

THE PRESIDENT'S ALASKA NATURAL GAS
TRANSPORTATION ACT WAIVER
RECOMMENDATION

HEARINGS
BEFORE THE
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

NINETY-SEVENTH CONGRESS

FIRST SESSION

ON

S.J. Res. 115

JOINT RESOLUTION TO APPROVE THE PRESIDENT'S RECOM-
MENDATION FOR A WAIVER OF LAW PURSUANT TO THE
ALASKA NATURAL GAS TRANSPORTATION ACT OF 1976

OCTOBER 22, 23, AND 26, 1981

Publication No. 97-38



Printed for the use of the
Committee on Energy and Natural Resources

**THE PRESIDENT'S ALASKA NATURAL GAS
TRANSPORTATION ACT WAIVER
RECOMMENDATION**

**HEARINGS
BEFORE THE
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE**

NINETY-SEVENTH CONGRESS

FIRST SESSION

ON

S.J. Res. 115

**JOINT RESOLUTION TO APPROVE THE PRESIDENT'S RECOM-
MENDATION FOR A WAIVER OF LAW PURSUANT TO THE
ALASKA NATURAL GAS TRANSPORTATION ACT OF 1976**

OCTOBER 22, 23, AND 26, 1981

Publication No. 97-38



**Printed for the use of the
Committee on Energy and Natural Resources**

U.S. GOVERNMENT PRINTING OFFICE

WASHINGTON : 1981

COMMITTEE ON ENERGY AND NATURAL RESOURCES

JAMES A. McCLURE, Idaho, *Chairman*

MARK O. HATFIELD, Oregon

LOWELL P. WEICKER, Jr., Connecticut

PETE V. DOMENICI, New Mexico

MALCOLM WALLOP, Wyoming

JOHN W. WARNER, Virginia

GORDON J. HUMPHREY, New Hampshire

FRANK H. MURKOWSKI, Alaska

DON NICKLES, Oklahoma

JOHN P. EAST, North Carolina

JOHN HEINZ, Pennsylvania

HENRY M. JACKSON, Washington

J. BENNETT JOHNSTON, Louisiana

DALE BUMPERS, Arkansas

WENDELL H. FORD, Kentucky

HOWARD M. METZENBAUM, Ohio

SPARK M. MATSUNAGA, Hawaii

JOHN MELCHER, Montana

PAUL E. TSONGAS, Massachusetts

BILL BRADLEY, New Jersey

MICHAEL D. HATHAWAY, *Staff Director*

CHARLES A. TRABANDT, *Chief Counsel*

D. MICHAEL HARVEY, *Chief Counsel for the Minority*

CONTENTS

Hearings:	Page
October 22, 1981.....	1
October 23, 1981.....	269
October 26, 1981.....	661
President's message to Congress.....	4
Senate Joint Resolution 115.....	11

THURSDAY, OCTOBER 22, 1981

STATEMENTS

Butler, Hon. C. M. III, Chairman, Federal Energy Regulatory Commission	149
Edwards, Hon. James B., Secretary of Energy, accompanied by R. Tenney Johnson, General Counsel.....	35
Hammond, Hon. Jay S., Governor, State of Alaska, accompanied by C. Deming Cowles, director of State/Federal relations, and Robert H. Loeffler, counsel.....	145
Horn, Hon. William P., Deputy Under Secretary, Department of the Interior...	250
Jackson, Hon. Henry M., a U.S. Senator from the State of Washington.....	18
Johnston, Hon. Ernest B. Jr., Acting Assistant Secretary for Economic and Business Affairs, Department of State.....	254
McClure, Hon. James A., a U.S. Senator from the State of Idaho.....	1
Metzenbaum, Hon. Howard M., a U.S. Senator from the State of Ohio.....	33
Murkowski, Hon. Frank H., a U.S. Senator from the State of Alaska.....	19
Rhett, Hon. John T., Jr., Federal Inspector, Alaska Natural Gas Transportation System.....	234
Stevens, Hon. Ted, a U.S. Senator from the State of Alaska.....	32

FRIDAY, OCTOBER 23, 1981

STATEMENTS

Baly, Michael, III, vice president, government operations, American Gas Association.....	603
Croom, John H., president, Columbia Gas Transmission Corp.....	298
Ewing, George H., president, Texas Eastern Transmission Corp.....	405
Graham, Robert H., vice president, Citibank, N.A.....	536
Jenks, Stephen W., vice president, Morgan Guaranty Trust Company of New York.....	556
Kalen, Kenneth E., group vice president, Panhandle Eastern Corp.....	389
Latimer, Radcliffe R., president and chief executive officer, TransCanada Pipeline Alaska, Ltd.....	306
Leake, William D., vice president, Alaska natural gas transportation system project, Atlantic Richfield Co.....	341
Lewand, Stanley J., vice president, Chase Manhattan Bank, N.A.....	563
Lepape, Harry L., president and chief executive officer, Pacific Interstate Transmission Co.....	327
McMillian, John G., chairman, board of partners, Alaskan Northwest Natural Gas Transportation Co.....	272
Melcher, Hon. John, a U.S. Senator from the State of Montana.....	271
Mosier, Frank E., senior vice president and director, the Standard Oil Co.....	381
Murkowski, Hon. Frank H., a U.S. Senator from the State of Alaska.....	269

IV

	Page
Pierce, Robert L., president and chief executive officer, Foothills Pipe Line (Yukon) Ltd., accompanied by S. Robert Blair, president and chief executive officer, NOVA, Edwin C. Phillips, chairman and chief executive officer, West-coast Transmission Co., Ltd., and George McHenry, counsel.....	428
Sacerdote, Peter M., partner, Goldman, Sachs & Co., accompanied by Andrew Sage, II, managing director, Lehman Brothers Kuhn Loeb, Inc.....	583
Sproul, John A., executive vice president, Pacific Gas & Electric Co.....	274
Raasch, Robert P., president, Northern Arctic Gas Co	318
Reso, Sidney J., senior vice president, Exxon Co., U.S.A	369
Roff, J. Hugh, Jr., president and chief executive officer, United Energy Resources, Inc.....	415
Trebilcott, James J., president, American Natural Alaskan Co.....	292
Tucher, H. Anton, vice president, Bank of America NT&SA	454

MONDAY, OCTOBER 26, 1981

STATEMENTS

Murkowski, Hon. Frank H., a U.S. Senator from the State of Alaska.....	661
Rothschild, Edwin, director, Energy Action Educational Foundation.....	662

APPENDIX

Responses to additional committee questions and the prepared statement of John G. McMillian.....	687
--	-----

THE PRESIDENT'S ALASKA NATURAL GAS TRANSPORTATION ACT WAIVER RECOMMEN- DATION

THURSDAY, OCTOBER 22, 1981

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, D.C.

The committee met, pursuant to notice, at 10:10 a.m., in room 3110, Dirksen Office Building, Hon. James A. McClure (chairman) presiding.

Present: Senators McClure, Murkowski, Nickles, Jackson, Ford, Metzenbaum, and Bradley.

Also present: Charles A. Trabandt, chief counsel; Howard Useem, professional staff member; and Elizabeth Moler, counsel for the minority.

OPENING STATEMENT OF HON. JAMES A. McCLURE, A U.S. SENATOR FROM THE STATE OF IDAHO

The CHAIRMAN. The committee will come to order. Good morning, ladies and gentlemen. The committee begins 3 days of hearings this morning to consider Senate Joint Resolution 115 to approve President Reagan's waiver package for the private financing of the Alaska natural gas pipeline. I introduced the resolution of approval on behalf of Senator Jackson, Senator Stevens, Senator Murkowski, and myself on Monday of this week.

These hearings on this resolution culminate 6 months of active review, discussion, and negotiations among the four of us with the pipeline sponsors, the financial community, and between ourselves and the administration and the leadership of our counterpart House committees. We jointly wrote to the President on July 24, and again on September 14, urging him to consider and send to the Congress a waiver of laws necessary to enable private financing of the pipeline.

Since spring the administration has been engaged in a parallel dialog with the Canadian Government including a number of direct discussions between the President and Prime Minister Trudeau. On October 7, the President announced his decision to send to Congress a waiver package similar to the one we forwarded to him on July 24, and again on September 14. Last Thursday, October 15, Congress formally received the President's waiver package thus triggering the 60-day congressional review and approval procedure under the Alaska Natural Gas Transportation Act of 1976.

TO THE CONGRESS OF THE UNITED STATES:

The Alaska Highway Pipeline route for the Alaska Natural Gas Transportation System was chosen by President Carter and approved by Congress in 1977. There was a strong Congressional endorsement that the pipeline should be built if it could be privately financed. That has been my consistent position since becoming President, as communicated on numerous occasions to our good neighbors in Canada and I am now submitting my formal findings and proposed waiver of law.

As I stated in my message to Prime Minister Trudeau informing him of my decision to submit this waiver:

My Administration supports the completion of this project through private financing, and it is our hope that this action will clear the way to moving ahead with it. I believe that this project is important not only in terms of its contribution to the energy security of North America. It is also a symbol of U.S.-Canadian ability to work together cooperatively in the energy area for the benefit of both countries and peoples. This same spirit can be very important in resolving the other problems we face in the energy area.

This waiver of law, submitted to the Congress under Section 8(g) of the Alaska Natural Gas Transportation Act, is designed to clear away governmental obstacles to proceeding with private financing of this important project. It is critical to the energy security of this country that the Federal Government not obstruct development of energy resources on the North Slope of Alaska. For this reason, it is important that the Congress begin expeditiously to consider and adopt a waiver of those laws that impede private financing of the project.

Ronald Reagan

THE WHITE HOUSE,

FINDINGS AND PROPOSED WAIVER OF LAW

Pursuant to the provisions of the Alaska Natural Gas Transportation Act of 1976 (ANGTA) 15 U.S.C. § 719, et seq., a transportation system to transport Alaska natural gas to consumers in the continental United States was selected and approved by Congress in 1977.

I find that certain provisions of law applicable to the federal actions to be taken under Subsections (a) and (c) of Section 9 of ANGTA require waiver in order to permit expeditious construction and initial operation of the approved transportation system. Accordingly, under the provisions of Section 8(g)(1) of ANGTA, I hereby propose to both Houses of Congress a waiver of the following provisions of law, such waiver to become effective upon approval of a joint resolution under the procedures set forth in Section 8(g)(2), 8(g)(3), and 8(g)(4) of ANGTA.

Waive P.L. 95-158 [Joint Resolution of approval,* pursuant to Section 8(a) of ANGTA, incorporating the President's Decision] in the following particulars:

Section 1, Paragraph 3, and Section 5, Conditions IV-4 and V-1, of the President's Decision, in order to permit producers of Alaska natural gas to participate in the ownership of the Alaska pipeline segment and the gas conditioning plant segment of the approved transportation system; provided, however, that any agreement on producer participation may be approved by the Federal Energy Regulatory Commission only after consideration of advice from the Attorney General and upon a finding by the Federal Energy Regulatory Commission that the agreement will not (a) create or maintain a situation inconsistent with the antitrust laws, or (b) in and of itself create restrictions on access to the Alaska segment of the approved transportation system for nonowner shippers or restrictions on capacity expansion; and

Section 2, Paragraph 3, First Sentence, of the President's Decision, to include the gas conditioning plant in the approved transportation system and in the final certificate to be issued for the system; and the

† See: Executive Office of the President, Energy Policy and Planning, Decision and Report to Congress on the Alaska Natural Gas Transportation System (September 1977) (hereinafter referred to as President's Decision); and see H. J. Res. 621, Pub. L. No. 95-158 (1977), wherein the President's Decision was incorporated and ratified by Congress pursuant to Section 8(a) of ANGTA.

* 15 U.S.C. § 719f nt.

application of Section 5, Condition IV-2 of the President's Decision to the gas conditioning plant; and

Section 5, Condition IV-3, of the President's Decision; provided, however, that such waiver shall not authorize the Federal Energy Regulatory Commission to approve tariffs except as provided herein. The Federal Energy Regulatory Commission may approve a tariff that will permit billing to commence and collection of rates and charges to begin and that will authorize recovery of all costs paid by purchasers of Alaska natural gas for transportation through the system pursuant to such tariffs prior to the flow of Alaska natural gas through the approved transportation system --

- (a) to permit recovery of the full cost of service for the pipeline in Canada to commence --
 - (1) upon completion and testing, so that it is proved capable of operation; and
 - (2) not before a date certain, as determined (in consultation with the Federal Inspector) by the Federal Energy Regulatory Commission in issuing a final certificate for the approved transportation system, to be the most likely date for the approved transportation system to begin operation; and
- (b) to permit recovery of the actual operation and maintenance expenses, actual current taxes and amounts necessary to service debt, including interest and scheduled retirement of debt, to commence --
 - (1) for the Alaska pipeline segment --
 - (A) upon completion and testing of the Alaska pipeline segment so that it is proved capable of operation; and
 - (B) not before a date certain, as determined (in consultation with the Federal Inspector) by the Federal Energy Regulatory Commission in issuing a final certificate for the approved transportation system, to be the most likely date for the approved transportation system to begin operation; and
 - (2) for the gas conditioning plant segment --
 - (A) upon completion and testing of the gas conditioning plant segment so that it is proved capable of operation; and
 - (B) not before a date certain, as determined (in consultation with the Federal Inspector) by the Federal Energy Regulatory Commission in issuing a final certificate for the approved transportation system, to be the most likely date for the approved transportation system to begin operation.

Waive Pub. L. No. 688, 75th Cong., 2nd Sess. [Natural Gas Act] in the following particulars:

Section 7(c)(1)(B) of the Natural Gas Act to the extent that section can be construed to require the use of formal evidentiary hearings in proceedings related to applications for certificates of public convenience and necessity authorizing the construction or operation of any segment of the approved transportation system; provided, however, that such waiver shall not preclude the use of formal evidentiary hearing(s) whenever the Federal Energy Regulatory Commission determines, in its discretion, that such a hearing is necessary; and

Sections 4, 5, 7, and 16 of the Natural Gas Act to the extent that such sections would allow the Federal Energy Regulatory Commission to change the provisions of any final rule or order approving (a) any tariff in any manner that would impair the recovery of the actual operation and maintenance expenses, actual current taxes, and amounts necessary to service debt, including interest and scheduled retirement of debt, for the approved transportation system; or (b) the recovery by purchasers of Alaska natural gas of all costs related to transportation of such gas pursuant to an approved tariff; and

Sections 1(b) and 2(6) of the Natural Gas Act to the extent necessary to permit the Alaskan Northwest Natural Gas Transportation Company or its successor and any shipper of Alaska natural gas through the Alaska pipeline segment of the approved transportation system to be deemed to be a "natural gas company" within the meaning of the Act at such time as it accepts a final certificate of public convenience and necessity authorizing it to construct or operate the Alaska pipeline segment and the gas conditioning plant segment of the approved transportation system or to ship or sell gas that is to be transported through the approved transportation system; and

Section 3 of the Natural Gas Act as it would apply to Alaska natural gas transported through the Alaska pipeline segment of the approved transportation system to the extent that any authorization would otherwise be required for ---

- (1) the exportation of Alaska natural gas to Canada (to the extent that such natural gas is replaced by Canada downstream from the export); and
- (2) the importation of natural gas from Canada (to the extent that such natural gas replaced Alaska natural gas exported to Canada); and
- (3) the exportation from Alaska into Canada and the importation from Canada into the lower 48 states of the United States of Alaska natural gas.

Waive P.L. 94-163* [Energy Policy and Conservation Act] in the following particulars:

Section 103 as it would apply to Alaska natural gas transported through the Alaska pipeline segment of the approved transportation system to the extent that any authorization would otherwise be required for --

- (1) the exportation of Alaska natural gas to Canada (to the extent that such natural gas is replaced by Canada downstream from the export); and
- (2) the importation of natural gas from Canada (to the extent that such natural gas replaced Alaska natural gas exported to Canada); and
- (3) the exportation from Alaska into Canada and the importation from Canada into the lower 48 states of the United States of Alaska natural gas.

* 42 U.S.C. § 6201, et seq.

SYNOPSIS OF WAIVER

Producer Ownership Participation

President Carter's 1977 Decision recognized that "(P)roducer participation in the financing of the project is warranted due to the beneficiary status and their financial strength." However, it limited that participation by prohibiting producers from having an equity interest in the project. The prohibition was based upon antitrust concerns, as expressed by the Department of Justice. A more thorough analysis of the antitrust issues reveals that the producers' ability to exert monopoly control over the project, or to inhibit further development of North Slope reserves by controlling the sole transportation available to natural gas markets, would most likely stem from their ability to limit access to the system or restrict its expansion. By requiring the Commission, in consultation with the attorney General, to address the access and expansion issues at the time of the final ANGSTS certificate issuance, the proposed waiver provides sufficient antitrust protection to meet the express concerns.

Conditioning Plant

President Carter's 1977 Decision excludes the conditioning plant from the description of the approved transportation system. The exclusion stems from the original certificate application which requested certification of facilities commencing at the discharge side of the conditioning plant facilities. The system described in the Decision was necessarily limited to the facilities for which certification was requested. As a practical matter, the economic effect of including the conditioning plant in the system is the same as treating the plant as a separately certificated facility and providing a conditioning cost allowance sufficient to provide for the recovery of the gas conditioning cost.

Billing Commencement Date

The proposed waiver is designed to address two interrelated tariff issues which are not dealt with in President Carter's 1977 Decision. Part (a) will enable the Commission to conform the tariff provisions to the tariff approved by the Canadian National Energy Board. The Canadian tariff provides for recovery of the full cost of service for the pipeline in Canada. The proposed waiver recognizes the Canadian decision, while protecting United States natural gas customers from the possibility that the Canadian segment of the pipeline would be completed in advance of the time it would be necessary. Part (b) will enable the Commission to fashion a

tariff that will provide an assured source of revenue for the payment of a minimum bill tariff. Such a tariff could conceivably go into effect in advance of completion and commissioning of all parts of the system. The minimum bill tariff would not go into effect before a date determined by the Commission to be the most likely date for the entire pipeline system to begin operation.

Evidentiary Hearing Requirement

The Natural Gas Act may be construed to require a formal, on the record, evidentiary hearing by the Commission on each application for a certificate of public convenience and necessity to construct or operate any segment of the ANCTS. The proposed waiver simply eliminates the requirement that such a hearing be held, leaving the Commission with discretion to determine whether such a hearing is necessary. The waiver is consistent with the purpose of the 1976 ANCTS to expedite decision-making on the project. The Commission would most likely substitute streamlined rulemaking procedures, with complete opportunity for public participation, on the remaining certificate issues.

Authority to Modify or Rescind Orders

The proposed waiver is intended to assure lenders for the project that the income stream which serves as security for their loans will not be reduced below the level necessary to retire the principal of the loan and to pay the interest thereon. It would accomplish this purpose by precluding the Commission from changing the rules of the game, so to speak, in a manner which would undercut the security of the loan. This objective would be achieved by withdrawing from the Commission its authority under the Natural Gas Act to change the project tariffs in such a manner as to reduce project revenues below the level necessary to service project debt.

Regulatory Status as a "Natural Gas Company"

This waiver is technical in nature.

Import and Export Authority

This waiver is technical in nature.

97TH CONGRESS
1ST SESSION

S. J. RES. 115

To approve the President's recommendation for a waiver of law pursuant to the Alaska Natural Gas Transportation Act of 1976.

IN THE SENATE OF THE UNITED STATES

OCTOBER 19 (legislative day, OCTOBER 14), 1981

Mr. McCLURE (for himself, Mr. JACKSON, Mr. STEVENS, and Mr. MURKOWSKI) introduced the following joint resolution; which was read twice and referred to the Committee on Energy and Natural Resources

JOINT RESOLUTION

To approve the President's recommendation for a waiver of law pursuant to the Alaska Natural Gas Transportation Act of 1976.

- 1 *Resolved by the Senate and House of Representatives*
- 2 *of the United States of America in Congress assembled,*
- 3 That the House of Representatives and Senate approve the
- 4 waiver of the provision of law (Public Law 95-158, Public
- 5 Law numbered 688, Seventy-fifth Congress, second session,
- 6 and Public Law 94-163) as proposed by the President, sub-
- 7 mitted to the Congress on October 15, 1981.

October 19, 1981

CONGRESSIONAL RECORD—SENATE

S 11603

Sargent, Nathan, *Public Men and Events* (Philadelphia, 1976), pages 61-62.
 * *Debates in Congress*, 18th Congress, 3rd sess., page 12.

* *Debates*, pages 30-31; *Debates in Congress*, 18th Congress, 3rd sess., pages 29-30.
 * *Debates in Congress*, 18th Congress, 2nd sess., page 56.

* *IBid.*, pages 689-95, 709-11.
 * *Historical Statistics of the United States* (Washington: 1976), Volume I, pages 8, 22.

Mr. ROBERT C. BYRD. Mr. President, does any Senator wish to yield?

I am ready to yield back my time.

Mr. BAKER. I yield back my time.

If the Senator will yield to me, I yield back the remainder of my time remaining under the standing order.

Mr. ROBERT C. BYRD. Mr. President, I yield back the remainder of my time.

ORDER OF BUSINESS

Mr. BAKER. Mr. President, I understand that Senators seeking recognition on special orders are detailed away from the Chamber.

I ask unanimous consent to reclaim my time under the standing order for the purpose of suggesting the absence of a quorum.

The ACTING PRESIDENT pro tempore. Without objection, it is so ordered.

Mr. BAKER. Mr. President, I suggest the absence of a quorum charged against my time.

The ACTING PRESIDENT pro tempore. The clerk will call the roll.

The roll clerk proceeded to call the roll.

Mr. STEVENS. Mr. President, I ask unanimous consent that the order for the quorum call be rescinded.

The ACTING PRESIDENT pro tempore. Without objection, it is so ordered.

RECOGNITION OF SENATOR
MCCLURE

The ACTING PRESIDENT pro tempore. Under the previous order, the Senator from Idaho is recognized.

SENATE JOINT RESOLUTION 115—TO
APPROVE THE PRESIDENT'S RECOMMENDATION FOR A WAIVER OF
LAW PURSUANT TO THE ALASKA
NATURAL GAS TRANSPORTATION
ACT OF 1976

(Introduced by Mr. McClure, for himself, Mr. JACKSON, Mr. STEVENS, and Mr. MURKOWSKI.)

Mr. MCCLURE. Mr. President, I am pleased to join with my colleagues Senator STEVENS, Senator MURKOWSKI, and Senator JACKSON to introduce the joint resolution of approval for the waiver of law proposed by President Reagan which is needed to expedite the construction and initial operation of the Alaska Natural Gas Transportation System. Approval of this waiver by the Senate and the House is a critical step in assuring the expeditious completion of this project by the private sector under private financing.

The rapid completion of this project is important not only for this Nation's eco-

nomic well-being, but also for our national security.

The Prudhoe Bay field, located on the north slope of Alaska, contains proven recoverable reserves of natural gas which conservatively total 26 trillion cubic feet; this is equivalent to about 4.5 billion barrels of oil. This field is the largest single gas reservoir ever discovered on the North American continent and it contains about one-eighth of the United States known reserves of gas. This field alone is capable of providing gas markets located in the lower 48 States with more than 2 billion cubic feet of gas per day over a 25-year period.

In addition to the proven reserves of natural gas located in the Prudhoe Bay field, independent experts estimate that there are somewhere in the range of 200 trillion cubic feet of additional reserves of gas located elsewhere in Alaska yet to be discovered. Without the construction of the Alaska Natural Gas Transportation System, however, none of the natural gas located in Alaska will be able to be transported to, and used in the lower 48 States; instead it would be shut in and lost forever.

The economic and national security consequences of a failure to complete this transportation system would be staggering. A brief review of our energy situation and the implications of our continued dependence on foreign petroleum is in order.

During the first 7 months of 1981, the United States relied on foreign sources for nearly 5.7 million barrels per day of oil. While this is a significant improvement over the nearly 9 million barrels per day of oil we imported during 1977, our current level of imports represents a more significant economic strain on our economy as well as an increased security threat to our Nation than we have ever encountered previously.

In 1973, this Nation imported slightly more than \$8 billion of foreign energy, accounting for less than 12 percent of our total imports of merchandise. By 1977, we imported \$45 billion worth of foreign energy, accounting for about 30 percent of our merchandise imports. During 1980, this Nation's imports of energy cost us nearly \$63 billion, and accounted for 34 percent of our total imports of merchandise. And, it should be noted, these imports of energy were 3½ times larger than our entire 1980 balance of trade deficit of \$24 billion. During the first 7 months of 1981, our energy imports totaled more than \$49 billion, again about one-third of this Nation's total imports of goods, and edging toward four times our entire balance of trade deficit of nearly \$14 billion.

It is only too evident that this Nation's imports of petroleum have played a significant part in our continuous adverse balance of payments which, in turn, has weakened the value of the dollar, increased the flow of imported goods, worsened our rate of inflation and significantly lessened the ability of our domestic companies to compete in the international market.

More importantly, however, these imports of foreign petroleum have increasingly been coming from unstable regions

of the world. Just prior to the oil crisis of 1973, 27 percent of the crude oil that the United States imported came from the Middle East; in January of this year more than 39 percent came from this region. And in addition to the crude oil that we import directly from this region are the petroleum products we import from other countries which are refined from oil produced in the Middle East.

As was exemplified during the recent Iranian revolution and accompanying Iraq/Iran war, some of the foreign suppliers of the oil which we overly depend upon are both unstable and only too willing to use the oil weapon to further their political interests.

From even this cursory examination of the United States vulnerability to foreign petroleum supply interruptions—whether they be intentional or accidental—it is only too evident that this Nation's economic well-being and national security rests far too much in the hands of foreign interests. The completion of the Alaska Natural Gas Transportation System can do much to relieve this country from this intolerable situation.

The Alaska Natural Gas Transportation System will have an initial capacity of 2 billion cubic feet of gas per day, and can be expanded to move as much as 3.2 billion cubic feet per day. The movement of 2 billion cubic feet of Alaskan natural gas to the lower 48 will displace nearly 400,000 barrels per day of imported oil, a savings of somewhere in the range of \$7 billion per year as well as a major reduction in our foreign petroleum dependence.

Ultimately when the system is expanded to transport 3.2 billion cubic feet of gas per day, as much as 600,000 barrels per day of foreign oil could be displaced thereby saving this Nation well in excess of \$11 billion each year of operation and insulating us even further from the uncertainties of unstable foreign petroleum production.

It is without question then, that the completion of the Alaska Natural Gas Transportation System is in this Nation's economic and national security interests. Failure to build the system would expose the country to unacceptable economic consequences, it would increase our vulnerability to the uncertainties of foreign production, it would result in the loss of this enormous resource from our base of energy reserves, it would deny domestic markets access to domestic energy, and moreover, it would jeopardize the economic recovery of our economy.

It is for these reasons, Mr. President, that I urge the Members of the Senate to join with me and my colleagues to support the passage of the joint resolution of approval of the waiver package proposed by the President of the United States.

The introduction of this resolution culminates 6 months of active review, discussion, and negotiations among the four of us, with the pipeline sponsors, the financial community, and between ourselves and the administration and the leadership of our counterpart House committees. We jointly wrote to the

President on July 24 and again on September 14 urging him to consider and send to the Congress a waiver of laws necessary to enable private financing of the pipeline. Since spring, the administration has been engaged in a parallel dialog with the Canadian Government, including a number of direct discussions between the President and Prime Minister Trudeau.

The President on October 7 announced his decision to send to Congress a waiver package similar to the one we forwarded to him on July 24 and again on September 14. Last Thursday, October 15, Congress formally received the President's waiver package, thus triggering the 60-day congressional review and approval procedure under the Alaska Natural Gas Transportation Act of 1976.

The Senate joint resolution of approval we are introducing today must be enacted with both Houses of Congress approving prior to the expiration of the 60-day period. Three days of hearings in the Energy and Natural Resources Committee on the resolution will begin on Thursday. I believe all of the cosponsors here are confident that the resolution ultimately will be enacted, and hopefully enacted before the end of this session of Congress.

All of us are pleased. I am sure, that the President decided to send us this particular waiver package, which preserves intact our substantive recommendations to him. The Alaska gas pipeline will open access to proven gas reserves on the North Slope which equal 15 percent of domestic gas reserves and will deliver 5 percent of our current annual gas consumption to the lower 48 States for a period of 20 to 30 years.

Such access and delivery will make a major contribution to our national energy security, the economic growth of America, and certainly our national security. Also, as the President cabled to Prime Minister Trudeau and noted in his formal transmittal statement, the project is—

A symbol of U.S.-Canadian ability to work together cooperatively in the energy area for the benefit of both countries and peoples (and) this same spirit can be very important in resolving the other problems we face in the energy area.

Perhaps what all of us believe is most important about this specific package is that it will provide a positive opportunity for private financing of the pipeline, rather than any Federal Government assistance. Legal barriers to gas producer participation in financing the project would be modified to allow such participation, while retaining appropriate safeguards, thus insuring needed equity financing for construction. Also, potential legal impediments to adequate debt financing are modified to increase the security of such investments in the billing arrangements and in needed regulatory predictability.

We are convinced that the combination of these several modifications, which the President found to be necessary under the law "to permit expeditious construction and operation" of the pipeline, will support the early negotiation of a

viable financing plan with needed debt and equity for the pipeline.

I believe we are also convinced that these modifications, which will be implemented and enforced by the Federal Energy Regulatory Commission under strict regulatory procedures, carefully balances the very best interest of this Nation, including gas consumers, participating financial institutions, the participating pipelines, producers and sponsors, as well as internationally important Canadian interests.

On that basis, we will urge our colleagues in the Senate and the House of Representatives to review and consider most carefully this package and the pipeline. Having done so, we are confident that they will agree with us to approve the President's proposal by enacting our Senate joint resolution in the next 60 days.

Thank you.

Mr. JACKSON. Mr. President, I am pleased to join three of my colleagues today in introducing a joint resolution of approval for the President's recommendation of a waiver of law package for those laws that impede private financing of the Alaska Natural Gas Transportation System.

I do so for one simple reason: Unless we act to approve the waiver package, there is no other way to get the pipeline built.

Building a pipeline to transport this Nation's single largest reserve of natural gas from the North Slope of Alaska to markets in the lower 48 States has long been recognized to be in the national interest. We first said so in 1973, when we passed legislation authorizing construction of the trans-Alaska oil pipeline. That legislation paved the way for negotiations with Canada over the natural gas pipeline route. The result of those negotiations is embodied in the route of the pipeline under consideration today.

We said so again in 1976, when we passed the Alaska Natural Gas Transportation Act taking the selection of a pipeline route out of normal bureaucratic channels to expedite a final decision on the matter by having the President and the Congress make the route decision.

We said so again in 1977, when we approved the President's decision under the 1976 act selecting the Alcan proposal as the preferred transportation system.

We said so again in 1978, when we passed the Natural Gas Policy Act, which contained several provisions designed to encourage construction of the gas pipeline project.

We said so again in 1980, when we passed a concurrent resolution to reassure our neighbors to the north that we would see this project to completion.

Finally, we must say once again that the pipeline project is in the national interest and needs to be built. Unless we do so, all of our efforts to date to provide for a privately financed natural gas pipeline from Alaska will prove to be in vain.

The stakes involved in this decision go far beyond the 26 trillion cubic feet of

recoverable natural gas reserves in Prudhoe Bay. The basic decision involved is whether we can find a way to enable construction of a privately financed natural gas pipeline to proceed. If we can, it will open up the entire northern part of the North American continent—in both the United States and Canada—to natural gas exploration and development. If we cannot, we will, in effect, be locking up not only the Prudhoe Bay reserves, but also an estimated 200 trillion cubic feet of undiscovered recoverable natural gas resources elsewhere in Alaska, and an equally great potential in northern Canada.

Last fall, the Canadian Federal Government relying on assurances from both the President and the Congress that we were still committed to completion of the entire Alaska Natural Gas Transportation System, authorized additional exports of natural gas. Some of that gas is already flowing through portions of the western leg of the system which were "prebuilt" to utilize the Canadian gas. The early construction phase of the eastern leg of the system is also underway. Over \$2 billion of private capital have already been committed to the prebuilt based upon our assurances that we remain committed to the project. Failure to meet this commitment would constitute a major breach of faith on the part of the United States and would have severe international repercussions.

I know that my colleagues will hear a great deal about this waiver package in the 3 weeks ahead. Committees of jurisdiction in both the Senate and the House have already scheduled hearings on the waiver proposal. We shall go into great detail in the coming weeks on the specifics of each aspect of the waiver proposal.

I do not propose to go into great detail about each provision in the waiver package today. However, I do want to comment on two aspects of the waiver proposal before a lot of erroneous information gets spread around and becomes conventional wisdom.

The financing mechanism contemplated by the package is likely to be the most controversial part of it. Indeed, it has already given me some pause. I personally would not have supported the proposal if there were any other means to get this tremendous undertaking underway.

The waiver would allow the Federal Energy Regulatory Commission to approve a tariff for the pipeline system that might result in consumers paying a small portion of the cost of the system in advance of gas deliveries. I use the word "might" on purpose, for I certainly hope that construction will proceed in the manner contemplated today by the engineers and that completion of all parts of the system will occur simultaneously.

The billing commencement date mechanism in the package would require the FERC to determine when it is most likely for the entire system to begin operation. If the entire system is not complete as of that date, purchasers of Alaska gas would be charged according to a minimum bill

October 19, 1981

CONGRESSIONAL RECORD—SENATE

S 11605

tariff for the gas conditioning plan in Alaska or for the pipeline segment in Alaska. They could also be charged according to a full cost of service tariff for the pipeline in Canada. This latter treatment conforms to Canadian law and regulatory decisions to date.

First, I want to stress that Alaska natural gas purchasers would not be required to pay any return of, or on, the producers' or the pipeline companies' equity investment in the gas conditioning plant or the Alaska pipeline segment of the project until the entire system is complete. That equity investment will be completely at risk until the project is completed.

The banks told us categorically that they would be unable to raise the funds for the project without this mechanism. Frankly, they asked for even more generous treatment but I, for one, could not agree to support anything that goes any further.

Second, I want to stress that the waiver package does not mean that potential Alaska gas purchasers would be locked into paying the tariff forever if the project were not completed. It simply means that FERC could not act to change the minimum bill tariff in the manner that would impair payment of the debt, taxes, and operating expenses. I have no doubt that a future Congress would take appropriate action if it appeared likely that the project would not be completed. We are simply saying that Congress will judge what to do if the project should fail, rather than the bureaucrats. On a project of this size and importance, I believe that is perfectly appropriate.

Mr. President, this waiver package and this pipeline system must be looked at as part of the larger effort we must make to lessen our dependence on insecure foreign sources for our basic energy needs. It is in this larger context that I look at this proposal.

This proposal goes to developing our own energy resources so that, over the long haul, we can strengthen both our economy and our national security. In my view, we have no choice but to proceed and to act favorably on the President's recommendation. I hope that my colleagues will agree with me and that they will support the joint resolution we are introducing today.

The ACTING PRESIDENT pro tempore. The Senator from Alaska is recognized.

Mr. STEVENS. Mr. President, today I join Senators McCrory, Jackson, and Muskowitz in introducing this joint resolution to approve the President's waiver package submitted pursuant to the Alaska Natural Gas Transportation Act of 1976 (ANGTA). We are introducing this resolution in a bipartisan effort to insure that every opportunity is given to allow private financing for the Alaska Natural Gas Transportation System (ANGTS).

We have dealt with this project specially in Congress and at the executive level for two reasons. The first reason is that in 1966 the largest single discovery of oil and natural gas ever made on the continent of North America was made

at Prudhoe Bay on the North Slope of Alaska.

Second, our experience with the immense financial and regulatory demands of the trans-Alaska oil pipeline indicated to Congress that special treatment had to be granted for any proposed natural gas pipeline. As Senator JACKSON has explained; the purpose of ANGTA was to provide a means for making a sound decision with respect to the selection of the Alaska gas transportation system. It was intended to expedite construction and initial operation by streamlining agency decisions, limiting judicial review and providing the mechanism by which the President and Congress could waive laws that pertain to the transportation system.

In 1977, the Federal Power Commission (FPC) recommended that the President select from two overline proposals which would carry Alaska natural gas across Canada to the lower 48 States.

On September 20, 1977, the United States and Canada signed an agreement on "Principals Applicable to a Northern Natural Gas Pipeline," which established the terms and conditions which would apply to ANGTS in Canada and the mechanisms by which the two countries would cooperate on this joint project. Two days later the President issued his decision selecting the Alaska northwest proposal as the best means to bring Alaska gas to the lower 48 States. Approximately 1 month later, Congress approved the Presidential decision. (J.J. R.A.S. 921, Public Law 95-59).

Finally in 1980, Congress passed the concurrent resolution (S. Con. Res. 104) expressing the "sense of the Congress that the system remains an essential part of securing this Nation's energy future and, as such, enjoys the highest level of Congressional support for its expeditious construction and completion by the end of 1985."

This project entails a 4,800 mile pipeline system stretching from Prudhoe Bay, across Canada to terminals in Illinois and California. With an estimated total of about \$40 billion, it would be the largest privately financed project in the history of man. This pipeline will bring 26 trillion cubic feet of gas—13 percent of our Nation's total gas reserves to market in the lower 48 States.

We are well on the way to approval of this project. Conditional FERC certification, approval of design specifications, tariffs, operating agreements by the FERC and the right-of-way grant from the Department of Interior have already been obtained. The State of Alaska is acting expeditiously to process permitting requirements in the State. The design and engineering of this pipeline is essentially complete. What remains is financing.

The waiver of law sent to us by the President pursuant to section 8(g) of ANGTA is targeted on those specific provisions of law impeding the ability of the private capital market to finance this project. Congress can assist the President and our Nation by removing these obstacles through congressional approval of the waiver.

Some are questioning the need for this natural gas. I would point out to them that beginning in 1967, and continuing each succeeding year up to the present, U.S. natural gas consumption has exceeded additions to proven reserves. We currently have proven natural gas reserves (including Alaska) below 200 trillion cubic feet.

Current gas production is about 20 trillion cubic feet per year, giving the United States a reserve life of less than 10 years. Conventional lower 48 gas production is expected to decrease despite accelerated drilling activities and productivity. The amount of gas discovered and produced is on a continuing decline. We must provide supplementary sources of gas to maintain our current supply level. It is the resounding consensus of all facets of our Government that gas from Alaska will be needed to augment supplies produced in the lower 48 States. This project will replace imported oil.

This project will create jobs for American workers and orders for U.S. businesses. Construction of this project will require a work force of 13,000 workers. Additionally, the project will help Canada maintain needed supply through gas exports to the United States and will strengthen our relationship with that nation.

Although there have been some disagreements recently in energy policy, the United States and Canada are inextricably bound to one another in areas of mutual interest, such as energy resource development. We need to emphasize this pipeline as a basis for ongoing cooperation with Canada.

Alaska gas is not subject to OPEC prices or embargo. The gas is to be distributed to 48 States and will provide benefits to a wide variety of U.S. gas users. Moreover, construction will demonstrate to the rest of the world the deep commitment of the United States to discovering and developing secure domestic sources of energy. Estimates indicate we will produce a net national economic benefit of \$40 to \$99 billion through construction of this gas line.

I am particularly concerned that the failure to pass this waiver and the potential destruction of financing this pipeline might be regarding further exploration and development in the frontier areas of Alaska. We are all aware that the Department of the Interior has installed as one of the cornerstones of this country's energy policy—its Outer Continental Shelf development plan. Over the next 5 years, Interior plans 16 Outer Continental Shelf lease sales off Alaska. Approximately 70 percent of all the Outer Continental Shelf leases will be off Alaska. Obscure names to most Americans—such as Diapir, Beaufort, Chukchi, the Navarin basin, and the North Alutian Shelf are targeted for development and represent some of the highest priority areas in this Nation for oil and gas exploration.

Furthermore, leasing is to commence in the high potential national petroleum reserve—Alaska, in December, with future leases to occur in numerous upland areas of the State over the next decade.

By most estimates, onshore and offshore Alaska will provide one barrel of oil for every barrel discovered in the rest of the United States. I ponder the question—what incentive is there to search for these hydrocarbons if there is no means of delivering the resources to market?

In a letter sent by Under Secretary of Interior, Donald Hodel, to Vice President George Bush on July 24 this year, the Department informs the Congress of the changes it felt were necessary in the Outer Continental Shelf leasing schedule.

The location of sale areas with respect to regional and national energy markets has been considered. The Department of Energy (DOE) has advised us that the location of a supply region lacking existing transportation facilities should not be viewed as constraints to the outer continental shelf leasing process. Only with proven reserves can expenditure for new transportation facilities be made. History has shown that once significant discovery is made in an area without prior production, transportation networks will be designed to meet the requirements for expeditious production of the discovery.

We risk changing history through failure to act on this project. I submit to you that a discovery of 26 trillion cubic feet of proven natural gas reserves is greater than significant. It is the largest single natural gas reserve discovered on the North American Continent. It is proven and is ready to be brought to market. A consortium of producers and sponsor companies have spent nearly \$1 billion in Alaska and Canada preparing to bring the product to market. Yet, we stand today at a juncture where construction of this project is in doubt. One thing is certain, failure to pass this joint resolution approving the President's waiver will send the signal loud and clear to our energy industry, financial markets, Canadian allies, gas consumers, and indeed the world that this country is not committed to the expeditious production or even discovery of essential energy resources. Moreover it will set this project back 10 to 15 years at a minimum.

There is little point in investing the vast amount of capital required to explore frontier areas in Alaska if our Government is not committed to take steps necessary to facilitate transportation of the resources once discovered. What motivation or incentive is there to drill in the Beaufort Sea, or the Navarin basin, or the national petroleum reserve of Alaska if there is substantial fear that we as a government are not wedded to the proposition that every effort must be made to provide a clear resource to areas of demand.

The challenge is being made that this project is not economic at this time. My answer to that is that this project can provide natural gas for the next 25 years in the lower 48 at costs ranging from \$4.13 to \$5.67 per million Btu's—in 1980 dollars. Although the initial cost of procuring Alaska natural gas may be higher than competing sources of supply, over that 25-year period, this project will provide the lowest cost natural gas in the country. An average estimate for the cost of oil over the same time is

approximately \$9 per million Btu's—in 1980 dollars—the Alaska Natural Gas Transportation System will be providing a relatively inexpensive source of energy to consumers.

This analysis does not even consider the potential 100 to 200 trillion cubic feet of estimated reserves remaining to be discovered in Alaska. The major portion of that potential is expected to be discovered on the North Slope and can conceivably be served by this transportation system. This is what we are really seeking to provide.

Regardless of future discoveries, the 26 trillion cubic feet of proven reserves that would certainly be served by ANGT's is sufficiently large to attract investment by the three principal North Slope gas producers—Arco, Exxon, and Sohio, of approximately \$9 billion in total financing responsibility. That is; these companies are willing to participate if Congress passes this waiver permitting them to do so and financing can be obtained. Congress is currently poised to make a decision with irreversible effects on the future development and exploration in frontier areas in Alaska. The President's waiver of law is designed to allow domestic and foreign institutions to provide financing for a \$40 billion project. Due to the enormous scope of this project, project sponsors cannot obtain sufficient financing domestically and must seek the vast majority of debt capital abroad.

We are, therefore, in need of creating a legal and regulatory framework that would offer sufficient certainty to convince international lending institutions that this project is competitive in relation to other world class investment opportunities.

Significantly, the Soviet Union has constructed approximately 6,000 miles of 56-inch gas pipelines between 1976 and 1980. Furthermore, the Russians' plan to lay roughly 10,000 miles of 56-inch pipe from fields in western Siberia to central and western areas of European Russia between 1981 and 1985. There is no doubt the Siberian pipeline and other Soviet pipeline projects will compete with the capital and supply markets in the industrialized world to accomplish the Russians' objectives. The question is the degree by which their efforts can be offset.

This waiver of law adopted by the President will remove barriers that currently prohibit private financing and will permit expeditious issuance of the final certificate authorizing the completion of ANGT's. This waiver will accomplish the essential objectives of permitting equity participation by North Slope producers in the pipeline project, allowing the Federal Energy Regulatory Commission to approve, at its discretion, a tariff allowing sufficient certainty to warrant the enormous sums needed for private financing, and enable the Federal Energy Regulatory Commission (FERC) to expedite the issuance of a final certificate of public necessity and convenience.

Although there are seven specific issues raised in this waiver, only two have seemed to draw substantial opposition

from Members of Congress or private interest groups. The first controversial item is the issue of "regulatory certainty." This waiver is designed to assure lenders that authority of the Federal Energy Regulatory Commission to modify or rescind orders cannot be implemented such that the income which would serve as security for loans would be reduced below the level necessary to retire the principal of the loan and to pay the interest thereon.

There is a body of law that indicates the current authority of FERC to take such an action. It can hardly be expected that sums of the magnitude required by this pipeline project can be obtained if FERC is able to change the project tariff in a manner that would reduce revenues below the level necessary to service project debt. In fact, it is inconceivable that prudent lenders would take such a risk in the fact of the broad discretion currently vested in FERC.

The most contentious element of the waiver is the issue of billing commencement. Under existing law, consumers cannot be billed until the entire pipeline is complete from the exit point of the conditioning plant through Alaska to Canada to the connecting point with the prebuilt sections at Calgary. This means, in effect, that consumers could be billed prior to gas actually flowing through the pipeline.

This is pursuant to the President's decision and report to Congress on the Alaska Natural Gas System in September 1977. This waiver incorporates the conditioning plant into the pipeline system and separates the system into three discrete segments. Billing upon completion of any one of the three segments can commence only after a date determined by FERC upon which the entire project, including the conditioning plant, can reasonably be completed. Consumers will not be responsible for any expense until that time.

At that date, consumers could be responsible for the full cost of service for the Canadian portion of the pipeline presuming the conditioning plant segment, the Alaska pipeline segment from the Canadian border to the conditioning plant, or both Alaska segments are not completed. The reason full cost is appropriate for the Canadian segment is the commitment of the prior administration to Canada to provide such a tariff as a means of securing financing for the Canadian portion of the project.

In contrast, the Alaska pipeline segment, which is constituted by pipeline from the Canadian border north to the conditioning plant at Frudhoe Bay, can upon completion after the date determined by FERC, receive what is known as minimum bill. Minimum bill permits recovery of the actual operation in maintenance expenses, current taxes, and amounts necessary to service debt, including interest and scheduled retirement of debt. This is assuming one of the other three segments is not completed.

The same analysis applies to the conditioning plant. It must be noted that no return on equity can commence until gas is flowing. Therefore, there is tremendous incentive upon the equity participants in

October 19, 1981

CONGRESSIONAL RECORD—SENATE

S 11607

this project to expeditiously complete the project. This waiver does not grant the equity participants in the project 1 cent until they have fulfilled their obligation to issue gas to consumers in the lower 48.

The issue then is what amount of risk is the consumer really absorbing in this project? The answer is, the consumer is assuming a minimal portion of the risk of delay in this project. Not only is there an incentive against project delay built in by the failure of the waiver to provide any return of equity until completion of the entire system, but also there is the additional guarantee of completion provided by the requirement that the entire pipeline segment in Alaska from the border of Canada to the conditioning plant at Prudhoe Bay be completed prior to any pre-conditioning billing.

The same requirement is placed upon the conditioning plant segment as a prerequisite for pre-conditioning billing. The consumer is therefore endowed with the dual protection of the minimum bill concept while being guaranteed that the most significant portion of this pipeline must be entirely complete prior to any billing. This concept falls far short of construction work in progress (CWIP), that has been sought by potential lenders for this project.

I wish to quote the President's synopsis accompanying his waiver package:

It is critical to the energy security of this country that the Federal Government not obstruct development of energy resources on the North Slope of Alaska.

This project is a catalyst for future energy development and will help us meet our demand for gas in the 1980's, 1990's, and into the next century. Additionally, this project will offset foreign oil and enhance national security derived from a reduction from our dependence on foreign oil.

The Alaska Natural Gas Transportation System will create jobs for the U.S. workers and order for U.S. businesses and in fact provide a net national economic benefit that has been estimated at \$40 to \$90 billion. Finally, the natural gas pipeline will benefit U.S. consumers by reducing the overall costs of their energy requirements, providing an energy resource of the cost that will decline over time, and at a rate less than that of foreign oil and perhaps other domestic oil and gas resources, and offers a reliable source of domestic energy to 48 States not subject to OPEC price increases or embargo.

I wholeheartedly join my colleagues in offering this resolution approving the President's waiver. We must lay aside the regulatory and legal obstacles clearly impeding private financing of this project. I am confident, concerning what is at stake, that the Congress will act expeditiously to do so.

The ACTING PRESIDENT pro tempore. Under the previous order, the Senator from Alaska (Mr. Murkowski) is recognized for not to exceed 15 minutes.

Mr. MURKOWSKI. Mr. President, today it is my privilege to join Senators McCLELL, JACKSON, and STRAVAS in the introduction of the resolution of approv-

al for the "waiver package" proposed by the President to facilitate the construction of the Alaska Natural Gas Transportation System.

Mr. President, in my mind, this is one of the most important pieces of legislation that will come before the 97th Congress. Swift action and approval of this resolution by the Congress will help insure the completion of a project that will bring an estimated 26 trillion cubic feet of natural gas from Alaska to the "lower-48."

I might mention, too, Mr. President, that this project is the choice of the environmental community over the other two proposed routes, namely, the Canadian Arctic gas route and the El Paso route which involved gas liquefaction.

Mr. President, I can think of no other project at this time that would have a more dramatic effect on the U.S. economy than the expenditure of \$40 billion on this project, which will have such a vast effect on employment in our country, initiating some 16,000 jobs.

Mr. President, that is just the beginning. It is estimated that up to 10 times the amount of proven natural gas reserves, that is, 26 trillion cubic feet of proven reserves, can be made available through increased exploration and development in the Alaskan Arctic over the next 20 years.

Without a means to bring this tremendous resource to market, we deny ourselves the opportunity to displace expensive and unreliable sources of foreign oil.

I do not have to reiterate the painful lessons of past oil shortages and the energy-related political events that have shaped recent history. Senator McCLELL, my good friend and chairman of the Energy Committee, has already spoken about the importance of this project to our goal of energy independence. Although the world presently has a so-called "energy glut," no responsible person—and certainly not the U.S. Government—can rely on this tenuous glut. It could very well disappear tomorrow, or next week, or next month. Our country, relying principally on private enterprise, must continue to develop aggressively new, domestic sources of energy to fuel our economy.

The contribution which this proposed gas pipeline can make to America's economic well-being and America's national security is truly significant. Completion of the project, therefore, is a matter of national importance. Congressional approval of President Reagan's "waiver package" by adoption of the resolution we introduce today will move the project toward completion.

Mr. President, much has changed since 1977 when President Carter presented his decision and report to Congress on the Alaska Natural Gas Transportation System. I believe Senator JACKSON will elaborate on the significance of that point and the subsequent need for a waiver package given today's circumstances. Inflation has pushed the project's cost estimates upward, and financing arrangements have and will continue to become increasingly complex due to the global monetary situation. This gas transportation system in its entirety will

cost over \$40 billion in "as spent" dollars if completed in 1986 as now projected. It will be the most expensive privately financed project in the history of the free world.

With these enormous capital costs, developing a sufficient and workable financing plan has been and will continue to be a great challenge. The sponsors, the gas producers, the pipeline companies, and a number of financial institutions have already had many discussions in this regard. Members of Congress who have been working on this "waiver package" have certainly become well aware of the unprecedented financial commitment it will take to complete the project.

The "waiver package" or terms of financing, includes several key provisions. First, it is now clear that the gas producers will need to have an equity or ownership interest in the project. Given the tremendous financial requirements of a project of this magnitude, equity participation by the energy industry is crucial. The current prohibition against producer equity participation is based on antitrust concerns which can be addressed at the time of final FERC certification of the project. Therefore, sufficient antitrust protection will be insured.

Other waivers address the question of regulatory certainty. The financial community requires some assurance that the income stream which serves as security for their loans will not be reduced below the level necessary to repay the debt. Essentially, this waiver simply precludes the Federal Energy Regulatory Commission from undercutting the security of the loan through future modification of the project tariffs in such a way as to seriously endanger debt servicing.

During the course of the lengthy discussions on the "waiver package," it also became clear that minimal assurances against the risk of noncompletion of this 4,600-mile pipeline system must be provided. The Canadian National Energy Board has already approved the tariff for the Canadian pipeline segment, which provides for the recovery of "full cost of service" upon completion and commission of that segment of the pipeline. This is in keeping with an agreement between President Carter and the Government of Canada which was reached prior to the rebuilding of some of the Canadian segments of the pipeline that have since been done. Additionally, financial experts who have studied the Alaskan segments of the project—the \$6 billion gas conditioning plant and the \$21 billion Alaska pipeline—have without exception indicated that some minimal assurance to investors for operating expenses, taxes, and debt service will be necessary if financing for this enormously expensive project is to be forthcoming.

After reviewing this situation carefully and considering the advice of financial experts, Senators working on this "waiver package" and the administration have included as proposed a procedure in the "waiver package" which will enable the Federal Energy Regulatory Commission under very limited circumstances and very specific terms to develop a tariff that will provide for an

assured minimal flow of revenues to investors prior to the completion of the entire system. The 1977 Presidential decision prohibited such a tariff.

The proposed "waiver package" would permit FERC to approve, in its discretion, a tariff permitting billing to commence for the gas conditioning plant, the Alaskan pipeline segment, and the Canadian segment of the pipeline system upon their individual and separate completion and commissioning but not before a target completion date established by FERC as the most likely date for the transportation system to begin operation.

FERC would be authorized to permit the U.S. sponsors to charge a minimum bill to recover actual operating and maintenance expenses, current taxes, and debt service, including interest and scheduled debt retirement after the target completion date set by FERC and upon completion and commissioning of each of the two individual segments—the gas conditioning plant and the Alaskan pipeline segment. FERC would also be authorized, consistent with the tariff already approved by the Canadian Energy Board, to permit Canadian sponsors to charge the full cost of service, including a return on equity, after the target completion date set by FERC and upon completion and commissioning of the system in Canada.

Contrary to certain statements about this part of the "waiver package," it would not reassign the risk of noncompletion of the entire pipeline project to consumers. Rather, the risk of noncompletion would be shared between investors and consumers. Investors would continue to assume the risk of noncompletion for their respective segments. If any segment were not completed, the investors in that segment would bear the loss associated with its noncompletion. Consumers would assume the responsibility for the repayment of debt only after the target completion date and completion of one or more segments. Equity would continue to remain at risk until service commences. That is some \$6 billion worth of equity risk.

Mr. President, this very limited authority for FERC to approve billing before the entire system is completed is not an opportunity to place consumers the entire risk of noncompletion of this transportation system. U.S. sponsors, at most, would be able to recover necessary operating expenses, taxes, and debt service—not return on equity—upon completion of one or the other of the two segments in Alaska and only after the target completion date set by FERC.

The financial community has made it as clear as it can be that without this limited FERC authority, the enormous capital which must be raised for this project will not be forthcoming. That is the bottom line, Mr. President.

I sincerely doubt—given the impetus which will develop to complete the project once it is underway—that billing will ever occur. However, in evaluating such a possibility, the risks of not having this vital project completed must also be considered. Not to build this project which will deliver nearly 26 trillion cubic

feet of natural gas to meet our country's energy needs and reduce our dependence on foreign energy sources is truly unthinkable.

Moreover, if we fail to develop the means to bring 26 trillion cubic feet of known natural gas reserves to market, then all of our discussions of accelerated gas leasing in Alaska are purely academic. This applies to offshore wells in Alaska as well.

There is another consideration that demands we act quickly to pave the way for the pipeline's financing and construction. The Soviet Union is embarking on the construction of a 3,600-mile natural gas pipeline from Western Siberia into Western Europe. This pipeline is expected to cost the Soviets approximately \$10 billion and the West European financial community will probably be supplying a significant portion of this financing.

It is unlikely that both the Soviet and Alaskan pipelines can be financed during the same time frame due to the immense capital requirements involved and the current global monetary and economic situation, in addition to the availability of pipe which would come from roughly the same source. There is an additional important reason for us to adopt this "waiver package" and proceed with financing arrangements for the Alaskan pipeline now.

Moreover, Mr. President, I believe that it would be regrettably ironic if the Senate failed to approve this package and we failed to move ahead with the project's financing and construction. The Western Europeans who will receive the natural gas are clearly willing to rely upon an energy source which—in a political context—may be viewed as potentially unreliable. Nevertheless, the Western Europeans and the Soviets are moving ahead. We, on the other hand, have an opportunity to develop our own domestic, secure source of energy. It would be irresponsible for us to fail to do so.

America is fortunate to have the unparalleled technological capability to extract energy from seemingly inaccessible regions. If we fail to take advantage of our technological advantage by not completing the Alaskan pipeline, we shall fail to achieve a greater degree of energy independence while the Soviet Union strengthens its own position. This is a consequence I do not believe we can afford.

Finally, Mr. President, I want to reiterate the importance of this project to our relationship with Canada. We have made a substantial commitment to the Canadians, and we have repeatedly assured them in numerous legislative or executive actions that this pipeline would be built. Relying upon these assurances, the Canadian Government authorized additional natural gas exports and the sponsors in Canada undertook to prebuild portions of this system in anticipation of construction in Alaska. Expectations are high throughout the Canadian Government and private sector. Any perceived unwillingness by our Government to take reasonable steps to promote this project will certainly be

interpreted as a breach of faith, if not a breach of international agreement. We may needlessly risk harm to our already delicate commercial relationship with Canada.

As President Reagan indicated in his October 6 telegram to Prime Minister Trudeau:

This (Alaska Natural Gas Pipeline) project is important not only in terms of its contribution to the energy security of North America, it is also a symbol of U.S.-Canadian ability to work together cooperatively in the energy area for the benefit of both countries and peoples.

Mr. President, we are at a crucial juncture. Simply put, if we fail to act and approve this resolution, we are denying ourselves the opportunity to achieve a greater degree of energy independence. That is not an alternative, Mr. President, that I can live with, and I am certain my Senate colleagues will share that conclusion and support this resolution.

ORDER OF BUSINESS

Mr. JACKSON. Mr. President, I suggest the absence of a quorum.

The ACTING PRESIDENT pro tempore. The clerk will call the roll.

The legislative clerk proceeded to call the roll.

Mr. SCHMITT. Mr. President, I ask unanimous consent that the order for the quorum call be rescinded.

The PRESIDING OFFICER. Without objection, it is so ordered.

Mr. SCHMITT. Mr. President, a parliamentary inquiry.

The ACTING PRESIDENT pro tempore. The Senator will state it.

Mr. SCHMITT. Is it necessary to get unanimous consent to proceed for 3 minutes?

The ACTING PRESIDENT pro tempore. At this point, it would be. The next order of business is for the majority leader to be recognized for 15 minutes.

Mr. SCHMITT. Mr. President, I ask unanimous consent that I may be permitted to proceed for 3 minutes.

The ACTING PRESIDENT pro tempore. Without objection, it is so ordered. (The remarks of Mr. SCHMITT at this point in connection with the introduction of legislation are printed under Introduction of Bills and Joint Resolutions.)

Mr. SCHMITT. Mr. President, I suggest the absence of a quorum.

The PRESIDING OFFICER (Mr. ANNEW). The clerk will call the roll. The legislative clerk proceeded to call the roll.

Mr. PROXMIER. Mr. President, I ask unanimous consent that the order for the quorum call be rescinded.

The PRESIDING OFFICER. Without objection, it is so ordered.

ROUTINE MORNING BUSINESS

The PRESIDING OFFICER. The Chair will advise the Senator that under the previous order there will now be a period for the transaction of routine morning business for not to exceed 30 minutes.

The CHAIRMAN. Senator Jackson, do you have a statement you would like to make at this time?

Senator JACKSON. Yes, Mr. Chairman.

**STATEMENT OF HON. HENRY M. JACKSON, A U.S. SENATOR
FROM THE STATE OF WASHINGTON**

Senator JACKSON. Thank you, Mr. Chairman.

I am very pleased to be here today to join with my chairman and members of the committee in opening the hearings on the President's waiver of law package for the Alaska natural gas transportation system.

For those of us who have worked on various pieces of the Alaska pipeline legislation since 1973 and who have suffered the trials and tribulations of financing negotiations for this system since 1977, I am certain we are all breathing a collective sigh of relief to have these hearings begin.

As I said on the Senate floor on Monday, I am a supporter of the waiver package. I do so for one simple reason. Unless we act to approve the waiver package there is no other way to get the pipeline built.

This waiver package and this pipeline system must be looked at as part of the larger effort we must take to lessen our dependence on insecure foreign sources for our basic energy needs. It is in this larger context that I look at this proposal.

Frankly, development of this waiver package has required many of us to put aside some previously held beliefs about some of the issues involved. We must all adapt to a changing dynamic world. That is difficult for politicians to do, especially when the choices before us are not intuitively pleasing.

Either we pass this waiver package and get on with the job of financing and building the project or we abandon our hope to develop our natural gas energy resources in Alaska in northern Canada. The choice is that simple.

This proposal goes to developing our own energy resources so that over the long haul we can strengthen both our economy and our national security.

Mr. Chairman, as you pointed out, there are enormous existing reserves in Alaska and Canada. The future potential is just enormous. The question is are we going to allow it to stay there in place and not move it. We cannot move it effectively by an LNG system or by tanker and we have no other alternative.

In my view we have no choice but to proceed and act favorably on the President's recommendation. I hope my colleagues on the committee will agree with me that they will support the joint resolution necessary to approve this proposal. Under the procedures, it is not subject to amendment.

I would point out the big task lies ahead. Assuming we get approval of the resolution by both Houses, the financial market looks very difficult. I think only a fool would indicate we are going to be able to finance it without some special effort. It is going to take enormous effort to raise the amount of money in a market where AAA bonds are at an all time high running close to 18 percent. This poses a serious problem, especially with most of the financial experts saying the long-term rates are going to stay up.

We have to do our job. I think we need to move expeditiously, Mr. Chairman, at least based on the recess schedule. The Senate's current schedule gives us only 2 days off at Thanksgiving. Based on that schedule, the review period would expire on December 18. I hope we can act in the Senate before that time. I assure the Chair that I will do everything I can to cooperate.

I regret, Mr. Chairman, I am late for a meeting of the Intelligence Committee and I will have to leave.

The CHAIRMAN. I understand. Everyone of us have conflicts in our schedules. The Appropriations Committee is meeting right now marking up the energy and water resources portion of the bill and I ought to be there.

I want to say publicly what is certainly very obvious. Without your help and continued effort over the last several weeks and months, we would not be here today. It has been a joint effort and a very important joint effort to forge the package which we submitted to the White House.

Senator JACKSON. I thank the Chairman. It has been a real bipartisan effort to find a way to get this job done. Four years have expired, Mr. Chairman since we approved the President's decision. Every year the cost goes up. We are at the point where we have to fish or cut bait. I hope we will get on with the job. I thank the Chairman.

The CHAIRMAN. Thank you, Senator Jackson.
Senator Murkowski.

STATEMENT OF HON. FRANK H. MURKOWSKI, A SENATOR FROM THE STATE OF ALASKA

Senator MURKOWSKI. Thank you, Mr. Chairman.

I certainly want to take this opportunity to commend you, Mr. Chairman, for scheduling these hearings so quickly after the President's transmittal of the proposed Alaska natural gas transmission waiver package.

Under law as you pointed out, Congress has just 60 days from the time of the President's transmittal to adopt Senate Joint Resolution 115, introduced by the chairman, Senator Jackson, Senator Stevens who could not be here today and sends his regrets. He had to go back to Alaska.

I certainly do approve of the President's waiver proposal.

Knowing we are pressed for time, I will keep my opening remarks brief and submit a formal statement for the hearing record.

I am deeply concerned about the continued decline in U.S. proven natural gas reserves. In 1970 we had proven gas reserves of 290 trillion cubic feet. In 1979 the latest year for which figures are available, we had proven gas reserves of only 195 trillion cubic feet, a 33-percent decrease in that time period.

Geological evaluations of the U.S. Geological Survey and the Federal Energy Regulatory Commission have indicated that we will face substantial declines in the deliverability of reserves from the Gulf of Mexico gas producing region. From that region alone, gas deliverability could decline as much as 2 trillion cubic feet each year beginning in 1985.

I fear that the current tenuous oil glut may divert our attention away from the fact that our levels of proven gas reserves are

continuing to decline. In light of this, Mr. Chairman, I think it is critical for this Nation to develop its natural gas resources.

The Alaska natural gas transmission system is absolutely critical to this effort. There are 26 trillion cubic feet of known proven gas reserves at Prudhoe Bay. That amount represents 15 percent of the total U.S. proven reserves and we have reason to believe that as much as 200 trillion cubic feet are in existence in that area.

Simply stated, our failure to bring to market our known reserves could be construed as a signal to the OPEC nations that we are not serious about achieving our goal of energy independence.

I also believe it is important to point out that the adoption of the President's proposed waiver package will facilitate the construction of a pipeline along the most environmentally preferred route.

It was the firm conclusion of the President's 1977 decision and report to Congress on the Alaska natural gas transportation system that the Alaska-Canadian pipeline route is clearly the superior proposal on environmental grounds.

In a hearing before the Senate Energy Committee in September and October of 1977, representatives of the Sierra Club, the Wilderness Society, the National Audubon Society and the Alaska Conservation Society were unanimous in their endorsement of this proposal as the best means to bring Alaska gas to lower 48 markets from an environmental point of view.

I also want to mention the importance of moving ahead with this project for yet another reason. The Soviet Union is moving ahead with its plans to construct a natural gas pipeline from Siberia to Western Europe. There is little doubt in my mind that the Siberia pipeline and some of the other Soviet natural gas development projects will compete with the Alaskan project in the capital and supplier markets to the industrialized West.

Basically we are talking about competition for dollars, available capital and for the availability of pipe to build the pipeline.

Therefore, Mr. Chairman, I believe it is crucial that we approve the President's proposed waiver package and move ahead with this project as quickly as possible.

The waiver package itself contains provisions which have already come under a good deal of scrutiny. Over the past several months Members of both Houses of Congress and their staffs in consultation with the project sponsors, gas producers, and financial community have attempted to come up with a package of waivers that would result in the construction of the pipeline.

I believe the waiver package that the President has sent to Congress will remove the legal and regulatory obstacles which stand in the way of private financing.

I would like to point out that the waivers we are talking about are really nothing more than the conditions of financing laid down by the lenders and they first must be overcome before this project can go ahead.

It is important to remember that the Alaskan gas pipeline project would be the largest privately financed construction project in the history of the free world, over \$40 billion, and that it will not involve any Federal subsidies or loan guarantees. Without congressional approval of these waivers, private financing and construction cannot proceed.

I would refer to the mild recession this country is in and I cannot think of any single project to stimulate the economy more than this \$40 billion project which would employ some 13,000 to 16,000 workers.

I want to commend you, Mr. Chairman, and Senator Jackson, for your outstanding leadership with regard to this issue. This is yet another example of your mutual efforts in the Senate to develop an effective national energy policy and to reduce our dependence on unreliable sources of foreign energy.

Mr. Chairman, I could say a good deal more but I am anxious to hear Secretary Edwards, Governor Hammond, and the other distinguished witnesses.

I would ask that I be allowed to submit a detailed written statement to be included in the hearing record.

The CHAIRMAN. It is so ordered. It will be so included. I get nervous everytime you talk about a \$40 billion project and I suspect others do also. The record will amply reflect the fact that includes all the carrying costs over time.

[The prepared statement of Senator Murkowski follows:]

Opening Statement of Senator Frank H. Murkowski
in hearings concerning the
Alaska Natural Gas Transportation System
before the
Senate Committee on Energy and Natural Resources
October 22, 1981

I wish to commend the Chairman for scheduling these hearings so quickly after the President's transmittal of his proposed Alaska Natural Gas Transportation "waiver package." Under law, Congress has just 60 days from the time of the President's transmittal to adopt Senate Joint Resolution 115, introduced by the Chairman, Senator Jackson, Senator Stevens, and I to approve the President's "waiver" proposal.

Mr. Chairman, I am deeply concerned about the continued decline in U.S. proven natural gas reserves. In 1970, we had proven gas reserves of 290 trillion cubic feet. In 1979, the latest year for which figures are available, we had proven gas reserves of only 195 trillion cubic feet -- a 33% decrease. Moreover, Mr. Chairman, geological evaluations of the U.S. Geological Survey and the Federal Energy Regulatory Commission have indicated that we will face substantial declines in the deliverability of reserves from the Gulf of Mexico gas producing region. From that region alone, gas deliverability could decline as much as 2 trillion cubic feet each year beginning in 1985.

-2-

I fear that the current, tenuous oil glut may divert our attention away from the fact that our levels of proven gas reserves are continuing to decline. In light of this, Mr. Chairman, I think it is critical for this nation to develop its natural gas resources. The Alaska Natural Gas Transportation System is absolutely critical to this effort. There are 26 trillion cubic feet of known, proven gas reserves at Prudhoe Bay -- that amount represents 13% of total U.S. proven reserves. Simply stated, our failure to bring to market our known reserves would be construed as a signal to the OPEC nations that we are not serious about achieving our goal of energy independence.

I do not have to reiterate the painful lessons of past oil shortages and the energy-related political events that have shaped recent history. Although the world presently has a so-called "energy glut," no responsible person -- and certainly not the United States Government -- can rely on this "glut." It could very well disappear tomorrow, or next week, or next month. Our country, relying principally on private enterprise, must continue to develop aggressively new, domestic sources of energy to fuel our economy.

The contribution which this proposed gas pipeline can make to America's economic well-being and America's national security is truly significant. Completion of the project, therefore, is a matter of national importance. Congressional approval of President Reagan's "waiver package" by adoption of S.J. Res. 115 will move the project toward completion.

... Mr. President, much has changed since 1977 when President Carter presented his decision and report to Congress on the Alaska Natural Gas Transportation System. Inflation has pushed the project's cost estimates upward, and financing arrangements have and will continue to become increasingly complex due to the global monetary situation. This gas transportation system in its entirety will cost over \$40 billion in "as spent" dollars if completed in 1986 as now projected. It will be the most expensive privately financed project in history.

The "waiver package" itself includes several key provisions. First, it is now clear that the gas producers will need to have an equity and ownership interest in the project. Given the tremendous financial requirements of a project of this magnitude, equity participation by the energy industry is crucial. The current prohibition against producer equity participation is based on antitrust concerns which can be addressed at the time of final FERC certification of the project. Therefore, sufficient antitrust protection will be insured.

Other waivers address the question of regulatory certainty. The financial community requires some assurance that the income stream which serves as security for their loans will not be reduced below the level necessary to repay the debt. Essentially, this waiver simply precludes the Federal

-4-

Energy Regulatory Commission from undercutting the security of the loan through future modification of the project tariffs in such a way as to seriously endanger debt servicing.

During the course of the lengthy discussions on the "waiver package," it also became clear that minimal assurances against the risk of noncompletion of this 4,800 mile pipeline system must be provided. The Canadian National Energy Board has already approved the tariff for the Canadian pipeline segment, which provides for the recovery of "full cost of service" upon completion and commission of that segment of the pipeline. This is in keeping with an agreement between President Carter and the Government of Canada which was reached prior to the prebuilding of some of the Canadian segments of the pipeline. Additionally, financial experts who have studied the Alaskan segments of the project -- the \$6 billion gas conditioning plant and the \$21 billion Alaska pipeline -- have without exception indicated that some minimal assurance to investors for operating expenses, taxes and debt service will be necessary if financing for this enormously-expensive project is to be forthcoming.

After reviewing this situation carefully and considering the advice of financial experts, Senators working on this "waiver package" and the Administration have included as proposed a procedure in the "waiver package" which will enable the Federal

Energy Regulatory Commission under very limited circumstances and very specific terms to develop a tariff that will provide for an assured minimal flow of revenues to investors prior to the completion of the entire system. The 1977 Presidential decision prohibited such a tariff.

The proposed "waiver package" would permit FERC to approve, in its discretion, a tariff permitting billing to commence for the gas conditioning plant, the Alaskan pipeline segment, and the Canadian segment of the pipeline system upon their individual and separate completion and commissioning but not before a target completion date established by FERC as the most likely date for the transportation system to begin operation.

FERC would be authorized to permit the U.S. sponsors to charge a "minimum bill" -- to recover actual operating and maintenance expenses, current taxes, and debt service, including interest and scheduled debt retirement -- after the target completion date set by FERC and upon completion and commissioning of each of the two individual segments -- the gas conditioning plant and the Alaska pipeline segment. FERC would also be authorized -- consistent with the tariff already approved by the Canadian Energy Board -- to permit Canadian sponsors to charge the full cost of service, including a return on equity, after the target completion date set by FERC and upon completion and commissioning of the system in Canada.

-6-

Contrary to certain statements about this part of the "waiver package," it would not reassign the risk of noncompletion of the entire pipeline project to consumers. Rather, the risk of noncompletion would be shared between investors and consumers. Investors would continue to assume the risk of noncompletion for their respective segments. If any segment was not completed, the investors in that segment would bear the loss associated with its noncompletion. Consumers would assume the responsibility for the repayment of debt only after the target completion date and completion of one or more segments. Equity would continue to remain at risk until service commenced.

Mr. President, this very limited authority for FERC to approve billing before the entire system is completed is not an opportunity to place on consumers the entire risk of noncompletion of this transportation system. U. S. sponsors, at most, would be able to recover necessary operating expenses, taxes, and debt service -- not return on equity -- upon completion of one or the other of the two segments in Alaska and only after the target completion date set by FERC.

The financial community has made it as clear as can be that without this limited FERC authority the enormous capital which must be raised for this project will not be forthcoming. That is the bottom line, Mr. Chairman.

I sincerely doubt -- given the impetus which will develop to complete the project once it is underway -- that billing prior to

completion of the entire system will ever occur. However, in evaluating such a possibility, the risks of not having this vital project completed must also be considered. Not to build this project which will deliver nearly 26 trillion cubic feet of natural gas to meet our country's energy needs and reduce our dependence on foreign energy sources is unthinkable! Moreover, if we fail to develop the means to bring 26 trillion cubic feet of known natural gas reserves to market, then all of our discussions of accelerated gas leasing in Alaska are purely academic.

I also wanted to mention, Mr. Chairman, the importance of moving quickly ahead with this project for yet another reason. The Soviet Union is moving ahead with its plans to construct a natural gas pipeline from Siberia to Western Europe. There is little doubt in my mind that the Siberian pipeline and some of the other Soviet natural gas development projects will compete with the Alaskan project in the capital and supplier markets of the industrialized West.

Moreover, Mr. Chairman, I believe that it would be regrettably ironic if the Senate failed to approve this package and we failed to move ahead with the project's financing and construction. The western Europeans who will receive the Soviet natural gas are clearly willing to rely upon an energy source which -- in a political context -- may be viewed as potentially unreliable. Nevertheless, the western Europeans and the Soviets are moving ahead. We, on the other hand, have an opportunity to develop our own domestic, secure source of energy. It would be irresponsible for us to fail to do so. America is fortunate to

have the unparalleled technological capability to extract energy from seemingly inaccessible regions. If we fail to take advantage of our technological advantage by not completing the Alaskan pipeline, we will fail to achieve a greater degree of energy independence while the Soviet Union strengthens its own position. This is a consequence I do not believe we can afford.

I also believe it is important to point out Mr. Chairman, that the adoption of the President's proposed waiver package will facilitate the construction of a pipeline along the most environmentally preferred route. It was the firm conclusion of the President's 1977 Decision and Report to Congress on the Alaska Natural Gas Transportation System that the Alaska-Canadian pipeline route is "clearly the superior proposal on environmental grounds." In hearings before the Senate Energy Committee in September and October of 1977, representatives of the Sierra Club, the Wilderness Society, the National Audubon Society, and the Alaska Conservation Society were unanimous in their endorsement of this proposal as the best means to bring Alaskan gas to "lower 48" markets from an environmental point of view.

Finally, Mr. Chairman, I want to reiterate the importance of this project to our relationship with Canada. We have made a substantial commitment to the Canadians, and we have repeatedly assured them in numerous legislative and Executive actions that this pipeline would be built. Relying upon these assurances, the Canadian government authorized additional natural gas exports and the sponsors in Canada undertook to pre-build portions of this

system in anticipation of construction in Alaska. Expectations are high throughout the Canadian government and private sector. Any perceived unwillingness by our government to take reasonable steps to promote this project will certainly be interpreted as a breach of faith if not a breach of international agreement. We may needlessly risk harm to our already delicate commercial relationship with Canada.

As President Reagan indicated in his October 6th telegram to Prime Minister Trudeau, and I quote:

"This (Alaska Natural Gas Pipeline) project is important not only in terms of its contribution to the energy security of North America, it is also a symbol of U. S. - Canadian ability to work together cooperatively in the energy area for the benefit of both countries and peoples."

Mr. Chairman, we are at a crucial juncture. Simply put, if we fail to act and approve this resolution, we are denying ourself the opportunity to achieve a greater degree of energy independence. That is not an alternative, Mr. Chairman, that I can live with, and I am certain my Senate colleagues on this Committee and in the full Senate will share that conclusion and support this resolution.

I believe it is important to remember that the Alaska gas pipeline project would be the largest privately financed construction project in history -- over \$40 billion -- and that it will not involve any Federal subsidies or loan guarantees. Without Congressional approval of these waivers, private financing and construction cannot proceed.

I want to commend you, Mr. Chairman, and Senator Jackson for your outstanding leadership with regard to this issue. This leadership is yet another example of your mutual efforts in the Senate to develop an effective national energy policy and to reduce our dependence on unreliable sources of foreign energy.

Thank you, Mr. Chairman.

The CHAIRMAN. I noticed yesterday a radio report that for the first time in history the State of Maryland had made a bonding issue in which the costs of the interest over time were greater than the amount of capital raised, a cost of \$111 million to borrow \$95 million.

I only mention that as a footnote to get the perspective of the \$40 billion back into the perspective of what the financial markets are and what the carrying costs over time are.

Senator Ted Stevens has submitted a statement for the record. The prepared statement of Senator Stevens follows:]

October 22, 1981

Statement of Senator Ted Stevens

Mr. Chairman, members of the Energy Committee, I sincerely regret my inability to be with you today at these hearings concerning the President's requested waiver of law for the Alaska Natural Gas Pipeline. I have unfortunately been committed to other obligations in Alaska for some time and could not resolve the conflict.

Those of us who have worked on this issue over the years are aware of the critical importance that delivery of this natural gas means to our economy, our relations with Canada, and moreover our national security. I firmly believe that these waivers represent the best effort to remove legislative and regulatory obstacles impeding private financing of what would be the largest private project in history.

Failure to remove these legislative and regulatory obstacles would destroy this consortium of sponsor and producer companies after they have invested amounts approaching \$1 billion and would set back construction of this pipeline 10 to 15 years. What is really at issue is the future of exploration in Alaska where an estimated 40% of our future oil and gas reserves lie awaiting discovery. There will be no exploration let alone development of these resources unless industry has confidence that our government will take reasonable steps to eliminate impediments to delivery of the resources.

I wholeheartedly join the efforts of Chairman McClure, and Senators Jackson and Murkowski in their bipartisan support of the President's waiver and urge that members of the Senate expeditiously pass our Joint Resolution of approval for the waiver.

The CHAIRMAN. Senator Metzenbaum, do you have an opening statement?

Senator METZENBAUM. Yes, Mr. Chairman.

STATEMENT OF HON. HOWARD M. METZENBAUM, A U.S.
SENATOR FROM THE STATE OF OHIO

Senator METZENBAUM. Mr. Chairman, I think we have before us today another example of those who speak loudest in favor of the free enterprise system and who continually ask for their government to keep its nose out of their business operations coming to their government asking for a subsidy; in this case asking that the consumers of this country subsidize this gas pipeline. They are asking us to waive Congress original requirement that there would be no obligation on the part of the consumers to pay for any construction costs prior to the pipeline providing service.

The pipeline's sponsors are also coming to the Congress and asking with this waiver that the Alaskan producers, who have been refused an ownership role in the pipeline now be permitted to do so.

I think this proposal is unfair and unequitable and unjust.

The President has submitted this waiver package for the Alaska natural gas pipeline, and I believe it is not in the best interest of the Nation or of the millions of gas consumers who will be forced to shoulder an unreasonable portion of its costs.

This pipeline is not a bad economic investment as presently structured. If investors think it is a bad economic investment it ought not to be going forward. The pipeline would provide investors with a 30-percent return on their equity, including the investment tax credit.

How can any logical person think that is an unreasonable return? Yet the marketplace is saying we are not willing to provide the financing for this project, we are not willing to put our name on the dotted line unless consumers in Ohio, Indiana, Illinois, and Pennsylvania and all the other States are willing to assume the risks for the project.

This legislation also would set new and very troubling precedents for the regulated pipeline industry that I cannot and will not support.

The proposed waiver would permit the pipeline consortium to charge consumers for the construction costs for both of the portions of the pipeline in the United States as soon as such is completed, even though no gas service will be provided until the entire pipeline has been completed.

Is there any way to be more unfair to the consumers of this country?

For the Canadian segment the waiver would go one step further and require consumers to pay for construction costs and a hefty rate of return on equity before any gas is transmitted.

The result of these provisions would be to require consumers to assume financial risks that properly belong to the pipeline's creditors and investors. Under this legislation it is entirely possible that consumers would be forced to pay a fixed cost in their gas bill each month for the entire 25 year life of the pipeline without any gas ever being transmitted.

All that would be required to reach that result would be for any portion of the pipeline to be constructed before the completion date and then be abandoned. There is no assurance that it will not be abandoned. We have heard on the television within the last several days about the intent to abandon a nuclear facility. It is not unlikely that this pipeline could be commenced and run into problems and then be abandoned. But under this waiver the consumers would still be expected to subsidize it.

Regarding consumers, and not creditors and investors, to pay for the retirement of debt, debt service and operating services plus a rate of return for equity on the Canadian portion, is just not right. It is a settled principle of regulatory economics that consumers are not required to pay for construction costs or provide a rate of return on equity until a utility has begun to provide service to the consumers. There is no reason to change that principle for the largest gas pipeline ever to be constructed.

The very same people who were in here urging us to enact this legislation in 1977 when President Carter submitted it are the very same people now who are saying the rules of yesterday do not apply today. To change the rules in midstream would malign the integrity of the process and the credibility of Congress and the executive offices of Government.

A second dangerous precedent that would be established by this waiver would be to include the gas conditioning plant at the pipeline's northern end as a part of the pipeline. A conditioning plant is not a transmission facility. It is a facility that is necessary for producers to market gas to a pipeline.

As FERC correctly pointed out 4 years ago, conditioning plants have not been considered a portion of any pipeline in the lower 48 States. It has not been the industry practice. It is unfair to relieve Exxon, Arco, and Sohio from their responsibility to construct this \$4 to \$6 billion facility by placing the burden on consumers.

This legislation would lift the ban on producer ownership in the pipeline. The 1977 Presidential decision prohibited the major oil companies from owning any portion of the Alaskan pipeline. The pipeline and producers have already negotiated at less than arm's length, as is evidenced by the indefinite price escalator clauses and alternative fuel price clauses in their purchase agreements. To permit the producers to have a 30-percent equity interest in the pipeline will only heighten these problems. It will eliminate the arm's-length negotiation that might otherwise be expected.

The antitrust concerns that existed 4 years ago remain unchanged today and I see no reason to lift this ban. There are those who would argue that we need not have a concern about the antitrust questions because the matter has to be approved by the Antitrust Division of the Department of Justice. But, as I have publicly stated on previous occasions, the present leadership of the Antitrust Division of the Department of Justice seems to have very little commitment to the antitrust laws and would probably serve this Nation better if returned to academia and left the office to someone who believes in those laws.

I realize that many of my colleagues claim these waivers are necessary for the pipeline to go forward. I must point out, however, that if the pipeline is unable to attract sufficient investment capi-

tal on a venture that offers a 30 percent rate of return after investment tax credits, then I suggest the market is determining that at \$30 billion the pipeline is too costly. The chairman said \$40 billion. What is \$10 billion between friends? At \$12 to \$15 per MCF, the gas is too expensive for the project to be built.

If the investors want it to be built, I think they should put their money on the line, and they ought to do it in the normal free enterprise manner. The consumers who come from my State and the other consuming States of the Nation should not be asked to subsidize this project whether or not it goes forward and certainly not before the gas is actually flowing to them so they may use it in their homes and industrial operations.

The CHAIRMAN. I want to thank Secretary Edwards for having changed his traveling schedule to make it possible to be here today. I know that is not always easy but it does underscore both the commitment of this committee and the commitment of the administration to move this forward as rapidly as possible.

I also want to acknowledge the presence of the Governor of Alaska, Governor Hammond, who is with us this morning and who will testify. I think that also underscores the importance that is attached to the project by the people of Alaska.

Secretary Edwards, I want to welcome you to the committee again and to testify on this matter with respect to the presidential waiver package which is before us for consideration.

STATEMENT OF HON. JAMES B. EDWARDS, SECRETARY OF ENERGY, ACCOMPANIED BY R. TENNEY JOHNSON, GENERAL COUNSEL

Secretary EDWARDS. Thank you, Mr. Chairman.

I would like to introduce my General Counsel, R. Tenney Johnson, who is here to respond to any questions.

Mr. Chairman and members of the committee, I am pleased to appear before you to discuss the President's waiver proposal for the Alaska Natural Gas Transportation System or ANGTS.

The President submitted this proposal to the Congress on October 15, 1981. I am here to support this waiver proposal and to urge you to consider it carefully and expeditiously.

In the winter of 1967 and 1968 a wildcat drilling rig struck a large oil and natural gas reserve at Prudhoe Bay on the North Slope of Alaska. The proven natural gas reserves at Prudhoe Bay are estimated at 26 trillion cubic feet and represent approximately 13 percent of the present total U.S. proven reserves.

When ANGTS is completed, these reserves are expected to supply initially approximately 5 percent of total U.S. gas consumption. There are also estimated undiscovered recoverable resources of around 100 trillion plus cubic feet of natural gas in Alaska of which a sizeable portion is believed to lie on the North Slope.

Congress recognized the importance of bringing this gas to the lower 48 American market by enacting the Alaska Natural Gas Transportation Act of 1976. That statute provided special expedited procedures for designation and approval of a system to bring Prudhoe Bay gas to the lower 48 States thereby bypassing the normal drawn out regulatory process.

Under procedures established by ANGTA, President Carter in the Decision and Report to Congress on the Alaska Natural Gas Transportation System, September 1977, designated the Alaska Highway route as the route for the pipeline. Congress incorporated that decision in Public Law 95-158.

The Alaskan pipeline segment of ANGTS to be constructed and operated by the Alaskan Northwest Natural Gas Transportation Co. will be a 745-mile pipeline from Prudhoe Bay running south along the existing oil pipeline right-of-way and then southeast along the Alaska Highway to the Canadian border.

A gas conditioning plant necessary to prepare the gas for entry into the pipeline will be located at Prudhoe Bay.

There will be three other segments of the ANGTS. The Canadian pipeline segment will run from the Alaska-Yukon border to central Alberta, a distance of approximately 1,500 miles. From Central Alberta the pipeline will fork into two legs. The western leg will carry gas to the San Francisco area while the eastern leg will carry gas to the Chicago area. The two legs are being largely prebuilt to carry Canadian gas to the lower 48 States.

The prebuilt segments are now under construction and initial deliveries through the western leg have begun at the rate of about 240 million cubic feet per day. The western leg was completed on schedule and under budget. The complete transportation system would cover approximately 4,800 miles.

Most of you are acquainted with it but I have this chart to show the breakdown in color of the three different legs of the pipeline and the diameters of the pipe and some costs attached thereto.

The sponsors have estimated the direct construction cost of all segments of the pipeline to be around \$23 billion U.S. dollars, 1980 dollars. Let me point out that the administration has not performed a cost estimate of its own nor has it conducted a final evaluation of the sponsors' estimated costs.

The \$23 billion figure includes approximately \$3 billion for the prebuilt segments now completed or under construction. These figures are in 1980 U.S. dollars. The initial cost of the Alaska pipeline segment is estimated to be approximately \$10 billion.

The gas conditioning plant segment is expected to cost at least \$3 billion. The Canadian pipeline segment is expected to cost at least \$5 billion.

Both President Carter and President Reagan have taken a personal interest in the ANGTS. President Carter advised the Canadians that the United States supports construction of the pipeline.

President Reagan recently stated in a message to Prime Minister Trudeau regarding this proposed waiver:

My administration supports the completion of this project through private financing and it is our hope that this action will clear the way to moving ahead with it. I believe that this project is important not only in terms of its contribution to the energy security of North America but it is also a symbol of United States-Canadian ability to work together cooperatively in the energy area for the benefit of both countries and peoples. This same spirit can be very important in resolving the other problems we face in the energy area.

In submitting the waiver proposal to Congress it is the President's intention to remove certain legal obstacles to the private financing of the ANGTS. This will allow free market forces to

operate and thereby determine whether this project will become a reality.

Because of the extraordinary dimensions and complexity of the pipeline, Congress envisioned that a specific waiver of law might be necessary to remove obstacles to "expeditious construction and initial operation." The waiver proposal is submitted for precisely that purpose pursuant to section 8(g)(1) of the act.

The President has submitted a waiver proposal dealing with several provisions of law. Some aspects are entirely technical and I do not propose to discuss them here. They are discussed in the President's submittal.

Before moving to the specific elements of the waiver, I wish to emphasize why we are taking this unusual step.

The purpose of the waiver proposal is to facilitate private sector evaluation and financing of the project. Absent this waiver proposal, we believe the pipeline cannot possibly be privately financed.

There are three major elements of the waiver proposal to which I now turn. Section 1, paragraph three of the President's decision provides that ownership participation in the pipeline is open to anyone except producers of Alaska natural gas.

Section 5, condition IV-4 of the decision, President Carter's decision, contains a similar prohibition. Section 5, condition V-1 provides that producers of significant amounts of Alaska natural gas cannot participate in ownership of the pipeline. However, they may provide guarantees for project debt.

This latter condition also excludes the producers from holding an equity interest in the project, having any veto power, or having any management control in the project.

The President's proposal will waive these provisions to allow producers of Prudhoe Bay gas to participate in the ownership of the Alaska pipeline segment of the ANGTS and the gas conditioning plant segment. The scope of their role will be determined in negotiations by the interested private companies.

I emphasize that there is an important proviso to this waiver provision to meet antitrust concerns. Any agreement on producer participation in the ANGTS is to be approved by the FERC after consultation with the Attorney General and upon a finding by FERC that the proposed agreement would not "create or maintain a situation inconsistent with the antitrust laws" or create restrictions on access to the Alaska pipeline segment by other shippers or place restrictions on capacity expansion.

We believe these safeguards provide sufficient Federal review to eliminate any possible antitrust violations.

The second important part of the waiver concerns the gas conditioning plant segment. Section 2, paragraph three, first sentence of the President's decision, that is President Carter's, excludes the gas conditioning plant as part of the pipeline system and from the final certificate to be issued by the FERC for the system.

The President's decision does not exclude a payment by gas customers for conditioning costs. FERC also has not yet made a final ruling concerning payment for conditioning costs. To resolve this issue we propose to waive the provision that excludes the gas conditioning plant from the pipeline.

The gas conditioning plant would of course be subject to final FERC certification as part of the transportation system. The cost of the plant is estimated to be at least \$3 billion. As a part of ANGTS the cost of the conditioning plant would be recoverable through FERC approved tariffs along with pipeline construction costs.

The final element of the waiver proposal I want to mention involves the issue of when billing for the cost of ANGTS may commence.

Section 5, condition IV-3 of the President's decision provides that consumers of Alaska natural gas cannot be charged any amount for the cost of the ANGTS at any time prior to completion and commissioning of all segments, American and Canadian, of the system.

We propose a waiver of that provision so that FERC could allow billing for transportation through the ANGTS prior to the time the whole system is completed and gas begins to flow under certain specified limited circumstances.

Under this waiver element, the system would be divided into three parts for billing purposes: The Canadian pipeline segment, the Alaska pipeline segment, and the gas conditioning plant segment.

With regard to the Canadian segment, this waiver element would permit recovery of the full cost of service upon completion and successful testing of that segment. No billing could commence before a date established by the FERC, in consultation with the Federal inspector, in issuing a final certificate for the ANGTS as the most likely date for the ANGTS to begin operation.

With regard to the Alaska pipeline segment, this waiver element would permit recovery of a minimum bill, that is actual operation and maintenance expense, actual current taxes, and amounts necessary to service debt, upon completion and successful testing of that segment.

As with the Canadian pipeline segment, billing could not begin before the date set by the FERC as the date for the ANGTS to begin operation. Similarly, recovery of a minimum bill could occur for the gas conditioning plant segment upon completion and successful testing of that plant, but not before the completion date of the ANGTS as is established by the FERC.

I want to emphasize that this billing element is subject to important safeguards. The FERC is not required to allow precompletion billing. For all three segments individually, it is simply authorized to do so. The cost recovery cannot be had before the date that the FERC has determined as the most likely date the whole system would begin operation.

That limitation on recovery reduces the possibility that billing would in fact commence before completion and operation of the entire system.

With regard to both the Alaska pipeline segment and the gas conditioning plant segment, only a minimum bill could be recovered prior to the flow of gas through the ANGTS. Under these circumstances, there would be no return on equity. We believe this would provide a strong financial incentive for the sponsors to persevere and to complete the project.

In conclusion, it is clear that the project cannot be privately financed without this waiver proposal. The President's message to the Congress makes clear his intention, with the approval of Congress, to remove certain legal obstacles to private financing.

As the President stated, the project is a symbol of United States-Canadian ability to work together in the energy field.

That concludes my prepared testimony. I will be pleased to answer any questions you may have.

Senator MURKOWSKI [presiding]. Thank you, Mr. Secretary.

I think your testimony has established a good foundation for this hearing and I think it reflects some of the concerns expressed by my colleague, Senator Metzenbaum, from Ohio.

We are going to have various Senators on the Energy Committee coming in and participating. I have been told Senator Bradley will be here shortly.

In order to accommodate Senator Metzenbaum's schedule, we are going to allow him to proceed with questions.

I would like to point out one item. It is my understanding that about 6.5 percent of this gas or 46 billion cubic feet is targeted for the State of Ohio. I further understand Ohio was one of the most severely affected States with the natural gas shortage which occurred in 1977. I believe we had to pass an Emergency Natural Gas Act.

I would hope your concerns that you have addressed will be answered because I think they are important and certainly deserve the scrutiny of this committee and the full response by the witnesses with us today and I would hope you and your staff can participate entirely in these responses.

I would respectfully request you proceed with your questions.

Senator METZENBAUM. Mr. Chairman, I do appreciate your courtesy in permitting me to inquire.

I think actually about 10 percent of this gas is slated for Ohio. I also would like you to know there are 7,000 gas wells in Ohio that are capped or shut in at this moment because the gas companies in Ohio are not inclined to purchase that gas. They claim there is such a surplus that no more gas can be put in the pipeline.

I would also say they are also considering importing liquefied natural gas at an extremely high price into Ohio. Gas companies are now telling people to connect with gas and start using it, which is contrary to their ads a few years ago. The people of my State have very little confidence in their gas companies. They feel somehow they have been had. When they get an extra billing for this particular pipeline which they know nothing about at all, they are not going to be very happy.

Many of us believed the gas shortage we had 1977 occurred when natural gas producers of this country capped their wells and held their gas back and waiting for a higher price. They got their way in 1978 and shortly thereafter they took the caps off.

I think the people of Ohio would support me totally in my opposition to this legislation, but I do respect the point of view of the Chairman. I guess we in Congress are just going to have to deal with the issue.

Mr. Secretary, in your testimony yesterday before the House Interior Committee, you stated the cost of financing the Alaska

pipeline would be too great for the domestic financial market and international investors would have to participate in the project.

I actually have some difficulty in comprehending that because I read in such magazines as Fortune and Business Week and others that some of the oil companies involved in this project or would like to be involved in this project are actually very well heeled. Of course this has to do with that one portion of the waiver and not with the other two portions.

My question is, Do you mean the OPEC nations will now be allowed to own a portion of this pipeline?

Secretary EDWARDS. Senator Metzenbaum, I would like for you to reread what you said I said yesterday. I do not often challenge things I said but I think I am going to have to challenge your statement.

Senator METZENBAUM. I am told, and I was not there but it has been reported to me that yesterday you testified before the House Interior Committee and stated that the cost of financing the Alaska pipeline would be too great for the domestic financial market and international investors would have to participate in the project.

Is that a misquote?

Secretary EDWARDS. I believe I would have to classify that as a complete misquote.

Senator METZENBAUM. I will not ask the question.

Secretary EDWARDS. I could stand corrected. I would like to look at the testimony in the record to see what it shows. I doubt seriously if I said that.

Senator METZENBAUM. I would say with all the negative head waiving going around with your staff that you probably did not say it.

I will take that up with my staff.

Do you believe the OPEC nations will be allowed to own a portion of the pipeline?

Secretary EDWARDS. Senator, the financing of this pipeline should be done by the private sector and wherever the private sector wishes to go to get financial support. I think that would be one of their options if they feel like that is the place to go.

Senator METZENBAUM. Do you recognize any possible conflicts between the OPEC nations having an ownership position and their other interests with this nation?

Secretary EDWARDS. I think it would depend upon what their ownership position was in the pipeline. I do not mind recycling some of these petro dollars back to this country to help us out.

Senator METZENBAUM. You indicated that the cost of the pipeline will be approximately \$23 billion. I thought the chairman was talking about \$40 billion. The staff of the House Energy and Commerce Committee estimates the cost will be \$40 billion by 1987. Would you agree with that figure?

Secretary EDWARDS. Both figures are correct, \$23 billion in 1980 dollars and \$40 billion in as spent dollars, which would include the debt service cost and return on equity.

Senator MURKOWSKI. Senator, I wonder if you would yield for a point of order on the discussion.

Senator METZENBAUM. Certainly.

Senator MURKOWSKI. I believe we are not talking about ownership. We are talking about a debt position when we are talking about where the financing is coming from. I would like to point that out for the record.

I am referring specifically to the financing, where the money is coming from. Those that are financing the project do not come in for an ownership position when we are looking at funding this project. We are looking at them taking a debt position.

Senator METZENBAUM. Would there not be an equity position as well?

Senator MURKOWSKI. Of course. When we go out for financing, we are going out for debt.

Senator METZENBAUM. There would be no equity involved in the financing?

Senator MURKOWSKI. Absolutely. The equity is a participation of the owners as opposed to the debt which is borrowed.

Senator METZENBAUM. Would it be a package, those who are providing the debt also obtain a portion of the equity?

Senator MURKOWSKI. Not necessarily. The participants or the owners are providing the equity. When you go out beyond that, you go out for debt but you do not take an ownership position.

Senator METZENBAUM. Is it not contemplated that money will be raised in the equity market as well as the debt market in order to finance this project?

Senator MURKOWSKI. We are talking about two specifics. We are talking about the owners contributing equity vis-a-vis going out and obtaining long-term debt. That is the point I would like to make. When we refer to debt we are not referring to ownership. We are talking about going after a significant amount of indebtedness, approximately three-quarters of the total cost.

Senator METZENBAUM. In the financing that has been offered at the marketplace and that they are attempting to place in the marketplace, would not the whole question of permitting equity investment be raised?

We are not going out trying to merely borrow money. Would not an effort be made to raise equity capital?

Secretary EDWARDS. Senator, 25 percent of this will be equity, and 75 percent will be borrowed money. When you go out to get equity investors, you take money out of the market. Of that 25 percent, the producers, as it stands now, are going to foot the bill for 30 percent of that 25 percent and the pipeline sponsors will handle the other 70 percent.

Senator METZENBAUM. What is your prediction as to what the ultimate cost will be for this gas when it first comes onstream?

Secretary EDWARDS. Senator, I do not think it falls in my purview to decide what the price of that gas will be.

Senator METZENBAUM. Your estimate.

Secretary EDWARDS. We have gotten all sorts of estimates. Some were as high as the deep gas we are buying now at \$9.40, and other estimates are less. I would prefer you ask some of the people who will testify later who have done the analysis on this to give you the figure. The estimates really come in a variety of types and figures.

Senator METZENBAUM. Mr. Chairman, I do have some other questions but I am late for my other appointment. I will try to come back. If not, I will submit my questions in writing.

Senator MURKOWSKI. Thank you, Senator.

Senator Ford, do you have an opening statement or questions?

Senator FORD. I have no opening statement or questions for the distinguished Secretary. I will let you off easy today.

Senator MURKOWSKI. All right.

Secretary EDWARDS. I appreciate that, Senator.

Senator MURKOWSKI. I have a few questions.

Mr. Secretary, in your opinion can the Alaska Natural Gas Transportation System be constructed with private financing if Congress fails to pass the Presidential waiver proposal?

Secretary EDWARDS. No.

Senator MURKOWSKI. Mr. Secretary, would you comment on what our failure to enact the Presidential waiver proposal would have on United States-Canadian relations?

Secretary EDWARDS. Senator, one of the reasons President Reagan recommended this waiver package was to keep faith with President Carter's commitment to our friends to the north. As you know our relationships are strained in some other areas particularly relating to energy issues and I think this would further strain those relationships.

I think if this waiver package is passed, whether the project comes to fruition or not, the very fact that this Government passed this waiver package is an expression of good will to our friends across the border. This administration feels the best thing to do is cooperate and continue that long friendship and try to improve it. This would be another expression of our friendship and cooperation in the affairs between our two nations.

I think if this was not passed, it would strain our relationship further.

Senator MURKOWSKI. In your analysis of the energy needs of our Nation through the capabilities of your Department and the realization that this gas will go into 50 States with the exception of Hawaii and Vermont, can you give us any kind of thumbnail sketch on where we might be without it in relationship to the projected needs?

We have had shortages off and on and we have reacted with extreme means and then we have found we have had excesses of energy.

Secretary EDWARDS. We keep hearing talk that we are finding a lot of gas out there. Statistically our proven reserves are going down. We are consuming more than we are putting into our proven reserves each year.

In order to bring about the energy security that this administration would like to bring to this country, we are interested in getting any energy resources we can find anywhere delivered to where they are needed. That is a tremendous resource of 26 trillion feet of proven gas, plus an estimated 100 to 200 trillion cubic feet more that will probably be found plus 68 trillion in Canada and another 100 trillion probably up there in the MacKenzie Delta.

When you think of this tremendous resource, it just makes sense to, remove the obstacles to the private financing of this pipeline.

This is what this waiver package is all about. It would help us tremendously in the solution to the country's energy shortage.

Senator MURKOWSKI. Is there any other project that is close to reality as this that might make up for this project if it is delayed, put off or not realized?

Secretary EDWARDS. Senator, I think if we deregulate natural gas, it will stimulate hunting for gas. It is hard for me to look into the crystal ball and predict what effect that would have. Some people say there will be a 25 percent increase in the production of gas.

In the last 2 years since oil price controls were relaxed and then lifted, we have had twice the number of successful wells found. That gives you an indication of what may happen if we deregulate natural gas.

Other than the deregulation of natural gas I know of nothing that comes close to this project.

Senator MURKOWSKI. Since you brought up deregulation I think it is appropriate that I ask the obvious question and that is what might deregulation do to the economics associated with this pipeline as far as the price of the gas is concerned ultimately?

Secretary EDWARDS. Senator, in the overall lifetime of this project, the economics will be helped by deregulation. In the short term, in the late 1980's, it may be less attractive if we deregulate gas. I think in the long run we should move ahead and deregulate, it will help this project.

Senator MURKOWSKI. Might we go back to the Canadian commitments that allegedly have been made by the previous administration with regard to this project and the response of Alberta in agreeing to allow the prebuilt section to be built. I believe there is a commitment from Alberta for a 7-year contract on natural gas to flow from their fields into that prebuilt pipeline and somewhere in the neighborhood of 100 million cubic feet a day with a call on 2.4.

My question is, in the event this project is not authorized, is there any exposure Canada might cut off its supply of gas to the United States and determine to keep that gas within their own nation?

Secretary EDWARDS. Senator, there is always that possibility. I would hope it would not happen. There are some treaties, the specifics of which I can find for you. The treaties are rather precise as to interference in the flow of gas. For the most part that has to do with the flow of gas coming through Canada rather than the flow of gas originating in Canada to the lower 48.

I certainly think there is the possibility that the gas originating in Canada could be affected in some way.

Senator MURKOWSKI. There has been a good deal of discussion about the contribution this gas will make to lessen our dependence on foreign crude oil. Could you elaborate on to what extent the Alaska gas might back out imports of foreign crude?

Secretary EDWARDS. As you know, the gas line will deliver 2 billion cubic feet of gas a day, which is equivalent to about 400,000 barrels of oil a day. On a yearly basis, that would save about \$5 billion in the balance of payments since otherwise we have to import this amount of energy into the country.

Senator MURKOWSKI. We would be substantially less dependent by 400,000 barrels equivalent Btu of oil.

Secretary EDWARDS. Correct.

Senator MURKOWSKI. We would lessen our imports and increase our balance of trade.

Secretary EDWARDS. That is correct.

Senator MURKOWSKI. Senator Nickles has just walked in. Do you have an opening statement?

Senator NICKLES. I do not have an opening statement. I would like to compliment the Secretary and the Reagan administration. I think this is one of another additional steps they have taken since the beginning of this year. A lot of people have said, what have they done? I think you have done a lot of good things with deregulation of oil, natural gas proposals.

Will this affect in any way your natural gas proposals that were let out earlier as far as deregulation of gas?

Secretary EDWARDS. I would like the two of them to stand on their own merits. A lot of people are trying to relate one to the other but I do not think there is a significant relationship.

Senator NICKLES. I would agree and compliment you on the substantial changes made under the Fuel Use Act as far as eliminating some of the off-gas provisions. I think we have taken giant steps in the first 9 months of this administration as far as restoring market capabilities to the energy field.

I think the real beneficiary has been the consumer.

Again I compliment you for your initiative in bringing this before us and I look for further information as far as its impact and possibilities for us to get this project on the move.

Secretary EDWARDS. Thank you, Senator.

Senator MURKOWSKI. Thank you.

Senator Bradley.

Senator BRADLEY. Mr. Secretary, as I understand what you have said, you strongly support the waivers and the completion of the pipeline. Is that correct?

Secretary EDWARDS. Senator, I strongly support the waivers that remove the obstacles to private financing of this pipeline. I would like to have the pipeline to answer the Nation's energy problems and this should contribute greatly to that.

Senator BRADLEY. What do you think the chances are that if you do remove the waivers or if you have the waivers, what are the chances that it will actually be completed?

Secretary EDWARDS. Senator, I think it would be purely speculation on my part.

Senator BRADLEY. What do you think as an energy planner?

Secretary EDWARDS. I still think it would be speculation, but I will tell you that without the waivers it will not be completed and with the waivers it may be completed.

Senator BRADLEY. As you look at the energy needs of the country in the next 5 to 10 years, are you counting on this pipeline being completed?

Secretary EDWARDS. Yes, we are hoping this pipeline will be completed.

Senator BRADLEY. If it is not completed, what other alternatives might you have to use in order to generate the equivalent amount of energy?

Secretary EDWARDS. There are several things we hope to do in the future. One is deregulation of natural gas which should stimulate production. The deregulation of oil has stimulated exploration activity and drilling activity. We have doubled the number of wells completed in the last 2 years. We hope to develop renewable resources. This is just one of those things that we would do. If this is not completed, we have to fall back on importation of foreign crude again.

I am living for the day when I do not have to preface my remarks with "barring any unforeseen circumstances in the Middle East," et cetera. I hope I can live long enough to make that statement.

Senator BRADLEY. I do, too, Mr. Secretary.

You raised the issue of deregulation of natural gas. When might that happen?

Secretary EDWARDS. A lot of that is up to you, Senator.

Senator BRADLEY. I figure there are three sacred documents in the U.S. Government, the Constitution, the Declaration of Independence and the Natural Gas Policy Act.

Secretary EDWARDS. From time to time all those things need a little correcting.

Senator BRADLEY. This pipeline was premised upon gas being controlled in accordance with the 1978 act. How would the financing of this pipeline change if gas were deregulated before the scheduled period?

Secretary EDWARDS. Senator, I think those who will be financing this pipeline will look at the situation with gas regulated and with gas deregulated. I am sure they will have economists looking at that from several angles.

Our studies show that in the late 1980's it will be less attractive and beyond that and over the lifetime of the project deregulation will help this project.

Senator BRADLEY. One of my concerns is the building of the three segments of the pipeline or a portion of those segments and not completing the final amount and yet billing the ratepayer for that part that was completed.

Can you tell me if there are other examples of this prebuilding procedure? What is the precedent?

Secretary EDWARDS. Senator, I would like to ask my General Counsel as to precedent for this.

Mr. JOHNSON. Senator, this is tailored pretty much to this project. The normal rule that the FERC has followed has not been to include the cost of the pipeline in the billing allowed to consumers until the pipeline is used and useful.

On occasion there are a few cases where the Commission has expressed itself as willing to consider some form of charge in advance of final action. In my judgment that does not truly constitute a precedent for what is proposed here.

This should be completely distinguished from the so-called construction work in progress. Precompletion billing is not construction work in progress. The consumers could be billed only under

rather unusual circumstances and the likelihood of their being billed has been substantially reduced by the safeguards put into the waiver proposal.

Secretary EDWARDS. For example, the most expensive situation that could arise that affects the ratepayers would be for example if the Canadian section was completed and the Alaskan section was completed but the processing plant was not completed. A cost to the residential consumer in the lower 48 States would be about \$1.50 to \$1.75 per month but only for the period of time after passage of the date certain set by FERC and until the entire pipeline was completed.

If the Canadian segment was completed and the Alaskan segment was not and the plant was completed, I think the cost would be about \$1.06.

Senator BRADLEY. If someone were to ask you why you think it will be completed even though there is certain uncertainty, what would you say? One of the thoughts is the split between debt and equity and what part of that is actually going to be put into the rates.

Are you familiar with that argument?

Secretary EDWARDS. Not precisely.

Senator BRADLEY. Is the General Counsel?

Mr. JOHNSON. I think what you are referring to is the fact that the equity owners would stand the risk of any return on or of the equity if some portion of the facility were not finished. We think the fact that the waiver does not permit them to recover any equity or any return on the equity while one of the segments is not finished is a tremendous incentive for them to make sure they do complete all the segments on time.

We also think the device of having the Commission specify the time at which the system is expected to be completed to be a very ingenious device to put the pressure on all sides, the Commission, the Federal inspector, the actual constructors to plan this and bring it together at one time so that the likelihood of billing the consumer and not having the gas flow is substantially reduced.

Senator BRADLEY. By putting up substantial equity?

Mr. JOHNSON. Yes, sir.

Senator BRADLEY. Let me ask one other question that relates to Alaska natural gas. It also relates to the international aspect of that natural gas.

Mr. Secretary, as you know the Soviet Union is supplying and will supply an increasing amount of natural gas to Western Germany. There was a proposal submitted to the Secretary through his Undersecretary, Guy Fiske, relating to the so-called electric boat idea. That idea contemplates using a submarine filled with liquified natural gas from Prudhoe Bay under the polar ice cap to Bremerhoffen filled with liquid natural gas. The route is shorter than from the Soviet Union and the price of the delivered natural gas is said to be competitive.

What is your view of that proposal?

Secretary EDWARDS. It is a very advanced technology to say the least. When they were studying this particular movement from Prudhoe Bay down to the lower 48, they looked at a similar propos-

al and they found the pipeline was the most effective way of transporting that.

As far as the proposal to North Europe, I think there are other ways we can get some alternative fuels for North Europe that may be better, including through pipelines under the North Sea. There are tremendous resources being discovered in the North Sea.

I think if we can convince our friends and allies in that part of the world that it would be to everyone's best interest to have some alternate resources—

Senator BRADLEY. If it could be demonstrated to you that natural gas delivered from Prudhoe Bay to Germany were competitive with natural gas delivered to Germany from Norway, would it make sense to you in trying to push this idea?

Secretary EDWARDS. If it were environmentally sound and economically sound, I am interested in any of those projects that would move energy from one point to another. I would be excited about it.

Senator BRADLEY. Could you provide to the committee an analysis in writing of the viability of this project of supplying Western Germany with gas under the polar cap?

Secretary EDWARDS. We would be glad to submit material General Dynamics.

[Subsequent to the hearing the committee received the following:]

General Dynamics Corp. has recently proposed to the Department of Energy (DOE) and other agencies that the natural gas reserves in Prudhoe Bay, Alaska, be exported to West Germany through the use of LNG submarines traveling under the Polar ice cap between Prudhoe Bay, Alaska and Wilhelmshaven, West Germany. This project is being promoted by General Dynamics as an alternative to the Trans Siberian pipeline gas project which would transport Siberian gas from the USSR to West Germany.

The DOE has not conducted any studies on the General Dynamics Corp. proposal. The economic viability of this project will most appropriately be determined by the market place.

Some introductory literature which provides discussion and details on this proposal has been made available by General Dynamics Corp. to a number of Federal agencies, including DOE. This literature will be made available to the committee.

GENERAL DYNAMICS

Marine Operations

**AN ENERGY
AND
FOREIGN POLICY
INITIATIVE**

**... TO UTILIZE MATURE
TECHNOLOGY THROUGH A MAJOR
INDUSTRIAL EXPANSION PROGRAM
TO PROVIDE A SECURE SUPPLY OF
GAS TO WESTERN EUROPE.**

GENERAL DYNAMICS

GENERAL DYNAMICS

Marine Operations

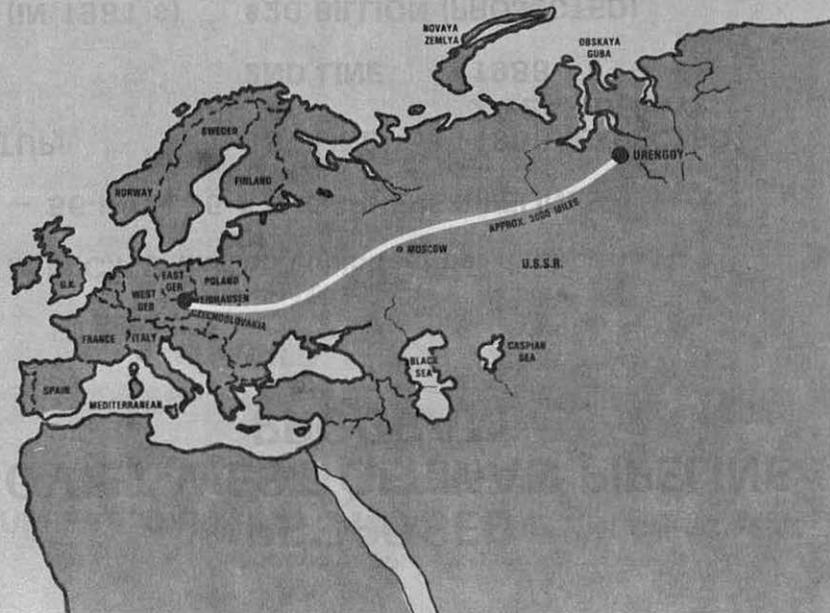
U.S. ARCTIC GAS DELIVERED TO EUROPE BY SUBMARINE LNG TANKER



GENERAL DYNAMICS

Marine Operations

THE SOVIET INITIATIVE



PROPOSED SOVIET-WEST GERMAN PIPELINE PROGRAM

3800 M.M.C.F.D (million cubic feet per day)

TWIN — 56-INCH 75 ATMOSPHERE PIPELINES

STARTUP:	1ST LINE	1985 (EXPECTED 2-YEAR DELAY)
	2ND LINE	1988

COST (IN 1981 \$) \$20 BILLION (PROJECTED)

GERMAN SHARE \$6.0 BILLION @ 7.8% - 9.6% INTEREST

WEST GERMAN GAS DEMAND BEING MET BY THE SOVIET UNION

- **CURRENTLY** 17%
- **PLANNED** 30%

CURRENT ANNUAL DEMAND 2.3 TRILLION CUBIC FEET

GENERAL DYNAMICS

Marine Operations

**PROPOSED
SOVIET-WEST GERMAN PIPELINE
PROGRAM**

RISK TO GERMANY/NATO

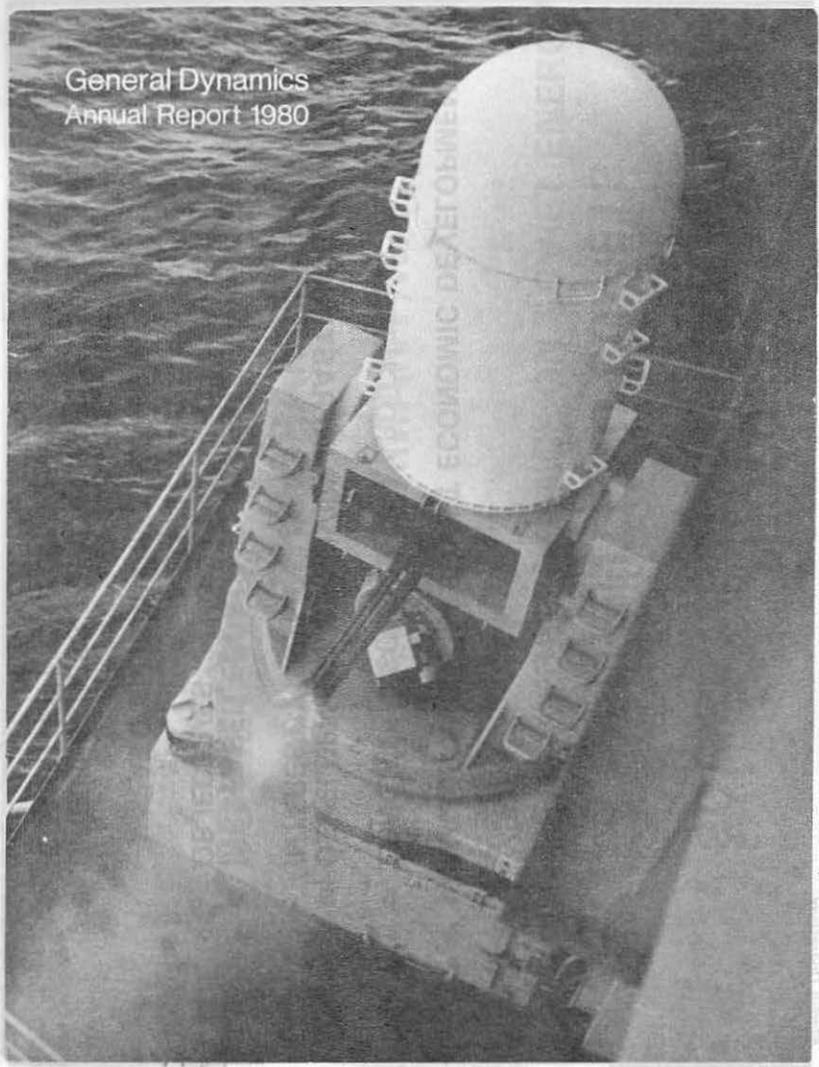
**INCREASED DEPENDENCE ON SOVIET ENERGY
AND RESULTING VULNERABILITY
TO ECONOMIC MANIPULATION.**

PROPOSED SOVIET-WEST GERMAN PIPELINE

BENEFITS TO SOVIETS

- **MAJOR EVENT IN SOVIET ECONOMIC DEVELOPMENT**
- **LONG TERM SOURCE OF HARD CURRENCY**
- **DEVELOPMENT OF SOVIET INFRASTRUCTURE WITH LOW INTEREST WESTERN LOANS**
- **INCREASED ECONOMIC LEVERAGE FOR POLITICAL OBJECTIVES**
 - **NATO MILITARY INITIATIVES**
- **DIRECT ACCESS TO ADVANCED WESTERN TECHNOLOGY (COMPUTER MONITORING)**

General Dynamics
Annual Report 1980



GENE

GENERAL DYNAMICS

General Dynamics
Summary of Sales and Earnings by Lines of Business

Dollars in millions

	1980	1979	1978	1977	1976
Sales					
Military aircraft	\$1,744	\$1,281	\$ 808	\$ 488	\$ 304
Commercial aircraft	133	128	94	78	42
Tactical missiles and gun systems	667	557	423	304	255
Space systems	106	97	96	106	132
Marine	1,077	933	942	1,149	1,044
Material Service and resources	520	577	471	437	421
Telecommunications	262	271	183	165	180
Data products	140	109	85	70	58
Other (electronics, motors, etc.)	94	107	103	104	118
	<u>\$4,743</u>	<u>\$4,060</u>	<u>\$3,205</u>	<u>\$2,901</u>	<u>\$2,554</u>
Earnings (Losses), net of taxes					
Military aircraft	\$ 72	\$ 42	\$ 29	\$ 20	\$ 20
Commercial aircraft	8	11	12	10	6
Tactical missiles and gun systems	22	19	16	19	18
Space systems	5	6	5	6	8
Marine (before SSN 688 settlement)	34	50	52	19	15
Material Service and resources	37	38	18	27	35
Telecommunications	(2)	11	2	(4)	(2)
Data products	9	6	5	4	3
Other (electronics, motors, etc.)	4	6	7	7	2
Interest expense and miscellaneous	6	(4)	(7)	(5)	(5)
Earnings from operations	195	185	139	103	100
SSN 688 negotiated settlement	—	—	(187)	—	—
Net Earnings (Loss)	<u>\$195</u>	<u>\$185</u>	<u>\$(48)</u>	<u>\$103</u>	<u>\$100</u>

Front Cover: One of three Pomona Division Phalanx close-in shipboard defense systems installed on the aircraft carrier USS America.





David S. Lewis
Chairman and
Chief Executive Officer



Oliver C. Boileau
President

To Our Shareholders:

1980 was a good year for General Dynamics. Sales and earnings reached new highs as the strong performance of our government business offset a slowdown in certain of our commercial activities. The quarterly cash dividends to shareholders were increased 20% and the common stock of the company was split in the ratio of 2 for 1.

The skills and hard work of the 84,000 men and women of General Dynamics were reflected in the following:

- Earnings rose to \$195 million, up 5.3% from 1979's record high.
- Sales increased for the eighth consecutive year—to \$4.7 billion, 16.8% higher than in 1979.
- Funded backlog at year-end was \$10.4 billion while total funded and unfunded backlog was \$11.2 billion.
- In the latest report on government contract awards, General Dynamics continues to be the nation's No. 1 defense contractor.

There is no question that General Dynamics continues to be a stronger, more vital company year by year. We were able to operate effectively in 1980 in the generally poor economic conditions in this country and abroad which led to a reduction in sales of our commercial products from \$1.32 billion in 1979 to \$1.21 billion in 1980. This was more than

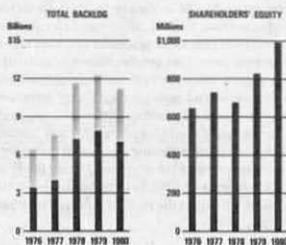
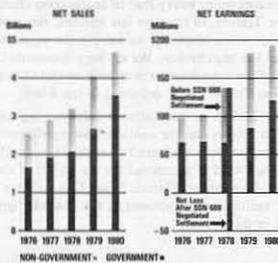
offset by the increase in government sales from \$2.74 billion to \$3.53 billion. However, the increase in pretax operating earnings from government business was not sufficient to offset the reduction in pretax earnings from the commercial side. On a pretax basis, overall earnings declined from \$290 million in 1979 to \$257 million in 1980; however, the permanent postponement of certain taxes on export-related earnings resulted in a significantly lower tax rate for 1980 and, therefore, higher after-tax earnings. This may be seen in the Consolidated Statement of Earnings on page 39 of this report.

During the year we took aggressive action to reduce discretionary costs in response to deteriorating market conditions, but we were careful not to cut unduly our important research and development programs which are so crucial to the long-term growth of the company. Continued heavy development work in digital switching technology was the principal reason for the loss shown for our telecommunications line of business on the opposite page.

We spent \$216 million for new capital items in 1980, somewhat less than originally planned, but still the second highest in our history. Again we made every effort to insure that those items considered to be key to our future growth were not postponed. Since 1974, we have invested more than \$1 billion in capital improvements and expansion.

We expect to continue our policy of investing all we constructively can in research and development and in new engineering and manufacturing facilities and in additional natural resources reserves. This policy has resulted in our sales increasing at an average annual compound rate of 16.7% and net earnings increasing at an average annual compound rate of 18.3% over the past four years as is seen in the table on the opposite page.

Looking to the future, the overall picture at General Dynamics continues to be very bright indeed. The American people have clearly indicated their determination that the defense posture of this country should be strengthened. Our company with its very broad range of high-priority programs stands to continue its growth with the expected major increases in defense spending over the next several years. Fortunately, these cover the full spectrum from early research, through advanced development, to early and mature production. While in 1980 we again were our country's leading defense contractor, it is important to note that not a single one of our major



programs now in production is scheduled for early completion or phase down. And each is backed by newer programs coming down the line.

It is now evident that our commercial operations will continue to be depressed in at least the early months of 1981, but we believe that each and every one of them will be in a stronger position to take advantage of resulting opportunities when the economy does take a turn for the better.

o o o

The following comments give an overview of some of the key activities in our various divisions and subsidiaries. These and the reports of our General Managers beginning on page 7 should provide a good insight into our company's operations.

F-16 Program Leads Aerospace Group

The aerospace divisions had a very good year, with combined earnings increasing 30% over 1979.

Fort Worth had the highest earnings of any division in the history of General Dynamics as the F-16 program moved toward peak scheduled production delivery rates during the year. From contract award in 1975, this program has been managed and operated in a highly professional manner. All schedules have been met and there has been excellent cost control with no overruns. Most important of all, the airplane has moved smoothly into operating squadrons of six air forces and provided the full military capability expected. The F-16s are effective, reliable and very popular with the flight and ground crews who operate and maintain them.

With more than 300 aircraft having been delivered to operational squadrons, the U.S. Air Force has gained an appreciation for the F-16's superb performance and flexibility in air-to-air and air-to-ground roles. It has decided to take advantage of these capabilities by significantly increasing the F-16's all-weather capability with the addition of radar-controlled missiles and the fire-control components required to guide them, as well as significantly upgrading the all-weather bombing systems by the addition of technologically advanced equipment. These systems are expected to be installed in aircraft scheduled for delivery beginning in 1984.

The success in service of the F-16 and the upgrading plans discussed above should improve the chances for obtaining more international customers for this fine, still low-cost aircraft. Contracts for 40 aircraft for Egypt are now firm, with first deliveries scheduled for late 1981. Recently, the Reagan Administration authorized the purchase of 36 F-16s by the Republic of Korea, subject to U.S. Congressional approval, which is expected.

We are determined to do all we can to broaden and extend the F-16 production program by taking advantage of technological advances as they can be phased in on an evolutionary basis. The first of these major modifications was the company-funded development of the F-16/79 (shown on the inside front cover flying with the F-16B). This version incorporates the lower-powered, but very mature General Electric J79 jet engine, and is designed to provide a first-line fighter to those countries not requiring the full capability of the standard F-16. Countries expressing real interest in the F-16/79 include

Austria, Jordan, the Republic of China, Thailand and Venezuela.

Of probably greater long-term importance was the decision taken by the company to start prototype development of the F-16XL after very extensive and highly successful engineering studies and wind tunnel and structural tests. This version, shown in an artist's view on page 9, takes the F-16 fuselage and its basic weapon systems and incorporates a very advanced wing design which will yield an airplane having more range, more speed, and shorter takeoff and landing distances, while still retaining the superb maneuverability for which the F-16 is noted. Just as the F-16 took full advantage of the best technologies of the early 1970s, we expect the F-16XL to exploit the best of the early 1980s.

Tactical Weapons Production Accelerates

Pomona continued its steady growth and had its highest earnings ever.

In the past 10 years Pomona has changed from a small team of 3,700 people having two missile programs to an organization of more than 8,400 scientific, manufacturing and management personnel with a diversified line of modern, highly effective missile and gun systems of importance to all three armed services of this country and to many of our allies. They have major programs in each stage of development from the earliest research and development concepts through mature production. Pomona certainly has the opportunity to become one of the most profitable divisions of General Dynamics in a very few years.

Excellent progress was made by Convair on its cruise missile programs for the U.S. Navy and Air Force. The sea-launched and ground-launched cruise missiles are entering production and development is continuing on a new air-launched, medium-range, nonnuclear cruise missile. Earnings from commercial aircraft programs at Convair were lower than in 1979 primarily as a result of a slowdown in orders for DC-10 fuselages from McDonnell Douglas. In 1981, DC-10 sales are expected to be reduced further; however, this will be offset in part by the beginning of production of engine struts for the new Boeing 767.

Navy Orders Eighth Trident

We continued to have a difficult time making the progress we expected on our highly important SSN

688 and Trident submarines as a result of a number of manufacturing and materials problems stemming from the past that had to be corrected on the 688s and from a continuing heavy load of engineering changes on the Trident. In the past few months, substantial progress was evident and we believe the production logjam has been broken. We are very optimistic that 1981 will be a much better year, with several 688s and the first Trident being delivered to the Fleet.

The Trident is our nation's only new strategic weapon system and the continued strong support of this program was evidenced in early January 1981 with the award of a contract for the eighth of these giant submarines to Electric Boat. This contract for \$401 million is not included in the backlog figures given in this report.

Business Prospects Improve at Quincy

While the Quincy shipyard delivered the last two of the liquefied natural gas (LNG) tankers under firm contract, the long-term business outlook for this division is much brighter than it was a year ago. Over the past few months we have received a number of contracts for large oil and chemical barges and for the repair of commercial and Navy ships. This work will go a long way toward keeping our experienced shipbuilding team together.

Of perhaps greater long-term importance, Quincy received provisional contracts for six LNG tankers to transport gas from Indonesia to the U.S. West Coast, and a letter of intent for three others to carry LNG from Alaska to the same port. Construction of the California LNG receiving terminal continues to be delayed by government regulatory procedures. Our contracts are conditional on the favorable resolution of the remaining issues and on obtaining favorable support for ship financing from the U.S. Maritime Administration, as was provided on our earlier LNG ships. These issues are expected to be resolved and work could start on the ships as early as 1983.

Commercial Operations Generally Profitable

Our domestic resources group - Freeman United Coal Mining, Material Service and Marblehead Lime - had another good year, with Material Service having all-time record earnings in spite of a general slowdown in construction activities in the Chicago area.

Sales and earnings were down significantly at Asbestos Corporation Limited (ACL) in which General Dynamics holds a 54.6% majority interest. Operations were hampered severely by a three-month strike early in 1980 and by unsettled market conditions in the Midwest and Europe. We continue to resist the Quebec Provincial Government's attempts to expropriate the Canadian-based assets of ACL. An Appeals Court ruling is expected in 1981 on ACL's suit challenging the legality of the expropriation legislation, a decision that can be further appealed, if necessary, to Canada's Supreme Court.

Our business systems and telecommunications group was led by Datagraphix, which maintained its leadership in the computer output microfilm industry with the highest earnings in its history, while Stromberg-Carlson and American Telecommunications continued to be adversely affected by the general economic slowdown in this country. Stromberg-Carlson was particularly hurt by the record high interest rates which prevented many telephone companies from implementing their plans to order new digital switching systems. However, we believe the prospects for significantly increased activity in the telecommunications field remain strong and Stromberg-Carlson has continued its very aggressive company-funded research and development program to insure having a broad line of advanced digital equipment available when the economy improves.

o o o

In summary, the company has many high-priority defense programs in production and others that are completing their development cycles, all of which have excellent earnings potential. Although some of our commercial operations were hampered by weakened economic conditions, they are well positioned to contribute to the company's growth when the business climate improves. We believe we have the technical, management and financial strengths to take advantage of new opportunities as they develop.

D.S. Lewis
Chairman

D.P. Smith
President

27 February 1981



Aerospace

Fort Worth Division - Fort Worth, Texas
Electronics Division - San Diego, California
Convair Division - San Diego, California
Pomona Division - Pomona, California

Convair's Ground Launched Cruise Missile being mated with U.S. Air Force mobile launching system at the Utah Test and Training Range.

Fort Worth Division

An operational review by Richard E. Adams, Vice President and General Manager

During 1980, the production rate for F-16s increased significantly, with 227 of the high-performance fighters being delivered to six air forces from the assembly lines in Fort Worth and in Europe. This first year of high-rate F-16 production enabled Fort Worth to record the highest sales and earnings in its history, and brought the total number of F-16s in operational service to 314.

In 1981, the production rate will continue to increase, with 276 aircraft being scheduled for delivery.

We received new orders for 40 F-16s for the Egyptian Air Force and 22 for the Royal Netherlands Air Force, adding to the present Dutch contract for 102. The Dutch government has stated it expects to order an additional 89 F-16s, with deliveries starting in 1985. Egypt and Israel have indicated requirements for additional quantities as well. In early 1981, the U.S. government indicated its approval of South Korean plans to order 36 F-16s, which should be only the first step in the modernization of that country's Air Force. Also in 1981, Australia, Greece and Spain are expected to announce the winners of their new fighter competitions – in all of which the F-16 is a finalist.

In a major development, the U.S. Air Force launched an important program to expand the capabilities of the F-16 with greatly enhanced night and adverse weather weapon systems, including provisions for major additional features in the Westinghouse radar to guide the Sparrow all-weather missile, and the Advanced Medium Range Air-to-Air Missile now being developed for use beginning in the mid-1980s. These new capabilities will be incorporated in F-16s beginning in 1984.

Potential for Long-Term F-16 Production

Other important steps were taken to broaden the base of the F-16 program and improve its potential for long-term production.

In 1979, we started work on the F-16/79, the so-called export version of the F-16, designed to meet the needs of countries not requiring the full performance of the standard F-16. Development of this aircraft, which is powered by the mature General Electric J79 jet engine, was completed during the past year, and it is now being evaluated by the air

F-16s are in operational service worldwide:

(Top Right) A U.S. Air Force pilot in preflight checkout at MacDill AFB, Fla.

(Bottom Right) An Israeli Air Force F-16

flies past the historic Jewish fortress of

Masada. (Left) F-16 pilots from Belgium,

Denmark, The Netherlands and Norway on

operational training flights over Europe.

forces of a number of countries. The future of this very fine aircraft is dependent on U.S. national policy decisions to make it available to those countries.

In 1980, Fort Worth began hardware development of the F-16XL, a higher-performance version of the F-16 that will incorporate very advanced aerodynamic and systems technologies. Its most distinguishing feature will be a new highly swept, cranked-arrow wing developed over the past five years in an intensive cooperative effort by Fort Worth and NASA engineers.

Wind tunnel and computer analyses show that the F-16XL will require much shorter takeoff and landing distances, will carry twice the bomb load of the present F-16 and will have substantially increased combat radii in air-to-air and air-to-ground missions – all of this while still retaining the superb maneuverability characteristics for which the F-16 is noted.

F-111 Programs

Technical support of the more than 400 Fort Worth-built F-111 fighter-bombers in operational service with the U.S. and Royal Australian Air Forces is one of our important ongoing commitments. We are developing plans to update the F-111 fleet for its vital defense role over the next two decades.

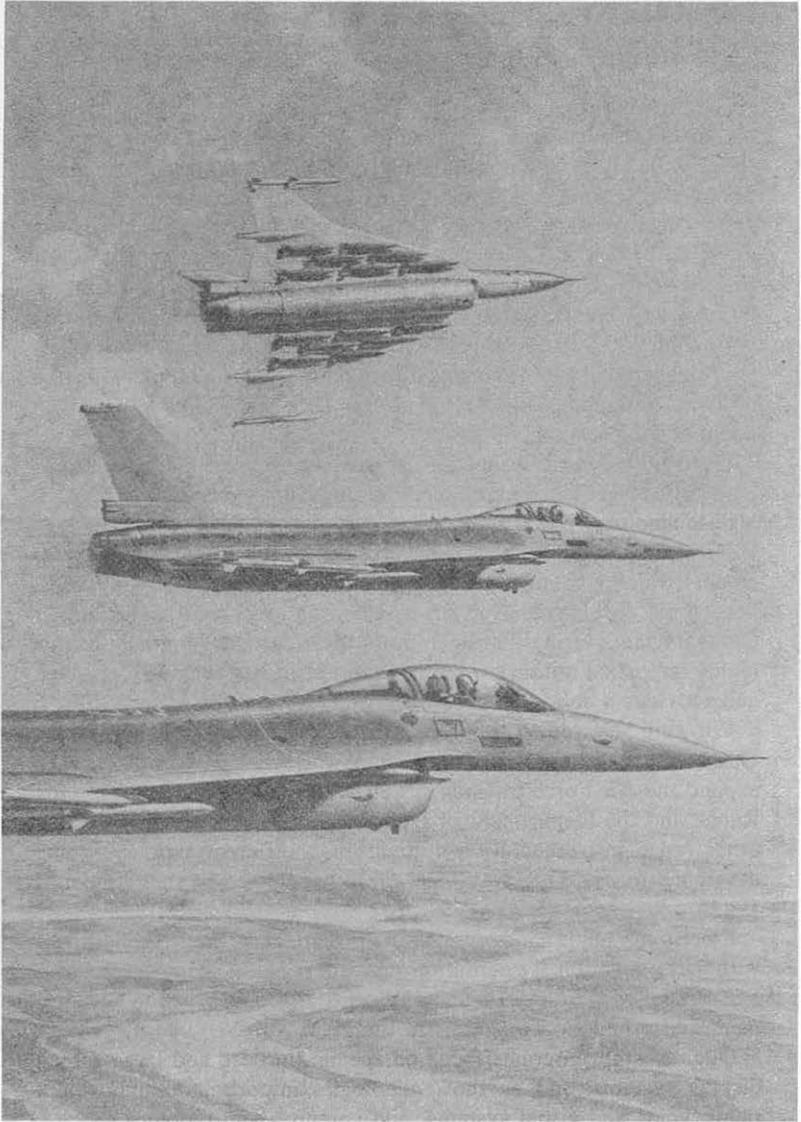
A modified version of the F-111 is one of the contenders to meet the Air Force requirement for a new manned strategic bomber, competing with a modified version of the B-1 and an all-new bomber based upon the much-discussed “stealth” technology. Our proposal is to convert 155 existing F-111s by stretching the fuselage and installing newer, more powerful and more efficient engines. The advanced F-111s could be in operational service in the mid-1980s. There is ample room in the Fort Worth plant to do this job without interference with the F-16 program; and if the F-111 is chosen, the Fort Worth business base would be significantly increased for the next several years.

Military Electronics Programs

New contracts for the design, manufacture and installation of military electronics systems for the U.S. government and customers in Europe generated more than \$32 million in sales in 1980 and boosted our funded electronics program backlog to nearly \$63 million.

During the year, the first of several Multiple Threat Emitter Simulators (MUTES) was delivered for acceptance testing to Eglin Air Force Base, Fla. MUTES is an electronic warfare training device for improving the combat readiness of air crews.

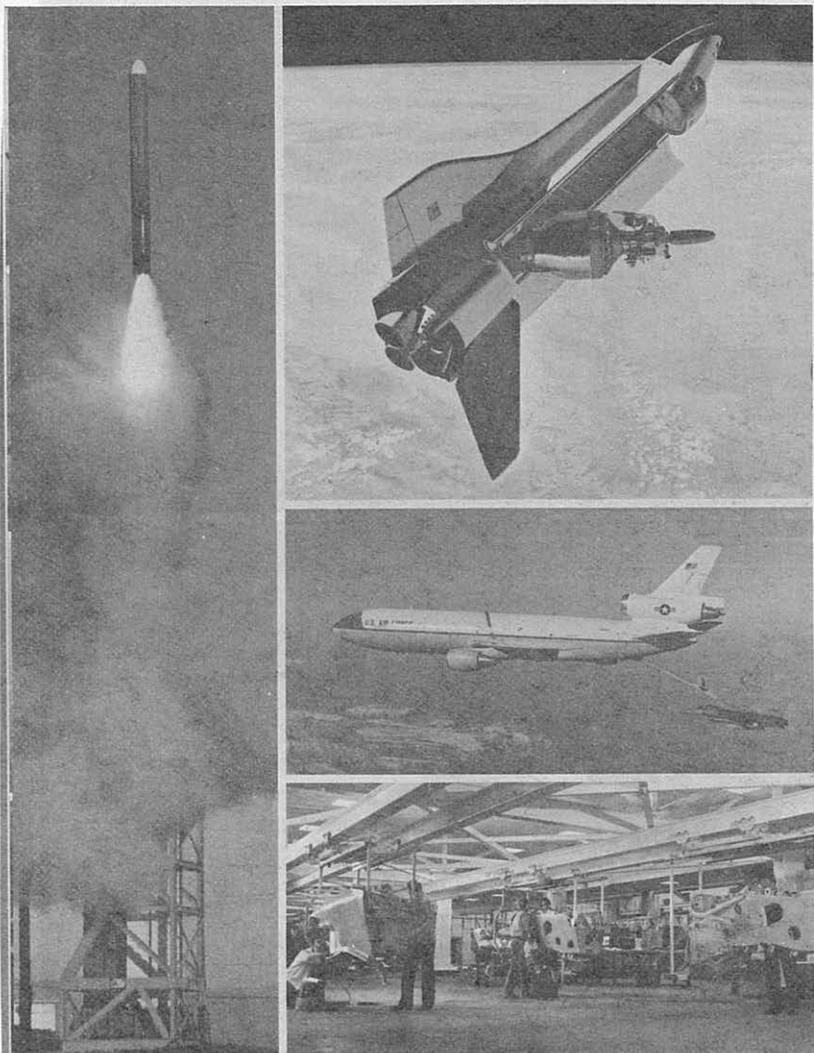
Fort Worth produces other electronic warfare and electronic intelligence gathering systems, radars, command and control systems and operates the U.S. Air Force's Electronic Warfare Evaluation Simulator. We plan to focus increased attention on the growing international market for command and control systems during the 1980s.



Artist's concept of the proposed advanced F-16XL in typical air-to-air and air-to-ground loadings.

Top: Electronic Air Combat Maneuvering Instrumentation system presents a record of fighter-pilot training tactics on a large-screen display for post-flight evaluation.

Bottom: An avionics test station being used to check out an F-16 radar at MacDill AFB, Fla.



Our research programs focus on special purpose and large screen display systems, and on the technologies important to lightweight radar, voice and visual systems, and antennas and radomes.

Top: Electronics Air Combat Maneuvering Instrumentation system presents a record of fighter-pilot training tactics on a large-screen display for post-flight evaluation.

Bottom: An avionics test station being used to check out an F-16 radar at MacDill AFB, Fla.

Convair Division

An operational review by Leonard F. Buchanan, Vice President and General Manager

In 1980, Convair's sales and earnings were lower than the year before; however, important new contracts for cruise missiles and space launch vehicles were received. At the same time, a number of advanced missile system studies and technology demonstration programs moved into new phases of research and development, reflecting Convair's commitment to maintain a leadership position in major technical areas having real growth potential for the future.

Cruise Missiles

Key test milestones in the Tomahawk Sea-Launched Cruise Missile (SLCM) program were successfully passed with test firings from an armored box launcher aboard a U.S. Navy ship and from a prototype shipboard vertical launching system.

We received our first production contract for the SLCM during the year, and the 1981 U.S. defense budget authorizes the production of 48 of these sophisticated ship- and submarine-launched weapon systems. This action initiates long-term volume production of the land-attack and antiship versions, which are scheduled to become operational in 1982.

The first flight of a Ground-Launched Cruise Missile (GLCM) from an operational-type mobile launcher was successfully accomplished. The GLCM is scheduled to be a major component of the U.S. Air Force's theater nuclear alert forces in Europe. Military planning calls for deployment in 1983 and production funds to implement these plans are expected to be received by Convair early in 1981.

Early in 1980, Convair was assigned the task of developing the Medium Range Air-to-Surface Missile (MRASM), a variant of the Tomahawk, to be launched from attack and fighter aircraft. The MRASM is a highly versatile missile that can carry a variety of different sizes and types of tactical armament weapons.

Far Left: First firing of a Tomahawk cruise missile from Navy's vertical launch system being developed for use aboard destroyers and cruisers. (Top) Artist's concept of high-energy Centaur upper stage being deployed on a planetary mission from the Space Shuttle. (Center) An F-16 is refueled by a McDonnell Douglas KC-10A, the fuselage of which is built by Convair. (Bottom) Production of struts to support the engine for the new Boeing 767 commercial transport.

Aircraft Programs

Our commercial aircraft work continued on schedule as we delivered to McDonnell Douglas 38 DC-10 fuselages, including two for the Air Force's KC-10A, the advanced tanker/cargo version of the airliner.

We also delivered our first set of production engine struts for the new Boeing 767 twin-jet airliner, initiating what is expected to be a long-term production run. The B767 will make its first flight later this year, with initial deliveries scheduled for August 1982. Fifteen of the world's major airlines have placed firm orders for 166 B767s and hold options for an additional 135.

Space Launch Vehicles

During 1980, our Atlas/Centaur launch vehicle combination boosted two military Fleet Satellite Communications spacecraft and an Intelsat V communications satellite into orbit while the basic Atlas successfully launched four space vehicles, including two of the new Global Positioning System satellites.

In July, the International Telecommunications Satellite Organization selected the Atlas/Centaur to launch its first four Intelsat V-A spacecraft. This decision will extend the production life of these vehicles well into the mid-1980s, and increases the likelihood that other potential users will order these dependable boosters for important future missions.

As a result of extensive design work by Convair engineers, NASA selected Centaur as the primary upper stage for planetary missions to be launched from the Space Shuttle. We have been working with NASA on a "wide body" Centaur design which will carry additional fuel for increased boost performance. In another important advanced space study program, we completed construction of a prototype deployable truss beam that could someday become the basic unit for constructing large operational platforms in space.

Convair also was awarded contracts totaling more than \$40 million related to the design and fabrication of superconducting magnets for new energy production programs involving magnetic fusion, magneto-hydrodynamic and isotope separation systems.

Pomona Division

An operational review by Ralph E. Hawes, Vice President and General Manager

During 1980, Pomona recorded the highest sales and earnings in its history as some programs entered volume production and others successfully passed key development milestones. We also continued our work in the application of increasingly higher technology to the design of advanced tactical weapons systems.

Navy Programs

We made a smooth transition into full-scale production on our unique Phalanx shipboard close-in weapon system. Three U.S. Navy aircraft carriers and three cruisers became the first ships to be equipped with this highly effective, 3,000-rounds-per-minute, radar-directed gun system for defense against low-flying aircraft and missiles. The Navy ordered an additional 75 systems in 1980, making a total of 156 to be delivered through 1982. Present U.S. Navy plans call for Phalanx systems to be installed in varying quantities on 240 ships while Japan and Saudi Arabia have ordered Phalanx for their navies.

Firm contracts call for production of Standard Missiles through calendar year 1982, and improvements now in development assure production of Standard well into the 1990s. Standard is the primary antiaircraft defense weapon on 80 current U.S. Navy ships, and the Standard-2 version will be the main armament on the Navy's new Spruance-class destroyers and Aegis-class cruisers. Twenty-nine ships of allied navies are also armed with the Standard Missile.

Production rates of 100 per month of Sparrow AIM-7F radar-guided, air-to-air missiles were reached and sustained during the year. Sparrow is the current all-weather missile carried by fighter aircraft of the U.S. Air Force and Navy and several allied nations. We expect to convert our production line to the new monopulse guidance version of the Sparrow, the AIM-7M, which is scheduled to be in production for most of this decade.

We continued full-scale engineering development on the RAM guided missile system, which is designed to provide naval vessels with a low-cost, high-firepower capability for destroying enemy antiship missiles. The RAM system is being developed under the joint sponsorship of the United States, West Germany and Denmark. The international sponsorship of the RAM program is an excellent example of the efforts being made to standardize weapons systems within the NATO alliance.

Army Programs

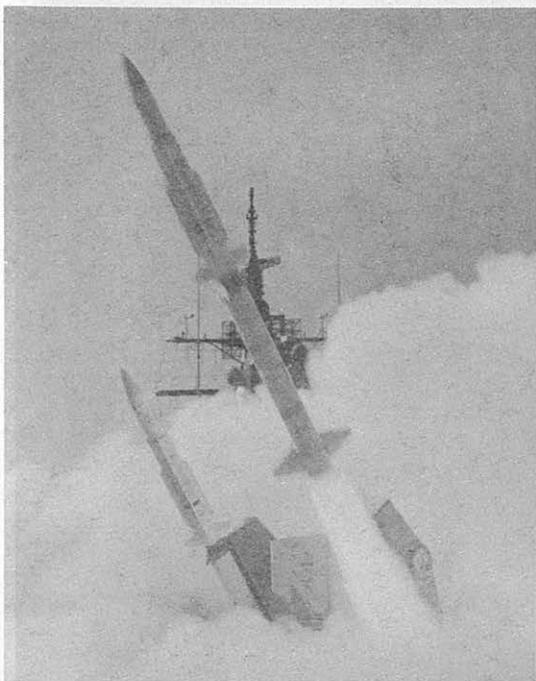
Pomona made substantial progress on a number of Army programs during the year. A major success was the qualification of the Stinger antiaircraft missile system which led to a \$60 million contract for additional production of the weapon. Stinger is a man-carried, shoulder-fired, infrared-guided missile which provides front-line troops with immediate defense against attacking aircraft and helicopters. Several allied countries have shown interest in Stinger for their defense forces.

Development work was continued on another shoulder-fired weapon called Viper, which will give the front-line soldier a defense against tanks and other armored vehicles. Resembling the famed Bazooka antitank weapon, the Viper system consists of a rocket with a very lethal warhead packaged in a telescoping fiberglass storage container which doubles as the rocket launch tube. Army troops have begun operational testing of the weapon in simulated battlefield conditions, and a production decision on Viper is expected in mid-1981.

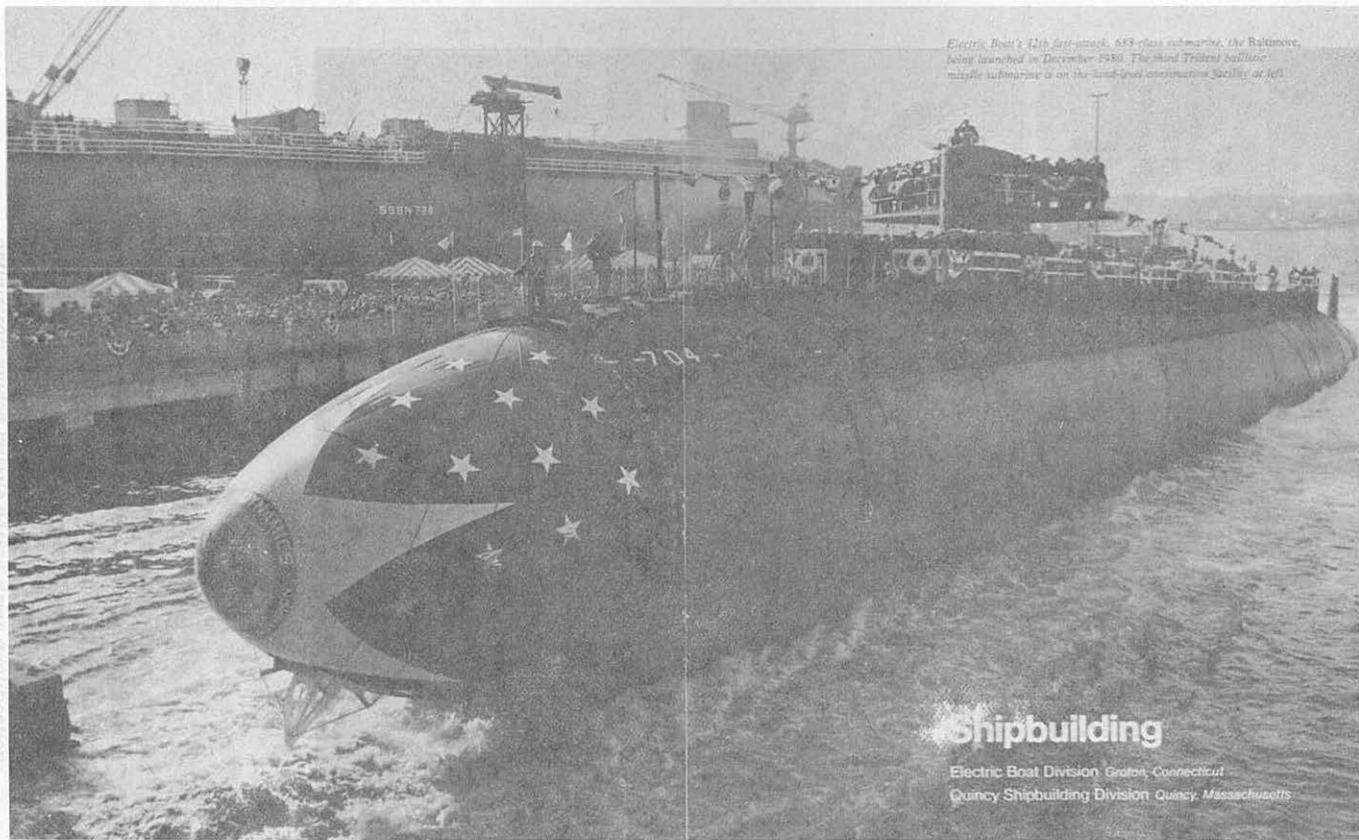
In November, Army crews completed extensive operational tests of our Division Air Defense (DIVAD) gun system, which is in competition with one developed by Ford Aerospace. DIVAD is a radar-directed, rapid-fire gun system installed in a tank turret and chassis to provide the Army's armored units with an effective defense against helicopters and fixed-wing aircraft. Our system operated exceptionally well during the tests. Later this year, the Army is expected to select one of the competing versions of DIVAD for a major production program that could last for many years.

Pomona's expanding production and development programs have required a substantial investment in new buildings and equipment, and additional highly skilled people.

Pomona's activities on several armament and missile programs are shown clockwise, from top left: New Standard Missile-2 in firing tests aboard the guided missile destroyer USS Mahan; a Sparrow AIM-7F air-to-air missile being loaded on a U.S. Navy F-14; the Stinger antiaircraft guided missile passed Army qualification tests for operational use; Viper, a short-range unguided antitank weapon in Army tests; the DIVAD radar-controlled gun system during U.S. Army field tests.



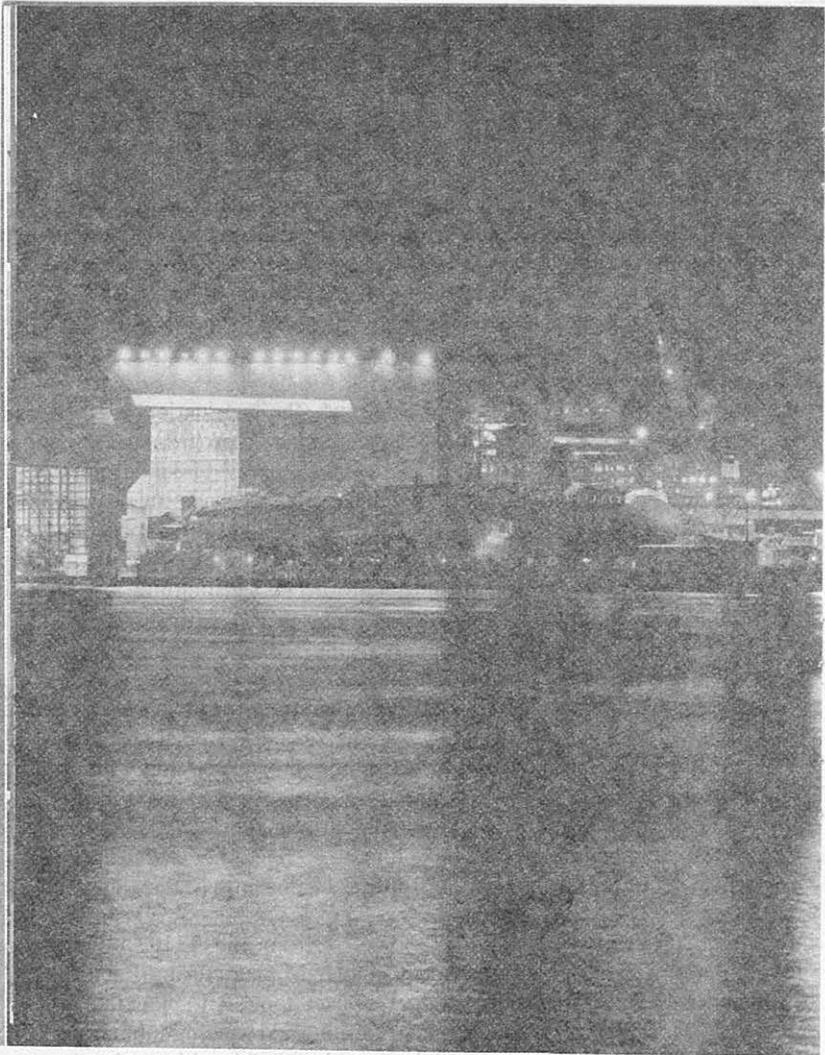
underway) passes its own qualification
 tests for operational use. Viper, a short-range, air-launched
 antibank weapon in Army use, the DIVAD radar-controlled
 gun system during U.S. Army field tests.



Electric Boat's 12th fast-attack, SSG-class submarine, the Baltimore, being launched in December 1980. The third Triump ballistic missile submarine is on the land-dock construction facility at left.

Shipbuilding

Electric Boat Division, Groton, Connecticut
 Quincy Shipbuilding Division, Quincy, Massachusetts



Electric Boat's new Trident-class submarines are being built in a timely manner with the quality that has been the hallmark of the Electric Boat tradition. The new Trident-class submarines are being built in a timely manner with the quality that has been the hallmark of the Electric Boat tradition. The new Trident-class submarines are being built in a timely manner with the quality that has been the hallmark of the Electric Boat tradition.

We now have a backlog of eight Tritons and 13 SSN 688-class attack submarines scheduled for delivery over the next five years. We are confident that our team of dedicated people will deliver these ships in a timely manner with the quality that has been the hallmark of the Electric Boat tradition. The new Trident-class submarines are being built in a timely manner with the quality that has been the hallmark of the Electric Boat tradition.

Left: Shipyard helps outfit the Trident as the first of the new Trident-class submarines is moved out of the production building to the outfitting platform.

Electric Boat Division

An operational review by P. Takis Veliotis, Executive Vice President - Marine

We made significant progress at Electric Boat in resolving several problems which have caused delays in the delivery of the Trident and SSN 688-class submarines.

Throughout the year, major efforts were made to detect and correct minor but troublesome welding defects and to take corrective action to locate and replace large amounts of steel which did not meet specifications. Progress was further slowed by the need to incorporate a large number of design changes being directed by the Navy and by problems with government-furnished equipment and components manufactured by outside suppliers.

With these problems largely behind us, the production logjam appears to be broken and we foresee much improved progress in 1981.

Trident is the single most important defense program under development in the Free World today and it will serve as a cornerstone of our nation's strategic forces well into the 21st century. These 560-foot-long submarines will have 50% greater missile capacity and will be able to remain on station as mobile launching platforms for substantially longer periods than any submarines previously in service.

At year-end, the *Ohio*, the first ship of the Trident class, was 98% complete and the *Michigan* and five other Tridents were in progressive stages of construction. The *Ohio* is being readied for sea trials and we expect it will be delivered later this year. The Trident system is probably the most complex design and construction project in shipbuilding history.

We launched two more 688-class submarines, the *Boston* and the *Baltimore*, and continued post-launch work on five others. We expect to deliver six of these advanced, fast-attack submarines to the Navy in 1981.

Major productivity gains are expected from the \$116 million Automated Submarine Frame and Cylinder Manufacturing Facility which became fully operational at our Quonset Point, R.I., plant late in the year. Massive fixtures are set up for forming and welding submarine cylinders and hull frames at close tolerances impossible with previously used production methods. Over the past seven years, nearly \$280 million has been invested at Electric Boat with the single goal of providing high quality submarines at substantially lower cost to the Navy.

We now have a backlog of eight Tridents and 15 SSN 688-class attack submarines scheduled for delivery over the next five years. We are confident that our team of dedicated people will deliver these ships in a timely manner with the quality that has been the hallmark of Electric Boat.

Left: Shipyard lights outline the Florida, as the third of the giant Trident-class submarines is moved out of the production building to the outfitting platform.

Quincy Shipbuilding Division

An operational review by Gary S. Grimes, General Manager

In 1980, Quincy delivered two liquefied natural gas (LNG) tankers, the *Lake Charles* and the *Louisiana*, which will transport LNG from Algeria to the U.S. Gulf Coast.

Eight other Quincy-built LNG tankers have been transporting LNG from Indonesia to four industrial ports in Japan for more than three years. At the end of 1980, these tankers had made 331 round trips and carried 41.4 million cubic meters of LNG, the equivalent of 896 billion cubic feet of natural gas. These ships continue their excellent performance, meeting schedule commitments routinely.

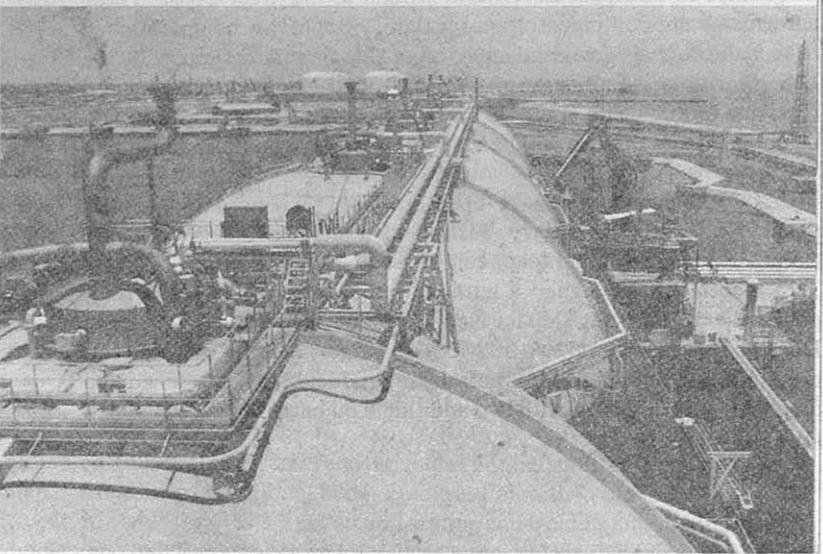
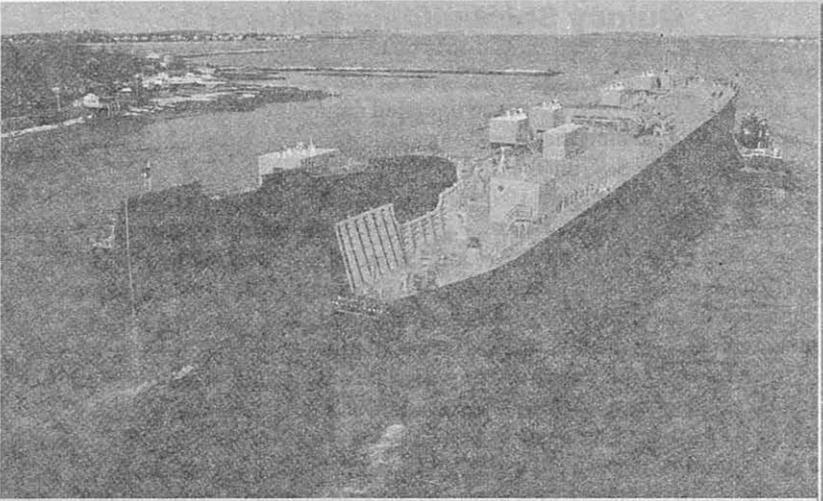
In October, Quincy received provisional contracts for six additional LNG tankers, three each for Ogden Marine and Zapata Western, to transport gas from Indonesia to the U.S. West Coast. In January 1981, a letter of intent was signed with Pacific Marine Associates for another three ships to transport LNG from Alaska to the West Coast. These agreements are contingent upon regulatory approvals being obtained from California agencies and approval of ship financing support by the U.S. Maritime Administration. We are optimistic that the required receiving terminal site approval and ship financing authorizations will be obtained and that we will be able to begin work on these tankers in 1983.

In the meantime, we have been working very hard to get new commercial and U.S. Navy business so that the nucleus of our experienced shipbuilding team can be retained in place.

In December, we signed a letter of intent for a \$60 million coal-powered, coal-carrying ship for New England Electric System. Also in December, we delivered two 502-foot oil barges, the first of a series of eight currently on order. Four petroleum product barges are scheduled for delivery during 1981 with two additional oil barges being scheduled for early 1982.

Top: The 33,500-ton oil barge, Bulkfleet Pennsylvania, leaving the Quincy shipyard. When in service, the 502-foot-long vessel will be pushed by an 8,000-horsepower tug specially designed to fit the notched stern of the barge.

Bottom: The Taurus, the seventh LNG tanker built by Quincy, takes on cargo at the Arun, Indonesia, liquefaction facility for delivery to Japan.



used production methods. Over the past seven years, nearly 3200 man-hours have been invested in Electric Boat with the single goal of producing high-quality submarines at substantially lower cost to the Navy.

We now have a backlog of eight Tritons and 15 SSN boats ready for delivery. Many of these boats are scheduled for delivery to the Navy in the next few months. The Triton is a 1000-ton boat, and the SSN is a 2000-ton boat. The Triton is a ballistic missile submarine, and the SSN is a nuclear-powered attack submarine. The Triton is powered by an 8,000-horsepower turbine engine, and the SSN is powered by a nuclear reactor. The Triton is built in Groton, Connecticut, and the SSN is built in Groton and Kings Bay, Georgia.

Left: Shipyard workers at Groton, Conn., take on cargo of the ship's weapons. Right: The shipyard's giant crane lifts the hull out of the building.



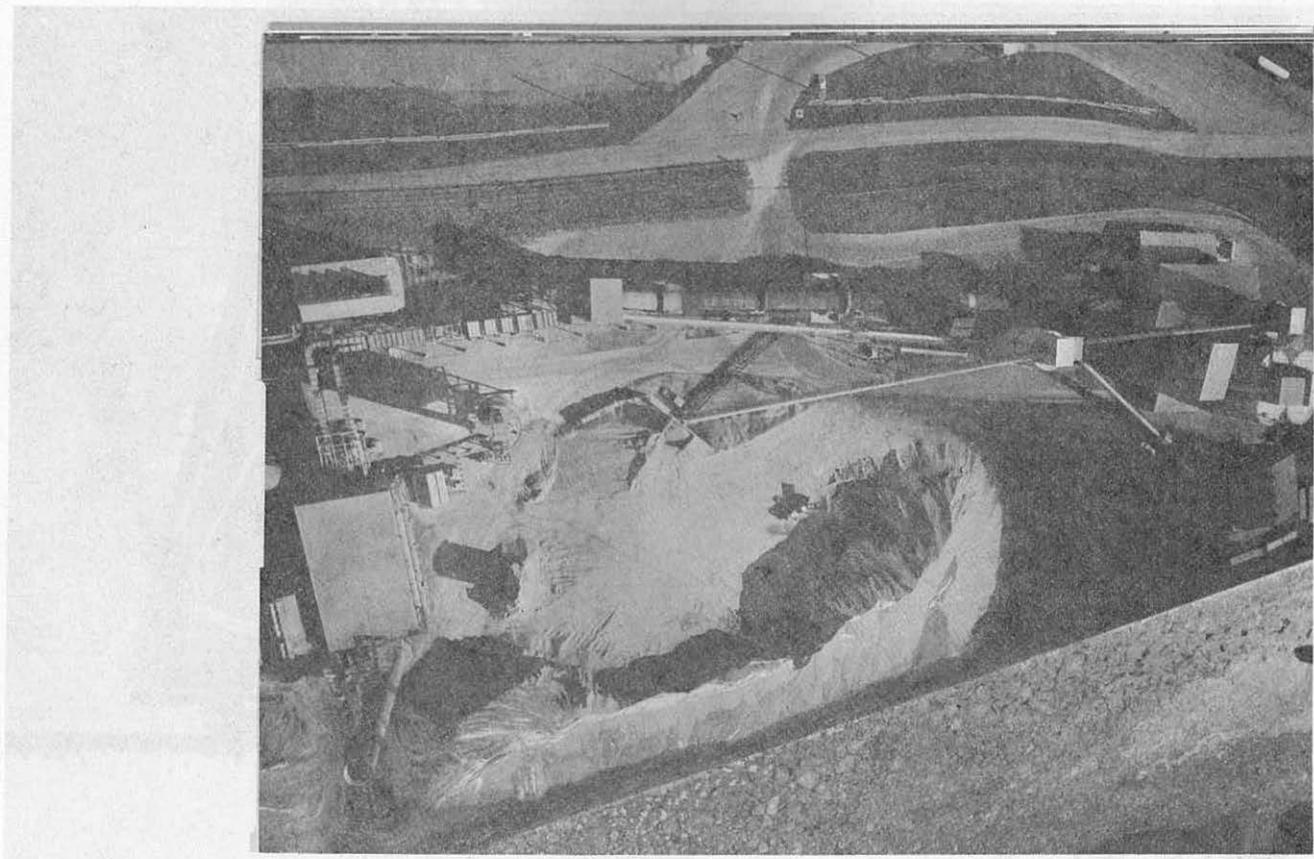
Building Products Resources

Material Service Corporation Chicago, Illinois
Freeman United Coal Mining Company Chicago, Illinois
Marblehead Lime Company Chicago, Illinois
Asbestos Corporation Limited Montreal, Quebec

Coal from Freeman United mines in Illinois is barged on the Mississippi River to midwestern utilities.

Industry names, production and capacity shown for information only.

Marblehead Lime's new South Chicago kiln began producing 1,500 tons of lime daily in early 1981.



Material Service

An operational review by Lester Crown, President

1980 was an excellent year for Material Service, the Chicago area's largest supplier of aggregates, concrete and concrete products. Buoyed by an exceptionally strong first half, earnings reached a new record high.

Our business in the second half of 1980 reflected the nationwide declines in residential and industrial/commercial construction and the cutback in federal funding for highway paving projects. This general trend will probably continue into the first part of 1981; however, we anticipate that a gradual increase in housing starts will occur during the latter part of the year.

We have continued to acquire additional reserves of sand, gravel and limestone to assure our ability to service the expected long-term growth of the construction industry in Illinois.

Freeman United Coal Mining

An operational review by Lucian A. Lincoln, President

Freeman United's 1980 sales and earnings exceeded those of 1979 in spite of the recession and poor market conditions. Overall, company productivity improved approximately 15%.

Construction of Crown III, an underground mine located near Springfield, Ill., is 95% complete. This mine has a planned output of two million tons per year, and most of the mine's production has been sold under long-term contract to Hoosier Energy, a Midwest utility company. Shipments to Hoosier are planned to begin in the second quarter of 1981.

In 1980, we broke ground for the new Industry mine located near Macomb, Ill. This surface mine will supply most of the 700,000 tons per year required under a long-term contract with the City of Muscatine, Iowa. Shipments will start in 1982.

Sections of Orient 6, our underground mine near Waltonville, Ill., were reopened in April 1980. The mine had been closed for several months due to low worker productivity and recurring labor problems. Several work practice and operational changes were made and productivity has improved. Consideration will be given to reopening other sections of this mine, if the improved productivity continues.

In 1977, Freeman produced 6.7 million tons of coal. In 1982, with increased productivity and the addition of the new Crown III and Industry mines, production will reach about 10 million tons per year.

Marblehead Lime's new South Chicago kiln began producing 1,500 tons of lime daily in early 1981.

Marblehead Lime

An operational review by M. James O'Brien, President

Marblehead had lower sales in 1980 due to the depressed state of its largest customer, the steel industry. However, the replacement of some operating units with more efficient equipment produced higher earnings than in 1979 as Marblehead positioned itself to serve its present markets more effectively and to diversify sales to a broader range of industries.

The mammoth new kiln at our South Chicago plant is in operation producing 1,500 tons of chemical-grade lime per day. The largest lime-producing unit in the world, this plant will process over one million tons of limestone during a year. Our new facility in Detroit is nearing completion and production is scheduled to start up in the first quarter of 1981. With this addition, we will be the world's largest manufacturer of chemical-grade lime.

At our Utah plant, a new kiln has more than doubled that plant's daily output to 700 tons of dead-burned dolomite, a form of limestone which is shipped to mills in the western U.S. for use as a refractory material in steel-making.

Asbestos Corporation Limited

An operational review by Maurice E. Taschereau, President

ACL had a difficult year in 1980. But even with a three-month strike and the generally unsettled and unfavorable economic conditions in its market areas, the company's operations were still profitable.

The market for asbestos fiber was weak all over the world, directly reflecting the slowdown in the economies of most developed nations. Fortunately, cement-grade asbestos makes up about 85% of our production and we expect demand for this grade to recover first and remain strong over the long term. We are particularly optimistic about future prospects in the developing nations, where asbestos-cement construction products and pipe will be needed for fresh water, irrigation, sewage disposal systems and industrial buildings.

We have taken steps to streamline our organization, cut costs and improve efficiency. These actions have placed ACL in a strong competitive position to take advantage of the expected market recovery as it develops gradually in the months and years ahead.

Top: Yard One near downtown Chicago is Material Service's principal loading point for ready-mix concrete.

Bottom: Cement-grade asbestos fiber mined at ACL's Thetford Mines, Quebec, is exported worldwide. In Thailand, the Siam Fiber-Cement Company Ltd. uses ACL fiber in water pipe and roofing materials.



Industrial Television

Microfiche is loaded into a Datagraphix DataMASTER 250 microfilm duplicator at the Ralston Purina Company computer facility in St. Louis. At left and right are Datagraphix OnLine AstroCOM II microfilm recorders.

*Partner: Computer-aided assistance. Their results at AT&T's Tufford
Atmos. Outlook is reported worldwide. In Houston, the State
Price Support Company Ltd. uses ACE Plus to store price and
marketing materials.*

Telecommunications Information Systems

Stratberg-Carlson Corporation, Tampa, Florida
American Telecommunications Corporation, El Monte, California
Datagraphix, Inc., San Diego, California
General Dynamics Communications Company, St. Louis, Missouri



equipment

Winn-Dixie Food telephones being tested before shipment. Machines receive final inspection at ATC plant. ATC's office handles automatic telephones answering. Canton Falls Electronic Corporation provides equipment in the Sanford, Fla. plant. Control room operators receive System Control DCO during system checkout. Corporation products counter-clockwise from top: The Zimmerman-Cotton and American Telecommunications

Stromberg-Carlson

An operational review by Frederick F. Jenny, President

Telecommunications is an industry experiencing rapid growth and profound technological change. Among the leaders is Stromberg-Carlson whose digital switching systems provide efficient and versatile communications for home, business, industrial and governmental customers.

High interest rates and other unfavorable economic conditions in these markets had a negative impact on sales and earnings in 1980 as compared to 1979. Nevertheless, the company continued to maintain a high level of research and development effort in advanced digital technology in order to be in a strong position to increase its market share when the economy improves. There is little question that the telephone companies and telecommunication users will convert to advanced digital switching systems as quickly as they can afford to do so.

The major component of our advanced System Century product line, the Digital Central Office (DCO) has met with excellent acceptance among our telephone company customers. We have placed 147 of these computerized call-switching offices in service and we have orders for an additional 140. The DCO successfully completed an extensive field trial with General Telephone & Electronics and has qualified as a standard system for use by all of GTE's operating companies.

Communications authorities in Puerto Rico, the Republic of Korea, American Samoa and Colombia have selected our digital switching systems to modernize their telephone equipment to serve their customers. These telephone networks employ a number of unattended switching centers to provide economical service in sparsely populated areas. The Korean equipment was prepackaged in a trailer, fully tested and shipped as a self-contained mobile exchange which can be placed into service in a matter of hours.

Another important member of the System Century family is the Digital Branch Exchange (DBX). This modern, high-performance, voice and data switching system was introduced in late 1979 and is sold principally to large businesses and governmental operations. We have installed 37 DBXs and have orders for an additional 100.

Stromberg-Carlson and American Telecommunications Corporation products, counterclockwise from top: The versatile System Century DCO during system checkout at the Sanford, Fla., plant; compact Stromberg-Carlson fully electronic Centuryphone provides advanced office features; AutoMatic TelePhone answering machines receive final inspection at ATC plant; ATC's Winnie-The-Pooh telephones being tested before shipment.

The latest addition to our System Century family, the Century 412 Electronic Key Telephone System, has gained enthusiastic acceptance in the business communications market. The 412 connects 4 outside lines to service 12 internal extensions in the small office or business. This combination of equipment simplifies installation and maintenance and offers a wide variety of modern features to this size operation for the first time.

We believe that the growth in the business telecommunications field will be substantial as more and more businesses and industries convert their operations to take advantage of the features and efficiencies of the electronic offices of the future.

American Telecommunications

An operational review by William B. Porter, President

ATC is a principal manufacturer and supplier of telephonic equipment to the Bell System and to a number of independent telephone companies.

In 1980 sales and earnings were significantly lower than in 1979 due primarily to the impact of the slowdown in consumer spending and to inventory reductions of character and decorator telephones by our customers.

We expect a progressive recovery in orders for decorator sets in 1981 as Winnie-The-Pooh joins our popular Mickey Mouse and Snoopy & Woodstock character telephone line. Our AutoMatic TelePhone which provides a tape-recorded answering service for the home and business is increasingly popular and production rates are now at 8,000 units per month. These units may also be obtained from the Bell System's PhoneCenter Stores and from many independent telephone companies.

ATC's research program is concentrating on the development of designs and production methods which will result in substantially lower manufacturing costs. We believe this will result in significantly increased markets for this attractive and efficient telecommunications equipment.

DatagraphiX

An operational review by Edward T. Keating, President

DatagraphiX maintained its position as world leader in the computer output microfilm (COM) industry in 1980. The company recorded its eighth consecutive year of increased sales and earnings, while broadening the scope of its information management products. This expansion gives DatagraphiX a unique position as the only company offering products providing computer data output on film, display terminals and paper.

COM, the process of printing computer-generated data on microfilm at very high speeds, is increasingly used for information handling to offset the rising costs of labor, space and distribution. Two significant events that dramatized the continued growth of DatagraphiX in the industry were the introduction of the Model 4590, the most sophisticated, high-production COM recorder on the market, and the shipment of the 1000th AutoCOM microfiche recorder/processor.

The data processing industry has seen a trend toward systems that are "on-line," or under the direct control of the central processing unit. Our response was the OnLine AutoCOM II, first installed in 1979. Demand continues to increase as customers realize the potential for innovative and cost-saving use of microfiche in the on-line mode.

While development of new hardware products has played an important part in the continued growth of DatagraphiX, increasing emphasis is being directed toward software support for customer requirements. In 1980, DatagraphiX created unique software programs to merge alphanumeric data with aperture card drawings, opening the door to many new applications, particularly in the engineering fields.

During the year, we enhanced our line of high-quality display terminals with several new models designed to operate with a variety of host computers. These terminals display standard computer output of 132 characters per line with exceptional clarity. The user realizes significant cost savings because the 132-column displays eliminate the need to reformat the computer data as is required for viewing on most other displays which present 80 characters per line.

Initial installations of the Model 9800 laser printers in both off-line and on-line versions were made during 1980. The Model 9800 utilizes laser technology and electrophotographic printing to generate data on paper at speeds up to 21,000 lines per minute. The speed, quality and innovative features of this printer are expected to result in considerable growth of this new product.

In the overseas market, DatagraphiX again installed more COM units than all other manufacturers combined. Our international subsidiaries showed marked growth and COM systems were installed for the first time in Hungary and Colombia, making a total of 1,763 COM centers in 47 countries where DatagraphiX equipment is providing outstanding service.

General Dynamics Communications

An operational review by William M. Lombardi, President

GDCC, with record sales and earnings for the second consecutive year, further solidified its position as the nation's largest independent specialist in telecommunications systems and services for business and industry.

As anticipated, the new Stromberg-Carlson System Century Digital Branch Exchange – marketed by GDCC as the Infotran – earned quick market acceptance. This telephone switching system is designed to function as a stand-alone Private Automatic Branch Exchange or serve as the core unit for a more sophisticated business network. Infotran accommodates voice and data communications and has the capacity required for medium-to-large systems.

Our digital Focus and Criterion PABXs set the pace in small-to-medium sized applications. These economical and compact telephone switching systems are perfect for businesses desiring the flexibility of stored program control and advanced system features, such as the Criterion's Automatic Call Distribution capability.

GDCC's network and information subsystem capabilities were enhanced with the acquisition of two firms: Com Dev, a Florida-based manufacturer of telephone information management systems, and Telephone Systems Management Corp. (TSM), a Philadelphia-based telephone data processing company. Com Dev's message accounting and control devices, Accountant and Callquest, are effective, cost-efficient systems for managing and controlling business communications expenses. TSM processes and compiles telephone call data and provides it to customers in hard-copy reports.

These acquisitions markedly strengthen GDCC's ability to provide microprocessor-based products and services for corporate networks and the electronic offices of the future.

At far right, General Dynamics Communications Company products are shown in service: (Top) Digital Branch Exchange can easily handle large volumes of calls. (Center) Receptionist training in the use of a Focus PBX console with GDCC instructor. (Bottom) The Accountant telephone message accounting machine monitors calling expenses.

DatagraphiX products are shown at near right: (Top) DeskMATE reader-in-a-drawer. (Center) High-resolution 132-B display terminal. (Bottom) Model 9800 off-line high-speed laser printer.

Consolidated Balance Sheet

Dollars in millions

Assets	31 December	
	1980	1979
Current Assets:		
Cash and equivalents	\$ 23.3	\$ 42.3
Accounts receivable:		
United States and other governments	96.3	71.8
Commercial customers	223.4	202.0
Contracts in process:		
Government contracts in process	600.0	475.6
Commercial programs in process	92.0	21.0
Inventory of commercial products, materials and spare parts	333.6	252.6
Prepaid expenses	23.4	12.8
Total Current Assets	1,392.0	1,078.1
Investments in Unconsolidated Subsidiaries	142.3	130.7
Other Assets	71.7	62.4
Property, Plant and Equipment, net	829.8	733.6
	<u>\$2,435.8</u>	<u>\$2,004.8</u>

Liabilities and Shareholders' Equity

Current Liabilities:		
Notes payable to banks	\$ 208.9	\$ 12.6
Current maturities of debt and capital lease obligations	8.9	11.9
Accounts payable	317.3	321.2
Accrued salaries and wages	117.3	82.8
Other accrued expenses	168.2	143.7
Provision for loss on SSN 688 program	100.7	146.6
Income taxes	5.8	6.1
Total Current Liabilities	927.1	724.9
Noncurrent Liabilities:		
Long-term debt less current maturities	47.5	53.3
Capital lease obligations less current maturities	11.4	13.6
Deferred income taxes	284.5	235.9
Other	75.9	60.1
Total Noncurrent Liabilities	419.3	362.9
Minority Shareholders' Equity in Subsidiary	61.2	61.1
Redeemable Preferred Stock	28.8	29.5
Common Shareholders' Equity	999.4	826.4
	<u>\$2,435.8</u>	<u>\$2,004.8</u>

The accompanying notes to consolidated financial statements are an integral part of this balance sheet.

Consolidated Statement of Earnings

Dollars in millions, except per share amounts

	Year ended 31 December		
	1980	1979	1978
Net Sales	\$4,742.7	\$4,059.6	\$3,205.2
Operating Costs and Expenses:			
Cost of sales	4,084.6	3,430.9	3,082.5
Selling and general and administrative	399.5	331.7	262.0
	<u>4,484.1</u>	<u>3,762.6</u>	<u>3,344.5</u>
Operating Profit (Loss)	258.6	297.0	(139.3)
Interest expense	(16.1)	(10.1)	(17.1)
Other income, net	16.1	9.3	5.2
Earnings (Loss) Before Minority Interest and Income Taxes	258.6	296.2	(151.2)
Minority interest	(1.5)	(6.1)	(4.1)
Provision for income taxes	(62.1)	(104.9)	107.2
Net Earnings (Loss)	<u>\$ 195.0</u>	<u>\$ 185.2</u>	<u>\$ (48.1)</u>
Net Earnings (Loss) Per Common Share	<u>\$ 3.58</u>	<u>\$ 3.43</u>	<u>\$ (.90)</u>

Consolidated Statement of Common Shareholders' Equity

Dollars in millions

	Common Stock		Retained Earnings	Treasury Stock	
	Shares	Amount		Shares	Amount
Balance, 1 January 1978	55,442,100	\$80.6	\$676.2	2,256,800	\$23.9
Net loss			(48.1)		
Stock options exercised		(.1)		(595,290)	(6.3)
Shares purchased, at cost				1,290,500	19.6
Shares issued under Incentive Compensation Plan		(.6)		(309,840)	(3.2)
Balance, 31 December 1978	55,442,100	79.9	628.1	2,642,170	34.0
Net earnings			185.2		
Cash dividends			(34.4)		
Stock options exercised			(.4)	(708,256)	(9.3)
Shares purchased, at cost				569,728	10.9
Shares issued under Incentive Compensation Plan .....		.2		(266,552)	(3.4)
Balance, 31 December 1979	55,442,100	80.1	778.5	2,237,090	32.2
Net earnings			195.0		
Cash dividends			(36.3)		
Stock options exercised		3.0		(482,200)	(6.9)
Shares acquired on exercise of stock options				15,576	.5
Conversions of Preferred Stock .....		.2		(31,217)	(.5)
Shares issued under Incentive Compensation Plan		1.5		(192,284)	(2.7)
Balance, 31 December 1980	<u>55,442,100</u>	<u>\$84.8</u>	<u>\$937.2</u>	<u>1,546,965</u>	<u>\$22.6</u>

The accompanying notes to consolidated financial statements are an integral part of these statements.

Consolidated Statement of Changes in Financial Position

Dollars in millions

	Year ended 31 December		
	1980	1979	1978
Sources of Working Capital:			
Net earnings (loss)	\$ 195.0	\$ 185.2	\$ (48.1)
Costs and expenses not requiring the use of working capital:			
Depreciation, depletion and amortization of property	117.8	100.1	95.9
Provision for deferred income taxes	48.6	98.4	(100.3)
Minority shareholders' equity in earnings of subsidiary	1.5	6.1	4.1
Other	20.2	13.2	(2.8)
Total provided by operations	383.1	403.0	(51.2)
Proceeds from stock options exercised	9.9	8.9	6.2
Proceeds from long-term borrowings and capital lease obligations	3.2	6.4	23.7
Preferred Stock issued	—	—	29.5
Other	5.7	8.0	5.1
Total provided from other sources	18.8	23.3	64.5
	<u>401.9</u>	<u>426.3</u>	<u>13.3</u>
Uses of Working Capital:			
Expenditures for property, plant and equipment	216.4	221.8	157.7
Dividends paid	36.3	34.4	—
Acquisition of receivables not currently due	13.3	10.1	6.3
Investments in unconsolidated subsidiaries	11.1	31.5	66.3
Current maturities and prepayments of long-term debt and capital lease obligations			
Capital lease obligations	8.8	11.0	8.6
Noncurrent assets arising from acquisitions	4.3	—	38.9
Treasury shares purchased, at cost	—	10.9	19.6
Payment of coal production payment	—	—	25.4
	<u>290.2</u>	<u>319.7</u>	<u>322.8</u>
Increase (Decrease) in Working Capital	<u>\$ 111.7</u>	<u>\$ 106.6</u>	<u>\$ (309.5)</u>
Changes in Major Elements of Working Capital:			
Cash and equivalents	\$ (19.0)	\$ (20.3)	\$ 15.3
Accounts receivable	45.9	33.7	78.3
Contracts in process	195.4	29.2	(126.2)
Inventories	81.0	31.3	40.1
Prepaid expenses	10.6	.6	3.5
Notes payable to banks	(196.3)	3.1	(13.1)
Current maturities of debt and capital lease obligations	3.0	.1	8.4
Accounts payable	3.9	(49.6)	(81.5)
Accrued salaries and wages	(34.5)	(9.0)	(12.0)
Other accrued expenses	(24.5)	(7.1)	10.0
Provision for loss on SSN 688 program	45.9	98.4	(245.0)
Income taxes .....	.3	(3.8)	12.7
	<u>\$ 111.7</u>	<u>\$ 106.6</u>	<u>\$ (309.5)</u>

The accompanying notes to consolidated financial statements are an integral part of this statement.

Notes to Consolidated Financial Statements

Dollars in millions, except per share amounts

A. Summary of Significant Accounting Policies

Principles of Consolidation. The consolidated financial statements include the accounts of all significant domestic and foreign subsidiaries except for domestic wholly owned finance and leasing subsidiaries, the investments in which are accounted for on the equity basis.

Sales and Earnings Under Long-Term Contracts and Programs. Cost type and major fixed-price type contracts and programs are accounted for under the percentage-of-completion method wherein sales and estimated earnings are recognized as work is performed. On certain other fixed-price contracts, sales and earnings are recorded when deliveries are made.

Rates used for recording sales and earnings are adjusted prospectively, based upon revisions in contract value and estimated cost at completion. Estimated losses are recorded in full when identified.

Contracts in Process. Contracts and programs in process accounted for under the percentage-of-completion method are stated at costs incurred plus estimated earnings, less amounts billed to customers. All other contracts and programs in process are stated at costs incurred less progress payments and amounts allocated to delivered units. The allocation of costs to delivered units is based upon the estimated average cost per unit at contract completion.

General and administrative expenses, including state and local income taxes, allocable to contracts and programs in process are included in cost of sales at time of sales recognition.

Consistent with industry practice, amounts relating to long-term contracts and programs are classified as current assets although a portion of these amounts is not expected to be realized within one year. Title to inventories under certain contracts and programs is vested in the customer in accordance with contract provisions.

Inventories. Inventories of commercial products, materials and spare parts are stated at the lower of cost, LIFO (last-in, first-out) and average, or market. The excess of current cost over inventories stated at LIFO cost was \$18.7 and \$14.6 at 31 December 1980 and 1979, respectively.

SSN 688 Program. In June 1978, the Corporation and the Navy reached a settlement for the Corpora-

tion's claims for cost overruns, estimated at \$843.0 on two contracts covering the construction of 18 SSN 688-class submarines. As a result, the Corporation recorded a loss of \$359.0 (\$187.0 net of tax) on the program. The liability (Provision for loss on SSN 688 program) represents the costs which will not be recoverable under the settlement and is being reduced as the costs are incurred.

Foreign Currency. The accounts of foreign subsidiaries are translated into U.S. dollars at the appropriate exchange rates. Exchange gains (losses) included in the determination of net earnings were \$2.5 in 1980, \$(.5) in 1979 and \$(4.8) in 1978.

Property, Plant and Equipment. The major classes of property, plant and equipment, at cost, follow:

	31 December	
	1980	1979
Land and improvements	\$ 88.6	\$ 80.9
Mineral areas	111.6	104.4
Buildings and improvements	238.0	220.9
Machinery and equipment	1,342.6	1,171.8
	<u>1,780.8</u>	<u>1,578.0</u>
Accumulated depreciation, depletion and amortization	951.0	844.4
	<u>\$ 829.8</u>	<u>\$ 733.6</u>

The Corporation uses accelerated methods of depreciation for the majority of its depreciable assets.

Plant facilities of certain divisions are provided by the U.S. Government.

Interest Cost. The Corporation adopted a policy effective 1 January 1980 of capitalizing interest cost on significant capital construction projects. Total interest cost incurred for 1980 was \$28.1 of which \$12.0 was capitalized and included in expenditures for property, plant and equipment.

Research and Development. Company-sponsored research and development costs, including proposal costs, are expensed as incurred and amounted to \$118.2 in 1980, \$99.0 in 1979 and \$86.0 in 1978.

Income Taxes. Investment tax credits are recognized as a reduction in income taxes in the year the related property is placed in service. Investment tax credits attributable to LNG tankers owned by unconsolidated

subsidiaries are included in the Corporation's provision for income taxes since, on a separate company basis, the tax benefits would not be utilized within the carryforward periods of these subsidiaries.

Employee Retirement Plan Costs. For trustee retirement plans an actuarial cost method is used under which the cost of the plans is funded over the estimated remaining service lives of the employees.

Earnings Per Share. Net earnings per common share are based upon the weighted average number of common shares outstanding during the year after appropriate provision for preferred dividends and giving effect to the Common Stock splits (see Note J). There was no material dilutive effect on net earnings per share due to Common Stock equivalents or other potentially dilutive securities.

B. Accounts Receivable, Contracts In Process and Inventories

At 31 December 1980, accounts receivable attributable to long-term contracts and programs amounted to \$99.0 of which approximately \$87.0 is due within one year.

Contracts in process at 31 December 1980 include \$546.0 of costs and profit accounted for under the percentage-of-completion method which will be due upon completion or acceptance of the contracted work. Approximately \$234.0 of this amount will be billable after one year. Advance and progress payments of \$3,825.0 and \$3,397.7 have been deducted from contracts in process at 31 December 1980 and 1979, respectively.

There are no significant amounts included in receivables or contracts in process for claims, deferred tooling and other deferred costs. In addition, there are no significant amounts of general and administrative costs included in inventories related to long-term contracts and programs.

Inventories of commercial products, materials and spare parts by major classification are:

	31 December	
	1980	1979
Finished goods	\$ 94.5	\$ 54.7
Work-in-process	85.8	67.3
Materials and supplies	158.3	134.9
Advance and progress payments ...	(5.0)	(4.3)
	<u>\$333.6</u>	<u>\$252.6</u>

C. Unconsolidated Finance and Leasing Subsidiaries

The Corporation's investment in unconsolidated finance and leasing subsidiaries is stated at cost plus equity in undistributed earnings since date of acquisition. Earnings of the subsidiaries are included in Other Income in the Consolidated Statement of Earnings.

Certain unconsolidated subsidiaries have financed the construction of liquefied natural gas tankers. Three of these subsidiaries own tankers which have been bareboat-chartered to nonrelated companies for a 25-year period commencing at their delivery dates in 1978 and 1979. Following is a summary of the comparative combined financial statements of these subsidiaries:

Combined Balance Sheet Data

	31 December	
	1980	1979
Assets		
Receivables on ship leases	\$378.6	\$383.5
Cash and other assets	—	6.9
	<u>\$378.6</u>	<u>\$390.4</u>

Liabilities and Shareholder's Equity

Title XI bonds and notes guaranteed by the U.S. Government, 7% to 11% with maturities through 2004	\$280.1	\$284.1
Other liabilities	5.2	10.4
Investment of parent company	93.3	95.9
	<u>\$378.6</u>	<u>\$390.4</u>

Combined Earnings Data

	Year ended 31 December		
	1980	1979	1978
Income	\$25.1	\$35.4	\$46.3
Interest, taxes and other expenses	24.0	34.6	46.2
Net earnings	<u>\$ 1.1</u>	<u>\$.8</u>	<u>\$.1</u>

Net interest expense (\$16.2 in 1979 and \$32.9 in 1978) incurred by the leasing companies during the period of construction is included as part of the cost of the ships.

The remaining unconsolidated subsidiaries finance notes and receivables for telephone and other equipment sold by certain consolidated subsidiaries of the Corporation. Following is a summary of the comparative combined financial statements of these subsidiaries:

Combined Balance Sheet Data

	31 December	
	1980	1979
Assets		
Notes receivable from independent telephone companies	\$111.7	\$127.4
Receivables on equipment leases and other notes	69.0	51.2
Cash and other assets	1.5	1.1
	<u>\$182.2</u>	<u>\$179.7</u>

Liabilities and Shareholders' Equity

Notes payable to insurance companies:		
4.25% to 10.60%, due in varying installments to 1993	\$ 91.0	\$100.1
9.30%, due 1992	32.0	34.7
Notes payable to banks	10.0	-
Other liabilities	9.9	10.6
Investment of and advances from parent companies	39.3	34.3
	<u>\$182.2</u>	<u>\$179.7</u>

Combined Earnings Data

	Year ended 31 December		
	1980	1979	1978
Income	\$20.9	\$19.6	\$19.7
Interest, taxes and other expenses	17.2	16.5	17.1
Net earnings	<u>\$ 3.7</u>	<u>\$ 3.1</u>	<u>\$ 2.6</u>

The Corporation has guaranteed payment of the 4.25% to 10.60% notes.

D. Notes Payable and Long-Term Debt

The Corporation and one of its finance subsidiaries may borrow up to \$200.0 under a bank credit agreement which expires on 31 March 1983 and \$150.0 under other lines of credit. Under the bank credit agreement, the companies are required to pay interest at the prime rate plus a fee on the balance of the unused commitment. At 31 December 1980, \$70.0 was outstanding under the bank credit agreement and \$100.0 was outstanding under other borrowing arrangements.

In addition, subsidiaries of the Corporation may borrow up to \$73.0 under other lines of credit at varying interest rates.

Under the \$200.0 bank credit agreement, the Corporation is expected to maintain average compensating cash balances equal to 5% of average bank loans outstanding plus 5% of the total available credit. Estimated average compensating balances were \$9.4 during 1980. There are no legal restrictions on the right to withdraw compensating balances.

Long-term debt consisted of the following:

	31 December	
	1980	1979
Obligations of General Dynamics Corporation and wholly owned subsidiaries:		
Installment purchase note at 9%, due 1988	\$14.2	\$15.4
Other-payable through 2004	18.9	22.9
	<u>33.1</u>	<u>38.3</u>
Obligations of Asbestos Corporation Limited (a 54.6%-owned subsidiary):		
Sinking fund debentures at 9.75%, due 1990	10.8	11.0
Bank loans payable through 1986	10.2	13.6
	<u>21.0</u>	<u>24.6</u>
Total General Dynamics Corporation and subsidiaries		
	54.1	62.9
Less current maturities	6.6	9.6
	<u>\$47.5</u>	<u>\$53.3</u>

The aggregate minimum payments required with respect to long-term debt are \$6.6, \$7.7, \$5.3, \$5.3 and \$5.4 for the years 1981 to 1985, respectively.

Under the bank credit agreement, \$339.6 of retained earnings at 31 December 1980 were free from dividend restrictions. The Corporation has complied with the restrictive covenants contained in the various debt agreements.

E. Contingencies

In June 1978, the Securities and Exchange Commission initiated a private investigation primarily to determine whether any violation of the Federal securities laws occurred as a result of the Corporation's accounting treatment of its SSN 688 and Trident submarine contracts, the disclosures regarding those contracts to its shareholders and the public and in reports filed with the Commission since approximately 1972, and the propriety of the SSN 688 claims filed with the Navy. The Corporation cannot predict what the full scope of the investigation, its duration, or its outcome will be. Management believes that all material financial and other information relating to its submarine programs have been fairly presented in its filings with the Commission and in the reports and disclosures to shareholders and to the public and that the SSN 688 claims filed with the Navy were proper.

The Corporation has agreed to make equity contributions of up to \$64.0 to its wholly owned subsidiary, Pantheon, Inc., which has a 40% interest in a partnership organized to own and operate two LNG tankers

under a 20-year contract. These contributions will provide Pantheon's share of the equity in the cost of the tankers plus working capital requirements. The tankers, which were constructed by the Corporation's Quincy Shipbuilding Division at a capitalized cost of \$286.9, were delivered in 1980 and will transport gas for a subsidiary of Panhandle Eastern Pipe Line Company.

At 31 December 1980, the Corporation had made equity contributions of \$11.1.

In addition, there were contingent liabilities with respect to guarantees, lawsuits and other matters arising in the ordinary course of business. In the opinion of management, no material liability exists with respect to these contingencies.

F. Income Taxes

The U.S. and Foreign income tax provisions are computed as follows:

	Year ended 31 December								
	1980			1979			1978		
	U.S.	Foreign	Total	U.S.	Foreign	Total	U.S.	Foreign	Total
Earnings (loss) before minority interest and income taxes	\$248.7	\$ 9.9	\$258.6	\$270.6	\$ 25.6	\$296.2	\$(164.3)	\$ 13.1	\$(151.2)
Tax provision at current tax rates on book income:									
Current	\$ 12.1	\$ 2.0	\$ 14.1	\$ —	\$ 7.8	\$ 7.8	\$ (3.8)	\$ (2.5)	\$ (6.3)
Deferred	100.4	1.4	101.8	124.5	2.1	126.6	(75.4)	6.2	(69.2)
Investment tax credits - deferred:									
LNG tankers	(10.0)	—	(10.0)	(10.5)	—	(10.5)	(20.7)	—	(20.7)
Other	(24.5)	—	(24.5)	(12.8)	—	(12.8)	(6.4)	—	(6.4)
Additional depletion allowances:									
Current	—	(.6)	(.6)	—	(1.3)	(1.3)	—	(.6)	(.6)
Deferred	(5.7)	—	(5.7)	(4.7)	—	(4.7)	(2.8)	—	(2.8)
Permanent deferral of DISC income	(13.0)	—	(13.0)	(.2)	—	(.2)	(1.2)	—	(1.2)
Provision for income taxes	\$ 59.3	\$ 2.8	\$ 62.1	\$ 96.3	\$ 8.6	\$104.9	\$(110.3)	\$ 3.1	\$(107.2)

The effective tax rate computed on total earnings before minority interest and income taxes, and before the 1978 SSN 688 settlement, was 24.0% in 1980, 35.4% in 1979 and 31.3% in 1978. The tax benefit on the SSN 688 loss was provided at 48%. All significant items which reduce the statutory rate to the effective rate have been reflected above.

U.S. income taxes and foreign withholding taxes (estimated at \$28.0 after utilization of foreign tax credits) which would be payable upon distribution of earnings of foreign subsidiaries and domestic international sales corporations have not been recognized, since the Corporation intends to continue investing those earnings in export activities and operations outside the United States. The undistributed earnings for which taxes have not been provided amount to \$121.3, of which \$101.9 is included in retained earnings.

The Corporation has a net operating loss carry-forward of \$1,181.5 expiring in various amounts from 1984 through 1987. Investment tax credits of \$127.9 are included in deferred income taxes and will expire in varying amounts during taxable years through 1987.

Deferred income taxes result primarily from the

completed contract method of accounting used for reporting taxable earnings on long-term contracts and are analyzed as follows:

	Year ended 31 December Provision (Credit)		
	1980	1979	1978
Completed contract method:			
Earnings on uncompleted contracts	\$ 88.8	\$112.4	\$ 86.6
Transitional adjustment	12.7	14.2	8.9
Loss on SSN 688 program	—	—	(172.3)
Other - U.S.	(1.1)	(2.1)	1.4
	100.4	124.5	(75.4)
Other - Foreign	1.4	2.1	6.2
	\$101.8	\$126.6	\$(69.2)

The Corporation's Federal income tax returns for 1975 and subsequent years are subject to review by the Internal Revenue Service.

The provision for state and local income taxes was \$8.9 in 1980, \$4.4 in 1979 and \$(4.1) in 1978 of which substantially all was current in 1980 and 1979 and deferred in 1978.

G. Rental Expenses and Lease Commitments

The Corporation has lease commitments expiring at various dates, principally for real property, data processing equipment and vehicles.

Minimum rental commitments under existing non-cancellable leases at 31 December 1980 are as follows:

	Capital Leases	Operating Leases
1981	\$ 3.4	\$ 29.6
1982	3.1	24.4
1983	2.9	17.3
1984	2.4	11.1
1985	1.4	9.9
1986 and thereafter	4.6	8.9
Total minimum lease payments	\$17.8	<u>\$101.2</u>
Less amounts representing interest	4.2	
Total capital lease obligations	13.6	
Less current maturities	2.2	
	<u>\$11.4</u>	

Rent expense, substantially all of which is minimum rentals, was \$47.3 in 1980, \$41.2 in 1979 and \$35.9 in 1978.

H. Stock Option and Incentive Compensation Plans

Under the Corporation's Stock Option Plan, "non-qualified" options may be granted for a term of not more than ten years. "Qualified" options have been issued in the past for a term of not more than five years. In addition, stock options have been granted to new employees in connection with their employment.

Information with respect to stock options is as follows:

	1980	1979
Number of shares under stock options:		
Outstanding at:		
beginning of year	2,719,750	2,732,950
Granted	546,728	731,600
Exercised	(482,200)	(708,256)
Cancelled	(14,410)	(36,544)
Outstanding at year-end	<u>2,769,868</u>	<u>2,719,750</u>
Exercisable at year-end	<u>2,082,552</u>	<u>1,789,269</u>
Aggregate price of shares under stock options:		
Granted during year	\$19.8	\$11.7
Exercised during year	\$ 4.5	\$ 5.5
Outstanding at year-end	<u>\$45.2</u>	<u>\$30.5</u>

At 31 December 1980, 1,313,319 shares have been reserved for options which may be granted in the future in addition to the shares reserved for issuance on the exercise of options outstanding.

Under its Incentive Compensation Plan, the Corporation may grant awards in any combination of cash, Common Stock and Common Stock contingently issuable in conjunction with the related grant of stock options under the Stock Option Plan to the extent the associated options are not exercised. At 31 December 1980, there were 574,842 shares of Common Stock contingently issuable. These shares are issuable at the rate of one share for each four shares of the outstanding options not exercised.

I. Employee Retirement Plan Costs

The Corporation and its subsidiaries have a number of trustee retirement plans covering substantially all employees. As of 1 January 1980, the date of the most recent actuarial determination, the actuarial-present value of vested and nonvested accumulated plan benefits (using an assumed rate of return of 6%) was \$719.7 and \$34.9, respectively. Net assets available for benefits were \$776.2. The cost of these plans was \$79.6 in 1980, \$76.1 in 1979 and \$67.6 in 1978. In addition to the above plans, the Corporation participates in various multiemployer pension plans the cost of which was \$14.7 in 1980, \$15.5 in 1979 and \$13.0 in 1978.

J. Common Shareholders' Equity

The authorized capital stock of the Corporation consists of 75,000,000 shares of \$1 par value Common Stock and 10,000,000 shares of \$1 par value Preferred Stock issuable in series, with the rights, preferences and limitations of each series to be determined by the Board of Directors.

On 2 October 1980, the Board of Directors authorized a Common Stock split in a ratio of 2 for 1 effective 17 October 1980. All share data, as appropriate, appearing in the financial statements and notes have been adjusted for stock splits.

Retained earnings at 31 December 1980 and 1979 include undistributed earnings of unconsolidated subsidiaries of \$21.9 and \$17.9, respectively.

K. Redeemable Preferred Stock

At 31 December 1980, 576,990 shares of "Series A Cumulative Convertible Preferred Stock" were issued and outstanding. The shares are stated at the mandatory redemption value of \$50 per share. Each share is entitled to \$50 plus accrued dividends upon liquidation; 2.27276 shares of Common Stock, upon conversion; and a cumulative annual dividend of \$4.25. If the Corporation fails to pay a quarterly preferred dividend, then no dividends may be paid or accrued on the Corporation's Common Stock, and no repurchase or redemption of the Common Stock may be made until all dividends accrued on the Preferred Stock have been paid or provided for. If the Corporation fails to pay the equivalent of six quarterly dividends, the preferred stockholders will have the right to elect two additional directors to serve until all preferred dividend arrearages are paid. Commencing 1 December 1983, 29,536 shares of the Preferred Stock must be redeemed and an additional 29,536 shares may be redeemed annually at \$50 per share, plus accrued dividends. At the Corporation's option, the remaining outstanding Preferred Stock may be redeemed, in whole or in part, at a premium on or after 1 December 1983.

L. Potential Expropriation of Asbestos Corporation Limited

Since 1977, the Corporation has contested the proposed takeover of its 54.6% interest in a Canadian subsidiary, Asbestos Corporation Limited (ACL) by the Quebec government.

While the provincial government has enacted an expropriation act which would allow it to take over ACL's Quebec assets immediately by the service of a notice of expropriation, ACL filed suit in the Superior Court of Quebec challenging the constitutionality of that law. In June 1980, the Superior Court sustained the constitutionality of the expropriation act and ACL immediately appealed the trial court's decision to the Quebec Court of Appeals. The Quebec Court of Appeals took the appeal under consideration in January 1981 and its decision in the case is anticipated during the first half of the year.

The Corporation's share of net earnings of ACL (in U.S. dollars) was \$1.3 in 1980, \$6.9 in 1979 and \$4.5 in 1978. The Corporation's equity in the net assets of ACL (in U.S. dollars) was \$78.7 at 31 December 1980.

M. Supplemental Information on the Effects of Inflation (Unaudited)

The information which follows presents the effect that inflation has had on selected financial data due to the decrease in the general purchasing power of the dollar in accordance with the requirements of Statement of Financial Accounting Standards No. 33. However, management believes that this information is not meaningful in interpreting this Corporation's results of operations since, historically, the Corporation has compensated for inflation through escalation provisions in its long-term contracts, price increases, increased productivity, efficiencies and other factors. The following information reflects the effect of general inflation as measured by the Consumer Price Index for all Urban Consumers:

	Year ended 31 December (in average 1980 dollars)	
	1980	1979
Net earnings	\$ 195.0	\$ 210.2
Adjustments to operating costs and expenses:		
Depreciation	(39.9)	(33.7)
Other	(13.4)	(13.5)
Net earnings adjusted for general inflation	\$ 141.7	\$ 163.0
Gain from decline in purchasing power of net amounts owed	\$ 20.2	\$ 15.4
Net assets at year-end	\$ 1,280.9	\$ 1,168.7

	1980	1979	1978	1977	1976
Net sales	\$4,742.7	\$4,608.6	\$4,048.3	\$3,945.0	\$3,696.2
Per share:					
Earnings	\$2.59	\$3.01	—	—	—
Dividends	\$.63	\$.68	—	—	—
Market price	\$40%	\$34%	\$20%	\$12%	\$15%
Average consumer price index	246.8	217.4	195.4	181.5	170.5
Net earnings adjusted for general inflation excludes adjustments to the provision for income taxes included in net earnings. All adjustments for general inflation are net of minority shareholders' interests.					

The current cost method of measuring the effects of inflation on net earnings for 1980 and 1979 approximates net earnings as adjusted for general inflation.

N. Summary of Business Segment Information

The Corporation operates in four principal business segments within the United States and one in Canada:

Government Aerospace. Design, engineering and manufacturing of military aircraft, missiles and gun systems, space systems, and their related subassemblies and components.

Government Shipbuilding. Design, engineering, construction, overhaul and conversion of submarines.

Commercial Shipbuilding. Construction of surface vessels.

Telecommunications. Manufacturing of a wide variety of telecommunications equipment.

Asbestos. Mining and milling of asbestos in Canada.

Other. Production of commercial aircraft subassemblies; quarrying and production of building products and lime; mining of coal; design and production of computer-generated microfilm equipment and various defense electronic systems and products.

The following tables summarize business segment data:

	Sales			Operating Profit (Loss)			Sales to U.S. Government		
	1980	1979	1978	1980	1979	1978	1980	1979	1978
Government Aerospace.....	\$2,517.4	\$1,934.6	\$1,326.8	\$ 173.7	\$ 116.3	\$ 91.0	\$2,515.8	\$1,934.0	\$1,321.4
Government Shipbuilding.....	901.9	677.9	655.0	23.4	18.8	(337.7)	897.8	674.5	653.8
Commercial Shipbuilding.....	175.5	255.5	286.6	.7	47.7	35.1	—	—	—
Telecommunications.....	261.6	270.7	183.5	(10.2)	12.8	(2.5)	16.1	9.6	10.2
Asbestos.....	97.7	147.1	129.6	2.9	20.6	17.5	—	—	—
Other.....	788.6	773.8	623.7	68.1	80.8	57.3	83.7	116.0	107.9
	<u>\$4,742.7</u>	<u>\$4,059.6</u>	<u>\$3,205.2</u>	<u>\$ 258.6</u>	<u>\$ 297.0</u>	<u>\$ (139.3)</u>	<u>\$3,513.4</u>	<u>\$2,734.1</u>	<u>\$2,093.3</u>

	Identifiable Assets			Capital Expenditures			Depreciation, Depletion and Amortization		
	1980	1979	1978	1980	1979	1978	1980	1979	1978
Government Aerospace.....	\$ 547.5	\$ 461.8	\$ 366.9	\$ 57.2	\$ 45.7	\$ 35.2	\$ 18.9	\$ 12.6	\$ 7.0
Government Shipbuilding.....	507.6	393.3	331.2	31.4	68.9	34.3	27.0	19.7	20.0
Commercial Shipbuilding.....	74.4	65.9	134.5	.5	.7	2.0	11.6	14.7	17.7
Telecommunications.....	217.7	178.9	156.9	8.5	7.7	4.7	6.0	4.4	4.2
Asbestos.....	273.0	247.8	240.5	12.4	20.2	18.4	10.9	10.7	12.2
Other.....	586.3	438.5	350.1	87.7	61.1	48.6	29.8	26.0	25.2
Corporate.....	229.3	218.6	198.6	18.7	17.5	14.5	13.6	12.0	9.6
	<u>\$2,435.8</u>	<u>\$2,004.8</u>	<u>\$1,778.7</u>	<u>\$ 216.4</u>	<u>\$ 221.8</u>	<u>\$ 157.7</u>	<u>\$ 117.8</u>	<u>\$ 100.1</u>	<u>\$ 95.9</u>

Auditors' Report

To the Shareholders and Board of Directors of General Dynamics Corporation:

We have examined the consolidated balance sheet of General Dynamics Corporation (a Delaware corporation) and subsidiaries as of 31 December 1980, and 1979, and the related consolidated statements of earnings, common shareholders' equity and changes in financial position for each of the three years in the period ended 31 December 1980. Our examinations were made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. We did not examine the financial statements of Asbestos Corporation Limited, a 54.6% owned consolidated subsidiary, which statements reflect approximately 11% and 12% of the total consolidated assets as of 31 December 1980, and 1979, respectively. These statements were examined by other auditors whose reports thereon have been furnished to us, and our opinion expressed herein, insofar as it relates to the amounts included for Asbestos Corporation Limited, is based solely upon the reports of the other auditors.

In our opinion, based upon our examinations and the reports of other auditors referred to above, the consolidated financial statements referred to above present fairly the financial position of General Dynamics Corporation and subsidiaries as of 31 December 1980, and 1979, and the results of their operations and the changes in their financial position for each of the three years in the period ended 31 December 1980, in conformity with generally accepted accounting principles applied on a consistent basis.

St. Louis, Missouri,
5 February 1981.

ARTHUR ANDERSEN & CO.

Quarterly Data

Dollars in millions, except per share amounts

	Sales	Operating Profit	Net Earnings	Per Share	Common Stock		
					Market Price Range		Dividends Paid
1980					High	Low	
4th Quarter...	\$1,294.6	\$66.8	\$52.6	\$.96	\$44 $\frac{1}{2}$	\$29 $\frac{1}{2}$	\$.18
3rd Quarter...	1,198.2	62.4	51.7	.95	38 $\frac{1}{2}$	32 $\frac{1}{2}$	.15
2nd Quarter...	1,179.8	77.3	54.4	1.00	36 $\frac{1}{2}$	29 $\frac{1}{2}$	.15
1st Quarter...	1,070.1	52.1	36.3	.67	42 $\frac{1}{2}$	25 $\frac{1}{2}$	.15
1979							
4th Quarter...	\$1,086.1	\$82.9	\$57.7	\$1.07	\$30 $\frac{1}{2}$	\$20	\$.15
3rd Quarter...	1,060.5	86.3	50.1	.93	22 $\frac{1}{2}$	15	.15
2nd Quarter...	1,017.4	83.0	47.9	.89	17 $\frac{1}{2}$	13 $\frac{1}{2}$	.15
1st Quarter...	895.6	44.8	29.5	.54	18 $\frac{1}{2}$	14 $\frac{1}{2}$	.15

General Dynamics Corporation will furnish to any shareholder a copy of its Form 10-K Report which is filed annually with the Securities and Exchange Commission. A copy of this report for 1980 may be obtained upon written request to John P. Maguire, Secretary, General Dynamics Corporation, Pierre Laclède Center, St. Louis, Missouri 63105.

Transfer Agents**Common Stock**

Bradford Trust Company, New York, New York
The First Jersey National Bank,
Jersey City, New Jersey
The First National Bank of Chicago,
Chicago, Illinois
Bank of America NT & SA,
San Francisco, California
Montreal Trust Company, Montreal, Canada
General Dynamics Corporation,
St. Louis, Missouri

Preferred Stock

General Dynamics Corporation,
St. Louis, Missouri

Registrars**Common Stock**

Bradford Trust Company, New York, New York
The First Jersey National Bank,
Jersey City, New Jersey
American National Bank and Trust
Company of Chicago, Chicago, Illinois
Bank of America NT & SA,
San Francisco, California
The Royal Trust Company, Montreal, Canada
Mercantile Trust Company N.A.,
St. Louis, Missouri

Preferred Stock

Mercantile Trust Company N.A.,
St. Louis, Missouri

Stock Exchange Listings**Common Stock**

New York Stock Exchange
Midwest Stock Exchange
Pacific Stock Exchange
Montreal Stock Exchange

Preferred Stock

New York Stock Exchange

1980	1979	1978	1977	1976	1975	1974	1973	1972	1971
\$ 4,742.7	\$ 4,059.6	\$ 3,205.2	\$2,901.2	\$2,553.5	\$2,160.0	\$1,968.4	\$1,641.8	\$1,539.4	\$1,868.8
4,484.1	3,762.6	2,985.5	2,709.1	2,383.3	2,023.3	1,856.0	1,563.5	1,480.5	1,813.0
16.1	10.1	17.1	10.8	17.2	23.7	23.1	17.4	19.9	21.3
62.1	104.9	65.1	79.3	53.3	47.7	35.1	24.8	14.8	15.5
195.0	185.2	138.6	103.4	99.6	81.1	50.9	38.3	26.4	20.2
—	—	(186.7)	—	—	—	—	—	—	—
—	—	—	—	—	3.4	1.3	1.0	(1.8)	1.4
195.0	185.2	(48.1)	103.4	99.6	84.5	52.2	39.3	24.6	21.6
3.58	3.43	2.59	1.90	1.82	1.52	.98	.73	.50	.39
—	—	(3.49)	—	—	—	—	—	—	—
—	—	—	—	—	.07	.02	.02	(.03)	.02
3.58	3.43	(.90)	1.90	1.82	1.59	1.00	.75	.47	.41
.63	.60	—	—	—	—	—	—	—	—
\$ 464.9	\$ 353.2	\$ 246.5	\$ 556.1	\$ 325.5	\$ 258.1	\$ 187.0	\$ 191.9	\$ 180.8	\$ 157.5
829.8	733.6	613.6	549.8	543.4	480.0	384.6	335.2	337.9	329.5
2,435.8	2,004.8	1,778.7	1,601.1	1,457.2	1,338.1	1,181.0	984.6	1,009.3	1,164.6
47.5	53.3	58.0	39.2	64.2	115.1	91.1	115.0	129.4	129.3
11.4	13.6	12.6	13.3	14.0	4.6	4.7	—	—	—
28.8	29.5	29.5	—	—	—	—	—	—	—
999.4	826.4	674.0	732.9	644.2	544.7	449.4	397.5	360.1	335.2
18.54	15.54	12.76	13.78	11.86	10.07	8.61	7.60	6.83	6.36
\$ 216.4	\$ 221.8	\$ 157.7	\$ 103.1	\$ 146.4	\$ 167.9	\$ 107.6	\$ 50.2	\$ 62.8	\$ 60.5
117.8	100.1	95.9	94.4	81.2	59.7	50.0	46.7	48.4	47.0
1,616.3	1,461.5	1,244.2	1,155.8	1,009.8	835.8	781.9	713.4	710.0	766.7
10,407.3	11,497.7	10,060.0	6,360.4	5,305.1	4,619.6	3,510.7	2,768.3	2,022.4	1,516.8
53.7	53.3	53.5	54.4	54.6	53.2	52.2	52.5	52.7	52.7
84,400	81,600	77,100	73,300	71,600	63,800	63,600	62,400	60,900	66,900
34,420	31,722	30,384	35,866	38,289	44,887	51,836	51,555	52,699	56,268

Directors and Officers**Board of Directors**

David S. Lewis
Chairman

Thomas G. Ayers
Former Chairman
Commonwealth Edison Co.
Chicago, Illinois

James M. Beggs
Executive Vice President

Oliver C. Boileau
President

Donald C. Cook
General Partner
Lazard Freres & Co.
Investment Banking
New York, New York

Henry Crown
Chairman
Henry Crown & Co.
Chicago, Illinois

Lester Crown
Executive Vice President

Nathan Cummings
Honorary Chairman
Consolidated Foods Corporation
New York, New York

Milton Falkoff
Financial Consultant
Chicago, Illinois

Guy W. Fiske
Executive Vice President

Albert E. Jenner, Jr.
Senior Partner
Jenner & Block
Attorneys
Chicago, Illinois

Earl D. Johnson
Business and
Financial Consultant
Greenwich, Connecticut

Harvey E. Kapnick
Former Chairman
Arthur Andersen & Co.
Chicago, Illinois

Edward E. Lynn
Vice President
and General Counsel

Gorden E. MacDonald
Executive Vice President

Robert W. Reneker
Former Chairman
Esmark, Inc.
Chicago, Illinois

Elliot H. Stein
President
Scherck, Stein & Franc, Inc.
Investment Brokerage
St. Louis, Missouri

P. Takis Veliotis
Executive Vice President

Executive Committee

Henry Crown
Chairman

Oliver C. Boileau

Nathan Cummings

Albert E. Jenner, Jr.

David S. Lewis

Gorden E. MacDonald

Robert W. Reneker

Officers

David S. Lewis
Chairman and Chief Executive Officer

Oliver C. Boileau
President

James M. Beggs
Executive Vice President-Aerospace

Lester Crown
Executive Vice President
President, Material Service Corporation

Guy W. Fiske
Executive Vice President-Commercial

Gorden E. MacDonald
Executive Vice President-Finance

P. Takis Veliotis
Executive Vice President-Marine
General Manager, Electric Boat

Richard E. Adams
Vice President
General Manager, Fort Worth

Leonard F. Buchanan
Vice President
General Manager, Convair

James J. Cunnane
Vice President-Controller

Otto J. Glasser
Vice President-International
(Washington)

Ralph E. Hawes
Vice President
General Manager, Pomona

Lyman C. Josephs
Vice President-International

Edward J. LeFevre
Vice President-Government Relations

Edward E. Lynn
Vice President and General Counsel

Warren G. Sullivan
Vice President-Industrial Relations

Wayne Wells
Vice President and Treasurer

Robert H. Widmer
Vice President-Science and Engineering

Frederick S. Wood
Vice President-Contracts and Pricing

John P. Maguire
Secretary

Principal Divisions and Subsidiaries**Aerospace**

Convair
5001 Kearny Villa Road
San Diego, California 92123

Electronics
5011 Kearny Villa Road
San Diego, California 92123

Fort Worth
North Grants Lane
Fort Worth, Texas 76108

Pomona
1675 West Mission Boulevard
Pomona, California 91766

Marine

Electric Boat
Eastern Point Road
Groton, Connecticut 06340

Quincy Shipbuilding
97 East Howard Street
Quincy, Massachusetts 02169

Building Products and Resources

Asbestos Corporation Limited
1155 Metcalfe Street
Montreal, Quebec, Canada H3B 2X6

Freeman United Coal Mining Company
300 West Washington Street
Chicago, Illinois 60606

Marblehead Lime Company
300 West Washington Street
Chicago, Illinois 60606

Material Service Corporation
300 West Washington Street
Chicago, Illinois 60606

Telecommunications and Information Systems

American Telecommunications Corporation
9620 Flair Drive
El Monte, California 91731

Datagraphix, Inc.
10981 San Diego Mission Road
San Diego, California 92108

General Dynamics Communications Company
12101 Woodcrest Executive Drive
St. Louis, Missouri 63141

Stromberg-Carlson Corporation
1000 North Ashley Drive
Tampa, Florida 33601

General Dynamics Corporation

Pierre Laclède Center, St. Louis, Missouri 63105

GENERAL DYNAMICS

Marine Operations

U.S. INITIATIVE

A GOVERNMENT-SUPPORTED U.S./WEST GERMAN
CONSORTIUM TO FINANCE, BUILD, OWN, OPERATE AND
MANAGE A SUBMARINE LIQUEFIED NATURAL GAS
TRANSPORTATION SYSTEM

GENERAL DYNAMICS
CORPORATION

SUBMARINE DELIVERY OF ARCTIC GAS TO EUROPE PROVIDES:

- **EFFECTIVE INSTRUMENT OF U.S. FOREIGN POLICY**
- **INCREASED ENERGY INDEPENDENCE FOR NATO ALLIANCE**
- **POSITIVE INFLUENCE ON BALANCE OF PAYMENTS**
- **MAJOR INITIATIVE FOR INDUSTRIAL GROWTH**

EFFECTIVE INSTRUMENT OF U.S. FOREIGN POLICY

- **DENY SOVIET ECONOMIC/POLITICAL INFLUENCE OVER WESTERN ALLIES**
- **DENY SUBSIDIZED FINANCING OF MAJOR SOVIET INFRASTRUCTURE PROJECT**
- **DENY SOVIET ACCESS TO ADVANCED TECHNOLOGY**
- **STRENGTHEN U.S. AND NATO INTERDEPENDENCE**
- **DE FACTO STATEMENT OF INDEPENDENCE FROM OPEC**
- **INCREASE U.S. PRESENCE IN ARCTIC REGIONS**

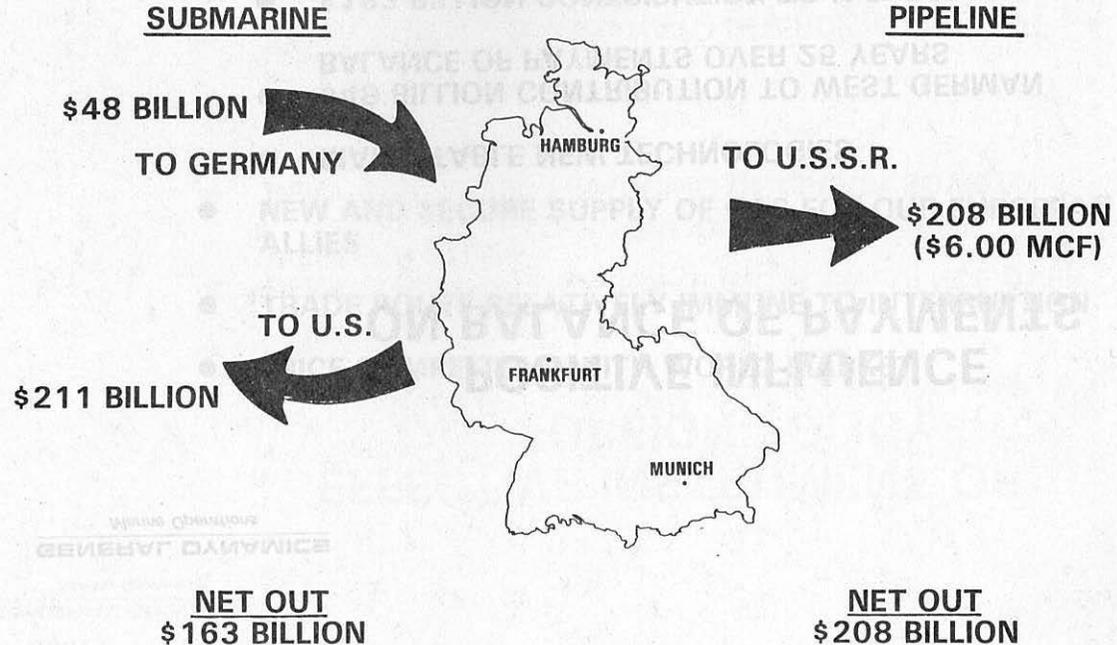
INCREASED ENERGY INDEPENDENCE FOR NATO ALLIANCE

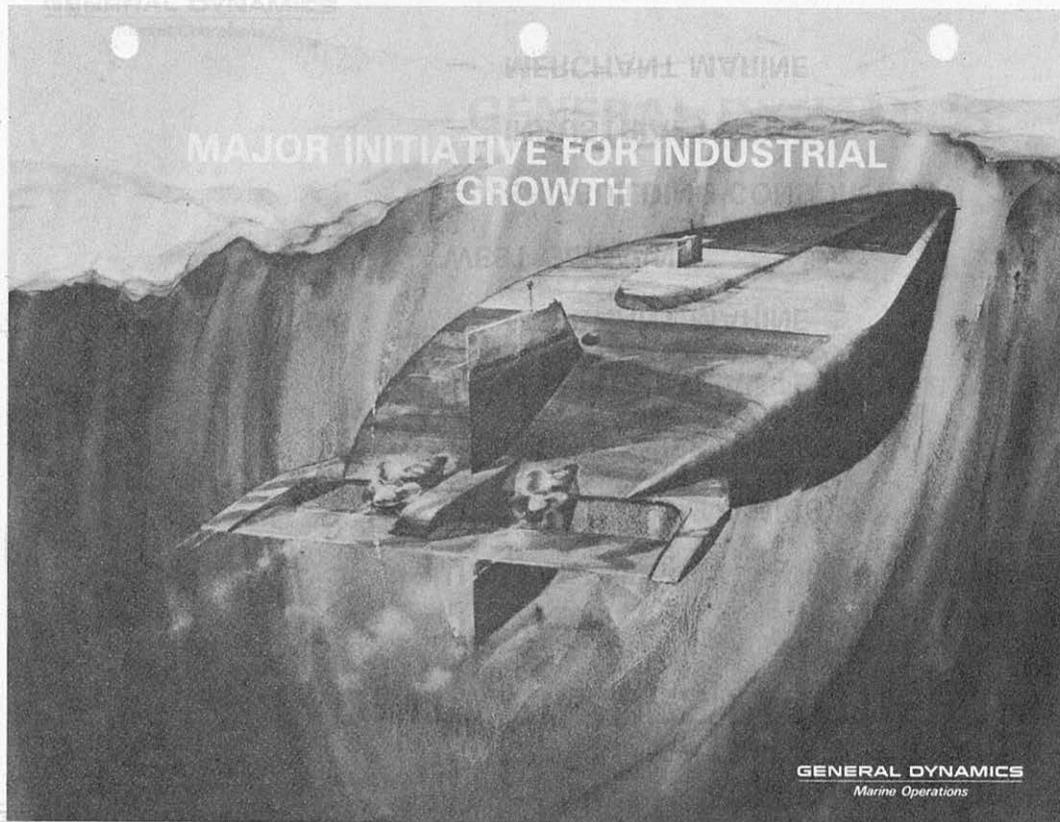
- NEW AND SECURE SUPPLY OF GAS FOR OUR EUROPEAN ALLIES
- TRADE ROUTE RELATIVELY IMMUNE TO INTERRUPTION
- PRICE COMPETITIVE WITH WORLD MARKET

POSITIVE INFLUENCE ON BALANCE OF PAYMENTS

- **MARKETABLE NEW TECHNOLOGIES**
- **\$48 BILLION CONTRIBUTION TO WEST GERMAN
BALANCE OF PAYMENTS OVER 25 YEARS**
- **\$163 BILLION CONTRIBUTION TO U.S. BALANCE OF
PAYMENTS AFTER 25 YEARS**

POSITIVE INFLUENCE ON BALANCE OF PAYMENTS





MAJOR INITIATIVE FOR INDUSTRIAL
GROWTH

GENERAL DYNAMICS
Marine Operations

JOINT VENTURE PARTNERSHIP

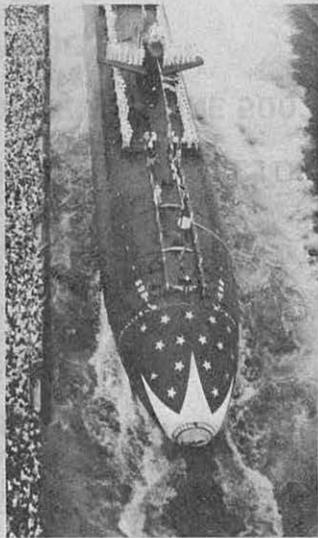
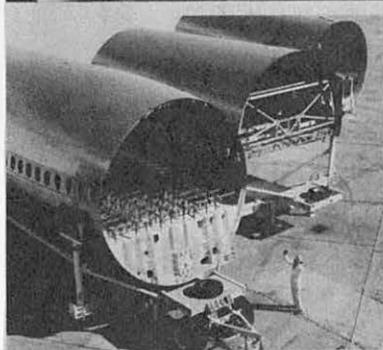
- U.S. PARTNER
 - GENERAL DYNAMICS
 - OTHER SHIPBUILDERS
 - U.S. INDUSTRIAL TEAM
 - MERCHANT MARINE
- WEST GERMAN
 - SHIPBUILDING CONSORTIUM
 - INDUSTRIAL PARTNERS
 - MERCHANT MARINE

GENERAL DYNAMICS

- **NUMBER 1 U.S. DEFENSE CONTRACTOR**
- **RANKED IN TOP 100 OF FORTUNE 500**
- **1980 SALES — \$4.7 BILLION**
- **1980 BACKLOG — \$10.4 BILLION**
- **1980 ASSETS — \$2.4 BILLION**
- **EMPLOYEES — 84,400**

GENERAL DYNAMICS

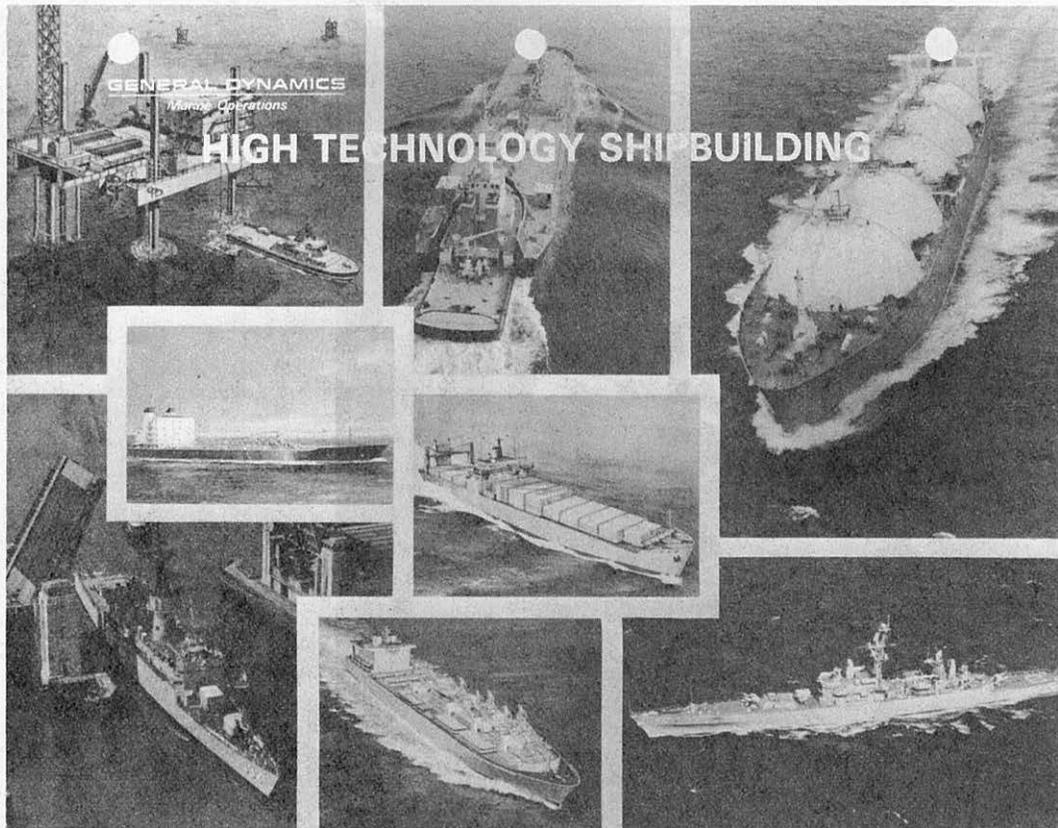
GENERAL DYNAMICS



GENERAL DYNAMICS

GENERAL DYNAMICS

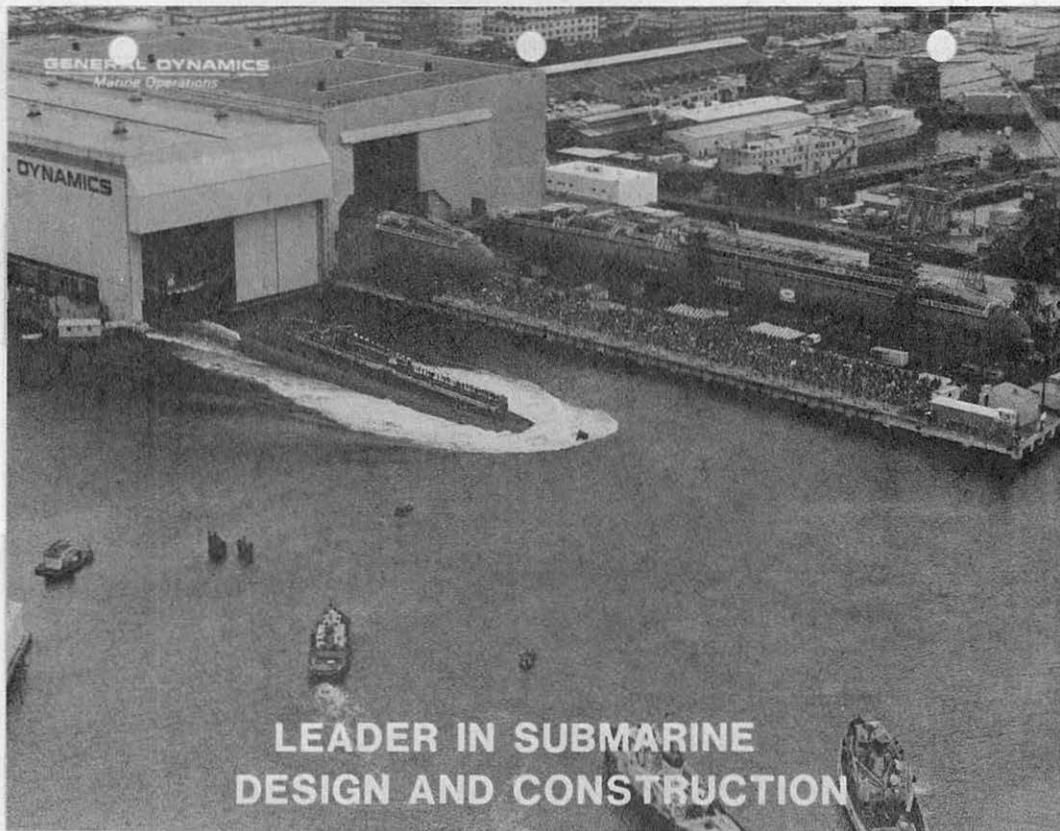




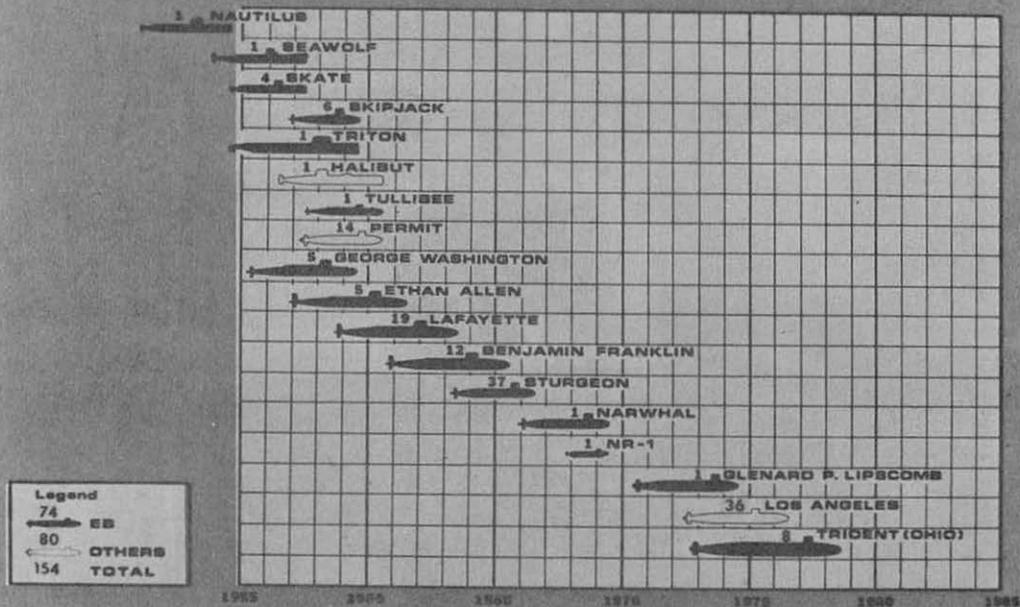
GENERAL DYNAMICS
Marine Operations

PROVEN PERFORMANCE

- TEN SHIPS DELIVERED
- 449 CARGO TRIPS
- 56,214,400 M³ OF LNG TRANSPORTED TO DATE



NUCLEAR POWERED SUBMARINES



GENERAL DYNAMICS

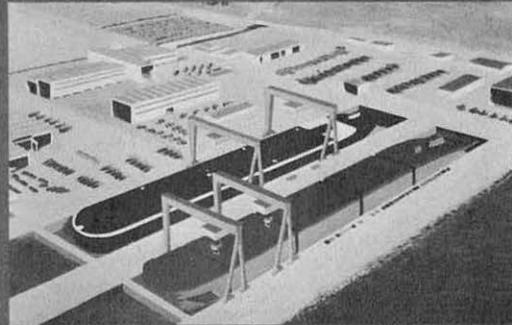
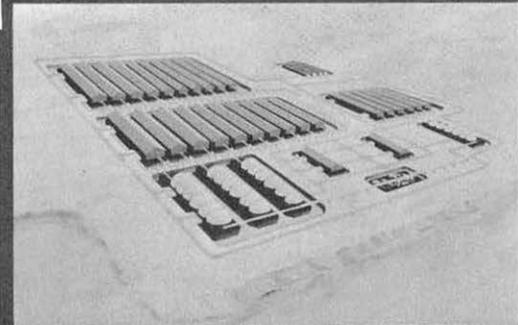
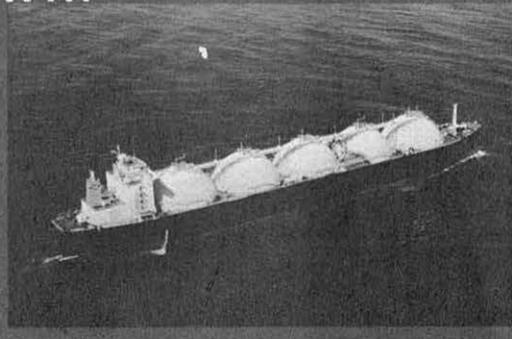
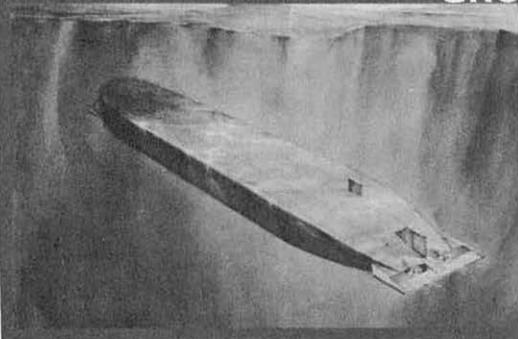
SSBN 726 — 'OHIO'
TRIDENT MISSILE SUBMARINE

- LENGTH: 560 FEET
- DISPLACEMENT: 16,600 SURFACED
18,700 SUBMERGED
- 24 TRIDENT MISSILES
- DELIVERED OCTOBER 1981

GENERAL DYNAMICS

Marine Operations

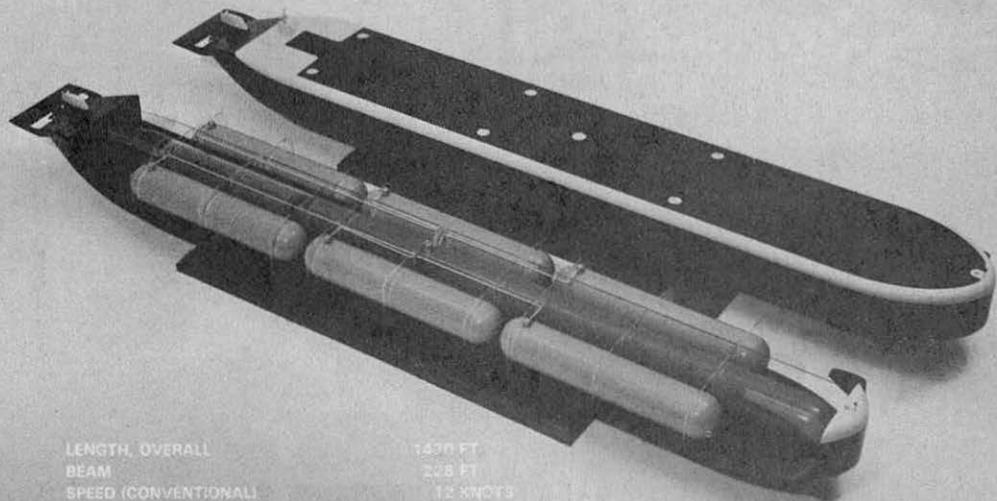
MAJOR INITIATIVE FOR INDUSTRIAL GROWTH



GENERAL DYNAMICS

Marine Operations

MAJOR INITIATIVE FOR INDUSTRIAL GROWTH



LENGTH, OVERALL

1430 FT.

BEAM

228 FT.

SPEED (CONVENTIONAL)

12 KNOTS

COLLAPSE DEPTH

1000 FT.

MAX. OPERATING DEPTH

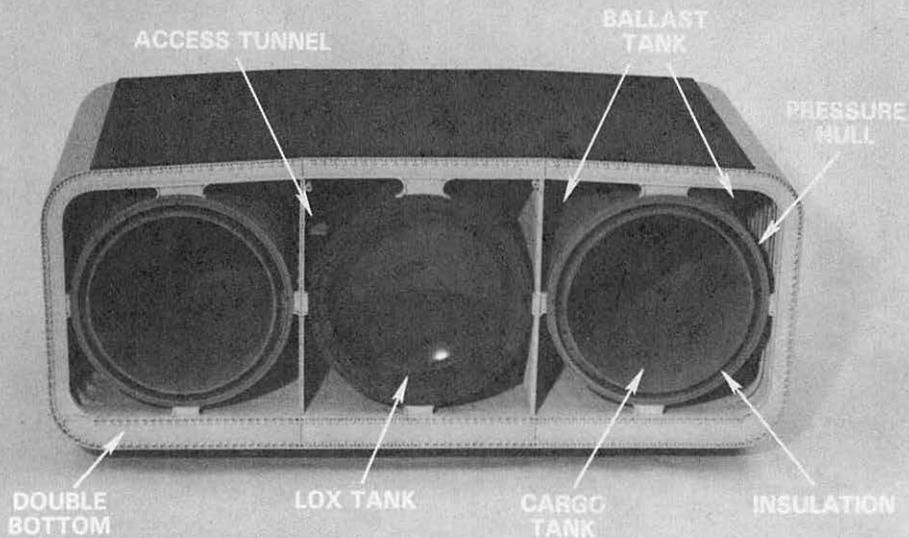
500 FT.

SUBMERGED DISPLACEMENT

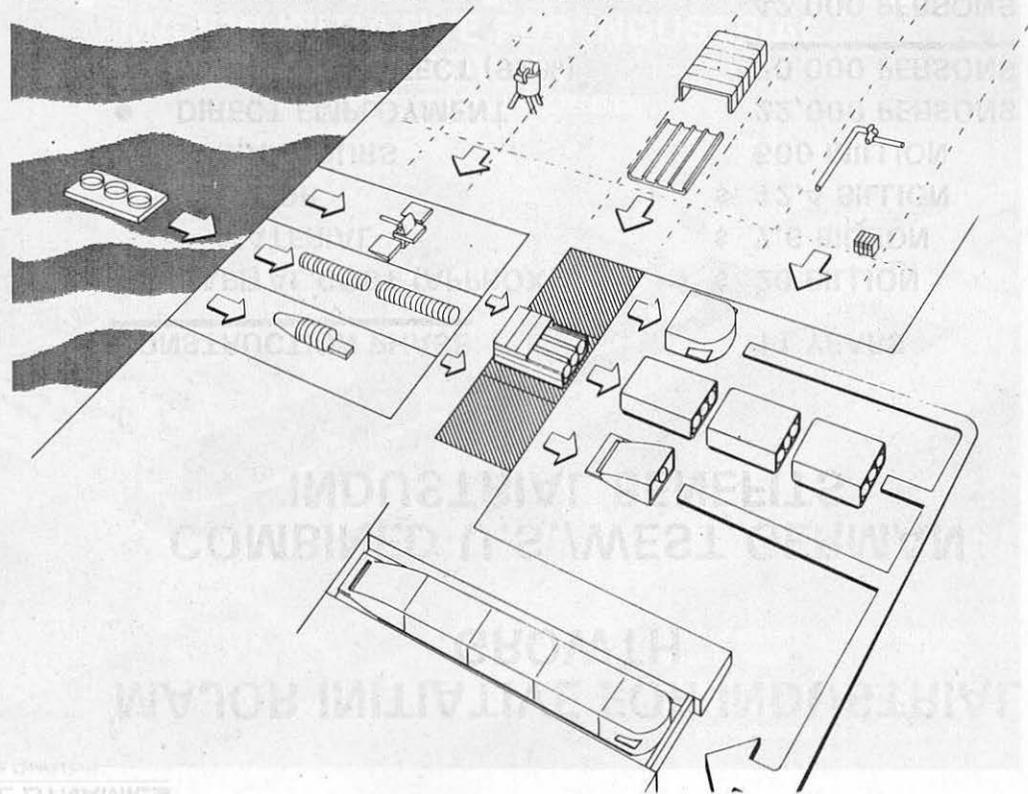
847,738 L.T.

GENERAL DYNAMICS
Marine Operations

MAJOR INITIATIVE FOR INDUSTRIAL GROWTH



PRODUCTION LINE FLOW



MAJOR INITIATIVE FOR INDUSTRIAL GROWTH

COMBINED U.S./WEST GERMAN INDUSTRIAL BENEFITS

CONSTRUCTION PHASE

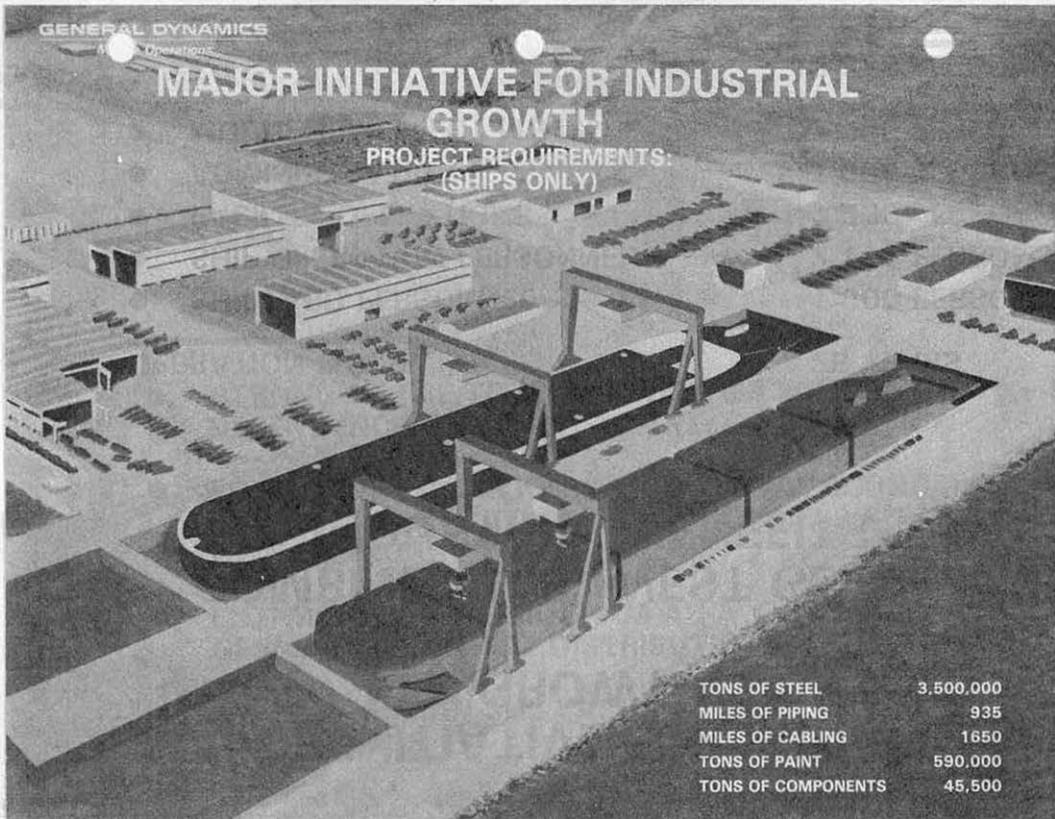
11 YEARS

● CAPITAL COST (APPROX)	\$ 20 BILLION
— MATERIAL	\$ 7.6 BILLION
— LABOR	\$ 12.4 BILLION
— MANHOURS	500 MILLION
● DIRECT EMPLOYMENT	22,000 PERSONS
● MULTIPLIER EFFECT (92%)	<u>20,000 PERSONS</u>
	<u><u>42,000 PERSONS</u></u>

GENERAL DYNAMICS

MAJOR INITIATIVE FOR INDUSTRIAL GROWTH

PROJECT REQUIREMENTS:
(SHIPS ONLY)



TONS OF STEEL	3,500,000
MILES OF PIPING	935
MILES OF CABLING	1650
TONS OF PAINT	590,000
TONS OF COMPONENTS	45,500

MAJOR INITIATIVE FOR INDUSTRIAL GROWTH

COMBINED U.S./WEST GERMAN INDUSTRIAL BENEFITS

OPERATION PHASE

25 YEARS

- SHIPYARD PERSONNEL 1,000 PERSONS
- SHIP OPERATION PERSONNEL 2,100 PERSONS
- FACILITY OPERATIONS 1,250 PERSONS
- ADMINISTRATION 1,000 PERSONS
- MULTIPLIER EFFECT (131%) 7,000 PERSONS

12,350 PERSONS

GENERAL DYNAMICS

Marine Operations

REACTION BY GERMAN INDUSTRY

- **STRONG DESIRE TO AVOID FURTHER ENERGY DEPENDENCE ON SOVIET UNION**
 - **POSITIVE RECOGNITION OF INDUSTRIAL ECONOMIC AND SOCIAL BENEFITS TO GERMANY VIS-A-VIS SOVIET-OWNED AND OPERATED PIPELINE**
 - **ENTHUSIASM FOR PROGRAM AS A WAY TO BALANCE GERMAN INDUSTRIAL DISTRIBUTION**
- **ALL GERMAN SHIPYARDS AT NEAR CAPACITY FOR 11 YEARS**

GENERAL DYNAMICS

Marine Operations

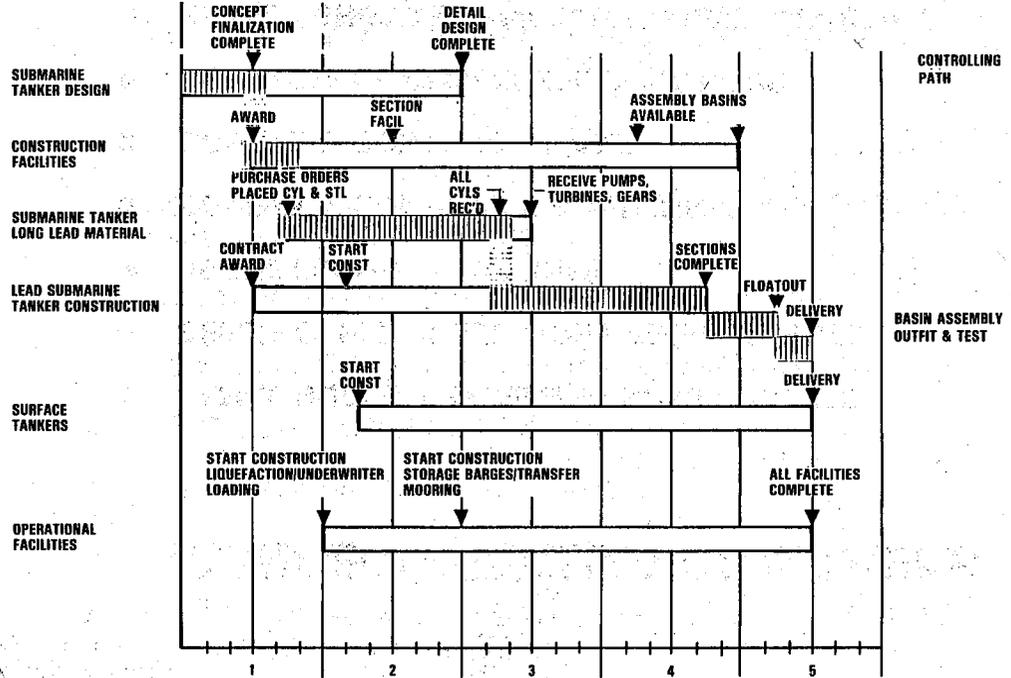
GERMAN INDUSTRIAL POSITION

**GERMAN INDUSTRY AND SHIPYARDS ARE EAGER TO
COOPERATE IN A JOINT VENTURE EFFORT TO URGE
CONSIDERATION OF LNG SUBMARINE PROGRAM PRIOR TO
FINALIZATION OF SOVIET PIPELINE PROJECT**

GENERAL DYNAMICS

Marine Operations

PROGRAM PLAN/CONTROLLING PATH



CONCEPT FINALIZATION TASKS

- **DEFINE NUCLEAR LICENSING REQUIREMENTS**
- **DEFINE OTHER REGULATORY REQUIREMENTS**
- **REFINE ECONOMIC STUDIES**
- **COMPLETE CONFIGURATION DEFINITION**
- **COMPLETE CONTRACT PLANS**
- **COMPLETE CONTRACT SPECIFICATIONS**
- **SURVEY SHIPYARD AND INDUSTRIAL CAPACITY**
- **COMPLETE FULL DEVELOPMENT OF MANUFACTURING AND FACILITIES PLAN**

CONCEPT FINALIZATION TASKS (CONT'D)

- **COMPLETE MODEL TESTING TO CONFIRM SHIP CONTROL AND HOVERING DYNAMICS**
- **DYNAMIC MODEL SOFTWARE DEVELOPMENT**
- **COMPLETE COMPONENT PURCHASE SPECIFICATIONS**
- **SCOPE SUBCONTRACT TASKS**
- **RELEASE PURCHASE INQUIRIES**
- **DEFINE TRANSPONDER REQUIREMENTS AND TEST**
- **COMPLETE DETAIL DESIGN AND MODEL TEST CARGO TRANSFER MATING SYSTEM**

REQUESTED ACTION FROM U.S. GOVERNMENT

- **IMMEDIATELY INITIATE DISCUSSIONS WITH GERMAN GOVERNMENT PROPOSING U.S. GAS TO GERMANY AS ALTERNATIVE TO INCREASED DEPENDENCE ON SOVIET GAS SUPPLY**
- **FUND CONCEPT FINALIZATION**
- **MAKE U.S. GAS RESERVES AVAILABLE FOR EXPORT AS MEANS TO IMPLEMENT AND STRENGTHEN FOREIGN POLICY**
- **PROVIDE CONVENTIONAL MEANS OF SUPPORT TO ENCOURAGE PROJECT IMPLEMENTATION**

GENERAL DYNAMICS

Marine Operations

LNG SUBMARINE TRANSPORTATION OF GAS FROM U.S. ARCTIC RESERVES TO EUROPE

- STRATEGICALLY VITAL
- INDUSTRIALLY BENEFICIAL
- TECHNOLOGICALLY ACHIEVABLE
- ECONOMICALLY COMPETITIVE

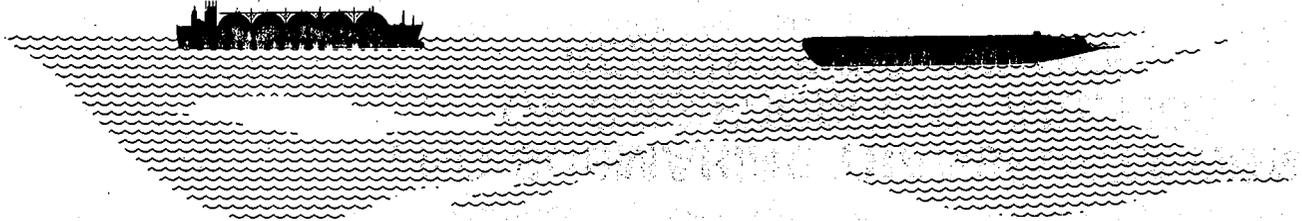
GENERAL DYNAMICS

Marine Operations

LEADERSHIP IN ENERGY

TRANSPORTATION

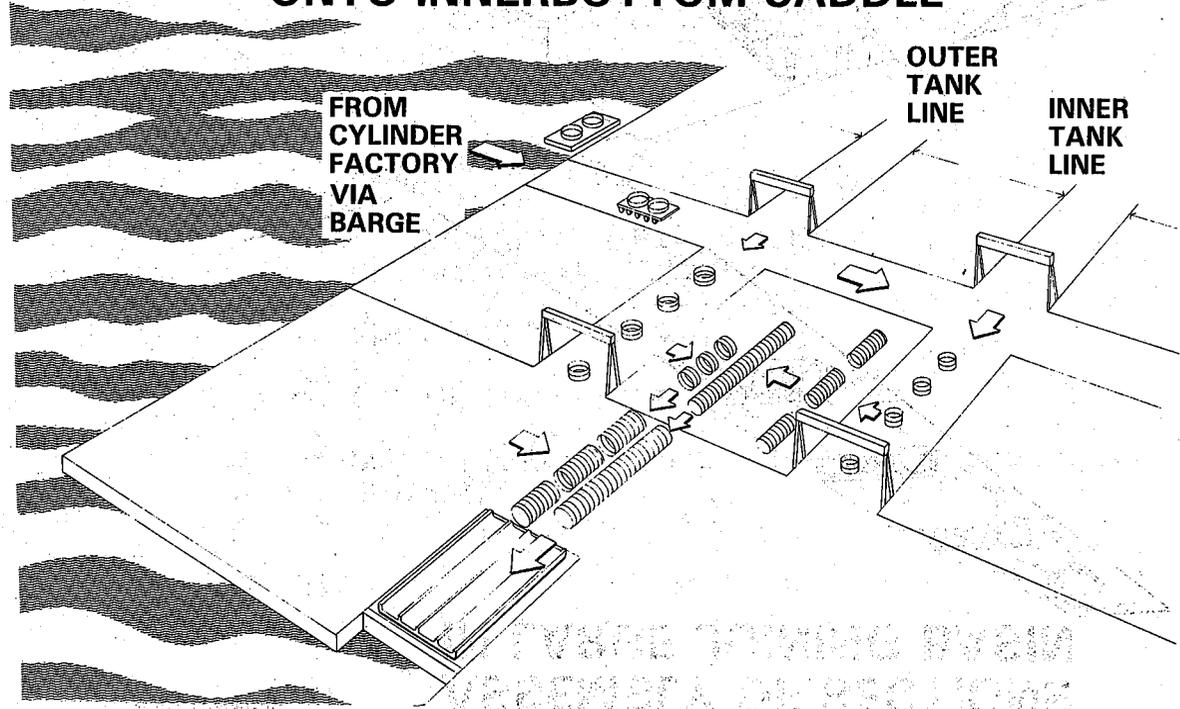
TECHNOLOGY



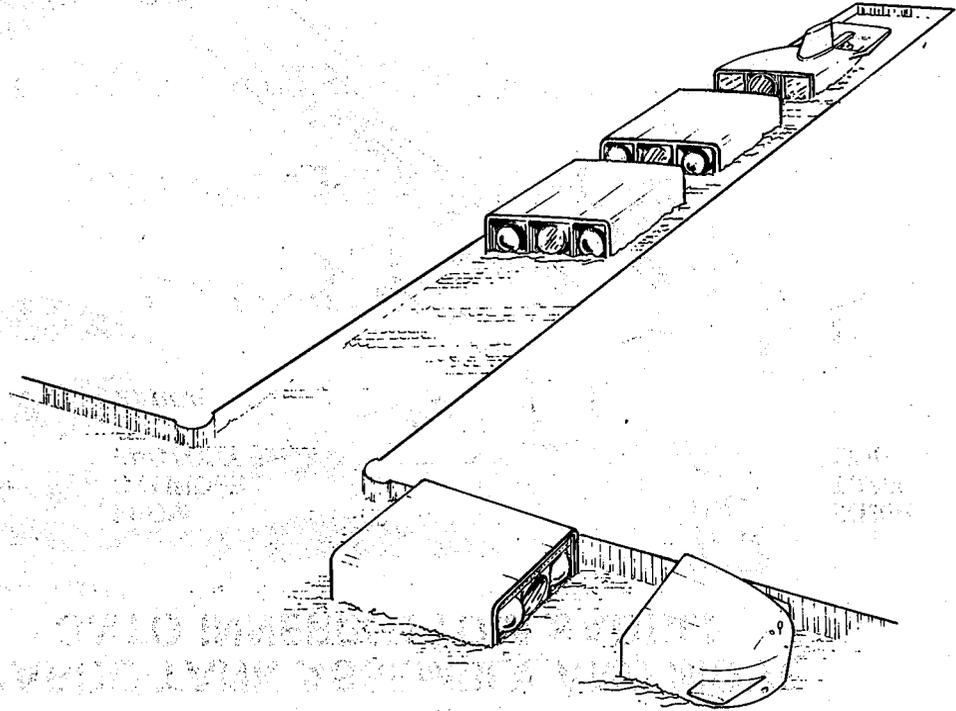
GENERAL DYNAMICS

Marine Operations

CARGO TANK ASSEMBLY AND MOVE ONTO INNERBOTTOM SADDLE



ASSEMBLY OF SECTIONS IN LARGE JOINING BASIN



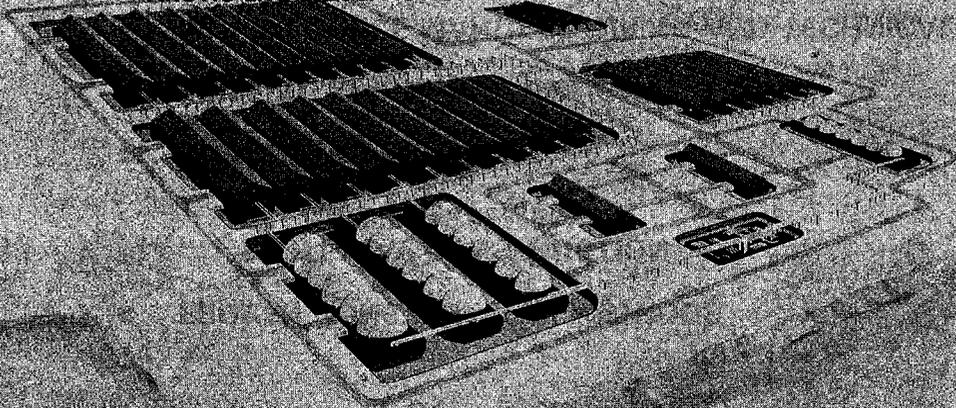
FEATURES OF THE FABRICATION AND ERECTION SCHEME

- **PROVEN CONSTRUCTION METHODS**
 - **SECTIONAL CONSTRUCTION**
 - **PACKAGED ASSEMBLY**
- **KNOWN TECHNOLOGY**
- **EXISTING MACHINERY DESIGN**
- **MULTI-SOURCE MANUFACTURING AND TECHNICAL SUPPORT**

GENERAL DYNAMICS
Marine Operations

MAJOR INITIATIVE FOR INDUSTRIAL GROWTH

ARCTIC LNG LIQUEFACTION AND STORAGE FACILITY



BARGES (900' X 140' X 50')	36
LIQUEFACTION TRAINS	26
TONS OF STEEL	587,600
TONS OF PIPING	52,884
MILES OF CABLING	1477
TONS OF COMPONENTS	162,000

Senator MURKOWSKI. One of the concerns is achieving a greater degree of energy independence for our own Nation. If we export the gas, the Secretary is going to have to come up with something else out of his hat.

Senator BRADLEY. There is a lot of gas in Alaska, is there not?

Senator MURKOWSKI. That is what they tell us. Sometimes there is a lot in Washington, too.

Mr. JOHNSON. We believe there would have to be a legislative act to permit the exportation of natural gas from Alaska.

Senator MURKOWSKI. I was anticipating that my good friend from New Jersey would ask what relationship this project might have to our commitment to fill the Strategic Petroleum Reserve; do you feel the two compliment one another in a sense?

Secretary EDWARDS. I think this would serve as a strategic gas reserve really, when you have that tremendous resource and have access to that resource. I think it would help. I think we need both of them.

Senator MURKOWSKI. The dedication of you and your associates to follow the dictate of our President in achieving a higher degree of energy independence is admirable. The significance of this project in achieving that independence is also worth noting. If this project is not completed and it does not become a reality, in your opinion, how will this very visible signal be taken by the Mideast countries we have become so dependent on?

Is it your opinion they might assume we are not serious about using our own domestic reserve potentials to achieve energy independence, and, as a consequence, perhaps expose us to yet higher prices for foreign crude oil?

Secretary EDWARDS. Senator, I think we must send positive signals as to our determination to achieve energy independence in a multitude of ways. The exploration crews we have out working, the number of drill rigs we have in the fields, the approval of the three synthetic fuel projects, et cetera, are all proper signals I think to be sending to our friends in the Middle East and the OPEC nations.

I think this would be another signal and a proper signal to say we are going to become energy independent at a time somewhere down the road. I think it would be a very significant part of that group of signals we are sending out.

Senator MURKOWSKI. Mr. Secretary, we would certainly like to thank you on behalf of the committee and your counsel for your excellent testimony and your explicit answers. I am sure those questions that were submitted by Senator Metzenbaum will be directed to you during this hearing.

I want to thank you and your associates for your testimony this morning.

Mr. JOHNSON. Senator, we will respond to Senator Bradley's question about the so-called electric boat proposal. We are going to make it plain that this would be the Department's response rather than the Undersecretary's because on this particular problem, he probably should not play an active part.

Senator MURKOWSKI. You should be aware, gentlemen, that it is very likely that the committee will be submitting written questions

to you for a response. The record will be open 2 weeks past the last date of the hearing. We will tell you.

Thank you, Mr. Secretary.

Secretary EDWARDS. Thank you.

Senator MURKOWSKI. Our next witness is the Honorable Jay Hammond, Governor of the State of Alaska.

Governor HAMMOND. Thank you very much, Mr. Chairman. I certainly appreciate the opportunity to testify.

Senator MURKOWSKI. Governor, I am going to interrupt you and introduce you.

Governor HAMMOND. All right.

Senator MURKOWSKI. Ordinarily the Senators come down to the table, but I am doing double duty today, as you can see.

I am certainly pleased and delighted that you are here, and I would like to advise those who might wonder a little bit about our Governor's career that he is serving his second 4-year term as Governor of our State. He was elected first in 1974, and subsequently reelected in 1978.

He has the distinction of having won reelection by an extreme close number and he has done an outstanding job each time in managing that count, and I would certainly commend him.

Governor Hammond served our country in World War II as a Marine fighter pilot. He came to Alaska in 1946. He has had a wide variety of vocations and avocations which represent the special lifestyle which Alaska offers.

He has been a bush pilot, trapper, guide, pilot for the U. S. Fish & Wildlife Service, commercial fisherman, and homesteader.

Before being elected Governor, Jay Hammond served three terms in the Alaska House of Representatives, served as majority whip, majority leader, president of the senate, chairman of the Senate Committee on Natural Resources, and was mayor of the Bristol Bay Borough where the big fish come from.

Governor Hammond is respected by the people of Alaska for his determination to foster Alaska's economic development in accordance with sound environmental principles.

He has served as Governor during the construction of the Trans-Alaska Oil Pipeline and during the development of the vast Prudhoe Bay resources.

He has overseen the development of the State's coastal management program, and I might add at this time, of budget cutting. Governor Hammond is the prime advocate of a proposed State constitutional amendment to limit the growth of the State's spending, which, of course, is something that is very dear to the hearts of those of us that are trying to work on some reductions around here.

The Governor is very knowledgeable about the gas pipeline project which this committee is now considering. Indeed, the State of Alaska, under his leadership, has been an active partner from the beginning with both the sponsors and the Federal Government planning for and designing this project.

I am sure that your testimony, Governor, this morning and observation will assist this committee as it considers the pending waiver package, and I welcome your testimony.

STATEMENT OF HON. JAY S. HAMMOND, GOVERNOR, STATE OF ALASKA, ACCOMPANIED BY C. DEMING COWLES, DIRECTOR OF STATE/FEDERAL REALTIONS, AND ROBERT H. LOEFFLER, COUNSEL

Governor HAMMOND. Thank you very much, Mr. Chairman and committee members.

Again, I appreciate the opportunity to testify on this vital issue that is of grave concern to not only the State of Alaska and the Nation, but has international implications as well.

I would like to introduce at this time two of my colleagues who, hopefully, will be able to answer any questions that I will not be able to field, and they are, on my left, Mr. Deming Cowles, the State's director of State/Federal relations here in Washington, D.C., and our counsel on gas pipeline matters in Washington, Robert Loeffler.

As you have stated, I have served as Alaska's Governor for nearly 7 years, and over that time I have seen the Trans-Alaska Oil Pipeline financed, constructed, and begin operation.

Yet, over the same time as I have watched and participated in gas pipeline matters, it has been a source of frustration to me that we as a nation have been unable to move ahead on the gas pipeline.

Before we turn to the specific waiver package, I wish to review the basic principles that have formed the State's position from the beginning of my administration.

Alaska supports the construction of the Alaska natural gas pipeline by the Northwest Partnership along the proposed route. We believe this is the best available pipeline route and that the line should be built now.

I have made it a priority of my administration to see that the pipeline is built and to assist the project as much as we realistically can.

In 1977, officials of my administration testified before the Senate and House committees with respect to the President's decision and report to Congress on the Alaska Natural Gas Pipeline Transportation System.

Since then, the State has continued to support the project. I personally have communicated my support to the President in 1979, and to the Secretary of Energy's special representative in 1980.

My representative has testified before the House Committee on Interior and Insular Affairs expressing Alaska's support for the project.

In the winter and spring of 1980, several of my cabinet members and I, as well as other representatives of the State, participated in the negotiations that led to the cooperative agreement for the design and engineering of the Alaska gas pipeline and conditioning plant.

The State participates on the design and engineering board as a nonvoting member. In article 13.7 of that agreement, the State "pledges its support for, and its cooperation and good faith in the exercise of its regulatory functions with respect to the project, the Alaska Natural Gas Transportation System, and related facilities." We continue to abide by that pledge.

Since the cooperative agreement was signed in June 1980, representatives of the State, including the Lieutenant Governor and the commissioner of natural resources, have participated in the meetings of the design and engineering board.

This has served to keep us informed of the progress on engineering matters and to help us become better acquainted with the major participants.

Alaska and the Federal Government share responsibility for permitting on the pipeline. The pipeline will cross nearly 200 miles of State land. This joint responsibility is expressly recognized and accepted by section 7(a)(5)(A) of the Alaska Natural Gas Transportation Act of 1976, which calls for a cooperative agreement between Alaska and the Federal Government to monitor the ANGTS.

The State has consolidated our permitting and monitoring functions under a State pipeline coordinator who reports directly to the commissioner of natural resources.

The office of pipeline coordinator assumed the responsibility for surveillance of the pipeline in January 1978, nearly 4 years ago. Our experience with TAPS led us to conclude that the project would be better served by this arrangement.

We believe that the Alaska Natural Gas Transportation System stands alone in terms of the major national energy projects currently proposed.

The technology required for the completion of the line is almost entirely conventional, even taking into account the special circumstances of Arctic construction.

It is equally important that the transportation system involves no risk with respect to whether or not energy will result. We know that there are 26 trillion cubic feet of natural gas in the Prudhoe Bay reservoir, and that this gas will be available once the transportation system is completed.

There is no uncertainty as to the availability of an enormous amount of energy from Alaska's North Slope. Thus, once the transportation system is completed, gas consumers and the Nation generally are assured of realizing deliverable energy for their investment.

We think the transportation system is critical, not only because it will unlock the reserves at Prudhoe Bay, but because it will spur exploration of Alaska's storehouse of oil and natural gas.

There are varied estimates of what additional quantities of natural gas and oil may be found in and around the North Slope of Alaska, but it is indisputable that it is one of the Nation's most promising, if not the most promising, energy provinces.

Completion of the transportation system for natural gas will not only encourage, but in a basic sense permit, the development of these resources.

The State is and will remain committed to the protection of our other natural resources. Thus, exploration for and production of hydrocarbon products must be harmonized with Alaska's environmental concerns. We are certain these goals can be achieved.

We are equally certain that, absent a system to transport North Slope gas to the lower 48 markets, the economics of exploration and development of additional supplies of both oil and gas would be severely handicapped.

I am aware that many parties have asked about State financial participation, particularly in light of our temporary financial gain due to the increase in the price of oil.

Since the beginning of the project, the State has been receptive to examining some financial participation in the transportation system. Of course, there are many factors, both short and long term, including the need for approval by the legislature, that would influence any decision to invest.

To date, full information as to the status of the financing plan, the prospects for its successful conclusion, and what, if any, appropriate role the State may play in the matter have not been available. Thus, we have not been able to conduct an indepth analysis of State financial participation.

Now that the waiver package has been introduced, however, it appears that many of the details of the financial plan will be crystallized.

I have been assured by the project sponsors that the information Alaska needs to determine the viability of State participation will soon be available to us.

In light of that fact, I have appointed a special committee headed by my commissioner of natural resources, and consisting of the commissioner of revenue and the attorney general, together with representatives to be appointed by the legislature, to investigate the merits of our financial participation in the transportation system.

In the past, the Governor proposed, and the legislature enacted, legislation establishing a gas pipeline revenue authority to aid in financing construction of the gasline.

Alaska was mindful then, as now, of our regulatory responsibilities with regard to the prevention of waste in the production of oil and gas from the Prudhoe Bay reservoir and with respect to environmental, health, safety, and other functions.

We are hopeful that any potential conflict between financial participation and these fundamental State responsibilities can be avoided as we begin consideration of the merits of State financial participation.

In conclusion, let me turn briefly to the waiver package.

Alaska supports congressional approval of the waiver package. We believe that it should assist the private financing of the project.

Whether it will, of course, depends on how the financial markets respond to the project's financing plan. However, I am informed by my financial and legal advisers that adoption of the package could strengthen the final plan the project can offer to Wall Street.

I will not address the specifics of the waiver package except to say that they have been reviewed by my administration and are acceptable to the State.

The package incorporates a number of provisions the State has advocated in the past as helpful to making the project a reality.

I would be pleased to answer any questions.

Senator MURKOWSKI. Thank you, Governor. You have responded in your testimony to a good deal of the number of questions I have had.

Let me call on Senator Nickles from the oil-producing State of Oklahoma.

Senator NICKLES. Governor, we welcome you. I have no questions. I do appreciate your comments and also the willingness of your administration that you have proved over the years in support of this project and your eagerness to get it underway. I think that is a very important step toward implementation of the project.

Senator MURKOWSKI. Governor, you noted and commented during your testimony of the impact that the Trans-Alaska Oil Pipeline had, not only on Alaskans, but on the environment as well.

Perhaps you could just elaborate a bit as to how you see a reoccurrence of that impact and to what degree. Obviously, we have got an infrastructure, we have got a road, we have got a lot of detail and information.

Governor HAMMOND. As you recall, Senator, there was a great deal of conflict and apprehension regarding the construction of the oil pipeline. Many environmental organizations particularly were concerned, predicted an environmental nightmare.

I think history has demonstrated to date that rather than an environmental nightmare, it was an engineering dream virtually.

While there have been some minor problems, the horror stories that some envisioned have certainly not taken place. I think it has been demonstrated that you can construct a transportation system in such a way as to minimize adverse environmental impact.

I am happy to report that on this particular pipeline, of course, the environmental community supports the routing and, by contrast again to the oil pipeline, envisions nothing by way of potential problems such as they initially envisioned relating to that oil pipeline.

I might point out that certainly the construction of such a massive project that it incurs a very substantial increase in the State's population on a relatively temporary basis, but incurs as well the additional costs of providing services and infrastructure to maintain that population increment is another side of the coin.

There are costs as well as benefits. We think that the overriding national interest make it clearly in the Nation's best interest and financially in the State's best interest. But we don't delude ourselves for a moment in believing that all those jobs, 13,000 jobs, will go in the majority to Alaskans.

We experienced, for example, in the oil pipeline construction a substantial number of jobs—I think something like 21,000, the majority of which went to persons from elsewhere.

So, again there is a massive influx of people that attend any construction project of this magnitude. The spinoff then benefits to other States than simply Alaska, and I think that should be borne in mind as well.

Senator MURKOWSKI. Thank you, Governor. Would you comment on your degree of satisfaction with the sponsors' plans as they concern making gas services available to those areas adjacent to the pipeline that presently do not have the services of natural gas, Fairbanks, some of the smaller communities?

Governor HAMMOND. That, of course, has been a major concern of the State, that such sort of availability be assured, and we have worked with the sponsors to achieve that assurance and they have cooperated in that regard. And while there are some details to be

worked out before final decision, we are generally confident that they can be.

Senator MURKOWSKI. Let me ask you, Governor, you have made a point that the construction of the project to bring the proven gas reserves is absolutely essential to unlocking even greater energy resources that we have every reason to believe exist in Alaska.

If the pipeline were not constructed, what would be your outlook for the development and marketing of Alaska's energy resources, particularly in the high Arctic?

Governor HAMMOND. I think it would very seriously impede the likelihood of substantial additional exploration and development of those resources.

Senator MURKOWSKI. The last question, Governor, and I think you have basically answered it in your testimony, but it is something that has come up a number of times back here, and it is again the role of Alaska in the likely participation in any way, and I gather from your comments that it has not necessarily been ruled out. And by your selection of John Katz, your commissioner of natural resources, along with the legislature, is it still under consideration?

Governor HAMMOND. It has by no means been ruled out, and frankly we would welcome participation once we knew and if we were to conclude that it was, in fact, a good business deal for the State. I think the same problems have confronted other prospective participants and questions that have yet to be answered confront the State of Alaska.

So, until they are, we cannot really scope out what the appropriateness of the State role might be, nor the magnitude of that.

Senator MURKOWSKI. Thank you very much, Governor, for your testimony. We appreciate having you and your associates here this morning, and I wish you a good day. Thank you, again.

Governor HAMMOND. Thank you, Mr. Chairman.

Senator MURKOWSKI. For those of you who want to come to the hearing tomorrow, we are going to be holding it in 1202, and that announcement is primarily for the benefit of those who are standing today, because I am somewhat assured that 1202, will be able to seat most of you.

It is the prerogative of the Chair to advise those of you who may have some alternative plans that we intend to go straight through until 1 o'clock, and then we will go through as far as we can with the witnesses, and at 1 o'clock we will terminate, and then we will again convene—we will finish all the witnesses by 1, I am told. Anyway, we will have another hearing tomorrow beginning at 10 in room 1202.

It is a pleasure to welcome to the committee the Honorable C. M. (Mike) Butler, Chairman of the Federal Energy Regulatory Commission.

Please proceed with your introductions and your testimony.

STATEMENT OF HON. C. M. BUTLER III, CHAIRMAN, FEDERAL ENERGY REGULATORY COMMISSION

Mr. BUTLER. Thank you, Senator.

Senator Murkowski, it is a privilege to have been invited to testify this morning before the Senate Energy Committee to discuss

the proposed waiver package for the Alaska Natural Gas Transportation System.

As the Senator has noted, the testimony which I have submitted for the committee's consideration is relatively lengthy, and in view of that I offer several options to the committee in the interest of conserving its time.

One of those is that I can simply request that the testimony be entered into the record.

Senator MURKOWSKI. Without objection, so ordered.

[The prepared statement of Mr. Butler follows:]

Mr. Chairman, I am pleased to have the opportunity to discuss the proposed waiver package for the Alaska Natural Gas Transportation System. I have submitted a written statement to the committee, which is quite lengthy, and I would like to offer several options to the committee in the interest of conserving its time. One of those options is that I can simply request that the testimony be entered into the record. Without objection, so ordered. [The prepared statement of Mr. Butler follows:]

The proposed waiver package for the Alaska Natural Gas Transportation System is a complex and important issue. It involves the potential for significant economic and environmental impacts. The package includes several key components, including the proposed waiver of certain regulatory requirements, the proposed changes to the system's operating procedures, and the proposed modifications to the system's safety protocols. These changes are intended to address the concerns of the public and the industry, while ensuring the system's safe and efficient operation.

The proposed waiver package is a result of extensive negotiations between the State of Alaska, the Federal Government, and the industry. It represents a significant step towards the resolution of the long-standing issues surrounding the system. However, it is important to note that the package is not without its challenges. There are several areas where further clarification and discussion are needed, particularly regarding the proposed changes to the system's operating procedures and safety protocols. It is essential that the committee carefully review the package and provide its recommendations to the President.

In conclusion, I believe that the proposed waiver package is a necessary and important step towards the resolution of the issues surrounding the Alaska Natural Gas Transportation System. I urge the committee to carefully review the package and provide its recommendations to the President. I am confident that the committee's actions will be in the best interests of the State of Alaska and the Nation.

STATEMENT OF
C. M. BUTLER III
CHAIRMAN, FEDERAL ENERGY REGULATORY COMMISSION
BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

October 22, 1981

Mr. Chairman and Members of the Committee:

I appreciate your invitation to appear before this distinguished Committee to express my views of the waivers proposed to facilitate the financing of the Alaska Natural Gas Transportation System. At the outset of my testimony, two disclaimers are required. First, the views which I express should be attributed to me alone and not the Commission as a whole or otherwise in part. I have not discussed my policy predilections on these matters with my colleagues, nor have they discussed theirs with me. Secondly, I am subject to certain legal constraints in connection with my testimony, as follows.

As the Committee is aware, a number of issues connected with this project have been decided by the Commission, 1/ and there are still other such matters pending before the Commission, including the adjudication of the project sponsors' application for a permanent certificate under Section 7 of the

1/ The "Commission", when used in the context of an action taken prior to October 1977, refers to the Federal Power Commission (FPC); when used otherwise, the reference is to the Federal Energy Regulatory Commission (FERC).

Natural Gas Act. In fact, the waiver package is of considerable relevance to that proceeding in this sense. The project sponsors claim that without the waivers, a viable financing plan cannot be developed. But the development of such plan is required for presentation to the Commission so that the Commission can decide, among other things, whether the project should be certificated. In these circumstances, I am free to express my views of policies applicable to the matters pending before you; however, any conclusions of fact which I might describe must be regarded by the Committee as nothing more than tentative. As a matter of fundamental fairness to all parties to that proceeding, conclusions about such facts cannot be reached until factual presentations in the proceeding have been completed. 2/

The Alaska Natural Gas Transportation Act of 1976 (ANGTA) 3/ was enacted for two primary purposes: (i) to provide a means for sound selection of a transportation system for the delivery of natural gas from the North Slope of Alaska to the lower-48 states, and (ii) to expedite its construction and initial operation. The decision to enact such legislation was based on findings by Congress that

2/ In further connection with this matter, see Appendix 1 to this testimony.

3/ 15 U.S.C. § 719 (1976).

there was a shortage of gas supplies in the lower-48 states which the Alaskan supplies could help to alleviate. Now, five years later, the transportation system has been selected, but the project certification has still to be completed. However, we are advised by the project sponsors that once certain institutional and legal obstacles, several of which were created by the Presidential Decision 4/ contemplated by ANGTA, are eliminated, the last obstacle to a complete application for a permanent certificate will be removed through development of a project financing plan. In response to these most recent representations by the project sponsors, I have considered two questions. The first is whether the project is still necessary or desirable; the second is whether the waivers of law sought violate principles of sound public policy.

As to the first question, I believe that the Congressional findings which underpin ANGTA remain valid. As the Commission

4/ Executive Office of the President, Energy Policy and Planning, Decision and Report to Congress on the Alaska Natural Gas Transportation System (September 22, 1977). Approved by joint resolution of the Congress, the Decision has the force and effect of law.

found in its Order No. 31 5/ and reiterated in Order No. 45, 6/ virtually every estimate of proven reserves at Prudhoe Bay exceeds 26 trillion cubic feet (Tcf). Delivery of those reserves could supply more than two billion cubic feet of natural gas per day over the anticipated 25-year life of the proposed transportation system. That amounts to about five percent of current U. S. demand for natural gas. Moreover, estimates of potential natural gas reserves in Alaska range from 100-200 Tcf. Under those circumstances, it would clearly be advisable to bring gas from Alaska to the lower-48 states if that can be done economically. Conversely, it can be reasonably inferred that failure to build a transportation system for Alaska natural gas would operate as an impediment to further exploration for, as well as production of, such gas.

The project sponsors have indicated that the average price 7/ of the gas over the life of the project will approximate \$4.89/MMBtu in 1980 dollars. Assuming that the long-term

5/ Order No. 31, "Order Setting Values for Incentive Rate of Return, Establishing Inflation Adjustment and Change in Scope Procedures, and Determining Applicable Tariff Provisions," Docket No. RM78-12 (issued June 8, 1979).

6/ Order No. 45, "Regulations and Statement of Policy," Docket No. RM79-19 (issued August 24, 1979).

7/ I assume that the term "price" reasonably equates to the term "average annual annuity cost equivalent" used by the project sponsors' advisers.

- 5 -

market clearing price for natural gas nationwide is approximately equivalent to the average low sulfur No. 6 fuel oil price, and if the project sponsors' representations as to cost are accurate, the price of such gas to the lower-48 states could be expected to be reasonably economic. By comparison, we are now purchasing gas at the borders from Canada and Mexico at \$4.94/MMBtu. Additionally, the price of deregulated, deep-gas supplies is currently about twice the sponsors' projected cost of Alaska gas. In this connection, although the producers may charge the full price permitted under Section 109 of the NGPA, they are not required to do so; so there may be some "give" in the cost of the Prudhoe Bay gas if necessary to make it marketable, particularly in the early years of the operation of the system. Additionally, the project sponsors are not precluded from asking the Commission to "levelize" the tariff in a way that more closely matches the transportation rate with the average transportation cost over the life of the project. If the Commission were to find such a proposal to be in the public interest, the cost of the Alaska gas to consumers in the early years of the project would be lowered. However, these and other questions concerning the marketability of Prudhoe Bay gas must be addressed by the parties in detail in the certificate proceedings pending before the Commission.

Although questions about the marketability of Alaska gas are still open, there appears to be no question but that the gas -- at least in the early years of the project -- will be relatively high-cost. At the same time, our natural gas supply situation has eased to the point where it may be tempting to question whether the delivery of relatively costly Alaskan reserves is justifiable. I believe that there are two justifications. First, if the gas from Alaska can be marketed competitively with gas from traditional lower-48 sources as the project sponsors claim, there is no predicate for the argument that the line should not be built. Secondly, the geological evaluations of the Commission's staff, and those of the U. S. Geological Survey, indicate substantial declines in the deliverability of reserves from the Gulf of Mexico producing region. 8/ The Commission's staff tells us that deliverability from that area could decline as much as 2 Tcf per year by 1985. Assuming only for the sake of argument that these assessments are correct, delivery of Alaska gas could offset those declines by 50 percent when the project is completed. Although these declines are also being offset with additional gas supplies found in response to higher NGPA prices, delivery of Alaska gas should be viewed as an

8/ South Louisiana Onshore and Texas Railroad Commission Producing Districts 2, 3 and 4, and Offshore Louisiana and Texas.

important hedge against, if not critical to avoid, significant gas shortages in the 1985-90 time frame, and beyond. I believe that recognition of these matters is implicit in President Reagan's message accompanying the proposed waivers. One can predict with assurance that history will criticize us severely for failing to provide Prudhoe Bay gas if that can be done at economic prices, and should gas shortages develop in the future.

I shall now address the question whether the requested waivers violate principles of sound public policy.

ANGTA created a unique process for selecting a transportation system for the delivery of the Prudhoe Bay reserves to lower-48 markets. The product of that process was a decision by President Carter, approved by Congress, which not only selected the system to be constructed, but also specified a general framework of conditions under which the selected system was to be constructed.

Section 5(a)(2) of ANGTA provides that, in the event a decision of the President takes effect pursuant to its provisions, the Commission shall issue a certificate of public convenience and necessity (the product of its normal authorization proceedings under Section 7 of the Natural

Gas Act) to the selected system. The Commission complied with that mandate by order of December 16, 1977, 9/ in which it issued conditional certificates to the sponsors of the selected project pending receipt of satisfactory evidence of compliance with the various terms and conditions which were made part of the President's Decision. Over the past four years, the Commission has issued a number of authorizations for various aspects of the project pursuant to those terms and conditions, including authorizations for the "pre-build projects." These projects involve early construction of certain southern Canadian and lower-48 ANGTS facilities for the purpose of importing gas which has been determined to be surplus to Canada's needs. Deliveries of pre-build gas commenced on October 1 of this year.

A brief legal history of the actions taken in connection with ANGTS involving the Commission (including a description of the authorizations which have been granted to date), and a list of matters which have yet to be decided by the Commission, is included as Appendix 2.

9/ "Order Vacating Prior Proceedings and Issuing Conditional Certificates of Public Convenience and Necessity," Docket Nos. CP78-123, CP78-124, and CP78-125 (issued December 16, 1977).

The waiver proposal submitted by the President would alter several of the terms and conditions in the Decision and eliminate certain other requirements and authorities.

In particular, the President's proposal would:

- lift the ban on producer ownership participation;
- make the conditioning plant required to prepare the gas for pipeline entry a part of the "approved transportation system," as that term is defined in the ANGTA;
- alter the Decision's limitation on pre-completion billing;
- allow the Commission to use procedures other than formal evidentiary hearings in the course of reaching certification decisions regarding the ANGTS;
- eliminate the Commission's authority to change its tariff orders to the detriment of debt service; and
- make other technical changes.

I shall comment only briefly on the matter of producer participation in the project. First, based on my experience in negotiating similar financing agreements, the contentions of the investment community that the project cannot be financed without the credit support of the producer-participants do not surprise me. Nor does the position of the producers

that they will participate only if they are permitted an equity interest in the project. Both of these arguments are advanced in favor of producer ownership. But beyond those reasons, I believe there is a largely unspoken advantage in allowing the producers to be equity investors in the project: They would appear to be excellent barometers of economic feasibility of this project. The relevant producers are major oil and gas companies, not unsophisticated in predicting the marketability of their products. Their consistent endorsement of the project despite speculation over the future of natural gas pricing policy provides a useful market indicator that gas from the project can be sold at competitive prices. Correlatively, given their critical importance to financing the project, should their enthusiasm for the marketability of the gas disappear, consumers would have had the benefit of an important market protection from the construction of a non-economic project. This protection stems from the exposure of the equity portion of the project investment -- no insubstantial sum of money -- to risk of loss in the events of construction delay, prolonged interruption of service, and pre-completion and post-completion abandonment. As I have indicated, the Commission will require the project sponsors to put on evidence in proceedings to be conducted concerning the marketability of Alaska gas under various circumstances, including changes in gas pricing policy.

I believe that the proviso to the waiver requiring the Commission to seek the advice of the Attorney General on antitrust questions and to make specified antitrust findings is an appropriate protection for the consuming public and is administrable by the Commission. The required findings are not unlike those the Nuclear Regulatory Commission is required to make in connection with the licensing of nuclear projects, and those the Federal Trade Commission is required to make in connection with pre-merger notifications under the Hart-Scott-Rodino Act.

The proposal would also waive the language of the President's Decision which has been interpreted by the Commission to exclude the gas conditioning plant from the definition of the approved transportation project. 10/ According to the synopsis of waiver accompanying President Reagan's proposal, President Carter's Decision in this regard was based on the absence of a described gas conditioning plant from the Alcan sponsors' certificate application. However, the Commission also construed the Decision in conjunction with Section 110 of the Natural Gas Policy Act

10/ Order No. 45 (mimeo at 4-5). In that order, the Commission pointed out that the President's Decision defined the approved transportation system as commencing on the discharge side of the gas conditioning plant, thereby excluding it from the approved transportation system. Id.

to grant broad discretion to the Commission to permit producers to collect an allowance for conditioning the Prudhoe Bay gas.

In my judgment, the previous Commission was correct in concluding that the President's Decision excluded the gas conditioning plant from the definition of the approved transportation system. However, I take strong exception to that Commission's rationale for disallowing producers -- as a matter of the Commission's discretion -- from receiving an allowance for the conditioning of Prudhoe Bay gas. The President's Decision clearly did leave discretion to the Commission to permit the recovery of those conditioning costs and, in places, even assumes that an allowance would be authorized. However, the order seems to disregard those facts after reciting them and concludes despite them that the President's Decision dictates a policy pursuant to which virtually all of the costs of conditioning will be borne by producers. It buttressed that conclusion with a factually unsupported assertion that traditional contracting practices between producers and pipelines in the lower-48 states were to levy such costs on producers.

In my view, the Commission should have started from a clean slate in deciding the issue and adhered to the crucial principle stated in the order. The transportation system and the gas which it would transport are sui generis, that is, not necessarily subject to traditional rules and practices. 11/ The Commission deviated from that principle in a fundamental way when it found that the usual practice in the lower 48 was for producers to bear conditioning costs required to make gas transportable and that, for that reason, the producers of Alaska gas should bear such costs. 12/ First, the previous Commission and I would agree that the cost of gas conditioning is a cost of making the Prudhoe Bay gas transportable; but I believe that, whatever historical practices have been, those costs should be identified for and borne by consumers. An attempt to "hide" such costs, or shield consumers from them, would tend to insulate the project from the risk that the gas would not be marketable, and thus tend to cloud the question whether the project should be built at all. Secondly, since transportation is such a major component of the cost of Alaska gas, the wellhead price realized by producers in current and foreseeable markets will doubtless be less than wellhead prices for natural gas produced in the lower-48 states.

11/ Correlatively, regulatory treatment of ANGTS should not be considered precedent-setting for unrelated projects.

12/ Order No. 45 (mimeo at 34-35).

Consequently, the imposition of conditioning costs on producers could have been expected to further compound the unattractiveness of the project created by the expectation of the Decision that they underwrite project risks without the rewards of an equity position. Under those circumstances, no one should have been surprised when the producers repeated their refusal to participate in the project.

President Reagan's proposal to waive Section 2, Paragraph 3, First Sentence of the President's Decision, would require the Commission to vacate Order No. 45 and find that the gas conditioning plant is part of the approved transportation system. It should be emphasized that this would not necessarily mean that the entire cost of the gas conditioning plant would be borne by consumers of the Prudhoe Bay gas. Some of the costs of conditioning and all of the costs of separation of liquid and liquefiable hydrocarbons would be subject to allocation to the production of such substances and thus to pass-through to consumers of those substances, rather than natural gas consumers. The question of the Commission's treatment of that particular question in the context of analogous transactions in the lower-48 states is

as yet unresolved, nor is it resolved in the context of ANGTS. As I have still to formulate my own views on the matter, I can express no policy opinion on its resolution at this time.

Waiver of Section 5, Condition IV-2, of the President's Decision means that the budget for the construction of the gas conditioning plant will have no bearing on the rate of return allowed the rest of the system. This does not preclude the Commission from requiring, through an incentive-penalty system, assurances that consumers will not bear an unreasonable risk of cost overruns in connection with completion of the gas conditioning plant.

President Reagan's proposal to waive Section 5, Condition IV-3, of President Carter's Decision is apparently the most controversial of the proposed waivers. The billing commencement condition of President Carter's Decision presently allocates both the risk of delay in project completion and the risk of noncompletion of the project to the project sponsors. The waiver would permit, but not require, the Commission to approve a tariff which would allocate such risks to the consumer.

As stated earlier, the waiver of Section 3, Paragraph 3, First Sentence, of the President's Decision would result in inclusion of the gas conditioning plant in the approved transportation system. To an extent, this aggravates the risk of delay in completion of the project because of the difficult logistics of constructing the gas conditioning plant at Prudhoe Bay. Because it would be constructed in large modules at Gulf Coast fabrication sites and then transported by barge to the North Slope, the plant could be delayed because its construction schedule is especially vulnerable to the vagaries of the Polar Ice Pack. While normally open for about six weeks each year, passage around Point Barrow to Prudhoe Bay is occasionally open for only a few days out of the year. (In fact, such a short season occurred during construction of the Trans-Alaska Oil Pipeline System (TAPS).) In the event of a bad year at a critical period in the construction of the conditioning facility, the inability to deliver needed equipment and material could force a delay in the expected commencement of gas deliveries.

The Decision did not answer the question to whom this risk of delay would be assigned, as the billing commencement condition therein referred only to completion of the approved

transportation system, which excluded the gas conditioning plant. In Order No. 31, the Commission split this risk between gas consumers and the project sponsors by allowing charges sufficient to cover debt service and certain other costs to begin as soon as all segments of the pipeline system were complete, but requiring return on and of equity to await gas flow.

The billing commencement waiver adopts an essentially similar approach to each segment of the pipeline system. It recognizes that gas flow could be delayed as a result of delays in the completion of any of the major segments, while the necessity to finance the segments which have not been delayed is continuous. In recognition that this project is primarily for the benefit of American gas consumers, sponsors of the Canadian segment are provided relief from this contingency by permission to begin charging the entire cost of service for the Canadian segment despite the absence of gas flow. ^{13/} However, U. S. project sponsors are provided only partial relief, to the extent of debt service and limited

^{13/} The sponsors of the project in Canada have been afforded such relief by the National Energy Board, FERC's Canadian counterpart. However, users of the pipeline (shippers) have declined to obligate themselves to the Canadian tariff until authorized by the FERC to recover payments pursuant to such tariffs in their rates. Thus the billing commencement waiver for the Canadian segment would provide the Commission with the authority to avoid frustrating the NEB's Decision.

other costs, in such eventuality. Prohibiting the return on or of equity during the period of noncompletion provides a powerful negative incentive to see that delays in the project are minimized.

Apparently, this aspect of the proposed financing has raised a question in the minds of some whether it is an appropriate exercise in public policy, even assuming that the project should be built and pre-completion billing is a necessary element of the financing plan. 14/ I would suggest to the Committee that it is.

The cost-based methodology that we employ in setting rates does not allow regulated companies to reap the benefits of an improved product or reduced costs. 15/ The benefits of an improved product or lowered costs principally have to be passed on to the consumer. This creates obvious problems of incentives for efficiency and innovation. It also creates another and potentially more serious problem.

If regulated companies cannot reap the benefits of good fortune, they cannot be expected to risk the burdens of bad fortune. If the best they can hope for are rates that just

14/ The assertion is that the lenders will require assurances that debt service will not be impaired upon completion of discrete major segments of the project.

15/ In a scholarly article, that statement would have to be qualified in various ways. But, as a close approximation to the truth, it will serve well enough.

cover their costs, they cannot be expected to bear significant risk of falling short of recovering those costs. Either such projects will not be undertaken by the regulated companies, or the risk must be at least shared between investors and consumers. Thus, there is a choice between two options within the present regulatory framework, and each option carries its own price. Regulated firms can limit themselves to technologies and projects that carry little risk of failure, and the price can exclude any part of the loss from the failures that do occur. Or, regulated firms can turn to riskier technologies and projects in the hope of obtaining more or better production and lower costs, and the price that the public pays then will include the assurances of shared responsibility for losses. Either option is possible. What is not possible is to pay the lower price of the first option and obtain the benefits of the second. Or at least that is not possible if we can assume that investors are rational, and regulatory agencies are at least not prepared to be duplicitous.

If these expectations of economic behavior are accurate, the tariff provisions permitted by the waiver of the billing commencement condition of President Carter's Decision can be

- 20 -

viewed as the missing piece in an otherwise workable plan requiring the sharing of the risks of a concededly risky project among consumers and sponsors. I should point out that this kind of sharing is already contemplated and permitted in part -- that is, in the event of service interruptions -- in Order No. 31. In that event, minimum bill provisions would allow the recovery of the cost of debt service, operation and maintenance expenses, and taxes after the cessation of gas flow. The new tariff condition would provide the same assurances in connection with risks experienced before project completion, and thus before gas flow. In my view, this kind of risk sharing can be justified in cases such as the one before the Committee which envision regulated companies undertaking high risk gas supply projects.

President Reagan's proposal would waive Section 7(c)(1)(B) to permit the Commission to employ informal procedures for the decision on the merits of the certificate application. The result of such a Commission decision would be to create a curious hybrid of administrative procedure. 16/ If workable, it should significantly expedite the Commission's decisionmaking. If the waiver is adopted, the Commission will be granted the flexibility to consider such procedure. That would probably

16/ Not, I might add, the first such curious hybrid the Commission will have dealt with.

assist the Commission to comply with the mandate of ANGTA to expedite the certificate process.

The waivers of Sections 4, 5, 7 and 16 of the Natural Gas Act are the subject of an extensive memorandum prepared at the request of the Honorable Philip R. Sharp, Chairman, and the Honorable Clarence J. Brown, Ranking Republican, Subcommittee on Fossil and Synthetic Fuels, Committee on Energy and Commerce, U. S. House of Representatives. I endorse the legal analysis of that memorandum, which is attached to this statement as Appendix 3.

Finally, the remaining waivers are technical in the main. I find no objection to them.

Federal Trade Commission v. Cement Institute, et al. 333 U.S. 683 (1948), involved an adjudication by the Federal Trade Commission that the multiple basing-point delivered-price system of fixing prices and terms of cement sales employed by defendants in that proceeding violated the antitrust laws. One of the arguments levied in attempting to overturn the decision of the FTC was that members of that Commission should have disqualified themselves for bias. Bias was allegedly demonstrated in certain reports to Congress and the President, and in testimony before Congressional Committees, that the members, or at least some of them, held the opinion that the operation of subject pricing system was the equivalent of a price-fixing scheme in violation of the Sherman Act.

Two holdings of the Court in denying defendants' claim are critically important. First, the Court held:

. . . the fact that the Commission had entertained such views as the result of its prior ex parte investigations did not necessarily mean that the minds of its members were irrevocably closed on the subject of the respondents' basing point practices. (Emphasis added.) 333 U.S. at 701.

Secondly, the Court rejected the argument that "it was a denial of due process for the Commission to act in these proceedings after having expressed the view that industry-wide use of the basing point system was illegal." The Court said about that argument:

Neither the Tumey decision nor any other decision of this Court would require us to hold that it would be a violation of procedural due process for a judge to sit in a case after he had expressed an opinion as to whether certain types of conduct were prohibited by law. In fact, judges frequently try the same case more than once and decide identical issues each time, although these issues involve questions both of law and fact. Certainly, the Federal Trade Commission [when acting in its quasi-judicial capacity] cannot possibly be under stronger constitutional compulsions in this respect than a court.

The Commission properly refused to disqualify itself. . . . 333 U.S. at 702-03.

Consistent with the Supreme Court's decision, the Court of Appeals for the District of Columbia has held that the standard for disqualifying an administrator in an adjudicatory proceeding because of prejudgment is whether a disinterested observer may conclude that the decisionmaker has in some measure adjudged the facts as well as the law. See, Association of National Advertisers, Inc., et al. v. Federal Trade Commission, et al., 627 F.2d 1151, 1158 (D.C. Cir. 1979).

From these principles, two propositions emerge. First, legitimate ex parte contacts do not require recusal. I was under no ex parte sanction in, for example, preparing the Transition Report on ANGTS. Factual judgments contained in that report have to be taken for what they are: judgments made on the basis of largely untested representations of interested parties, as supported by existing records and administrative, congressional and executive documents. Taken in the context of formal agency proceedings, those judgments can be characterized as nothing more than tentative. They are clearly subject to change on the basis of factual presentations to the Commission which if found persuasive and substantial would lead to other, inconsistent conclusions. The same is true of review of agency files and the like in preparation for testimony before this Committee. To the extent that I make any comments about the facts relevant to proceedings pending before the Commission, they must be recognized for what they are: nothing more than tentative conclusions, subject to change on the basis of facts adduced further in the proceeding.

Secondly, my opinion concerning policy and legal questions, as contrasted with factual questions, does not subject me to legitimate challenge that I should recuse myself from the proceedings. However, I feel compelled to point out that I am no more close-minded on points of policy than on questions of fact. I am perfectly willing to listen to competing viewpoints on matters of policy connected with this or any other project which will come before the Commission.

Alaska Natural Gas Transportation System

The Alaska Natural Gas Transportation System (ANGTS) is an international project created to transport natural gas from the North Slope of Alaska, through Canada, to the lower 48 states. The United States portion of the system consists of three segments: (1) the Alaska segment, running from Prudhoe Bay on the North Slope to the Yukon border; (2) the Western Leg, running from the British Columbia border to California; and (3) and the Northern Border pipeline, running from a point on the Canadian border near Monchy, Saskatchewan, to Dwight, Illinois.

The ANGTS is unlike any other gas pipeline in the United States in that it is governed by a unique legal framework. The Alaska Natural Gas Transportation Act (ANGTA), 15 U.S.C. §719, et seq., enacted by Congress in 1976, supplements (but does not replace) the Natural Gas Act; certificates are issued under the Natural Gas Act pursuant to procedures mandated by ANGTA. Section 9 of ANGTA mandates expeditious consideration by all federal agencies of all federal authorizations "necessary or related to the construction and operation of" the ANGTS, while Section 10 specifically provides for limited and expedited judicial review of such agency action.

Pursuant to Section 7 of ANGTA, the President, in September of 1977, submitted his Decision and Report to Congress on the Alaska Natural Gas Transportation System (Executive Office of the President, Energy Policy and Planning) which designated both the project sponsors and the route for the ANGTS as well as many conditions for its construction. Congress approved the President's Decision by Joint Resolution, which became law on November 8, 1977. H.R.J. Res. 621, Pub. L. No. 95-158, 91 Stat. 1268, 95th Cong., 1st Sess. (1977). Important background documents that contributed to the President's Decision include Administrative Law Judge Nahum Litt's Initial Decision (430 pages) in Docket No. 75-96, et al. (February 1, 1977); the Federal Power Commission's Recommendation to the President (May 1, 1977); and the Federal Power Commission's Comments on the President's Decision (October 1977). The national commitment to construct the ANGTS was reaffirmed by the Congress in a Concurrent Resolution adopted on June 27, 1980. S. Con. Res. 104, 96th Cong., 2nd Sess. (1980).

The ANGTS is also governed by two international agreements with Canada, both of which have the force and effect of law. The "Agreement Between the Government of the United States of America and the Government of Canada Concerning Transit Pipelines," entered in force October 1, 1977 after ratification by the Senate, applies to all pipelines in both countries whenever one country's pipeline carries the other country's gas or oil. The treaty mandates nondiscriminatory treatment. (Note: The ANGTS transports Alaskan gas across Canada; the Great Lakes system transports Canadian gas through the U.S. from Western Canada to Eastern Canada.)

The "Agreement Between the United States of America and Canada on Principles Applicable to a Northern Natural Gas Pipeline," signed by representatives of the two governments on September 20, 1977, is an executive agreement that was made part of the President's Decision (pages 47-83). Inasmuch as the Decision was approved by Congress, it (including the Agreement) has the legal status of a statute. The Agreement specifies the route of the ANGTS, and contains numerous conditions. Pursuant to the Agreement, our Commission has consulted with the National Energy Board of Canada in co-ordinating the respective certification of the various ANGTS segments in the U.S. and Canada, including related imports of Canadian gas to support the "prebuilding" of the lower half of the system. (In Canada, the ANGTS is known as the "Alaska Highway" project.)

One other relevant item of legislation is Reorganization Plan No. 1 of 1979, which was submitted by the President to the Congress and not disapproved by the Congress. The Plan establishes the Office of the Federal Inspector, which reports directly to the President. The Inspector is responsible for monitoring the construction of the pipeline, and for co-ordinating all federal permitting and certification of it. The Plan transfers to the Inspector the Commission's Natural Gas Act Section 3 and 7 jurisdiction to enforce the Commission's certificates and import authorizations issued to the ANGTS project sponsors.

Commission orders on the ANGTS have been attacked in court three times, and successfully defended by the Solicitor's Office in each instance. In Midwestern Gas Transmission Co. v. FERC, 589 F.2d 603 (D.C. Cir. 1978), the Court affirmed certain preliminary import determinations. The decision contains an excellent recitation of the procedural history of the project, including the basic judicial interpretation of both ANGTA and the President's Decision. In Earth Resources Co. v. FERC, 617 F.2d 775 (1980), the Court affirmed a Commission order establishing the size and pressure for the Alaska segment, confirming that ANGTA and the President's Decision conclusively terminated the NEPA process for the ANGTS. Finally, in General Services Customer Group v. FERC, D. C. Circuit, No. 80-1803 (1980), the Court issued an unpublished per curiam decision affirming the Commission's orders certifying the Northern Border prebuild project.

In addition, in FERC v. Public Service Commission of North Dakota, 513 F. Supp. 653 (D.N.D. 1981), our Commission and the Federal Inspector filed a lawsuit to enjoin the North Dakota PSC from enforcing an order that would have required locating the Northern Border segment along a different route from the one authorized by the President, the Congress and our Commission. The Court granted the injunction.

During the past several years, the Commission has issued a long series of orders, pursuant to a variety of proceedings, the more prominent of which are listed below. Many of these proceedings utilized rulemaking or other expedited procedures. Unless otherwise indicated herein these orders were issued in Docket No. CP78-123, et al.

By an order issued December 16, 1977, the Commission granted conditional certificates to all of the ANGTS project sponsors, for all three segments, and pursuant to the mandate of the President's Decision. The order also appointed John Adger as the Commission's "Alaskan Delegate," to co-ordinate the project.

By an order issued August 6, 1979, the Commission established the pipe size and pressure for the Alaska segment. By an order issued on May 8, 1980 (with an erratum notice on May 21, 1980, and supplemented by an order of June 20, 1980), and pursuant to Section 17 of ANGTA, the Commission attached conditions to all ANGTS certificates requiring an equal employment opportunity and minority business opportunity affirmative action plan.

The Western Leg prebuild project was certificated in orders issued on January 11 and June 13, 1980. The Northern Border prebuild project was certificated in orders issued on April 28, and June 20, 1980. All of these orders also contained related import authorizations. (Initial Decisions were waived.) Additional import authorizations for imports through Northern Border were approved in orders issued on June 27, 1980 (Docket No. CP80-22) and April 24, 1981.

In Docket No. RM78-12, the Commission issued Order Nos. 31 and 31B, on June 8 and September 6, 1979, pursuant to the mandate of the President's Decision, establishing an incentive rate of return for the Alaska and Northern Border segments. These orders also approved the tariffs for Northern Border and the Alaska segment. To complete the process, in Docket No. CP80-435 the Commission's Alaskan Delegate, in conjunction with an employee of the Office of Federal Inspector, submitted to the Commission a lengthy report on the Alaska segment cost estimate, and the Commission has issued an order inviting comment on the report.

In Docket No. RM79-19, the Commission issued Order No. 45 on August 24, 1979, setting out regulations and a policy statement on production related costs for Prudhoe Bay gas. The effective date of that order was stayed pending rehearing; at the request of the Secretary of Energy, the Commission extended the stay indefinitely pending negotiations by the ANGTS project sponsors with the Prudhoe Bay producers.

On February 26, 1980, the Commission issued an order attaching certain environmental conditions to the conditional certificates. On December 15, 1980, the Commission issued an order approving amendments to the Alaska segment partnership agreement. On February 23, 1981, the Commission issued an order attaching certificate conditions requiring compliance with an executive agreement of June 10, 1980, between the U. S. and Canada, regarding reciprocal procurement monitoring requirements.

On March 31, 1980, the Commission issued an order delegating to the Federal Inspector certain ANGTS archeological responsibilities. On December 19, 1980, the Commission issued an order delegating to the Federal Inspector certain ANGTS rate base approval responsibilities.

PENDING AND FUTURE PROCEEDINGS

ANGTS proceedings currently pending before the Commission include:

1. The final certification proceeding for the Alaska segment.
2. Production related costs rulemaking for Prudhoe Bay gas.
3. The Alaska segment cost estimate proceeding.
4. Rate base proceedings for Alaska segment and Northern Border pre-1980 costs.
5. The Northwest Canadian Gas Sales Company certificate and import applications in lieu of Northwest Alaskan Pipeline Company.

To these could be added proceedings that have not yet been instituted:

6. Rulemaking on shipper tracking of ANGTS transportation charges.
7. In the more distant future, final certification of the non-prebuilt sections of Northern Border and Western Leg, and certification of shippers of Alaska gas.

The scope and current status of each of these proceedings is discussed below.

1. Alaska segment final certification.

Issues to be presented in the final certification proceeding might include, inter alia:

- (1) The financing plan, including tariff issues.
- (2) Cost of service and net national economic benefit.
- (3) Marketability of the gas.
- (4) Cost allocation for the conditioning plant.
- (5) Any remaining design questions.
- (6) Any issues deferred from the Alaska segment cost estimate proceeding.

In this regard, finance condition No. 2 in the President's Decision provides that "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 . . . materially and unreasonably exceed the comparable capital cost estimates filed by Alcan with the Federal Power Commission on March 8, 1977 . . . the FPC may not issue a certificate for the project." The proposed billing commencement date waiver would not affirmatively establish any particular billing commencement date as a matter of law; rather, it would cut back on the restrictions in the President's Decision so as to afford the Commission the legal flexibility to approve tariffs that permit a billing commencement date earlier than the one approved by the Commission in Order No. 31.

2. Production related costs.

On August 24, 1979, pursuant to a formal rulemaking proceeding, the Commission issued Order No. 45 in Docket No. RM79-19, adopting regulations and a policy statement on production related costs for Prudhoe Bay gas. The order was stayed to permit parties to file applications for rehearing, and a number of such applications were filed. At the request of the Secretary of Energy, the Commission issued an indefinite stay order. Thus, Docket No. RM79-19 is an open docket before the Commission, with applications for rehearing of Order No. 45 pending for decision.

3. Cost estimate proceeding.

The Commission issued an order in August of 1981, in Docket No. CP80-435, inviting comment and reply comment on a report submitted to the Commission by its Alaskan Delegate and by the Federal Inspector's Director of Audit and Cost Analysis, analyzing the Alaska segment cost estimate. Comments and reply comments have been filed, and are being analyzed by the Commission's staff pursuant to preparation of an order for Commission consideration. Thus, the cost of the Alaska segment is an issue presently before the Commission for decision.

4. Rate base proceedings.

In December of 1980, the Commission issued an order affording interested parties an opportunity to show cause why the Commission's Chief Accountant's audit report on pre-1980 Alaska segment expenditures should not be accepted by the Commission for rate base purposes. A comparable show cause order was issued in March of this year with respect to Northern Border's pre-1980

costs. Comments and reply comments were received in response to both orders. Thus, the rate bases of both Northern Border and Alaskan Northwest, to the extent that they involve costs incurred prior to 1980, are both pending before the Commission for decision.

5. Northwest Canadian application:

The Commission issued an order on October 1, 1981, authorizing Northwest Alaskan Pipeline Company to import the Canadian prebuilt gas at the present border price, and approving Northwest Alaskan's tariff for the resale of that gas to PIT for transportation through the Western Delivery System to its destination in Southern California. The order, however, deferred consideration of the application of Northwest Canadian Gas Sales Company for a certificate and import authorization to import and resell the gas in lieu of Northwest Alaskan, but afforded Northwest Canadian an opportunity to file additional information on the purpose of its application. To date, Northwest Canadian has not made any further filings. Thus, Northwest Canadian's application is currently pending before the Commission in an open docket.

6. Shipper tracking.

The Commission's staff is currently preparing, for consideration by the Commission, a notice of proposed rulemaking on the subject of tracking ANGTS transportation charges (including transportation charges incurred in Canada) in the ANGTS shipper tariffs.

7. Future certificate proceedings.

At some date within the next few years, Northern Border and PGT will file applications for certificates to construct and operate non-prebuilt portions of the Eastern and Western Legs, and shippers will file applications for certificates to ship the Alaska gas through the ANGTS. These applications may entail, inter alia, adjustments of depreciation schedules for the prebuilt segments.

FEDERAL ENERGY REGULATORY COMMISSION
 WASHINGTON, D. C. 20426

August 18, 1981

MEMORANDUM TO: Honorable Philip R. Sharp
 Chairman
 Subcommittee on Fossil & Synthetic Fuels
 Committee on Energy and Commerce
 House of Representatives

Honorable Clarence J. Brown
 Ranking Minority Member
 Subcommittee on Fossil & Synthetic Fuels
 Committee on Energy and Commerce
 House of Representatives

FROM : Charles A. Moore
 General Counsel
 Federal Energy Regulatory Commission

RE : Proposal by Sponsors of the Alaskan
 Natural Gas Transportation System (ANGTS)
 for Congressional Waiver of Sections 4,
 5, 7 and 16 of the Natural Gas Act in
 Certain Respects Pursuant to Section 8g
 of the Alaskan Natural Gas Transportation
 Act of 1978

Questions Presented

By letter of July 24, 1981, to C. M. Butler III,
 Chairman, Federal Energy Regulatory Commission, 1/ you
 requested a legal memorandum addressing the following
 questions:

1/ Hereinafter, the term "Commission" refers to the Federal
 Power Commission at all times before October 1, 1977, and
 the Federal Energy Regulatory Commission at all times
 thereafter.

(a) The full implications of the proposed waiver quoted hereinbelow, (b) whether there have been past Commission actions which justify the desires of the sponsors to have Congress provide the waiver, (c) hypothetical situations which would work to the injury of the pipeline sponsors of ANGTS or other participants in the project should no such waiver be provided by Congress, (d) hypothetical situations which might work to the injury of resale customers and consumers should such a waiver be provided by Congress, and (e) the reasonable likelihood of the hypothetical situations actually occurring.

The text of the waiver request, as set forth in your letter, is as follows:

Authority to Modify or Rescind Orders

Waive Sections 4, 5, 7, and 16 of the Natural Gas Act to the extent that such sections would allow the Commission to change the provisions of any final rule or order approving (a) any tariff in any manner that would impair the recovery of the actual operation and maintenance expenses, actual current taxes, and amounts necessary to service debt, including interest and scheduled retirement of debt, for the approved transportation system; or (b) the recovery by shippers of Alaska gas of (1) all costs related to the purchase of such gas at just and reasonable rates, and (2) transportation of such gas pursuant to an approved tariff.

We are advised that this text is currently a topic of discussion at staff levels in the Administration and the Congress, and that the text may be revised in one or more respects. Accordingly, the memorandum is expressly limited to the preceding text, although I will be pleased to respond as expeditiously as possible to any questions you might have in connection with material changes in such text.

Discussion1. Background

As you know, the ANGTS is an international project created to transport natural gas from the North Slope of Alaska, through Canada, to the lower 48 states. The United States portion of the system consists of three segments: (1) the Alaska segment, running from Prudhoe Bay on the North Slope to the Yukon border; (2) the Western Leg, running from the British Columbia border to California; and (3) and the Northern Border pipeline, running from a point on the Canadian border near Monchy, Saskatchewan, to Dwight, Illinois.

The ANGTS is unlike any other gas pipeline in the United States in that it is governed by a unique legal framework. The Alaska Natural Gas Transportation Act (ANGTA), 15 U.S.C. section 719, et seq., enacted by Congress in 1976, supplements (but does not replace) the Natural Gas Act; certificates are issued under the Natural Gas Act pursuant to procedures mandated by ANGTA.

Pursuant to Section 7 of ANGTA, the President, in September of 1977, submitted his Decision and Report to Congress on the Alaska Natural Gas Transportation System (Executive Office of the President, Energy Policy and Planning) which designated both the project sponsors and the route for the ANGTS as well as many conditions for its construction. Congress approved the President's Decision by Joint Resolution, which became law on November 8, 1977. H.R.J. Res. 621, Pub. L. No. 95-158, 91 Stat. 1268, 95th Cong., 1st Sess. (1977).

The ANGTS is also governed by two international agreements with Canada, both of which have the force and effect of law. The "Agreement Between the Government of the United States of America and the Government of Canada Concerning Transit Pipelines," entered in force October 1, 1977 after ratification by the Senate, applies to all pipelines in both countries whenever one country's pipeline carries the other country's gas or oil. The treaty mandates nondiscriminatory treatment.

The "Agreement Between the United States of America and Canada on Principles Applicable to a Northern Natural Gas Pipeline," signed by representatives of the two governments on September 20, 1977, is an executive agreement that was made part of the President's Decision (pages 47-83). Inasmuch as the Decision was approved by Congress, it (including the Agreement) has the legal status of a statute. The Agreement specifies the route of the ANGTS, and contains numerous conditions. Pursuant to the Agreement, our Commission has consulted with the National Energy Board of Canada in coordinating respective certification of the various ANGTS segments in the U. S. and Canada, including related imports of Canadian gas to support the "prebuilding" of the lower half of the system.

One other relevant item of legislation is Reorganization Plan No. 1 of 1979, which was submitted by the President to the Congress and not disapproved by the Congress. The Plan establishes the Office of the Federal Inspector, which reports directly to the President. The Inspector is responsible for monitoring the construction of the pipeline, and for coordinating all federal permitting and certification of it. The Plan transfers to the Inspector the Commission's Natural Gas Act Sections 3 and 7 jurisdiction to enforce the Commission's certificates and import authorizations issued to the ANGTS project sponsors.

Two categories of tariffs are involved. The project sponsors will own and operate the various segments of the ANGTS, but will not buy or sell the gas transported through it. The shippers will buy the gas at the Prudhoe Bay Field, ship it through the sponsors' facilities, and sell it somewhere at the other end of the pipeline. The sponsors will have tariffs authorizing charges to the shippers. The shippers will in turn have tariff provisions authorizing charges to their customers for the sale of the gas, which charges will include in some form reimbursement of the shippers for the transportation charges paid by the shippers to the sponsors, as well as reimbursement for the costs of purchasing the Prudhoe Bay Field gas.

Thus, for example, if a shipper buys gas at Prudhoe Bay for sale in Detroit, the shipper would incur separate transportation charges billed by the respective sponsors of the Alaska segment, the Canadian segment, and the Northern Border segment of the system. That shipper would request

a tariff authorizing "flow through" to its customers of the full amount of transportation charges paid to the sponsors of each of the three pipeline segments through which the gas was transported, as well as the full cost of the gas itself.

The "flow through" issue is often referred to as "tracking" of charges. Tracking of gas purchase costs is authorized by the Commission's regulations, through purchased gas adjustment clauses. (See 18 C.F.R. 154.38.) Tracking of transportation charges has been authorized in certain instances on a case by case basis.

In Order Nos. 31 and 31-B, 2/ the Commission approved in principle the tracking by ANGTS shippers of transportation charges billed by U. S. certificated ANGTS project sponsors (i.e., the sponsors of the Alaska, Northern Border and Western Leg segments), but reserved for later resolution the issue of tracking the charges of Foothills Pipe Lines (Yukon) Ltd. (Foothills), the sponsor of the Canadian segment. The unresolved tracking issues (including tracking of Foothills' charges that have been approved by the National Energy Board of Canada) are currently under study by the Commission's Alaskan Delegate, who is preparing a report to the Commission.

The sponsors' and shippers' initial tariffs are approved by the Commission pursuant to Section 7 of the Natural Gas Act upon issuance of the certificates. Alaskan Northwest's pro forma tariff was approved in Order Nos. 31 and 31-B. Section 7 provides a "public convenience and necessity" standard. While the Commission may establish initial rates that meet the more rigorous "just and reasonable" standard in Sections 4 and 5 of the Act, it is not required by law to do so. The Commission must only find that the initial rates are in the "public convenience and necessity" and may reserve for later determination what the "just and reasonable" rate should be.

2/ Order No. 31, "Order Setting Values for Incentive Rate of Return, Establishing Inflation Adjustment and Change in Scope Procedures, and Determining Applicable Tariff Provisions," issued June 8, 1979 in Docket No. RM78-12; Order No. 31-B on rehearing, issued September 6, 1979, in the same docket.

Section 7(e) of the Natural Gas Act gives the Commission authority to attach conditions to certificates. The courts have construed broadly the Commission's responsibility under the Natural Gas Act to condition certificates with respect to rate terms and other matters affecting the public convenience and necessity. See, e.g., Atlantic Refining Co. v. Public Service Commission of New York, 360 U.S. 378 (1959); FPC v. Hunt, 376 U.S. 515 (1964). But see Panhandle Eastern Pipe Line Co. v. F.E.R.C., 613 F.2d 1120 (D.C. Cir. 1979), cert. denied, 101 S. Ct. 247 (1980).

Section 4 of the Act requires that all rates and charges be "just and reasonable." After certification, all changes in the initially approved tariffs and rates must be filed with the Commission pursuant to Section 4. The Commission, pursuant to prescribed standards and procedures, may "suspend" such changes for up to five months pending a hearing. If the changes are suspended, the prior approved tariffs and rates remain in effect during the period of suspension. The changes may take effect after the suspension period but subject to refund (with interest) depending on the outcome of the hearing process on contested issues or other disposition by the Commission.

Section 5(a) of the Act authorizes the Commission to institute a proceeding on its own initiative, to consider the justness and reasonableness of a certificate holder's rates and tariffs, and to determine new rates or tariff provisions if the existing ones are determined to be "unjust, unreasonable, unduly discriminatory, or preferential." Such changes can only be prospective; in a Section 5 proceeding the Commission cannot suspend rates or order refunds.

Section 16 of the Natural Gas Act authorizes the Commission to modify or rescind its orders after they have been issued. This authority, under appropriate circumstances, may be utilized for a variety of purposes, ranging from correction of mistakes to modification of certificate terms and conditions in light of changed circumstances.

2. Nature of the Financing

The subject waiver is sought from Congress by the project sponsors of ANGTS in connection with the financing of the project. The financing mechanism selected by the sponsors

has been referred to as "project financing." The propriety of project financing has been addressed by the Commission on a number of occasions, most recently in Ozark Gas Transmission System, FERC Opinion No. 125, Docket No. CP78-532 (July 28, 1981). In that opinion, the Commission described project financing generally as follows:

Project financing differs from conventional financing mainly in connection with loan security. Security generally takes one of two forms in a conventional financing. First, the project sponsor, or borrower, has sufficient unencumbered assets that the lender feels secure in making a loan on the basis of the borrower's general credit. The loan agreement, in such cases, may require any of a number of different undertakings on the part of the borrower to maintain his creditworthiness. Secondly, if the borrower does not have unencumbered assets sufficient to secure the borrowing, the lender may require the pledge of specific assets to be funded by the borrowing as collateral for the loan. As Judge Litt pointed out in his initial decision on the Alaskan Natural Gas Transportation System, this is itself a kind of project financing. In this case the lender is secure in the knowledge that the borrower has put enough money into the project that the economic value of the project, less equity and liquidation costs, will yield sufficient funds for the lender to recover the principal value of the loan and accrued interest. A convenient example of this kind of financing is the mortgage of a building.

A project financing, as it has come to be known in energy projects before the Commission, is a financing in which the general creditworthiness of the borrower is either insufficient or allegedly unavailable to secure the borrowing, and the underlying economic value of the assets to be financed are also insufficient to assure the lender that he will not lose his money. The latter inadequacy will presumptively obtain in the case of any pipeline financing, since the salvage value of the pipeline to be built should, in all cases,

be less than the loan obligation. ^{21/} In this case, an optional financing vehicle is the stream of income to be generated by the project. However, that vehicle is only available in the event that the income stream can be assured whether or not the project should fail. Such assurance is sought in this case in the form of the so-called minimum bill. The minimum bill has been structured in a fashion which will yield sufficient revenues to cover debt service (both principal and interest payments), whether the project is successful or not. In the event the project were to fail, the minimum bill would be levied on the customers of the shippers in the form of a surcharge for gas they do not receive.

^{21/} In this regard Ozark's witness, Gary, states, 'Today we all recognize a mortgage on a pipeline is virtually worthless, except for one aspect, in making a legal investment.' Tr. 12/1064

Slip opinion, at 10-11 (footnotes omitted in part).

As the Commission pointed out in the Ozark case, substantial policy justification should be found in certificate applications before the Commission pursuant to which project financing is sought. In the case of the ANGTS, such justifications have already been considered by both the Executive and Legislative Branches of the Federal Government, as well as the Commission, and have been found sufficient to permit the project financing of the ANGTS. ^{3/}

Some of the justifications have included the substantial amount of natural gas to be delivered by the project, the potential for displacement of large quantities of foreign oil, reduction of pressure on the U. S. balance of payments, net national benefits to both the U. S. and Canada, and the anticipated average cost of gas over the project life.

^{3/} See, generally, Federal Power Commission, Recommendation to the President, Alaska Natural Gas Transportation Systems (May 1, 1977).

3. Reason for the Proposed Waiver

The waiver has a rather singular purpose. It is intended to assure lenders for the project that the income stream which serves as security for their loans will not be reduced below the level necessary to retire the principal of the loan and to pay the interest thereon. It would accomplish this purpose by precluding the Commission from changing the rules of the game, so to speak, in a manner which would undercut the security for the loan. This objective would be achieved by withdrawing from the Commission its authority under the Natural Gas Act to change the project tariffs in such a manner as to reduce project revenues below the level necessary to service project debt. The request for the waiver evidences that certainty of the security is essential, i.e., in this instance that the lenders will rely heavily and to their detriment on the orders of the Commission granting the certificate and establishing the tariffs as preconditions to the sponsors' take down of the construction loans.

All of the foregoing has been explicitly recognized by the Commission in FERC Order No. 31. 4/ In that order the Commission stated:

The project sponsors have earnestly sought that this Order, especially as it relates to the tariff structure, provide assurance to prospective equity investors and lenders. The concern of the sponsors is wellfounded. The Commission fully recognizes that equity investors and lenders will make critical decisions respecting the financing of the construction of ANGTS in reliance on this Order.

The Commission has articulated in great detail its rationale for this Order. Where reasoned alternatives were available, we have provided a thorough analysis of the issues and the basis for our conclusions. This thoroughness provides the investor's best security in relying on this Order.

4/ Supra, note 2, at 4 (mimeo).

The fact of the request for a waiver suggests that the project sponsors and the lenders feel that they need greater assurance than has been provided to date. The Chairman and I feel compelled to agree with that assessment. As the subsequent discussion and legal analysis shows, with the objective of "security" in mind, a waiver is clearly a far better assurance than an order of the Commission. For example, previous efforts by sponsors to secure additional certainty for lenders by attempting to obtain estoppel findings in Commission orders have been unsuccessful. 5/

5/ Applicants in the Great Plains case asked the Commission to make a very explicit estoppel case against itself by including certain statements in its order. Great Plains Gasification Associates, et al., FERC Opinion No. 69 (November 21, 1979) (reversed on other grounds, Office of Consumers' Counsel v. F.E.R.C., ___ F.2d ___ (D.C. Cir. 1980), Case No. 80-1303, decided December 8, 1980). The estoppel option will be discussed in the text, *infra*. In its initial brief to the Presiding Administrative Law Judge, Great Plains claimed the following:

" . . . The lenders have indicated that they will require that the authorizations obtained [from the Commission] by the project companies contain [as a condition to take down of the loan for the project]:

(1) A statement of the Commission's intention not to revoke or modify the tariff provisions approved by it for this project during the term of the bank loan;

(2) A statement of the Commission's understanding that the lenders would not commit funds for this project without assurances that these provisions would continue in effect without modification during the term of the bank loan;

(3) A statement of the Commission's intent to suspend the application as to this project of any future rule, order, or decision of general applicability which might affect the approved tariff provisions until after the conclusion of a full evidentiary hearing to determine the propriety and

(Footnote 5 continued on next page)

Important in the context of ANGTS financing is that a waiver would provide clear assurances and signals to foreign, as well as domestic, lenders. We are advised that a sizeable portion of the borrowing must be acquired from foreign investors because of legal lending limits and other institutional obstacles faced by domestic lenders.

4. Regulatory Risk

The regulatory risk perceived by lenders consists of two separate, but not unrelated, sets of events. They are: (1) that the Commission would change the tariffs initially approved on a claim of changed circumstances, and (2) that a subsequent Commission, composed of a majority with a different view of the public interest than the collective view of the Commission originally approving the tariffs, would change the tariffs to the detriment of the lenders in order to reflect their different views. The Commission's ability to change the tariffs in either of these events is not clear as a matter of law. It is not unlimited, but our analysis indicates that it is fairly broad. The effect of the proposed waiver would be to eliminate in material part the Commission's options -- to the extent they exist -- to change the tariffs in either of these cases.

5/ Footnote continued from prior page

lawfulness of such Commission action as it affects the tariff provisions on which the financing is based" Initial Brief of Great Plains Gasification Associates and the Customer Pipeline Companies, Docket Nos. CP78-391, et al., January 29, 1979, at 70-71.

Five other admissions were sought from the Commission, but those quoted are exemplary of what the lenders sought. Both the law judge and the Commission refused to provide them. See Opinion No. 69, at 63.

Similar estoppel findings were requested by the ANGTS sponsors in the proceeding that culminated in Order No. 31; however, they were refused in favor of the language quote at page 10, supra. As discussed hereafter, it is questionable whether such findings would achieve the desired or intended result.

5. Constitutional Question

Implicit in the questions articulated in your letter is the issue of whether the waiver is a reasonably necessary mechanism to provide the lenders with the certainty they seek. The threshold issue, in this respect, is whether there is any constitutional bar to the Commission taking the kind of action described in the subsequent paragraphs. If such a bar exists, the waiver would not be necessary. Our research indicates that this question has not been authoritatively answered by the courts. That is, there are no clear constitutional limits regarding the Commission's power to change tariffs, where parties have substantially changed position in reliance on such tariffs, and the Commission had prior, actual knowledge of such reliance. The Chairman and I believe that a respectable case could be made that it would violate basic constitutional principles of due process for the Commission to change tariffs not explicitly conditioned to permit change, when the Commission is fully aware that the tariffs form the basis of project financing, and the changes will in one way or another undercut that basis. However, there is an absence of authority to support such a proposition. 6/

6/ The question whether legislative or quasi-legislative action with retroactive effect works to deprive an owner of property without due process is somewhat analogous. Unfortunately, there are no clear principles, and the cases go both ways. See generally, text and cases collected in Cong. Research Service of Library of Congress, The Constitution of the United States of America: Analysis and Interpretation (1972), at 1165, et seq.

A case strongly suggestive that the principles of estoppel do not apply to federal agencies is Federal Crop Insurance Corp. v. Merrill, 332 U.S. 380 (1947). In that case, certain farmers were assured by a local agent of the federal corporation that a certain type of crop could be insured. In fact, rules of the corporation provided that such crops could not be insured, although neither the agent nor the farmers had actual knowledge of the regulations. Relying on the agent's advice, the crops were planted and subsequently destroyed.

(Footnote 6 continued on next page)

6/ Footnote continued from prior page

In holding that the farmers could not collect insurance for the crops despite the payment of premiums therefor and the inducement of the local agent's assurances, the Court indicated that knowledge of the rules contrary to the agent's advice would be imputed to the farmers because the rules were published in the Federal Register. Despite the difference of the facts in the Merrill case (farmers had relied on apparent rather than actual authority), the Court used strong language to suggest in dicta that the government corporation would be treated as an agency of the United States and would be immune from doctrines like estoppel. Id. at 384-85.

These dicta have led one commentator to take the following position:

Merrill indicates that estoppel will not be used to protect an individual who has changed his position in reliance on administrative advice: 'It is settled law that no estoppel can arise against the government.' [Citing, Chapman v. Santa Fe Pac. R., 198 F.2d 498, 519 (D.C. Cir. 1951) (dissenting opinion), cert. denied, 343 U.S. 964 (1952).] B. Schwartz, Administrative Law (1976), at 133, et seq.

Professor Schwartz agrees with the Merrill-type result when the agency has acted in excess of its statutory authority. However, he goes on to say:

. . . Both reason and policy argue that prejudicial reliance warrants invoking the doctrine of estoppel against the government in other cases: 'when the sovereign becomes an actor in a court of justice, its rights must be determined upon those fixed principles of justice which govern between man and man in like situations.' Id., at 135 (footnote omitted), citing Ritter v. United States, 28 F.2d 265, 267 (3d Cir. 1928).

(Footnote 6 continued on next page)

6/ Footnote continued from prior page

The following cases support Professor Schwartz's policy proposal: Brandt v. Hickel, 427 F.2d 53, 56-57 (9th Cir. 1970); Chapman v. El Paso Natural Gas Co., 204 F.2d 46, 53-54 (D.C. Cir. 1953); United States v. Lazy FC Ranch, 481 F.2d 985, 988-989 (9th Cir. 1973); Oil Shale Corp. v. Morton, 370 F. Supp. 108, 124-127 (D. Colo. 1973).

The decision in the Lazy FC Ranch case, *supra*, indicates that a line of federal estoppel cases may be emerging, and that such is required by elementary notions of fairness. 481 F.2d at 989. The Chairman advises that his view is consistent with that of Professor Schwartz and the Court in Lazy FC Ranch. However, absent an authoritative pronouncement on the matter by the United States Supreme Court, or specific federal legislation, I cannot render an opinion as General Counsel of the Commission that the Commission would in all or substantially all cases be estopped by its orders from changing the ANGTS tariffs in such manner as to impair the underlying security for the financing of the ANGTS. In my judgment, the best opinion that could be rendered would simply agree that the Commission is constitutionally prohibited from setting a confiscatory rate of return. As stated by the Supreme Court in Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia, 262 U.S. 679, 690 (1923):

Rates which are not sufficient to yield a reasonable return on the value of the property used at the time it is being used to render the service are unjust, unreasonable and confiscatory, and their enforcement deprives the public utility company of its property in violation of the Fourteenth Amendment.

See also, F.P.C. v. Hope Natural Gas Co.; 320 U.S. 591, 603 (1943). As the subsequent discussion reveals, short

(Footnote 6 continued on next page)

6. Statutory Question

The foregoing is not to suggest that there are no Supreme Court cases dealing with regulatory estoppel. To the contrary, there are two cases of considerable relevance; however, both are based on interpretations of the enabling legislation of other agencies. In the first of these, United States v. Seatrain Lines, 329 U.S. 424 (1946), the Court held that the Interstate Commerce Commission lacked the authority to alter the certificate of a water carrier on its own motion. The holding was based on the express statutory language which permitted such action with respect to motor carriers, and the absence of correlative statutory authority in the case of water carriers, in the Interstate Commerce Act.

6/ Footnote continued from prior page

of this constitutional limitation, the Commission has considerable latitude in the exercise of its jurisdiction under Sections 4, 5, 7 and 16 of the Natural Gas Act.

The fact that the lenders have induced the project sponsors to ask for the waiver may well indicate that an unqualified legal opinion cannot be obtained from lenders' counsel to the effect that a constitutional bar exists to provide an estoppel defense. A similar conclusion may be deduced from the request for estoppel admissions in the Great Plains case, supra, note 5.

In Civil Aeronautics Board v. Delta Air Lines, Inc., 367 U.S. 316 (1961), the Supreme Court considered a similar question. The Court determined that Section 401(g) of the Federal Aviation Act prohibited the CAB from altering a certificate of public convenience and necessity, even where the certificating order purported to reserve jurisdiction prior to certification to make summary modifications pursuant to petitions for reconsideration. Reaching this result, the Court's analysis was founded on the plain meaning of the language in the enabling statute and its legislative history.

The Delta case is of particular importance to the subject of this memorandum for two reasons. First, the Court clearly explained the nature of the problem with the following statement:

Whenever a question concerning administrative, or judicial, reconsideration arises, two opposing policies immediately demand recognition: the desirability of finality, on the one hand, and the public interest in reaching what, ultimately, appears to be the right result on the other [footnote omitted]. Since these policies are in tension, it is necessary to reach a compromise in each case Id. at 321.

The second key element of the Delta case is the recognition by the Court that the limitations placed on the CAB under the Federal Aviation Act resulted from Congressional concern during the passage of its predecessor, the Civil Aeronautics Act of 1938, over the reliance on, and consequent expenditure by airlines of large sums of money on the basis of the CAB's certificate (route) decisions. In this connection, the Court stated:

In short, our conclusion is that Congress wanted certificated carriers to enjoy 'security of route' so that they might invest the considerable sums required to support their operations; and, to this end, Congress provided certain minimum protections before a certificated operation could be cancelled. We do not think it too much to ask that the Board furnish these minimum protections as a matter of course, whether or not the Board in a given case might think them meaningless. It

might be added that some authorities have felt strongly enough about the practical significance of these protections to suggest that their presence may be required by the Fifth Amendment. See Seatrains Lines v. United States, 64 F. Supp. 156, 161; Handlon v. Town of Belleville, 4 N.J. 99, 71 A. 2d 624; see also 63 Harv. L. Rev. 1437, 1439. Id., at 331-332.

7. The Natural Gas Act

The Seatrains and Delta cases teach that the starting point in determining the practical necessity of the waiver as a security device is the language of the relevant enabling statute, the Natural Gas Act. Sections 4 and 7 are relevant, but the key provisions are Sections 5(a) and 16. Section 16 reads in pertinent part:

The Commission shall have power to ... prescribe, issue, make, amend, and rescind such orders, rules or regulations as it may find necessary or appropriate to carry out the provisions of this act.

Section 5(a) provides, in pertinent part, that if the Commission:

... [S]hall find that any rate, charge, or classification demanded, observed, charged, or collected by any natural gas company in connection with any transportation or sale of natural gas, subject to the jurisdiction of the Commission, or that any rule, regulation, practice or contract affecting such rate, charge, or classification is unjust, unreasonable, unduly discriminatory, or preferential, the Commission shall determine the just and reasonable rate, charge, or classification rule, regulation, practice, or contract to be thereafter observed and in force, and shall fix the same by order. [emphasis supplied]

These statutory pronouncements are mandatory as opposed to precatory. The broad language of Section 16, when employed in conjunction with Section 5, has permitted the Commission to alter and amend conditions to certificated service with full approval by the

courts. Section 5(a) has been interpreted as giving the Commission authority to alter the terms and conditions of certificated service even though the affected parties, acting alone, could not have changed them. F.P.C. v. Louisiana Power and Light Co., 406 U.S. 621, 646-647 (1972). In Opinion No. 754-A, Docket No. RP71-119, issued August 17, 1976, aff'd on other grounds, Hercules, Inc. v. F.P.C., 559 F.2d 1208 (3rd Cir. 1977), the F.P.C. concluded, with court approval, that it could exercise its Section 5 authority to promulgate new terms and conditions attached to certificates authorizing initial service.

The combined effect of Sections 5(a) and 16 is to require the Commission to amend terms and conditions of a certificate if those terms and conditions prescribe tariff provisions subsequently found to result in rates or charges which are not just and reasonable. As the United States Court of Appeals for the District of Columbia Circuit stated in American Smelting and Refining Company v. F.P.C., 494 F.2d 925, 940-941 (1974), cert. denied sub nom., Southern California Gas Co., et al., v. F.P.C., 419 U.S. 882 (1974), once the Commission finds that an existing rate or charge is unjust or discriminatory, 7/ it "must prescribe the remedy for that condition." 8/ If the existing illegal rate or charge is the result of the operation of a certificate condition, the remedy clearly will lie in the revocation or alteration of the order prescribing that condition, and thus the certificate itself.

-
- 7/ The Commission's authority to find that a tariff (previously determined to be just and reasonable) no longer functions in a reasonable manner has been upheld by the U.S. Court of Appeals for the District of Columbia Circuit in Pacific Gas Transmission Co. v. F.P.C., 536 F.2d 393 (1976).
- 8/ The D.C. Circuit has also taken this position in Pacific Gas Transmission Co. v. F.P.C., supra., where it stated at page 396 that "[a]fter such a finding, the Commission had not only the power but a solemn duty to take immediate action."

Furthermore, the unique nature of the Alaskan Northwest tariff provisions may subject them to amendment on another basis. Because they were developed in a rule-making, the provisions of Order No. 31 arguably are not the result of the Commission acting in a judicial capacity, but in a legislative one, formulating and applying policy. The distinction is important because where the Commission acts in the former capacity, applying law or policy to past facts, a decision on the merits as to a disputed, and litigated issue of fact becomes final. United States v. Utah Construction and Mining Co., 384 U.S. 354, 421-422 (1966); Davis, Administrative Law Treatise, §18.09 (1970 Supp.). In the latter case, the Commission is free to take appropriate steps without being bound by its prior actions. Permian Basin Area Rates Cases, 390 U.S. 747, 789 (1968); Public Service Commission, State of New York v. F.P.C., 511 F.2d 338, 353 (D.C. Cir. 1975). The policy determination in this case has been that the public convenience and necessity required the assurances to investors in the ANGTGS provided for by the tariff provisions of Order No. 31. Arguably, the Commission has determined that as a matter of policy, at least under present circumstances, a tariff designed to meet the conditions of Order No. 31 will be just and reasonable. The same reasoning might also apply to the shipper tracking provisions in the event that such provisions are adopted by the Commission through rule-making procedures. Although it is questionable whether the rulemaking-adjudication distinction would be given great weight in the context of the facts at hand, it might be enough to convince a future Commission that it could, within the law, conclude that a different policy determination better serves the public interest.

From the foregoing it is clear that there is a plausible case for Commission authority to subsequently alter the tariff conditions of Alaskan Northwest's certificate, relying on Sections 16 and 5(a) of the Natural Gas Act and judicial pronouncements authorizing agencies to make changes in policy. The foundation for that case is the general principle that a policy determination made by a present Commission cannot preclude a future Commission from making a policy determination to the contrary, provided that in doing so it adequately explains the reasons for its new position, Consolidated Gas Supply Corp. v. F.P.C., 520 F.2d 1176 (D.C. Cir. 1975), whether or not there has been a change of circum-

stances. Greater Boston Television Corp. v. F.P.C., 444 F.2d 852 (D.C. Cir. 1970). A corollary to that principle is that a present Commission cannot bind a future Commission so as to preclude the prospective operation of Section 5. Optional Procedure for Certifying New Producer Sales of Natural Gas, 48 F.P.C. 218, 223 (1972); Pacific Gas Transmission Co. v. F.P.C., supra. These rules are analogous to those applicable to the legislature: namely, this Congress cannot preclude legislation, or amendments to legislation, by the next Congress.

8. Reasonableness of the Waiver Request

This line of analysis suggests several important conclusions, which bear ultimately on the recommendation of this memorandum. First, the presence or absence of a constitutional ban to the impairment by this or a future Commission of the tariffs upon which the lenders will rely is unclear. Second, there appears to be no statutory bar, such as was found to exist in the Seatrain and Delta cases, which would preclude the Commission from changing the tariffs. Even though it is clear that commentators, the Courts, at least by way of dictum, and the past and probably current Commissions accept the principle that elementary notions of justice should allow the project lenders to rely in good faith on the decisions of the Commission in making their loans, the request of the project sponsors indicating their "desires . . . to have these provisions waived" appears to be based on a concern as to the certainty of the federal estoppel doctrine under the Natural Gas Act. The questions that remain are those that are directly raised by your letter. They ask in essence whether there are either historical or predictable future facts which support or impugn the legislative request. That is, assuming that the waiver request is not patently unreasonable, is there a historical legal perspective from which the Congress could judge the future and find sound public reasons to grant or deny the waiver.

9. Past Commission Actions

For the moment I will defer to subsequent paragraphs the question of "the full implications of the waiver" and turn to your second specific question: whether there have been past Commission actions which justify the desires of the sponsors to have the subject sections of the Natural Gas Act waived. In this connection, the following contains a summary of recent cases, representative of past Commission actions, which involved issues of claimed detrimental reliance. Having done so I will leave it to the Subcommittee to conclude from these decisions whether or not the project sponsors' request is justified.

A. Jurisdiction: Distrigas Corporation, et al. v. F.P.C., et al., 495 F.2d 1057 (D.C. Cir. 1974), cert. denied, 419 U.S. 834 (1974).

This proceeding involved, in pertinent part, a filing by Distrigas Corporation and its affiliates, Distrigas of New York Corporation and Distrigas of Massachusetts, (Distrigas) which requested the Federal Power Commission to grant Distrigas the authority under Section 3 of the Natural Gas Act to import liquefied natural gas (LNG) from Algeria. 9/ The filing also contained a request by Distrigas for the FPC to issue a disclaimer of the Commission's jurisdiction under Section 7 of the Natural Gas Act. 10/

9/ Following regasification, more than 80 percent of the gas was to be sold in the state of importation to distributors and direct customers and the remainder to distributors in neighboring states.

10/ The imported LNG was to be delivered and regasified at facilities at Staten Island, New York and Everett, Massachusetts.

The Commission in a three to two vote granted the requested Section 3 authorization without condition but, noting that this was a novel situation, reserved the right to add conditions in the future if circumstances should change. The Commission noted that Section 3 of the Natural Gas Act specifically provided for such future amendments. However, the Commission did not find Section 7 jurisdiction over the regasification facilities and service nor over the facilities and services involved in the sale of the regasified LNG in the state of importation. 11/ The result of the decision was that there was no jurisdiction under Section 7 or Section 3 (by way of conditions to the import authorization) over the regasification facilities and service nor over the intrastate facilities and service. The Commission indicated its hope that this disclaimer of jurisdiction would make the project more attractive to private investors and "lead to more gas at a lower price to the consumer than if [the Commission] controlled every detail and decision related thereto." Two Commissioners dissented, arguing that the Commission should take jurisdiction under Sections 3 and 7 of the Natural Gas Act over the regasification facilities and the "intrastate" facilities.

Following the Commission's decision, Distrigas "assertedly in reliance on the Commission's limited jurisdictional disclaimer, . . . proceeded to construction of its Everett and Staten Island facilities, expending very substantial sums on each." In a new filing, Distrigas also applied for Section 3 authorization to import significant additional quantities of natural gas and for Section 7 authorization to sell these additional volumes, as well as certain of the originally authorized volumes, in interstate commerce.

11/ The Commission did take jurisdiction under Section 7 of the Natural Gas Act over the sales of gas which was ultimately destined for resale in interstate commerce. However, it found that jurisdiction over such sales attached only at the tailgate of the regasification plant.

Meanwhile, at the Commission two of the original three person majority had left and had not been replaced. Therefore, the two dissenting Commissioners were now a majority. In response to Distrigas' applications, they found that circumstances had changed since Distrigas' original application had been acted upon by the Commission. Specifically, they stated that the original Distrigas application proposed new and increased sales for resale in interstate commerce. Therefore, the Commission held that Section 7 certification was mandated for all of Distrigas' facilities.

On appeal, Distrigas argued, among other things, that once the Commission's previous decision on the jurisdictional issue was final and Distrigas had subsequently acted in reliance on that decision by (1) contracting with its customers and (2) constructing its facilities, the Commission was foreclosed from changing its mind and asserting jurisdiction where it had previously declined to do so. Distrigas cited the Seatrain case, 12/ where the Supreme Court had overturned the Interstate Commerce Commission's attempt to revoke a certificate previously granted to a water carrier.

The Court found that the Commission had the authority to issue the order it had issued under Section 3 of the Natural Gas Act but remanded for additional proceedings before imposition of any requirements to certification under Section 7. The Court distinguished Seatrain on the basis of lack of statutory authority in that case, and noted that both Section 3 of the Natural Gas Act as well as the Commission's previous order specifically contemplated changes and amendments. The Court further found that if Distrigas had relied on an interpretation of the original Commission order to the contrary (i.e., that the original Commission order granted Distrigas a permanent immunity from regulation), Distrigas' reliance was misplaced.

12/ Supra, at 15.

As part of its basis for rejecting the estoppel argument, the Court concluded that Distrigas' claim of injury was at that point hypothetical in nature since Distrigas had not demonstrated that the Commission would not ultimately authorize Distrigas' proposal.

On remand, the Commission granted Distrigas' application subject to certain conditions.

The Distrigas case is one where the Court approved a changed Commission's reversal of a previous Commission's ruling upon which the company and its lenders had arguably relied to their detriment. As a basis for that approval the Court stated, "any 'right' to non-regulation that the Commission's previous decision can be supposed to have vested in Distrigas was entirely contingent on the Commission's continuing to view such non-regulation as in the public interest." However, two facts tend to distinguish Distrigas from the ANGTS. One is the conditions cited by the Court in the original Section 3 authorization, which arguably placed Distrigas and its lenders on notice that the rule could change. The other distinguishing fact was that the Court found that the Commission's decision had not yet injured Distrigas and that it might not in the future. Presumptively, the matter was resolved at the Commission level in a way which did not adversely affect Distrigas or its lenders. Nonetheless, one could conclude that the uncertainty caused by the Commission's reversal is the type of action the ANGTS lenders seek to protect themselves against.

- B. Cost of Service Tariff: Pacific Gas Transmission Co. v. F.P.C., et al., 536 F.2d 393 (D.C. Cir. 1976), cert. denied, 429 U.S. 999 (1976).

This case involved a Commission order which, pursuant to Section 5(a) of the Natural Gas Act, changed in

part Pacific Gas Transmission Company's (PGT) cost-of-service tariff after a full hearing. Prior to the Commission decision, PGT had been permitted to adjust its rates automatically on a monthly basis to reflect all changes in its costs, including amounts for gas purchased from Canadian producers for resale in the United States. This tariff had been in effect since PGT was first authorized to import gas from Canada in 1960. 13/

In 1974 and 1975, after a hearing under Section 5(a) of the Natural Gas Act, the Commission modified PGT's cost-of-service tariff to provide that changes in the cost of gas purchased by PGT from Canadian suppliers could be passed on to PGT's customers only after PGT had applied for the rate increase pursuant to Section 4 of the Natural Gas Act, and after any suspension period imposed by the Commission thereunder. The Commission revised the tariff to provide that such filings would be subject to suspension by the Commission pursuant to Section 4 of the Natural Gas Act and, if suspended, subject to refund and possible reduction as provided in Section 4 of the Natural Gas Act. The Commission justified the revised tariff by stating that Canadian authorities had recently begun to require that significantly increased prices be charged for Canadian gas sold for resale in the United States. Furthermore, Canadian authorities had changed their pricing policy by referencing it to prices for alternate energy sources (primarily oil products) in markets served by Canadian gas. This formula change signaled further significant increases in the cost of gas purchased by PGT from Canadian producers (as much as four times higher than prior to the Section 5 proceeding). The Commission found that these changed circumstances rendered PGT's existing tariff "unjust and unreasonable" and required prior Commission review of rate increases for Canadian gas before they could be passed on to consumers in the United States.

13/ See Pacific Gas Transmission Company, 24 FPC 134 (1960).

On appeal, PGT argued in part that the Commission-ordered modification of its tariff could result in delay or outright denial of its recovery of increased Canadian purchased gas costs which, in turn, would financially destroy PGT. PGT also argued that the Commission was without power to modify the cost-of-service tariff which a previous Commission had approved in 1960 when PGT was originally authorized to commence the importation of Canadian natural gas.

The Court denied all of PGT's claims and affirmed the Commission order and its action revising the tariff under Section 5(a). In support of its holding, the majority noted that the Commission had granted prompt authorization under Section 4 for Canadian gas rate increases which took effect after the disputed tariff change. The majority opinion indicated that failure of the Commission to include such increases might well be to "abdicate" its responsibilities under Section 4. However, Judge Bazelon in a dissenting opinion directed considerable criticism towards the Commission for injecting uncertainty into PGT's financial position. As the dissent stated: ". . . the FPC concedes that had PGT been required to absorb even the initial 32 cent price increase for a short period of time it would have been driven out of business, and 2,000,000 consumers would have been deprived of 40% of their gas supply." (536 F.2d at 397.)

C. Advance Payments (30 day rule): Tennessee Gas Pipeline Co., et al. v. F.E.R.C., et al., 606 F.2d 1094 (D.C. Cir. 1979), cert. denied, 447 U.S. 922 (1980); Natural Gas Pipeline Co. v. F.E.R.C., 590 F.2d 664 (7th Cir. 1979); United Gas Pipe Line Co. v. F.E.R.C., 597 F.2d 581 (5th Cir. 1979); Trunkline Gas Co. v. F.E.R.C., 608 F.2d 582 (5th Cir. 1979).

These cases involve interstate natural gas pipelines which, pursuant to a series of Commission rulemakings, including most notably Order Nos. 465 and 499, made interest-free loans (advance payments) to natural gas

producers as exploration and development investments which were to be repaid by future delivery of gas. Pursuant to these Commission Orders the pipelines were allowed to include such advances in their rate bases, for rate of return purposes, as exploration and development investments. This policy was advanced by the Commission as an incentive for the addition of gas supplies. The Commission's rulemaking orders spelled out in detail the requirements for inclusion of advance payments in Account 166. However, insofar as the "timing" of the expenditures by the producers versus the date of the pipelines investment, the Commission was silent, except to the extent the orders stated that amounts included in Account 166 could receive favorable rate base treatment where they were found to be "reasonable and appropriate." Subsequent to these Orders, pipelines invested at least \$5.5 billion in "advance payments" with producers. However, after these investments had been made, the Commission, acting under FPC Order No. 465, pursuant to the "reasonable and appropriate" language, disallowed rate base treatment for certain advances because they were made to the producers and included in the pipelines' rates more than "thirty days" before they were spent by the producers. As a result large amounts of advance payments were retroactively disallowed on a deferral basis for inclusion in pipeline companies' rate bases.

On appeal to three different Circuit Courts, the pipelines claimed serious injury and voiced loud complaints that the general language of Order Nos. 465 and 499 had offered no notice of the new specific timing rule imposed by the Commission. As acknowledged by the D.C. Circuit Court, ". . . substantial sums were involved and deferral has resulted in considerable losses for the pipelines' stockholders." (606 F.2d at 1108.)

The pipelines argued that, at the invitation of the Commission rulemaking orders, pipelines were encouraged to make advance payments to promote exploration and development of natural gas reserves for the interstate market. Pursuant to those orders, the pipelines argued, they had invested substantial sums of money in the advance payment program. Thus, they argued that it was unfair and illegal for the Com-

mission, pursuant to the reasonable and appropriate standard, to establish in individual pipeline rate cases decided after the rulemaking orders had issued and after the advance payments contracts had been executed, that rate base treatment of advance payments would not be allowed more than thirty days in advance of when they were spent by the producers.

The three separate circuit courts reversed the Commission orders decided on this basis. However, the D.C. Circuit in Tennessee rejected the pipelines' claims of retroactive ratemaking and detrimental reliance and directed the Commission on remand to develop a timing relationship supported by substantial evidence. The Fifth Circuit in the United and Trunkline cases and the Seventh Circuit in the Natural case found that it was impermissible retroactive ratemaking to impose a timing requirement on Order No. 465 advances and that the pipelines had relied to their detriment on the absence of a timing requirement in the Order when they made advances to producers. Therefore, they reversed the Commission decision on the Order No. 465 advances and directed inclusion of the designated amounts in the respective pipelines' rate bases. Since Order No. 499 contained at least an ambiguously general reference to a timing relationship, those portions of the Commission decision were remanded because of a lack of substantial evidence supporting that portion of the Commission orders. Although the Commission was reversed in these cases, language from the Court's opinion in Tennessee is illustrative of the "regulatory risk" inherent to an industry subject to the Commission's jurisdiction.

We find that petitioners' arguments in support of their interpretation (of estoppel facts) are undercut by consideration of the character of the advance payment program as an experimental departure from well accepted and understood regulatory law. (606 F.2d at 1108.)

* * *

One of the risks incurred by the pipelines has been the 'regulatory risk' that an experimental program such as advance payments might miscarry, and that administrative readjustment would not prevent substantial adverse impact. (606 F.2d at 1120.)

- D. Dedication of Gas Reserves: Air Products & Chemicals, Inc. v. F.E.R.C., F.2d
(5th Cir. 1981), Case No. 78-2011, decided July 16, 1981.

This case involves a Commission order which ended a prior Commission policy under the "Chandeleur incentive doctrine" (of approximately seven years' duration) which allowed offshore natural gas producers to reserve for their own use a portion of gas reserves which otherwise would have been dedicated to the interstate market. The prior policy had allowed these reservations as an incentive to producers to expedite the exploration and development of offshore reserves of natural gas. The Commission, in its final order, found that the reservation incentive was no longer needed because, among other things, the interstate market was suffering severe curtailments and thus the gas which would be reserved by the producers was needed to serve the interstate market.

On appeal the producers argued, among other things, that they relied to their detriment on the prior FPC policy allowing reservations and that it was unfair and illegal for the Commission to reverse its policy in an adjudicated case instead of a rulemaking proceeding to be applied prospectively.

The Court remanded the case to the Commission because of the improper way in which the Commission relied on extra-record evidence to support its decision, but it rejected the producers' arguments of detrimental reliance on the prior Commission policy. The Court noted that the old Commission policy was continually attacked by consumer groups in various cases and that it was, at its inception, described by the FPC as experimental. In sum, the Court found that the policy was

never "well established" enough to have caused detrimental reliance thereon by producers or anyone else. The Court noted further that the producers were not precluded from selling the gas in interstate commerce for a fair price but rather were prohibited from reserving the gas for their own use.

E. Unsuccessful Project Costs: Tennessee, et al. v. F.E.R.C., 606 F.2d 1094 (D.C. Cir. 1979), cert. denied, 447 U.S. 922 (1980).

This proceeding involved, among other things, an attempt by Transcontinental Gas Pipe Line Corporation (Transco) to recover costs associated with four unsuccessful projects related to the production of synthetic natural gas (SNG). The Commission denied recovery of these costs because they were not "used and useful" in providing service and could not be charged to rate-payers. 14/

On appeal, Transco argued that it had spent \$22 million on these ultimately unsuccessful projects in purported reliance on a Commission policy allowing recovery of the costs of the projects if they proved to be unsuccessful. The Court found that the Commission had no policy allowing recovery of these costs and then affirmed the Commission's decision.

14/ A possible concern of the lenders is that a dogmatic application of the "used and useful" maxim would result in similar treatment of the ANGTS if the project were to suspend operation after completion or, through no fault of the sponsors they were unable to commence operation after completion. The need for assurances to the contrary (the minimum bill) provides a major impetus for project financing as opposed to conventional financing.

Other cases in which the Commission is currently under criticism for assertedly changing policies to the detriment of jurisdictional companies include (i) applications for rehearing of Commission Opinion No. 90 15/ and Order No. 94, 16/ and (ii) the oil pipeline cases where revision of the ratemaking methodology formerly employed by the Interstate Commerce Commission is under consideration. 17/

However, these cases should not be taken as a suggestion that the Commission never accords finality to its orders. In *Texaco, et al.*, Docket No. CI77-329, et al., 13 FERC ¶ 61,222 (1980), for instance, a United States Senator filed a pleading on July 21, 1980, seeking to reopen a case settled on February 10, 1978. Part of the Senator's argument was that changed circumstances justified reopening the case, but the Commission refused to grant the intervention and declined to disturb its earlier order.

Arguably, cases such as those described above represent a possible "justification" or reason why the sponsors have now sought the waiver from Congress. At the same time, however, these decisions and others of a similar nature have generated some sympathy in the courts and have begun to establish the proposition that estoppel is available as a defense against the government if the government's wrongful conduct threatens to work a serious injustice and if the public's interest would not be unduly damaged by the imposition of estoppel. *Lazy FC Ranch, supra*, 481 F.2d at 989. Nevertheless, because the estoppel doctrine has not been fully developed under the Natural Gas Act, it is fair to state that only a waiver would provide the lenders with the same sense of legal certainty that a firmly established "regulatory estoppel doctrine" would afford these investors. Whether this legal uncertainty "justifies" the requested waiver is a value judgment best left to Congress. With this in mind, it is appropriate to consider your questions as to hypothetical situations creating injury to project participants.

15/ 12 FERC ¶ 61,080 (1980).

16/ 12 FERC ¶ 61,080 (1980); FERC Statutes and Regulations, ¶ 30,178 (1980).

17/ Trans Alaska Pipeline System (TAPS) (Phase I), Docket Nos. OR78-1, et al.; Williams Pipe Line Company (Phase I), Docket Nos. OR79-1, et al.

10. Hypothetical Injuries to Project Participants

Our analysis has produced four general sets of hypothetical circumstances which might induce a Commission response changing the tariff provisions related to the project, absent the waiver. They are:

- (1) a changed economic environment resulting in materially different costs of capital (i.e., interest rates and return on equity) from those extant at the time of initial approval;
- (2) changed amounts of natural gas available to be transported resulting in a materially different economic life for the transportation system;
- (3) changed economics of the gas to be delivered by the system, relative to other sources of energy supplies, warranting an altered revenue pattern in order to avoid more serious economic dislocations; and
- (4) premature project failure.

As a consequence of these general events, the following hypothetical Commission actions might take place:

(a) Upon a finding of changed circumstances the Commission could determine, pursuant to Sections 5, 7 and 16 of the Natural Gas Act, that the cost-of-service tariff (which provides that Alaskan Northwest's rates will be adjusted twice a year by a formula that requires Alaskan Northwest to change its rates to reflect actual costs in its charges to shippers) was no longer appropriate. The Commission could then require Alaskan Northwest to charge a stated rate, such as a flat rate per MMBtu of natural gas transported, and require a filing pursuant to Section 4 of the Natural Gas Act to be made prior to the effectuation of any increase in that stated rate. The rate increase filing could be suspended for up to five months, and the proposed rates thereafter collected could be subject to possible reduction and refund with interest.

The risks to Alaskan Northwest in the event of a Commission-ordered change to a stated rate form of tariff involve the adverse economic impacts resulting from the regulatory lag attendant to putting into effect a proposed

rate increase under Section 4 of the Natural Gas Act. The regulatory lag consists of the sum of: (1) the time necessary to prepare a Section 4 rate filing plus (2) the one-month notice requirements between the time the filing is made and the earliest possible effective date (absent a waiver of the notice requirements) plus (3) a suspension period of up to 5 months beyond the proposed effective date. During the lag period, Alaskan Northwest sponsors would not be able to recover all of the costs previously covered by operation of the cost-of-service tariff.

As noted previously, the FPC modified in part the cost-of-service tariff of Pacific Gas Transmission Company to require Section 4 filings to recover increased Canadian purchased gas costs. However, the Court concluded that the result was justified inasmuch as the Commission had, pursuant to Section 4, allowed a "non-niggardly" flow-through by the company of increased gas costs, notwithstanding the dissent's concern that delay would have resulted in adverse consequences.

(b) Alternatively, the Commission could decide at a future time to leave the cost-of-service tariff intact but remove the minimum bill (which guarantees recovery of actual operation and maintenance expenses, actual current taxes and debt costs). 18/ The consequence of this action could

18/ The minimum bill provides for the recovery of actual operation and maintenance expenses, actual current taxes, and all amounts necessary to service debt including interest and scheduled retirement of debt. Under no circumstances would debt service be impaired.

Recovery of equity investment and return on equity investment is, however, treated differently. The "90 percent billing adjustment ratchet" reduces charges to eliminate return on equity investment and associated taxes for any service diminution below 90 percent of tendered gas. This tariff provision would be applicable in instances when the reduction in service for any one month was greater than 10 percent. The reduction in charges to reduce the return on equity and

(Footnote 18 continued on next page)

be that during periods of interruption exceeding thirty days Alaskan Northwest would bear all of the financial consequences of the interruption because it would not be able to charge the shippers for any costs incurred during the period of interruption. 19/

(c) Another hypothetical involves a situation wherein the ANGTS project fails some time after the date construction had commenced. Assume further that upon review of

18/ Footnote continued from prior page

associated taxes would be proportional to the percentage of volumes tendered but not transported. The pipeline would be permitted to recoup any such billing adjustments by transporting volumes in excess of the contract level in subsequent months. The charge for such "Billing Adjustment Gas" transportation would be computed by using the same billing adjustment (i.e., the same dollar per Dekatherm). Any service reduction below 100% but more than 90% would be accounted for as "No Billing Adjustment Gas." As such, this gas would be transported in subsequent months at no added charge to the shipper.

The "90 percent billing adjustment ratchet" also operates during periods of interruption of service. It ceases to be operative, however, for any period of total cessation of service for more than 30 days. Beginning with the thirty-first day of any total cessation of service, the portion of the charges attributable to "equity costs" would be collected subject to refund pending a showing by Alaskan Northwest that it should be permitted to retain equity costs collected during the period of cessation of service. Equity costs, in this context, are defined to be "that portion of depreciation expense not necessary for debt service and associated taxes." (Order No. 31, at 181-182.)

The above discussed ANGTS tariff provisions differ substantially from lower-48 pipeline tariff provisions in a number of important respects. It is fair to state that the ANGTS tariff contains unique, "first-of-a-kind", provisions which have not been previously granted by the Commission.

19/ This assumes that in eliminating the minimum bill the Commission would also eliminate the opportunity to collect equity costs subject to refund and to make a showing pursuant to the provisions described in note 18, supra.

the circumstances surrounding the project failure, a future Commission decided, pursuant to Sections 5, 7 and 16 of the Natural Gas Act, to reverse a previous decision in principle to require consumers to pay all debt costs regardless of the circumstances once final certification had been granted and debt servicing obligations had commenced. Thus, the partners of Alaskan Northwest (including sponsor-shippers) would be required to absorb all Alaskan Northwest debt costs as well as other (such as equity) Alaskan Northwest costs. Such a Commission decision would have an immediate severe financial impact on Alaskan Northwest, with the degree of severity being a function of the financial health of its partners.

(d) The Commission could decide several years in the future, pursuant to Section 5 of the Natural Gas Act, to direct the shippers of the gas to remove from their respective tariffs the rate adjustment (tracking) provisions which permit the shippers to flow through increases in transportation costs without the necessity of making a full filing under Section 4 of the Natural Gas Act (reflecting all current costs and revenues, not merely the increased costs of transportation). 20/ In these

20/ While the Commission has decided in principle to allow the shippers to track in a timely manner amounts reflecting transportation costs paid to the ANGTS sponsors under tariffs approved by the Commission, the Commission has not yet decided what kind of tracking of these costs by the shippers would be permitted. For example, the tracking provision could require a periodic rate filing under Section 4 reflecting only the change in transportation cost, similar to the shipper's current purchased gas cost adjustment clauses. Or the provision could permit the shippers to adjust their rates automatically on a simultaneous basis to reflect changes in ANGTS transportation costs. Such a provision would be similar to fuel cost adjustment clauses permitted in rate schedules and tariffs of electric utilities for transactions which are subject to this Commission's jurisdiction.

It should also be noted that no decision has yet been made by the Commission governing pass-through by the shippers of transportation costs incurred under tariffs subject to the jurisdiction of Canadian authorities.

circumstances, the shippers could be subject to under recovery of the Alaskan Northwest transportation costs because of the same regulatory lag discussed above.

(e) If additional reserves of natural gas were found in Alaska sufficient to lengthen the economic life of the ANGTS beyond the 25-year life now inherent in the proposed depreciation rate, the Commission might at some future time reduce the depreciation rate so as to more accurately spread the recovery of the plant investment over the useful life of the project. 21/ Alaskan Northwest might oppose such a change on the ground that the resultant reduced amount of depreciation expense recovered on an annual basis would impair their ability to service debt having a shorter term.

(f) In the event of a premature end to the viability of the project after it had commenced operation (because of physical, market or other forces), the Commission might find that a faster write-off of debt was appropriate, rather than continued operation of the minimum bill provisions. This could cause financial harm to Alaskan Northwest if the debt-holder refused to allow Alaskan Northwest to accelerate repayment of its debt, particularly if the interest rate to be paid to the lenders on the debt is higher than the general level of interest rates being paid for comparable investments. Alternatively, absent a waiver, a future Commission could determine, based on either a change in policy perception or based on facts attributing fault to the sponsors for the project failure, that the sponsor-investors (as opposed to the consumers) should bear some part, or all, of the risk of loss of recovery of debt, and then appropriately adjust the tariff or minimum bill provisions.

(g) In the event that Alaskan Northwest transportation costs and the costs of Prudhoe Bay and other natural gas, increase significantly, a shipper's resale rate could be increased so as to adversely affect the marketability of a shipper's gas. Under this scenario, the shippers (particularly the non-sponsor shippers) might argue for a reduction in the Alaskan Northwest transportation charges so that the shippers could continue to market their gas. Absent a waiver the Commission would have the power to

21/ See, Memphis, Light, Gas and Water Division v. FPC, 504 F.2d 225 (D.C. Cir. 1974).

order some sort of temporary or indefinite reduction to Alaskan Northwest's charges. In response, Alaskan Northwest, or some other party, might argue that the reduction in Alaskan Northwest's charges (regardless of the reason therefor) impaired the recovery of Alaskan Northwest's "minimum bill" costs and thus jeopardized the financial health of the project.

(h) Another hypothetical involves the pipeline-shippers' current purchased gas cost adjustment (PGA) clauses, which, as now written, would permit the shippers to pass through Alaskan purchased gas costs to their customers. If the Commission should decide to revoke or modify the PGA clauses, the shippers would be subject to regulatory lag in recovering Alaskan and possibly other purchased gas cost increases. To the extent that such a lag caused a financial strain on the shippers, it could affect the cash flow to the ANGTS.

(i) In Order No. 31, the Commission stated its intention to periodically review Alaskan Northwest's rate of return on common equity. Absent the waiver, the Commission's authority to conduct such periodic reviews would provide a basis to adjust the return on common equity downward to reflect any lowering of the cost of common equity to Alaskan Northwest. Such a lowering of common equity costs would most likely result from a general overall improvement in the economy resulting in an improvement in the financial markets, leading to a reduction in the return on equity needed by Alaskan Northwest to continue to render adequate service in the public interest. The argument that a reduction in equity return could impair collection of all debt costs in violation of the proposed waiver language would presumably be an argument by lenders and others that the interest coverage must be greater than one (i.e., 1.5, 2.0, etc.) in order to ensure that Alaskan Northwest's ability to pay debt is not impaired.

11. Hypothetical Injuries to Consumers

You have asked "what hypothetical situations there might be which would work to the injury of resale customers and consumers should the waiver be granted." At bottom the most injurious risk that could be borne by the consumer is that the project might be abandoned either before or after completion, and that the consumer, through the resale customer, would be surcharged for the investment in the project

but would not receive gas from it. Next most injurious is the risk that the consumer will have to pay for gas not received during sustained periods in which the pipeline is out of service. Arguably, for each risk which would exist to the sponsors and/or shippers in the absence of a waiver, there would exist a concomitant risk to the resale customers and/or consumers in the event a waiver is granted. However, in fairness these risks should be properly placed in the context of the facts of the proceeding and the legal status of the ANGTS project to date.

President Carter in his formal Decision, the Congress in its approval of the President's Decision and international agreements, and the Commission in its Recommendation to the President and in existing orders, have each concluded that this project is in the public interest. These approvals have led to the existing tariff, minimum bill and other provisions applicable to the ANGTS as described above. The project sponsors and lenders have nonetheless responded by seeking further assurance that the unique features of these determinations, as well as the Commission's final orders and rules, will not be altered or modified after adoption. Relevant here are the existing decisions of various authorities that the ANGTS may be project financed and that certain portions of the investment should be recoverable from consumers in events, including project interruption, where consumers do not receive the benefit of delivered gas. Thus, decisions have been made that impose risk on the consumers regardless of the waiver. Further, the Commission's ultimate orders and rules will allocate the remaining risks among the parties after consideration of all factors consistent with or affecting the public interest. Accordingly, an argument can be made that once the legal foundation for the ANGTS places the risks, the waiver would impose no substantial additional risk on the consumers, but only provide a method for assuring implementation of the federal decisions made. The extent to which a waiver would place additional onus on the consumers would include the implications of removing the "regulatory risk" from the sponsors. In other words, the consumers would then face the risk that a future Commission could not, based on changed circumstances or different policy perception, modify the ultimate ANGTS orders or rules within the parameters of their final issuance.

12. Reasonable Likelihood of These Events Occurring

From a legal standpoint, the likelihood that a future Commission would take or decline to take action of the type inquired about in your letter would appear to depend upon (a) whether a reconsideration of past policy determination occurs, and/or (b) the future existence of facts which would produce a policy response by the Commission. The likelihood of such facts occurring is a prediction or assessment that, presumably, has been made in connection with all federal determinations to date. In issuing the final orders and rules, the Commission is legally charged with the responsibility of weighing the risks, to both the sponsors and consumers, attendant to investing the sums necessary to complete the project. The risks are exceptionally difficult to quantify because of the infinite set of variables that exist, and in the end the question is one of judgment. Either the risks are too great for the consumers to be asked to bear (i.e., the project is not in the public interest), or they are not. The Commission may well be required to make that determination as part of its final certification of the project. 22/ Appropriately, the Congress must decide, through adoption or rejection of the waiver, whether to eliminate the "regulatory risk" inherent in continued Commission jurisdiction after final certification.

I am advised by the Chairman that he will support passage of a waiver designed to assure project financing of the ANGTS consistent with the positions expressed in this memorandum. 23/

22/ See President's Decision, Finance Condition No. 2, at pages 36-37.

23/ In this connection, the text of the ultimate waiver language, if any, is a matter of continuing interest to the Chairman, myself and the Office of the General Counsel. Without addressing any of the complexities involved with the final language, please be advised that we would welcome the opportunity to provide your Committee and other interested persons with any technical assistance or advice that may be requested.

Hopefully the foregoing provides you with an adequate response to your inquiry given the length of time taken and the resources available to prepare this memorandum. Please understand that this response is not intended, nor should it be taken, as an official Commission position. Rather, this memorandum represents the combined efforts of the Office of the General Counsel and other Commission staff members, as well as opinions of the Chairman and myself.

NINETY-SEVENTH CONGRESS

PHILIP B. SHARP, IND., CHAIRMAN
 ANTHONY TOBI MCFERTY, CONN. CLARENCE J. BROWN, OHIO
 EDWARD J. MARKEY, MASS. JAMES M. COLLINS, TEX.
 ALBERT ROSE, JR., TENN. TOM CONDOGAN, ILL.
 PHIL GRAMM, TEX. BERT A. LEE, KY.
 AL SWIFT, WASH. WILLIAM E. DANNENMEYER,
 MICKY LEAHN, TEX. CALIF.
 RICHARD C. SHELLEY, ALA. THOMAS J. TAUCHE, IOWA
 GARDNER COLLINS, FLA. HAROLD ROGERS, NY.
 MIKE BYRNE, OHA. CLEVELY BENEDETTI, W. VA.
 W. J. "BILLY" TAZEN, LA. DANIEL R. COATE, IND.
 RALPH W. HALL, TEX. JAMES T. BROWNE, N.C.
 TIMOTHY E. WIRTH, COLO. (EX OFFICIO)
 JOHN D. DINGELL, MICH. (EX OFFICIO)

CONGRESS OF THE UNITED STATES
 HOUSE OF REPRESENTATIVES
 SUBCOMMITTEE ON FOSSIL AND SYNTHETIC FUELS
 OF THE
 COMMITTEE ON ENERGY AND COMMERCE
 WASHINGTON, D.C. 20515

July 24, 1981

The Honorable Charles M. Butler, III
 Chairman
 Federal Energy Regulatory Commission
 825 N. Capitol Street
 Washington, D.C. 20426

Dear Chairman Butler:

As you know, the sponsors of the Alaska Natural Gas Transportation System (ANGTS) have communicated to the President their request that he propose to the Congress waivers of several provisions of law which are considered by the sponsors and their financial advisors to be necessary to the financing of the project.

Among the proposed waivers are several that deal with the regulatory authority of the Commission with regard to the ANGTS. The President has asked us and other Members of Congress to work together with his Administration in exploring the meaning and acceptability of the suggested waivers, because after their proposal they would by law not be subject to amendment. In order to fully understand the effects of those waivers which relate to regulatory processes, we have decided to solicit your assistance.

We request that you assign the most expert attorneys and specialists on your staff to provide us by August 1 with a written legal memorandum which presents their best judgment as to the effects on normal practice and procedure before the FERC of the following waiver of law:

Authority to Modify or Rescind Orders

Waive Sections 4, 5, 7, and 16 of the Natural Gas Act to the extent that such sections would allow the Commission to change the provisions of any final rule or order approving (a) any tariff in any manner that would impair the recovery of the actual operation and maintenance expenses, actual current taxes, and amounts necessary to

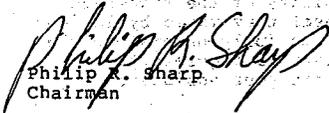
service debt, including interest and scheduled requirement of debt, for the approved transportation system; or (b) the recovery by shippers of Alaska gas of (1) all costs related to the purchase of such gas at just and reasonable rates, and (2) transportation of such gas pursuant to an approved tariff.

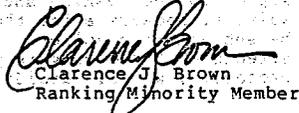
We want to understand (a) the full implications of such a waiver, (b) whether there have been past Commission actions which justify the desires of the sponsors to have these provisions waived, (c) what hypothetical situations there might be which would work to the injury of the pipeline sponsors of ANGTS or other participants in the project should there be no such waiver, (d) what hypothetical situations there might be which would work to the injury of resale customers and consumers should such a waiver be provided, and (e) the reasonable likelihood of such situations actually occurring.

We are not seeking an official Commission decision or statement on these questions, and certainly have no intent of affecting in any way future Commission decisions related to the ANGTS or any other matter, but seek instead to profit from the expertise available to you on your staff. We apologize for the extremely short time frame of our request, but we are attempting to gain this knowledge rapidly enough that a waiver package might be successfully dealt with during this session of Congress, under the procedures of the Alaska Natural Gas Transportation Act.

Thank you very much for your cooperation. If any questions arise please contact John Jimison or Michal Boland of our staff at 225-0320 or 225-3641.

Sincerely,


Philip A. Sharp
Chairman


Clarence J. Brown
Ranking Member

PRS/jj

Mr. BUTLER. With that, Senator, I would offer to answer any questions the committee might have for me.

Senator MURKOWSKI. You have proven my time schedule is correct.

Senator Nickles.

Senator NICKLES. With Mr. Butler's help, we may make that 1 o'clock adjournment. We appreciate that. And, Mr. Butler, again I say thank you to you and your staff for the excellent work that you have done. We have been working closely with you on this and some other matters, particularly some other matters, that I think you have proven your administrative capability to be able to take a lot of things on your plate in a short period of time and have been able to do a fine job.

Mr. Chairman, I don't have any prepared questions. I am assuming that your statement is basically somewhat in line with that of the Secretary.

Mr. BUTLER. Yes, it is.

Senator NICKLES. And in more detail as far as some of the specifics.

Mr. BUTLER. As to some of the regulatory policy questions, that is correct.

Senator NICKLES. Fine.

Senator MURKOWSKI. Mr. Butler, would you describe the role that the Federal Energy Regulatory Commission will play in assuring consumers in the Lower 48 States that they will pay the lowest possible cost for the Alaskan gas when it begins to flow?

Mr. BUTLER. Yes, Senator. As the committee, as I am sure, is aware, the Commission has decided a number of issues in connection with the Alaska Gas Transportation System. A list of those is included in appendix 2 to my testimony.

As far as the future proceedings before the Commission are concerned, I will read very briefly the list that we have.

We have a final certification proceeding for the Alaskan segment, and I think that goes directly to your question. In addition to that, there is a production related cost rulemaking for the Prudhoe Bay area, an Alaskan segment cost estimate proceeding, a rate base proceeding for the Alaskan segment and for the northern border pre-1980 costs, and a Northwest Canadian Gas Sales Co. certificate and import application in lieu of Northwest Alaskan Pipeline Co.

In addition to those, additional possible proceedings will be rulemakings on shipper tracking of the Alaska Natural Gas Transportation System transportation charges, and, in the more distant future, final certification of the nonprebuilt sections of Northern Border and Western Leg, and certification of the shippers of Alaskan gas.

In specific connection with your question, the most significant of these proceedings is the first that I mentioned, the final certification proceeding for the Alaskan segment.

In the course of that proceeding, we will decide these questions: We will consider the financing plan that hopefully will be presented as a result of the Congress action on the President's waiver package; second, and most importantly in connection with your question, we will consider the cost of service and the net national

economic benefit of the project. And third, also very importantly, the question of the marketability of this gas.

In the course of those proceedings, the Commission expects to discharge its responsibility to assure, on the basis of the factual presentations of the project sponsors, that the cost of the Alaskan gas, assuming that it is marketable and that the project is certified, will be the lowest possible cost to consumers.

That is a question, however, that must be answered on the basis of the factual presentations in the certificate proceedings, and I can only say on my behalf, and I believe on behalf of my colleagues, that we will do all that we possibly can to insure that those costs are as low as they possibly can be.

Senator MURKOWSKI. I think it is appropriate if we were to ask you to introduce your colleagues at this time.

Mr. BUTLER. Senator, I have asked a number of our staff to be present with me. The other members of the Commission are not present at this time.

Senator MURKOWSKI. All right. Thank you, Mr. Butler.

I have some questions that are probably going to appear as though they were proposed by the layman, and this is the case, with regard to the waivers because I believe there is a good deal of confusion surrounding those. And in view of your regulatory responsibility and role, I think it appropriate to spend a few moments on each of the four major waivers that are covered in the discussion before us.

Of course, the first involves the proposed equity by the gas owners of some 30 percent of the project, or they taking a 30 percent equity interest in the entire pipeline, including the conditioning plant and the pipeline as proposed.

My question is, In view of the concern that has always been expressed in the traditional prohibition against gas owners from being involved in the gas transmission business, this project obviously sets a precedent. That precedent was addressed, I think, by the concern of Senator Metzbaum in his opening statement, that he feels that this is perhaps not in the best interest of the country to establish this type of a precedent.

I would respectfully request your opinion as to why it happens to be apparently necessary as proposed, at least, in this case that this exception for this project be allowed?

Mr. BUTLER. Senator, in specific reference to that question, I would refer to pages 9 through 11 of my testimony.

Senator MURKOWSKI. Could you just summarize that for the layman?

Mr. BUTLER. Yes, sir, I will.

As a matter of policy judgment, it is clear that the participation of the producers will probably provide us with a good economic barometer of whether or not this project is an economically sound project.

Starting from that as a base, it is clear that the producers are not unsophisticated in projecting the market for their own products. Their exposure by becoming equity owners of 30 percent of the equity in this project is substantial.

Therefore, I see that an advantage accrues to the consumer in a protective sense.

The question of whether or not adverse antitrust implications can arise as a result of that participation is specifically addressed in the waiver package. As Secretary Edwards pointed out, that is the provision of the waiver that indicates that any agreement of producer participation may be approved by the Federal Energy Regulatory Commission only after consideration of the advice from the Attorney General upon a finding by the Federal Energy Regulatory Commission that a certificate will not create or maintain a situation inconsistent with the antitrust laws.

In that connection, I would point out that, as I have said in my prepared testimony, that provision is not one that is unique to the law. It is a provision that is found in laws that govern the decision-making of other Federal independent regulatory agencies, including the Nuclear Regulatory Commission, which is required to make similar findings in connection with the licensing of nuclear projects, and the role of the Federal Trade Commission under the Hart-Scott-Rodino Act in which they are to make such findings in connection with the Hart-Scott-Rodino premerger notification statute.

I cannot in good conscience sit before the committee at this point and say, yes, this project should go forward, there are no antitrust considerations, nor can I say that permission of the producers to be equity participants in this project does not create a situation inconsistent with the antitrust laws.

What I have to suggest is that in the course of the certificate proceeding, on the basis of what we are required to do by the waiver package, the Commission first will have to consult with appropriate personnel of the Justice Department, solicit their views in that connection, and the Commission then will have to, on the basis of the factual presentation before it, including the financing plan which has not yet been prepared, make a determination whether or not the situation envisioned by the waiver will or will not occur.

That is a matter of fact, essentially, that the Commission will have to decide.

I am comfortable that the provision of the waiver package both is administrable and that the Commission itself and its staff are competent to evaluate, on the basis of the facts as they are presented to us in the adjudication of the certificate application, whether or not a situation inconsistent with the antitrust laws will be created.

Senator MURKOWSKI. Then your regulatory requirements don't necessarily flow to the exposure of antitrust contrary to the best interest of the public. That is something that you depend on from the Antitrust Division of the Justice Department.

My question is, Since what we are considering here is an exception, do you, as a regulator, feel comfortable that there are the necessary safeguards in the system as established, through the Justice Department, to allow the public's best interest to be protected from any antitrust exposure that may result in the owners of the gas, the producers, becoming involved in the transmission?

Mr. BUTLER. The short answer to your question, Senator, is yes.

Senator MURKOWSKI. Thank you. The second question also relates to the waivers, and it is the waiver that allows the gas conditioning plant to flow in as part of the overall project, which is

an exception and has to be cleared, because it is my understanding under the authorization originally that the conditioning plant would be a separate entity and not part of the overall pipeline.

Would you elaborate for the record as to why, in your opinion, this has to be structured as a part of the pipeline and cannot stand on its own?

Mr. BUTLER. Strictly speaking, Senator, it is not necessary except for considerations of the financing plan that the gas conditioning plant be included as a part of the approved transportation system.

Section 110 of the Natural Gas Policy Act commits to the Commission the discretion whether or not to allow costs of gas conditioning to be collected by producers over and above the permissible wellhead price, in this case under section 109 of the Natural Gas Policy Act.

From the standpoint of the financing, it would probably be required, and I am speculating to a certain extent right now—once we have the financing plan and the testimony of the investment community and the project sponsors in this connection, it will be more clear. But I would speculate that it probably is necessary to assure that there will be a stream of revenue sufficient to repay debt service in an all events sort of situation.

An alternative would be for the Commission to find that it is appropriate under section 110 of the Natural Gas Policy Act to permit an allowance for gas conditioning. The Commission could do that.

It is clear from a previous order of the Commission, order 45, that the Commission has found that that cost is necessary in order to make the gas transportable.

However, it is improbable that that type of approach by the Commission would satisfy the requirements of the lenders. And as I say, that is a matter of some speculation on my part, but I believe that it is probably going to be necessary from the standpoint of the structure of the financing plan.

My judgment in that connection is primarily based on experience that I had, prior to going with the Commission, negotiating loan agreements not totally dissimilar to the one that the project sponsors will be negotiating in this case.

Senator MURKOWSKI. The third waiver involves, as I understand it, assurance that the financial community will have a sufficient rate structure allowed and established by your agency to enable amortization of the project.

What assurance does the public have that your rate structure, while allowing a reasonable rate of return which the investors obviously demand, yet is not excessive in relation to the public welfare?

Mr. BUTLER. The question of whether the Commission should exercise its discretion which is granted by the waiver package to permit a revised tariff which would change the billing commencement date, in effect, will be dependent upon, in part, the factual presentations of the project sponsors during the course of the proceedings before the Commission. We will have to look at the question of costs, the projected costs of service, the projected marketability of the gas.

The major portion of the consumers' assurance comes in the form of the Commission's decisionmaking in that connection.

Now, as a matter of policy, it seems important, as is pointed out in my prepared testimony, to point to the fact that in the kind of regulatory environment to which the sponsors are currently subject, they are treated on a cost based method which essentially takes away from them, and other such companies, the fruits of their innovativeness, their technological foresight, their increases in productivity, their reductions in costs, and so forth.

So, there is a substantial disincentive for such companies to undertake projects in an environment where they cannot reap the advantages of such cost savings and where the projects are very risky. The risk of those projects can be looked at as a cost. That cost is not otherwise recoverable through their rates in this type of environment.

So, the consequence is that it is required for projects like this to be undertaken that consumers, essentially, pick up that "risk" cost as they pick up all other costs of the project. And basically, what the billing commencement waiver does is to reflect that policy consideration.

Senator MURKOWSKI. Mr. Butler, there is a vote on and I am going to recess the hearing for 5 minutes.

But before I go, I would like to pose my last question, which involves the prebilling waiver that I feel needs some enlightenment. And I would like, upon my return when we reconvene the hearing, to have you comment on the implications of "subsidy" of the consumer as indicated and expressed in the concern of Senator Metzenbaum. I think is in the minds of a number of people, and it is going to have to be gone into with a good deal of explanation and analysis on just what the risk is to the consumer that there might be a likelihood of the consumer ever having to actually meet the obligations of prebilling.

We all are aware that in any development of any kind, the user basically pays through the use of the facility over an extended period of time. But in this case we have a rather complex set of circumstances that involve three segments, that involve a commitment to a friendly foreign nation, with regard to how their debt and equity will be treated under prebilling vis-a-vis how the debt and equity will be treated under the prebilling as it would be applicable to the other two segments, which is somewhat different.

I understand one involves all costs to the Canadians that they would recover, and the conditioning plant and the Alaska segment would cover debt only. And what incentive, again, is there that this project be completed in a timely manner so that the consumer will not have that exposure?

With that rather lengthy dialog, why, I will recess and look forward to your reply.

[Whereupon, a short recess was taken.]

Senator MURKOWSKI. We will reconvene the hearing of the Energy and Natural Resources Committee and again go back to Mr. Butler.

Mr. Butler, do you recall the question? I recall the question. Hopefully, you recall the answer. Please proceed, and maybe be-

tween the two of us we can cover in detail the many facets of that question posed to you.

Mr. BUTLER. Thank you, Senator. The question was, essentially, as I recall it, in three parts.

The first part of the question asked whether or not it was, I think, in effect, fair to characterize the change in the billing commencement date as a subsidy.

The answer to that question, in my judgment, is no. As I mentioned in the answer to the question which preceded the last question that you asked, the risk of noncompletion and of delay has to be looked at in terms of cost.

The question is, By whom will that cost be borne? Typically, costs are borne, all of the costs of service of a project like this are borne by the consumer. And what we are asking the consumer to do, in the event that we certificate this project, is to bear the cost of the risk of delay or the cost of the risk of noncompletion to the extent—and I emphasize “to the extent”—that it is necessary for the retirement of the debt portion of this investment.

Senator MURKOWSKI. Now, break that out so we understand. You say the debt portion of this investment. Would you break it out as it applies to the three segments, the conditioning plant, the Alaskan and U.S. segment combined, and the Canadian segment, and explain to us the difference in the exposure to the consumer on prebilling of those three segments?

Mr. BUTLER. In 1980 dollars, as I recollect, the cost of the Alaskan leg is expected to be about \$10.8 billion. The cost of the conditioning plant is expected to be about \$3.5 billion. And the cost of the Canadian, Northern Canadian segment is expected to be about \$6 billion.

Senator MURKOWSKI. Now, that is with no interest?

Mr. BUTLER. That is in 1980 dollars, ignoring the effects of inflation over time. We know that inflation and we know that financing costs are going to have a bearing on the ultimate cost of the project.

Now, in connection with those three different segments, the Canadian section, the gas conditioning plant, and the Alaskan segment, you had asked about the difference in treatment.

Senator MURKOWSKI. Yes. In other words, we are asking specifically if the consumer were required to pick up through the cost sharing or the prebilling application, how would it differ between, say, the Canadian section and the Alaska-U.S. section, or the third one, which is the conditioning plant?

Mr. BUTLER. As to the Canadian leg of the project, the proposed waiver would permit the Commission to approve a tariff that allowed all of the costs of service to be paid for either upon completion of the Canadian segment or upon the occurrence of a date to be picked by the Commission, whichever comes later.

Senator MURKOWSKI. OK. Maybe we ought to go to the date certain first, and then work backward.

Now, this exposure becomes a reality at what you call a date certain. Would you explain to us what that means and how you arrive at it? I understand it is your responsibility to establish the date certain.

Mr. BUTLER. That is correct. The date certain is one that will have to be decided upon by the Commission on the basis of the presentation, the factual presentation of the sponsors.

That will include the construction schedule and the best estimates of the engineers as to when the project will be completed under various assumptions.

The Commission will be responsible for considering the evidence that they provided and questioning that evidence and coming up with a date.

Now, I would like to point out that with respect to the gas conditioning plant and with respect to the Alaskan leg, there is a substantial dollar amount of exposure on the part of the project sponsors that will not be picked up under the terms of this waiver provision because all we are allowing them to recover is their debt.

Senator MURKOWSKI. On which portions?

Mr. BUTLER. On the gas conditioning plant and the Alaskan segment.

Senator MURKOWSKI. So, that is all that the consumer would ultimately be exposed to?

Mr. BUTLER. That is correct.

Senator MURKOWSKI. A proportional amount for debt only?

Mr. BUTLER. That is correct. The exposure for equity is at risk, completely at risk.

In the event that the project is delayed in completion, or in the event that the project is not completed, the project sponsors will in effect, face the loss of what they have put into the project. That is out of their pocket and not out of the consumer's pocket.

Senator MURKOWSKI. So, that is their incentive at risk, then?

Mr. BUTLER. That is their risk incentive.

Senator MURKOWSKI. And that amounts to how much? You gave us a figure of about \$19 to \$22 billion.

Mr. BUTLER. We would be looking at the debt equity ratio of 75 percent debt, 25 percent equity. It would be roughly a quarter.

Senator MURKOWSKI. So, somewhere around \$5 to \$6 billion.

Mr. BUTLER. \$5 to \$6, \$6½ billion, something like that.

That is a significant exposure. Even given the size of some of the participants in this project, it is not easy to lose that kind of money.

The project sponsors, under those circumstances, will have, I think, a powerful incentive to very carefully consider and select that target date, and that date, from their standpoint, should be one that is earlier, and not later, because—

Senator MURKOWSKI. If it is later, it takes the risk of construction delays out, but if it is later they don't get a return on their investment. So, it is a give and take, isn't it?

Mr. BUTLER. That is correct. They are going to have a powerful incentive to be very careful in selecting that date.

The expectation is that that incentive will work and that the consumer will not be exposed as a result of the exposure of the equity owners, will not be exposed to an undue risk.

Senator MURKOWSKI. Tell me, why is there a difference between the Alaska segment, the conditioning plant segment being treated only with the exposure of debt, and the Canadian section, which

has different treatment? According to your statement, that covers exposure of all costs.

Mr. BUTLER. Both debt and equity, that is correct.

Senator MURKOWSKI. Why do we have a difference here?

Mr. BUTLER. The rationale is that the Canadians, the Canadian project participants have really no incentive to involve themselves in a project of this magnitude, or really of any magnitude, since it is primarily for the benefit of American gas consumers, and they are subject to questions whether the Americans have the resolve, whether the U.S. companies have the resolve to complete this project.

Under those circumstances, they fully expect to recover all of their costs, and that is probably proper.

Senator MURKOWSKI. Because there is no major benefit?

Mr. BUTLER. That is correct. There are really two reasons. One of them is that they do not have a really direct benefit. They do have an indirect net national economic benefit. They do not have a direct benefit with respect to their gas consumers.

So, the consequence is that there really is not an incentive on their part.

In addition to that, they are, in effect, contingent. They are dependent, rather, on the completion of the American segments in order to recover their return. There is a risk in their eyes that the Americans, because this project has taken so long to get completed, will not complete the transportation system.

If that were to happen, they would be stuck out there with a \$6 billion investment, and they insist that they recover their entire cost of service.

Senator MURKOWSKI. But a portion of their investment is in the prebuilt section, is it not?

Mr. BUTLER. But that portion of the investment is not, to my recollection, particularly large. It runs on the order of about 10 percent.

So, their exposure is quite heavy.

Senator MURKOWSKI. So, the Canadians justify their request for all potential costs to be reimbursed as being based on the fact that this is an American line allowed to go through Canada. And as a quid pro quo, that is a consideration that they have demanded. And it is my understanding that this was negotiated by the Carter administration in understanding with Canada.

Can you enlighten us on what that commitment was, or how binding is it? Or do we have anything more than a moral obligation to Canada in this regard, or do we have a binding obligation?

Mr. BUTLER. That is a question that probably would best be answered by representatives of the State Department, and I would suggest that you direct the question to them.

Senator MURKOWSKI. I would be happy to do that.

Mr. BUTLER. I would suggest in that connection that President Carter, in his decision, effectively disallowed the kind of recovery that we are looking at in the waiver package.

After the Canadians indicated their discomfort with that aspect of President Carter's decision, President Carter sent a letter to President Trudeau, as I recall, and the State Department people can elucidate on this, in which he agreed to attempt to change the

ground rules so that the Canadians would be in a position where they could recover all of their costs. *

Senator MURKOWSKI: The matter of alleged subsidy, that what we are asking the American consumer to do is to subsidize this project instead of coming up for a Federal guarantee, so that the financial community can be satisfied, what you are saying, then, is that there is no exposure of subsidy if this date certain is met?

In other words, the three segments hook up, you turn the gas on at Prudhoe Bay, it is conditioned, it flows through the Alaska-United States-Canadian, and comes out in Illinois and goes through the distribution system; if that is done in a timely manner the consumer does not pay any prebilling?

Mr. BUTLER: That is correct, if I followed your question.

Senator MURKOWSKI: I would be happy to repeat it again, because I would like to make sure that you and I are on the same wavelength on this.

In other words, if you set a date certain some time in 1986 or 1987, and the Canadian portion is finished, the Alaska-United States portion is finished, the conditioning plant is finished, and it works, and you turn it on and the gas comes out the other end, at that point what is the exposure of the American consumer to any prebilling application?

Mr. BUTLER: None. The project is completed by definition. In that event, there is no ultimate exposure whether the project is completed before or after the date certain. If completion occurs after the date selected, the consumer is exposed, only until the actual date of completion, to a liability for cost of a yet to be completed project that is not yet in use. In any event, the recovery of costs of the project is not a "subsidy."

Senator MURKOWSKI: If they are not completed, then—let's assume, for example, that the Canadian portion was complete, the Alaska-United States portion was complete, but the conditioning plant wasn't completed. Now, prebilling would start upon the date certain?

Mr. BUTLER: The target date that we have set.

Senator MURKOWSKI: And it would apply to the owners of the debt on the two completed portions only; is that correct?

Mr. BUTLER: That is correct.

Senator MURKOWSKI: In other words, the Canadian portion would receive all cost prebilling, and the Alaska-United States portion would receive debt only?

Mr. BUTLER: That is correct.

Senator MURKOWSKI: And the exposure that was out there on whatever figure you want to use, \$3 to \$6 billion, whether you are talking about 1980 or 1987 dollars, on the conditioning plant would be out there with no consideration to the consumer as far as the application of prepayment?

Mr. BUTLER: That is correct. In that connection, it is worthwhile to note also that under the terms of the President's decision and the report that accompanies it, it is made clear that the intention is to consider the first dollars spent equity dollars. *

So, that means that in terms of those initial costs, those costs will be spent as equity up to the point where the equity cutoff turns on. And the consequence is that there is very significant

exposure on the part of the project sponsors, and consequently a very significant exposure that they will not be able to receive a return of their equity, and it is critically important to focus on that—that is, the capital that they have actually put up.

In addition to that, they will receive no return on their equity; that is, any earnings as a result of that investment.

The consequence is, there is a very significant exposure on the part of the project sponsors, and that operates as a very powerful incentive for the exercise of care in the construction of this project.

Senator MURKOWSKI. In measuring the risk to the consumer, we are depending on the capability of the engineers, the record, I gather, of the transmission companies which were made up of the major transmission companies that are in the business in the country, Columbia Gas and on and on, plus the Exxon and the major companies that have proven expertise. And it would seem that if we have already built an oil pipeline, a hot pipeline across the most significant area of risk; namely Alaska where we have permafrost and all the other exposures, safely, and it has been operational for several years now and is producing, I believe, 6 percent of the total domestic supply of crude oil produced in the United States, that the element of risk based on previous experience is somewhat limited.

There is risk, obviously, if you do anything, but in this case we have an infrastructure established, we know the environmental concerns, we have got a road along a right-of-way, and certainly the United States is criss-crossed with gas pipelines.

What I am trying to do is to identify what the actual risk to the American consumer is in this regard. I think you have answered that quite well and explicitly that while there is a risk, it is measurable, and there is an incentive for the companies to get on and make sure that one segment or another does not fall behind this date certain. And your commitment, obviously, to work in establishing this to the best interest of all concerned is understandable in that there is an incentive if it is done early, but it has to be allowed a reasonable time to obviously finish the project so that the return can develop for the interested parties.

Mr. BUTLER. That is correct, Senator. In that connection, when we talk about risk that is borne by consumers, what is significant about the risk is that the risk represents a cost. And all costs are required to be recovered by these regulated companies in their cost of service.

One can hardly fairly characterize recovery of cost as a subsidy.

Senator MURKOWSKI. As I understand this, this matter of prebilling is a condition imposed by the lenders simply because this project is of such gargantuan magnitude.

Mr. BUTLER. That is correct.

Senator MURKOWSKI. In the financing limitations, they have to have some assurance that in the unlikely event that there is a non-completion, that somebody is going to stand behind them.

Mr. BUTLER. That is correct, Senator. In that connection, the lenders are going to require, I suspect, the kinds of assurances that the waiver package would provide them with.

I might say that in connection with the equity investment, an incentive rate of return has been structured by the Commission. It

may have to be revisited as a result of what you have done in the waiver package, but that also provides substantial incentives to keep costs at a reasonable level consistent with prudence.

Senator MURKOWSKI. I think it would be in order to ask your staff, and I am sure you are going to be doing it, to quantify what the risks are under various hypothetical situations for the hearing record.

I recognize it is, perhaps, going to be a little difficult to do, because your are going to have to qualify it so much.

Mr. BUTLER. Senator, there is another difficulty that arises in that connection. That is, that is a question that we are going to have to determine on the basis of the record. It would, in my opinion, it could be considered unfair to the project sponsors for us to try to take a position as to what those risks are before they have, in effect, have the opportunity to say their piece.

Senator MURKOWSKI. Maybe it is more appropriate that we ask the Department of Energy to do that.

Mr. BUTLER. I would recommend either the Department of Energy be asked to do that—

Senator MURKOWSKI. I would withdraw that from the record and request the Department of Energy.

Mr. BUTLER. Or that the project sponsors be asked to do that, or the bankers.

Senator MURKOWSKI. Yes; well, we still have the general counsel, Mr. Tenney Johnson, counsel of DOE here with us.

Mr. BUTLER. I understand he will be on the following panel.

Senator MURKOWSKI. I think he has got a time commitment. So, we will provide him with additional questions and an additional opportunity to testify. We could have him testify tomorrow, or we would like you to.

Can you testify tomorrow?

Mr. JOHNSON. I would prefer providing the information for the record, Senator. I know what you want.

Senator MURKOWSKI. All right. That would be sufficient.

I am going to release you before the next vote, which is on now, Mr. Butler. I have got one other question that I think is significant.

It is basically the application of the overall cost to the consumer dropping over the life of the pipeline because you begin to amortize this pipeline over 20 or 25 years. So, your cost of the gas up front is whatever it might be, it is not going to be cheap—we know that. But as the amortization schedule goes down, can the consumer expect, under the application through your authority, a proportional reduction along with the reduction of the debt amortization and so forth?

In other words, at some point in time the pipeline is going to be paid for. What happens to the rates?

Mr. BUTLER. As a general proposition, the fixed costs of the pipeline are recovered relatively more quickly at the front end of the project than at the back end, so what you would typically see, in layman's terms, would be a declining rate over the life of the project.

The rate of that decline is one that would be fixed in the tariff that the commission eventually settles on.

Senator MURKOWSKI. Let me just ask the last question, then.

Might this be, in your opinion, relatively inexpensive gas in 7, 10, 15 years?

Mr. BUTLER. That is a very difficult question for me to answer.

Senator MURKOWSKI. So you are not going to answer yes or no?

Mr. BUTLER. I think I would prefer not to. I think I really can't do that because, again, we, in the course of our adjudication of this question, are going to have to make that determination. I just don't think that I can either appropriately or even accurately make an answer.

Senator MURKOWSKI. Well, we will leave that question open for those that view this hearing in 5 to 7 years, assuming there is a project.

I want to thank you very much, Mr. Butler, for your testimony, and the assistance of your associates, and with that, we are going to recess for another 5 minutes. I have got to go vote again. We will still convene this hearing even if it is after 1 o'clock.

Thank you.

[Whereupon, a short recess was taken.]

Senator MURKOWSKI. We will reconvene the hearing on the Alaska natural gas transmission proposed waiver package that was to be concluded by 1, and it is 1:10 now, and the Chair apologizes for having to go vote.

We will proceed with the witness list as indicated.

We have the Honorable John T. Rhett, Jr., Federal Inspector, Alaska Natural Gas Transportation System.

We welcome you to the committee, Mr. Rhett, and look forward to your testimony. Please proceed.

STATEMENT OF HON. JOHN T. RHETT, JR., FEDERAL INSPECTOR, ALASKA NATURAL GAS TRANSPORTATION SYSTEM

Mr. RHETT. I appreciate this opportunity very much, Mr. Chairman. To save time, I had a summary of my submitted testimony and to further save time, I have a summary of the summary that will pull out the three or four key points that I really wanted to make. I would then be pleased to answer any questions you might have.

The first point is that the Federal inspector system has been working, and working well. It will provide the framework necessary to oversee the project. This will also be the case if the waiver package is approved.

My point is that, from a managerial viewpoint—during permitting, construction, design, completion and the first year of operation—we feel that the waivers are manageable—in fact, easily manageable.

This does not mean that there are no problems. For example, including the gas conditioning plant in the project will require a lot of additional effort from the agency. But we have known about this and we have been working cooperatively with the sponsors.

Second, the precommencement billing proposal will affect scheduling. This is a managerial problem between the Federal inspector, the sponsors and the Canadians. We have already been working with all of them including both of my Canadian counterparts, the Northern Pipeline Agency, and the National Energy Board. And

we feel that the risk that we can't complete the sections together is low.

I think a lot of people miss the point that, while there are tremendous incentives for the sponsors to complete the segments together, there are also incentives for the Federal Inspector and for the head of the Northern Pipeline Agency to do the same thing. This is part of our responsibility and we were hired to do a good job.

The second part—which is closely related—is the matter of technical problems.

Two years ago, when I started, there were still a number of unresolved technical questions such as frost heave and the proximity of the gas pipeline to the TAPS pipeline. These are resolved.

I don't mean that there isn't further work that has to be done, but not only are we satisfied that these problems are solvable within expected cost ranges and with normal engineering, but so are other national experts. I might add that, in some cases, like frost heave, international experts are also comfortable with the progress to date.

The sponsors have moved the engineering of the project to the point that we know now that the project can be built and can be built within normal construction contingencies.

Having reached this point, I feel very strongly that we now need to take that next step. We need to give the project the opportunity to move ahead. The way to do that is the waiver package, so that the project can be privately financed and we can move ahead with it.

There is nothing technical holding it up.

Thank you.

[The prepared statement of Mr. Rhett follows:]

STATEMENT OF JOHN T. RHETT
FEDERAL INSPECTOR
OFFICE OF THE FEDERAL INSPECTOR
FOR THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

Before the Senate Committee on Energy and Natural Resources
October 22, 1981

Mr. Chairman and Members of the Committee, I am pleased to have the opportunity to appear before you today. I am John T. Rhett, Federal Inspector for the Alaska Natural Gas Transportation System. To assist in your evaluation of the proposal before you today, I would like to take this opportunity to explain the Office of the Federal Inspector (OFI) and its past and future relationship to the Alaska Natural Gas Transportation System. This project has received much attention and Presidential and Congressional support for the expeditious construction and initial operation of this vital, national energy project has been voiced on a number of occasions.

The Alaska Natural Gas Transportation System (ANGTS) is one of the most ambitious construction projects undertaken in modern times. It will be the largest privately financed project ever constructed and the first buried, chilled gas pipeline ever built in permafrost. Prudhoe Bay contains 26 trillion cubic feet of recoverable natural gas and is the largest U.S. reserve. The pipeline will deliver approximately 4 percent of the annual needs of the United States. Because the design of the Alaska Natural Gas Transportation System will allow it to carry up to 3.2 billion cubic feet per day with additional compression, production from other reserves can also be transported to further supplement our domestic supplies.

The project entails construction of approximately 4,800 miles of large diameter pipeline. The system is commonly divided into four segments: the Alaskan Leg, the Canadian Leg, the Western Leg, and the Eastern Leg. It will traverse eleven states and four Canadian provinces, from the north slope of Alaska to the Chicago and San Francisco areas. This pipeline is being constructed in two phases. Construction of Phase I, sometimes called "prebuild," has been financed and is underway. Phase I consists of construction of the southern portions of the Canadian Leg and parts of the Western and Eastern Legs to deliver Canadian gas exported from the Province of Alberta to the West Coast and the mid-West.

On October 1, 1981, Alberta gas began flowing through the Western Leg of the Alaska Natural Gas Transportation System. Existing U.S. and Canadian pipelines were expanded, or looped, to carry this gas. This work represents successful completion of approximately 290 miles of the total project. An additional 395 miles were completed on the Western Delivery System, a related facility in the U.S. Some work on ancillary facilities remains on the U.S. portion of the Western Leg and the Western Delivery System, but this did not impair the system's ability to transport gas on the scheduled operation date.

Construction of Phase I of the Eastern Leg is proceeding ahead of schedule in both the U.S. and Canada. Foothills Pipelines Company, Ltd., the sponsor of the Canadian portion, has completed construction of about 268 out of a total of 397 miles of pipeline. Clean-up activities, hydrostatic testing, and compressor and meter station construction are scheduled to be completed in 1982. On the U.S. portion, about 550 of the total 823 miles are finished. By the end of this year, it is expected that about 78 percent of the U.S. portion and about 68 percent of the Canadian portion will be completed. The Eastern Leg is scheduled to begin operations in September 1982. At that time, 975 million cubic feet per day of Alberta gas will begin flowing to U.S. consumers in the midwest and almost one-third of the mileage of the Alaska Natural Gas Transportation System will be completed. At this time, it appears that both the Eastern and Western Legs will be completed under budget.

The Office of the Federal Inspector (OFI) is a separate Federal agency created by Reorganization Plan No. 1 of 1979 solely to expedite and oversee the planning, construction, and initial operation of the Alaska Natural Gas Transportation System. It will cease to exist one year after initial operation of the pipeline system. Two factors contributed significantly to the Presidential and Congressional support for the creation of the OFI. First, the Trans-Alaska Pipeline System was perceived to be often plagued by uncoordinated, conflicting, and untimely Federal decisions, and at times, onerous Federal requirements. Consequently, the President and Congress created the OFI as the focal point for Federal decisions to improve the timeliness and predictability of government regulatory decisions. Second, charging the Federal Inspector with the responsibility for expediting Federal actions on the project and approving cost changes minimizes the potential for undue cost overruns. Together, these changes increase confidence in the ability of the Federal Government to perform its oversight function in a responsible and consistent manner, thus providing a better opportunity to obtain private financing.

In recognition of the specific problems encountered during construction of the Trans-Alaska Pipeline System, as well as the general difficulties encountered on many large energy projects, the President and the Congress gave the OFI broad authority covering every Federal regulatory responsibility related to the Alaska Natural Gas Transportation System. First, although the Federal agencies retain the responsibility to issue the necessary permits, the OFI is charged with assuring that these permits are issued in a timely fashion. To manage this complex process for the Alaskan Leg, the OFI acts as the focal point, or "one window," during the permitting process, thus relieving the sponsors of the burden of dealing with many agencies. The OFI also reviews the permits to assure that no conflicting or unreasonable conditions are attached. Our efforts are focused on assuring that the process runs smoothly and that problems are identified and resolved early. Extensive coordination with the sponsors and the Federal and State agencies is necessary to achieve an equitable balance among all objectives. Through this process, three important objectives are being achieved. First, the regulatory burden on the sponsors is reduced. Second, the Federal permitting process does not delay work on the project. Third, through OFI's review, the potential for conflicting and unreasonable Federal requirements is reduced.

Obviously, achievement of these objectives requires extensive coordination with the Federal agencies. Through Reorganization Plan No. 1 of 1979 and Executive Order No. 12142, two special mechanisms were created to assure that this coordination occurs. First, an Executive Policy Board composed of senior policy-level representatives of the involved agencies was created to advise the Federal Inspector. Second, each agency was required to appoint an Agency Authorized Officer to act as the focal point for all agency activities on the project. To date, OFI has had extremely good cooperation from the Federal agencies involved in the project. The experience on Phase I has shown that, when the pace of the project accelerates, the agencies will put narrow interests aside and work constructively toward the common goal of expediting the project. I am confident that we can expect the same level of cooperation on Phase II.

To achieve its mission, the OFI must also work closely with the state governments involved in the project. Overall, we have been extremely pleased with our experience on Phase I. We have received outstanding cooperation and have been able to work with the states to minimize duplicative and conflicting monitoring efforts. Even though certain jurisdictional disputes between the Federal government and the State of North Dakota resulted in court actions, the State and OFI have since established very positive relations and we do not anticipate any difficulties during construction in that State. Due to the sensitive environment and large amount of State land crossed by the project, the President and the Congress recognized that special efforts should be taken to assure that the Federal Government's and the State of Alaska's monitoring efforts are compatible. Thus, the Alaska Natural Gas Transportation Act and the President's Decision directed the Federal Inspector to establish a Joint Federal/State Monitoring Agreement with the State of Alaska. In addition to conducting initial negotiations on this Joint Agreement, the OFI has established a number of special procedures to assure that the State's concerns are fully represented during the early planning, permitting, and design processes.

Before construction, the OFI is also required to approve the project sponsor's management plans, designs, final cost estimates, construction schedule, cost and schedule control systems, and quality assurance plan. These are unique requirements, designed specifically to achieve two objectives:

- 1) to assure that the necessary planning is complete before construction begins; and
- 2) to define--in advance and as precisely as possible--the conditions under which the project will be constructed.

The OFI is responsible for enforcing all Federal laws, regulations, and permits governing the project. This enforcement responsibility was transferred to the OFI by law and covers, among other areas, environmental protection, pipeline integrity, equal employment opportunity, and minority business enterprise participation. This centralization of authority is unique. During construction, only the Federal Inspector enforces the legal requirements imposed on the project by the Federal agencies' permit conditions. The Executive Policy Board may offer advice to the Federal Inspector, but the Federal Inspector is the sole Federal decision-maker for construction.

Because the Federal Inspector is responsible for assuring that the sponsors build the project in a cost-effective and expeditious manner, in addition to the traditional governmental responsibility for public and pipeline safety and environmental protection, his decisions must reflect a careful balancing of all objectives. Moreover, because the Office of the Federal Inspector's authorities cover nearly every aspect of the project from the early planning stage through initial operation, its decisions will have a broader perspective and more continuity and consistency than those of an agency with a more limited focus of responsibility.

The OFI was established in July 1979. In December 1980, when construction began on the Western Leg, this experiment in public administration began to be tested. Although the construction to date has been fairly standard, I believe it is a valid test of the mechanisms established to oversee the project. The OFI's project oversight philosophy centers around my firm belief that the Federal government can work cooperatively with the sponsors and the Federal and State agencies while still protecting the public interest by assuring that the pipeline is built safely and expeditiously in a cost-effective, environmentally sound manner. I firmly believe that cooperation is essential, but I have never believed that elimination of all conflicts is possible. When agreement cannot be reached through hard bargaining, OFI has the authority -- and the responsibility -- to assure that an acceptable solution is implemented. The responsibility for building this project lies with the sponsors; the OFI is responsible for overseeing their work to assure that it conforms to applicable requirements. This is an unusual role for the Federal Government and one that demands careful control to assure that the OFI's regulatory responsibilities are fulfilled and the public interest protected, without the Federal Government unnecessarily directing private enterprise's efforts to accomplish the job.

Although the Federal Government is not building or financing this pipeline, the extent of its involvement makes it essential that it act in a consistent, efficient, and reasonable manner. The OFI has made a concerted effort to avoid duplication of expertise; eliminate overlapping and conflicting requirements; and work constructively with the sponsors and the Federal and State agencies to resolve problems early. Although various refinements will have to be made to accommodate the complexity of the Alaskan Leg, I believe that our experience on Phase I of the Alaska Natural Gas Transportation System has shown that regulatory requirements and construction realities can be responsibly balanced, without unduly restricting industry's activities.

Because Phase II of the project is of critical concern in these proceedings, I would like to discuss the status of design and planning for the Alaskan Leg. Before they may begin construction, the project sponsors need three major permits. One, the Department of the Interior's Right-of-Way Grant which authorizes the crossing of Federal land, was issued on December 1, 1980. The State of Alaska must also issue a Right-of-Way Lease to authorize the crossing of State land. The OFI will continue to assist the State's and the sponsor's efforts to work out the detailed provisions of this Lease. Work on the Federal Energy Regulatory Commission's (FERC) Certificate of Public Convenience and Necessity, is underway. In July 1980, when the project sponsors filed the cost estimate for the Alaskan

Leg, a special process was established to review this estimate. This included a joint FERC/OFI staff review. This review is now complete and the FERC has received comments on the report. In addition to a final decision on the cost estimate, the Certificate proceedings will include review of the sponsor's tariffs, financing plan, marketability analysis, and net national economic benefit and cost-of-service calculations. The sponsors have not yet filed these elements of their Certificate application.

As you may know, in July 1980, the sponsors and the producers agreed to jointly fund the design of the Alaskan Leg and the gas conditioning plant. The effort expended to date will help avoid future problems and ultimately assist in achieving cost-effective design and construction. This effort has included a substantial amount of money spent to conduct a number of field programs designed to gather geotechnical and environmental data necessary for design. These field programs have included pipe stress tests, borehole drilling programs, fisheries surveys, endangered species studies, trench stability tests, blasting studies and detailed alignment surveys. This pre-design work is essentially completed thus enabling the sponsors to finalize the design criteria and proceed with the detailed pipeline design. Design of the Compressor Stations and the gas conditioning plant has progressed far enough to allow the sponsors to develop detailed specifications and assemble the initial procurement documents.

The ability to develop a design that will adequately protect the pipeline from the effects of frost heave has been the major technical concern from the beginning. Because this will be the first buried, chilled pipeline and because it will pass through frost-susceptible soils, this is the first time that this problem has been encountered. During the past two years, industry, government, and academic permafrost experts have worked on this problem together. The basic scientific problems have been resolved and only development of the detailed engineering remains. These efforts have demonstrated that the sponsors possess the technical capability to resolve difficult problems and that a cost-effective frost heave design can be developed.

The safety of the existing oil pipeline has also been of serious concern. The Department of the Interior's Right-of-Way Grant required that, wherever possible, the gas and the oil pipelines be separated by at least 200 feet. This requirement has not solved the entire problem, but it has made it manageable. One of the more serious remaining problems is the small stretch through Atigun Pass in northern Alaska. Everyone recognizes that construction through Atigun Pass will be difficult. To allow adequate time to resolve any unforeseen problems, the sponsors plan to construct this portion one year earlier than the rest of the pipeline. In addition, plans now include construction of major river crossings, including the Yukon River, before the rest of the pipeline. This early construction of difficult areas should help assure that schedules can be met.

The current schedule for the Alaskan Leg calls for completion during the winter of 1986-1987. This schedule is still viable, but it is tight. Although there is usually room to adjust a schedule, the demanding arctic conditions add substantial constraints which are not present in more typical construction projects, thus limiting the sponsor's ability to compress certain elements of the schedule. For example, there are only about six

weeks during the year in which modules for the gas conditioning plant may be shipped through the Beaufort Sea. Three such sealifts -- in 1983, 1984, and 1985 -- will be required. Another constraint is the fact that long lead times are necessary to procure equipment, fabricate modules for the conditioning plant, and build the compressor units. The sponsors are presently planning to make these commitments in the second quarter of 1982 in order to meet the 1986-1987 completion date.

The technical and engineering aspects of the Alaskan Leg and the gas conditioning plant have been developed sufficiently to assure that not only can the project be built, but its costs can be accurately predicted.

Finally, I would like to offer a few comments on the proposal before you today. The OFI is a technical agency, responsible for construction oversight. Only two of the elements of this proposal will affect OFI's operations and these effects are manageable.

If the conditioning plant is included as a certificated part of the project, the OFI will have almost the same responsibilities for the plant as it has for the pipeline. The major difference would be the absence of the Incentive Rate of Return mechanism. While the addition of the conditioning plant will increase the workload of the agency, we have planned for this change and do not believe that we will have any difficulty meeting the additional requirements.

The element of this proposal which would allow billing of charges upon completion of either the Canadian segment, the Alaskan segment, or the gas conditioning plant segment will require that the OFI work very closely with its Canadian counterpart, the Northern Pipeline Agency, and the sponsors to assure that the schedules for each segment are well-coordinated. Although such international coordination already exists and has been outstanding to date, this will require an additional effort from the OFI to assure that the schedules continually mesh and that the chances of large variances in completion dates are minimized. The need for this additional effort is also well-recognized by my Canadian counterparts. I have discussed various approaches with the Northern Pipeline Agency and the National Energy Board and we agree that a satisfactory mechanism can be established. This governmental coordination will supplement the Alaskan sponsor's efforts to assure that the resource needs and schedules of the Alaskan pipeline and conditioning plant remain compatible.

In summary, I would like to emphasize two things. First, this is an extremely complex project. It is often compared to the Trans-Alaska Pipeline System and, in many ways, that comparison is valid. However, there are many very important differences. I believe one of the most significant differences lies in the creation of the Office of the Federal Inspector. The Office of the Federal Inspector was given a unique set of authorities and a unique opportunity to demonstrate that the Federal government can protect the public interest while still working in a cooperative manner with private industry. Special requirements have been established to assure sound advance planning and early agreement on the conditions under which the pipeline will be built. The sponsors will be rewarded for cost-effective construction through the Incentive Rate of Return mechanism and the Office of the Federal Inspector has been charged with assuring cost-effective and

timely completion of a safe and environmentally sound pipeline. The centralization of Federal authority will help assure balanced decisions and reduce the potential for conflicting requirements. To date, over 700 miles of the U.S. portion of this project have been successfully completed. While this was fairly standard construction, I believe it has served as a valid initial test of the mechanisms established to oversee this project. This experience has shown that our approach will work and we have adequate time to refine our procedures to accommodate the additional challenges posed by arctic construction.

Second, the sponsors have invested a great deal of time and effort in preliminary studies and designs for both the Alaskan Leg and the conditioning plant. Although much work remains, the design and engineering effort has progressed far enough to provide confidence that the project can be built in a technically sound manner and that the costs can be established within the ranges normally expected on large construction projects. Now that the question of whether the project can be built has been resolved, it is appropriate to consider -- as you are today -- the circumstances under which it may be financed and constructed.

Mr. Chairman, that concludes my presentation. I would be pleased to answer any questions you may have.

Senator MURKOWSKI. Thank you, Mr. Rhett. I have some questions.

The first one is the project sponsors' cost service estimates. I understand that you have reviewed the project sponsors' cost of service estimates.

Could you explain to the committee where, if any, your estimates might differ from theirs? And would you please provide us with perhaps a more detailed response, if you feel it is necessary, for the record?

Mr. RHETT. I will provide a complete detailed explanation of our role. The package has been provided to the staff.

[The response follows:]

THE FEDERAL INSPECTOR,
ALASKA NATURAL GAS TRANSPORTATION SYSTEM,
Washington, D.C., October 20, 1981.

HON. JAMES A. McCLURE,
U.S. Senate,
Washington, D.C.

DEAR SENATOR McCLURE: At Congressman Dingell's request, my staff has prepared the attached analyses (which supersede the draft packages dated October 15 and 16, 1981) on the cost-of-service and other factors related to the Alaska Natural Gas Transportation System using his staff's assumptions and the sponsor's cost figures. I am always pleased to be of assistance, but in this case, you should be aware of certain limitations of this work.

As you know, determining cost-of-service is not one of the Office of the Federal Inspector's (OFI) responsibilities. However, one of OFI's employees is familiar with the computer model developed by the the FERC to perform cost-of-service analyses. Using the input assumptions specified by Congressional staff, we have used the model to perform cost-of-service analyses and developed the attached summaries of the results. We have also performed other calculations specified by Congressional staff such as internal rates of return, consumer indifference, and effects of pre-billing which utilize the results of the cost-of-service analyses. Thus, our assistance was basically technical support. Because OFI is not staffed appropriately, we made no attempt to analyze the assumptions specified by Congressional staff; our efforts have been directed to assuring that the model accurately analyzes the scenarios requested.

There are two packages attached. The package dated October 18, 1981 is based upon the cost estimates which have been filed by the sponsors. The package dated October 19, 1981 is based upon revised cost estimates and adjustments in the way costs are allocated which have not yet been formally filed. A comparison of the two estimates, including the Center Point allowances requested by the sponsors, is shown below:

[1980 dollars in billions, including Center Point]

	Oct. 18, 1981 package	Oct. 19, 1981 package
Conditioning Plant.....	3.3	3.6
Alaska Pipeline.....	10.6	10.8
Canada.....	5.8	5.8
U.S. Eastern Leg.....	1.9	1.9
U.S. Western Leg.....	.9	.9
TOTAL.....	22.5	23.0

At the request of Congressman Dingell's staff, we have provided copies of these analyses to other House and Senate staff who have a continuing interest in the Alaska Natural Gas Transportation System. Due to the impending resignation of the only member of our staff with a detailed understanding of the cost-of-service model, OFI will no longer be able to provide support in this area. We will, of course, attempt to answer any questions you may have after reviewing the attached explanations of the analyses, summaries of the results, and graphs.

Sincerely yours,

JOHN T. RHETT,
Federal Inspector.

Enclosures.¹

Mr. RHETT. In general, the Office of the Federal Inspector is not staffed to analyze cost of service; it is not one of its responsibilities. But we happen to have an employee who has worked on the cost of service model while it was being developed at FERC over the years.

We took congressional staff's numbers and assumptions and ran them through the model. We also doublechecked our model with Northwest's model to make sure that the results were accurate and within a normal model range. Although the models are different, the results were within 1 percent, or, in some cases 5 percent of each other.

The only thing that I want to emphasize is that, in every case, the assumptions we used have been somebody else's—either the sponsors' or the congressional staff's. In some cases, congressional staff asked us to check the sponsor's results.

The important part of this is that the assumptions affect the results greatly: a three point change in the interest rate and a three point change in the inflation rate can change the "as spent" cost of the project by \$10 billion.

Senator MURKOWSKI. Is this, in your opinion, the reason for the fact that for the sake of witness testimony we generally use two sets of figures, one of \$21 to \$25 billion, and the other in the area of \$40 billion?

Mr. RHETT. No. Those two figures are the same figure.
Senator MURKOWSKI. But one is without interest?

¹ The enclosures have been retained in committee files.

JAMES A. MC CLURE, IDAHO CHAIRMAN
 MARK O. MATFIELD, OREG.
 LOWELL P. WEICHER, JR., CONN.
 PETE V. DOMENICI, N. MEX.
 MALCOLM WALLACE, WYD.
 JOHN W. WARNER, VA.
 GORDON J. HUMPHREYS, N.M.
 FRANK R. MURROWSKI, ALASKA
 DON NICOLESE, OHIO
 JOHN P. EAST, N.C.
 JOHN HEINZ, PA.

MICHAEL D. MATHAWAY, STAFF DIRECTOR
 CHARLES A. TRABASSO, CHIEF COUNSEL
 D. MICHAEL HARVEY, CHIEF COUNSEL FOR THE MINORITY

HENRY M. JACKSON, WASH.
 J. BENNETT JOHNSON, LA.
 DALE BUMPERS, ARK.
 WENDELL H. FORD, KY.
 HOWARD M. HATCHER, OHIO
 FRANK M. MATSINGLA, HAWAII
 JOHN HILCHER, MONT.
 PAUL E. TROWER, MASS.
 BILL BRADLEY, N.J.

United States Senate

COMMITTEE ON
 ENERGY AND NATURAL RESOURCES

WASHINGTON, D.C. 20510

October 9, 1981

Honorable John T. Rhett
 Federal Inspector for the
 Alaska Natural Gas Transportation System
 Post Office Box 19400
 Washington, D.C. 20036

Dear Jack:

I am writing for the purpose of obtaining a status report on the implementation of Section 17 of the Alaska Natural Gas Transportation Act of 1976.

I am specifically interested in actions taken to date to implement the Section 17 requirements by Pacific Gas Transmission Company in its construction of the prebuild phase of the Western Leg and in its planning for the completion phase; by Northern Border Pipeline Company, in its construction of the prebuild phase of the Eastern Leg and in its planning for the completion phase; and by Northwest Alaskan Pipeline Company in its contracting to date and in its planning for the completion phase for the Alaska segment.

Constituents of mine have complained rigorously about the implementation of the Section 17 requirements. In response to their complaints, members of your staff and mine have met and had some preliminary discussions about the Section 17 program. From those discussions, I understand that your regulations require the identification of "contractable opportunities" for Minority Business Enterprise (MBE) and Female Business Enterprise (FBE) participation. I am told that Pacific Gas Transmission Company in particular has identified so few "contractable opportunities" as to make the program virtually meaningless. They also allege that PGT has not done a satisfactory review of MBE capability, or implemented a satisfactory outreach program. According to estimates supplied last week by your staff, of the \$166 million in contracting that will be done for the Western Leg Prebuild Project, PGT estimates that less than \$2 million in contracts will be awarded to MBE's and FBE's. PGT has told my constituents that the figures are \$200 million and \$4 million respectively.

I do not want to prejudge the implementation of the program to date. At this point I am seeking basic information about its implementation in order to make a judgment on the allegations that have been made.

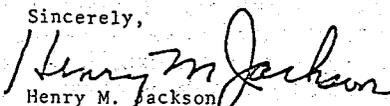
It seems particularly important to take a look at the implementation of the program to date while we are awaiting completion of the financing package necessary for the completion phase. I recognize that the vast majority of the contract opportunities will come in the completion phase. I do not want to be trying to design and implement the Section 17 program while the completion phase is underway. If any problems are identified, we have time to do the job properly now, before the final contracting and subcontracting gets underway.

I would appreciate your providing me with the information outlined below as promptly as possible. I would request that the data provided in response to each item listed be broken down into six separate parts, with information made available for the prebuild phase and the completion phase for each of the three prime sponsors, PGT, Northern Border, and Northwest Alaskan. For each of the six categories, please provide:

1. The current estimate of the project cost;
2. The total amount of prime contracts and subcontracts let to date;
3. The total amount of prime contracts and subcontracts identified as "contractable opportunities" for MBE and FBE participation;
4. A list of each of the prime contracts, and subcontracts, offered to date for possible joint ventures with MBE's and FBE's;
5. A list of each of the prime contracts, and subcontracts, let to date to MBE's and FBE's, the date each was awarded, and the dollar value of each contract;
6. A list of any prime contractors, or subcontractors, that have not provided and/or implemented the affirmative action plan required by your regulations;
7. A list by project activity of each of the contracts and subcontracts let or to be let, indicating which have been identified as "contractable opportunities" for MBE's and FBE's under your regulations; and
8. A description of the method utilized by each contractor and subcontractor (a) to establish the goals for MBE and FBE contract opportunities; and (b) to identify whether there are any MBE's or FBE's capable of performing the project activity to be covered by each contract.

You and your staff have been very helpful in responding to my requests for information in this area. I look forward to working with you to identify any problems that may exist in the program, which I know is of mutual concern.

Sincerely,


Henry M. Jackson
Ranking Minority Member

HMJ:bmP

Senator MURKOWSKI. Are you familiar with this letter?

Mr. RHETT. Very much so.

Senator MURKOWSKI. Do you have any information, or could you elaborate on the current status of his request?

Mr. RHETT. Yes.

Senator MURKOWSKI. And when might he receive a reply to his inquiry?

Mr. RHETT. I have sent an interim response saying that the amount of information requested was such that I could not gather it all until about the end of October. This information is now being furnished by the sponsors.

Senator MURKOWSKI. Can he be assured that that information is available before the joint resolution is reported to the committee?

Mr. RHETT. Yes, sir. It will be available to him by November 1.

Senator MURKOWSKI. Would you care to make any comments as to his concern over the affirmative action program for the project?

Mr. RHETT. Only that I have the same concerns—not particularly for this project, but in general—on both affirmative action and MBE. My concern is to assure that it is done and done right.

We were in the process of investigating this area ourselves when Senator Jackson's letter arrived. The major thing we want to find out is whether there is something wrong. If there is, we will do something about it.

Generally, the companies have been meeting their goals well. There is a question however, raised by some members of the minority community, on the method used to compute the minority and female business enterprise goals. This is the basic issue because, unlike employment goals, there is no standard for computing them and so we may be plowing new ground.

Senator MURKOWSKI. Why would you be plowing new ground when we have already built a pipeline?

Mr. RHETT. Well, by new ground, I meant new ground in the minority business goal-setting, not in construction of a pipeline.

Senator MURKOWSKI. I see.

Mr. RHETT. There is a major difference, of course, in this pipeline. The addition of the incentive rate of return mechanism limited the costs that could be added later. All costs have to be carefully reviewed.

Senator MURKOWSKI. In the application of the incentive rate of return, which I understand as it is applicable to this project is in the still developing stages of how that is actually applied in a very complex formula that I, frankly, have had explained to me, and I don't think that I have been too dense to understand it, but I don't think anybody could explain it, so I am not going to ask you to.

But when I have been asked, is it necessary, I have been assured that we are so far along into it that we can't abandon it, which doesn't satisfy my curiosity either.

But being as it may, if we got into that, I am afraid we would be here all afternoon, but it will come up certainly to other witnesses before the hearing is concluded.

But in the application of your responsibilities, or do you not have a role in establishing or recommending or approving or concurring with this date certain that we have talked about earlier that Chairman Butler of FERC elaborated on a good deal?

Mr. RHETT. It is a consultation role. As the one supervising the construction with an engineering viewpoint, I will sit down with the commission and the commission staff and work this out.

Senator MURKOWSKI. Now, do you have to agree with them, or do you just give them your opinion and they take it or leave it?

Mr. RHETT. Well, if we put it in that light, I think I always give the opinion and they take it or leave it. However, since I have been Federal Inspector—and I am talking about all the Federal agencies including FERC—my dealings with the agencies have never been conducted this way. They have always been very cooperative.

Senator MURKOWSKI. Are you required to make your recommendation public, or can you keep it confidential?

Mr. RHETT. I haven't thought about it, Senator, but I will.

Senator MURKOWSKI. You would what?

Mr. RHETT. The one thing I do know is that I have never found much that didn't eventually become public.

Senator MURKOWSKI. That has been my observation in the short time that I have been here. But I would assume that it would be in order that that recommendation from your standpoint with regard to the date certain should be made public.

Mr. RHETT. My initial reaction is that since it is going into an FERC proceeding, I would assume that it probably becomes public. However, I am saying this as an engineer, not as a lawyer. I would like to confirm this later for the record.

[Subsequent to the hearing the committee received the following:]

With respect to the FERC's certification proceedings under the Natural Gas Act, the date certain determination would have to be made known to all parties. In essence, the decision would be made public. I have consulted with the FERC and they concur with my opinion.

Senator MURKOWSKI. Do you feel, after your examination as a professional engineer, as well as your duties in a regulatory role, that your personal examination, based on your professional background, would be of significance to FERC in looking for all the

expertise that they can get in establishing this date certain? What I am attempting to emphasize here is the significance of any consumer exposure as it would reflect the date certain. So that if a segment wasn't finished, why then, we have got the problem of the consumer picking up a portion of the cost, which is certainly not the intention by any means, and I think we need every reassurance possible that we are eliminating whatever that risk might be.

Mr. RHETT. Mr. Chairman, I think that is completely essential. We will have the familiarity, the professional expertise, and the resources to pull that information together for the Commission better than anybody else. Obviously, the sponsors will also be doing this, but the Office of the Federal Inspector will be the "umbrella."

Senator MURKOWSKI. Would you care to comment on the express concern that has been evidenced, not only by Senator Metzenbaum, but by others, to the general assumption that somehow the consumer is exposing himself to a risk that is more significant than the ordinary risk of a consumer in taking a product and paying for whatever that product might be over the amortization period, with the implication on the subsidy aspect that is associated with this particular unique situation that is dictated strictly by the financial community and certainly not by the legislative body?

Mr. RHETT. Mr. Chairman, I would like to divide the issue. One part of it is a matter of regulatory policy. This is not within my responsibility and I do not consider myself qualified to speak to this element.

The second part is the issue of risk. I personally believe that, give the current status of the engineering; the relationship that we have with Canada; the outstanding working relations we have with the State of Alaska; and our detailed knowledge of the project—including both the conditioning plant and the pipeline; the risks are minimal.

Senator MURKOWSKI. Minimal?

Mr. RHETT. Minimal. They are not that great. It is a construction job. Of course, there could be something unexpected—a "force majeure". I can't predict this. I am talking as an engineer who is concerned about building something in the Arctic, over Atigun Pass and the other difficult areas. The engineering on this project is more advanced than it was before construction of TAPS and, although there were still engineering and scientific questions 2 or 3 years ago, these have been resolved for the most part.

Senator MURKOWSKI. Your testimony is certainly reassuring to the committee in the sense that the experience has taken place already in the oil pipeline and for this gas pipeline the technology is not of a significant nature that in your opinion it poses any new or significantly new threat to the ingenuity of the American commitment to get things done, is that right?

Mr. RHETT. That is right.

Senator MURKOWSKI. Let me ask you a question about the conditioning plant. The technology on that is obviously different than a construction project, which is what a gasline really is.

What exposure is there, if any, that is unique about the conditioning plant, which is one of the segments that ultimately we have to concern ourselves with? If that isn't ready, the gas can't flow.

Mr. RHETT. Yes. The problems that could occur on the plant are the ones that concern us in a lot of ways but they are not construction problems. The problem doesn't lie in the of modular construction or in bringing it to Prudhoe in pieces and assembling it.

Senator MURKOWSKI. Suppose the ice condition should be such for 2 or 3 years in a row that you couldn't barge the prefabricated units in?

Mr. RHETT. This is the basic issue: weather.

Senator MURKOWSKI. Could they be trucked in over the highways?

Mr. RHETT. While I am sure it could possibly be brought in by truck, the pieces are so large that trying to transport them by truck while trying to build a pipeline off the same road would be extremely difficult.

Senator MURKOWSKI. But we have never had a situation yet where the barges couldn't get in? We have had problems, but each year they have gotten in over the last 7 to 10 years, is that right?

Mr. RHETT. Yes. And there are three sealifts. Obviously, the last one is the most critical because if the project if stays on a tight schedule, there won't be time to plan an alternative if the last sealift can't get in due to ice. But, if the first one were frozen—while such an event would pose a difficult problem affecting cost and engineering—there would still be a good chance of completing the plant on schedule.

Senator MURKOWSKI. Mr. Rhett, I very much thank you for your testimony. It has been very useful to the committee, and you have agreed to submit some questions for the record for the benefit of Senator Jackson.

I apologize again for having to excuse for another 5 minutes, but we have another roll call vote.

You are certainly excused, Mr. Rhett, and I would ask that the other two witnesses take a short break.

Thank you.

[Whereupon, a short recess was taken.]

Senator MURKOWSKI. We will reconvene the hearing, and I would hope that the witnesses, Mr. Horn and Mr. Johnston, join the chair that this is a good way to lose a little weight. By the time we get through, why, lunch is going to be over.

Mr. Horn, Deputy Under Secretary, Department of Interior. We welcome you to the committee and look forward to your testimony. Please proceed.

STATEMENT OF HON. WILLIAM P. HORN, DEPUTY UNDER SECRETARY, DEPARTMENT OF THE INTERIOR

Mr. HORN. Thank you, Mr. Chairman.

I will submit my short prepared statement for the record and really summarize it in three basic points.

The first, of course, is that the Department of the Interior fully supports the President's waiver package, and we are persuaded that this package, if approved, will remove Government impediments to private financing of this important project.

Moreover, the development and delivery to market of the 26 trillion cubic feet of natural gas at Prudhoe Bay is a goal of this administration that Interior actively supports.

We are also concerned that failure to bring this major resource to market may well discourage exploration and subsequent development of vital resources in other frontier areas of the country, including northern Alaska.

The second point is that the department's role vis-a-vis this project is limited and our statutory responsibilities are not affected by the waiver package submitted to you.

Third, the Department's primary obligation regarding the project has been discharged with the issuance of the rights-of-way in 1980 and 1981.

Once the project is approved and gets started, we will be charged with issuing various other temporary use permits and such, and we will work closely with the Office of Federal Inspector to insure that there are no inordinate delays caused by actions on our part.

I would be pleased to answer any questions you may have.

[The prepared statement of Mr. Horn follows:]

Mr. Horn's prepared statement follows:

As a member of the Department of the Interior, I am pleased to have the opportunity to discuss the proposed project with you.

The proposed project is a significant development in the area of resource management and is consistent with the Department's policy of promoting the efficient and responsible use of our natural resources.

The project is being undertaken in accordance with the Department's policy of promoting the efficient and responsible use of our natural resources.

The project is being undertaken in accordance with the Department's policy of promoting the efficient and responsible use of our natural resources.

The project is being undertaken in accordance with the Department's policy of promoting the efficient and responsible use of our natural resources.

The project is being undertaken in accordance with the Department's policy of promoting the efficient and responsible use of our natural resources.

The project is being undertaken in accordance with the Department's policy of promoting the efficient and responsible use of our natural resources.

The project is being undertaken in accordance with the Department's policy of promoting the efficient and responsible use of our natural resources.

The project is being undertaken in accordance with the Department's policy of promoting the efficient and responsible use of our natural resources.

The project is being undertaken in accordance with the Department's policy of promoting the efficient and responsible use of our natural resources.

The project is being undertaken in accordance with the Department's policy of promoting the efficient and responsible use of our natural resources.

Statement of

William P. Horn
DEPUTY UNDER SECRETARY

DEPARTMENT OF THE INTERIOR

Mr. Chairman:

My name is William Horn and I am the Deputy Under Secretary at the Department of the Interior.

The Department's role in the Alaska natural gas pipeline project is limited and neither affects nor is affected by the waiver package submitted to you by President Reagan last week. Your time this morning is limited so I will not repeat the information already presented by other government witnesses, especially Secretary Edwards.

The Department of the Interior fully supports the President's waiver package. We are persuaded that this package will remove governmental impediments to private financing of this important project. Development and delivery to market of 26 trillion cubic feet of Alaska natural gas is a goal of this Administration that Interior actively supports. We are also concerned that failure to bring this major resource to market will discourage exploration and subsequent development of vital resources in other frontier areas. As previously noted, however, the waiver package before you does not impact Interior's responsibilities. Accordingly, we defer to the other witnesses to explain the package more comprehensively to you.

The Department's direct role in this project is generally limited to granting and protecting rights-of-way across Federal lands. We have already discharged our primary obligation and issued the rights-of-way for the U.S. legs of the project. These grants were made in 1980 and earlier this year.

This concludes my prepared statement. I will be happy to try to answer any questions the Committee may have on the Department of the Interior's role in this project.

Senator MURKOWSKI. Thank you, Mr. Horn.

The Interior Department is responsible, I believe, for monitoring the activities of the pipeline partners to assure that they fulfill the terms and conditions of the right-of-way granted by your Department. Is that correct?

Mr. HORN. Partially.

Senator MURKOWSKI. OK. Why don't you clarify that for me?

Mr. HORN. Essentially, under the terms of reorganization plan No. 1 executed in 1979, we have a relationship with the Office of Federal Inspector.

Senator MURKOWSKI. Reorganization plan No. 1?

Mr. HORN. 1979.

Senator MURKOWSKI. Which one are we on now?

Mr. HORN. I am not quite sure. As far as I know, in terms of this project, that is still the governing document.

Senator MURKOWSKI. We are still on No. 1?

Mr. HORN. Yes.

Senator MURKOWSKI. That is reassuring. Please continue.

Mr. HORN. Primarily, the way it works is that the companies come in, make their application through the one window concept to the Federal inspector.

If one of the permits falls within our responsibility, we then go through the process of issuing the necessary permit, and then that permit will be administered and enforced by the Office of Federal Inspector, and we provide whatever necessary cooperation and support that the Federal inspector requires.

Senator MURKOWSKI. As of this date, with your somewhat limited input, are there any terms and conditions that you feel are not being met?

Mr. HORN. We have no knowledge at the moment of any problems regarding adherence to the various terms and conditions.

Senator MURKOWSKI. The responsibility of the Department of the Interior and the Department of Energy always appeared to me to kind of go hand in glove. You are the trustee for the public lands and the resources in those lands, and the Department of Energy is responsible for the energy development and promotion and marketing.

In your view, recognizing the commitment to achieve energy independence by the administration, particularly a higher degree, how do you foresee the development of some of the more remote offshore areas that have received a good deal of interest by geologists, various oil companies, such as the Navarene Basin, which are extremely remote and obviously require considerable new technology to bring those resources into our Nation's storehouse of energy?

Do you have any opinions offhand of the likelihood of being able to achieve production and development of those further out, more extensive, more expansive, more technologically demanding areas, if we cannot bring a relatively proven capability into the marketplace, such as the Alaska natural gas transmission pipeline?

Do you think there is any correlation there?

Mr. HORN. Obviously, failure—

Senator MURKOWSKI. I am talking about the financing and the commitments, because here we have a big project, a \$40 billion project. But these others may exceed that.

Mr. HORN. Obviously, failure to do what is necessary from the Government's perspective to remove obstacles to getting this project going could have a dampening impact on industry interest in developing some of the more remote areas.

Frankly, any private industry decision to develop, for example, the Navarene Basin or to engage in exploration activities in the national petroleum reserve is a function of the economics of what is discovered, and then, of course, the ability to move those things out.

In this circumstance, if this administration doesn't take the steps it sees necessary to remove obstacles to getting this project started, that might send a signal that the administration is not as interested in developing some of these areas, and frankly we are. We think that is one of the reasons the President has submitted the waiver package, to facilitate the private investment and financing of this project.

Senator MURKOWSKI. I thank you, Mr. Horn. I very much appreciate your testimony. It was brief and to the point. I assume that the committee understands that the Department of the Interior is basically endorsing the waiver package as proposed.

Mr. HORN. That is correct.

Senator MURKOWSKI. Thank you very much, Mr. Horn. We appreciate your testimony, and particularly for bearing with us at this late hour.

Mr. HORN. Thank you, Mr. Chairman.

Senator MURKOWSKI. Our next witness is Mr. Ernest Johnston, Acting Assistant Secretary for Economics and Business, Department of State.

Mr. Johnston, we welcome you before the committee. You are the last witness and we look forward to your testimony.

There are several questions which we, as you might have guessed, have before us, but before we ask the questions, why, maybe you will answer them in your statement.

STATEMENT OF HON. ERNEST B. JOHNSTON, JR., ACTING ASSISTANT SECRETARY FOR ECONOMIC AND BUSINESS AFFAIRS, DEPARTMENT OF STATE

Mr. JOHNSTON. Mr. Chairman, I will submit my statement for the record, but there are one or two points that I feel I would like to highlight.

The State Department strongly supports the enactment of this waiver.

We all know the effects of the 1973, 1979, and 1980 oil crises on petroleum prices and lines at the gas station in the United States.

We have talked about \$23 billion being a lot of money. It is a lot of money, but it is only one-fourth of the U.S. oil bill in 1 year.

This project will give us the energy supplies equivalent to about 10 percent of our oil imports in any one year.

It will also benefit our allies, because we will not need to compete with them for access to natural gas from Africa and the

Middle East. This will thus reduce their vulnerability to Soviet cutoffs.

There are also important foreign policy benefits.

Canada has supported the pipeline from the beginning.

However, to give impetus to the pipeline, we urged the Canadians to allow the construction of the two southern legs in advance, and to allow the export of Alberta gas.

The opponents of the pipeline in Canada urged Prime Minister Trudeau not to approve the prebuilt sections. The critics felt that if the Alaska portion of the pipeline was not completed they might be linked up with the United States exporting gas indefinitely through the prebuilt portion, gas that they felt they would need in their own Canadian economy.

Prime Minister Trudeau, however, made the decision to go ahead and allow these two southern legs to be constructed. He did so on the basis of a congressional resolution which was passed by both Houses, and on the basis of a letter that President Carter wrote to him in July.

I think perhaps it might be a good idea to submit that letter for the record, because it is quite precise.

Senator MURKOWSKI. For the record, we would appreciate that being submitted for the record. So ordered.

Mr. JOHNSTON. President Reagan affirmed to the Parliament in Ottawa that he was committed to a pipeline based on private financing. He also had discussions along this line in Ottawa with the Prime Minister, and in Washington.

This waiver is the embodiment of the assurances which were given to Prime Minister Trudeau. They will, in our view, remove the restrictions that would complicate the private sector's efforts to carry this pipeline forward.

It is for that reason that we think that this is a bill which the Congress should support.

[The prepared statement of Mr. Johnston and statement by President Carter follows:]

STATEMENT BY ERNEST B. JOHNSTON, JR., ACTING ASSISTANT SECRETARY FOR
ECONOMIC AND BUSINESS AFFAIRS, DEPARTMENT OF STATE

IT IS A PLEASURE TO BE HERE TODAY TO TESTIFY BEFORE YOUR COMMITTEE ON BEHALF OF SECRETARY HAIG WHO, ALONG WITH SECRETARIES RASHISH AND HORMATS, IS PRESENTLY IN CANCUN, MEXICO WITH PRESIDENT REAGAN. I WILL PRESENT THE DEPARTMENT OF STATE'S VIEWS ON THE WAIVER TO EXISTING LAW WHICH THE PRESIDENT HAS SUBMITTED TO FACILITATE THE PRIVATE FINANCING OF THE ALASKAN NATURAL GAS TRANSPORTATION SYSTEM (ANGTS). IN PARTICULAR, I WOULD LIKE TO HIGHLIGHT WHAT WE BELIEVE TO BE THE KEY BENEFITS THAT ANGTS WOULD PROVIDE THE UNITED STATES.

IN ORDER TO ASSESS THE ROLE THAT ANGTS MIGHT PLAY IN THE U.S. ENERGY PICTURE, IT WOULD BE USEFUL TO BEGIN BY NOTING SOME OF THE FACTORS OVER THE PAST DECADE THAT HAVE LED POLICY MAKERS AND PRIVATE ENERGY PLANNERS ALIKE TO URGE THE EARLY COMPLETION OF A NATURAL GAS DELIVERY SYSTEM PROVIDING ALASKAN GAS TO THE LOWER 48 STATES.

THE IMPETUS OF ANGTS HAS ITS ROOTS IN THE TURBULENT GLOBAL ENERGY DEVELOPMENTS OF THE PAST DECADE. IN THE EARLY 1970'S, THE GROWTH IN AMERICAN ENERGY CONSUMPTION QUICKLY OUTSTRIPPED THE CAPACITY OF OUR DOMESTIC ENERGY PRODUCERS. IMPORTS NATURALLY FILLED THE GAP. IMPORTED ENERGY WAS STILL RELATIVELY CHEAP, EASY TO PROCURE, AND SEEMINGLY FREE OF POLITICAL RISKS.

BY SEPTEMBER 1973, OIL IMPORTS ALONE CONSTITUTED 38.3 PERCENT OF TOTAL OIL CONSUMPTION, UP FROM JUST 21.2

PERCENT IN 1968. WITH THIS RAPID GROWTH IN ENERGY IMPORTS CAME INCREASED VULNERABILITY TO ENERGY IMPORT CUTOFFS, BUT MOST DID NOT RECOGNIZE THE SERIOUSNESS OF SUCH A DEVELOPMENT.

THE OIL EMBARGO OF 1973-1974, AND THE RESULTING ENERGY SHOCK HERE AT HOME, AWOKE THE AMERICAN PUBLIC AND POLICY MAKERS ALIKE TO THE DANGERS OF FURTHER INCREASING OUR DEPENDENCE ON FOREIGN OIL. SOARING ENERGY PRICES AND LONG LINES AT THE PUMP DROVE HOME IN A TANGIBLE WAY THAT INCREASING DEPENDENCE ON FOREIGN SOURCES FOR OUR ENERGY NEEDS WOULD ONLY MAKE THE UNITED STATES INCREASINGLY VULNERABLE IN TIMES OF UNCERTAIN SUPPLY. THE GLOBAL ENERGY CRISES IN 1979 AND 1980 AS A RESULT OF THE REVOLUTION IN IRAN AND THE IRAN-IRAQ WAR ONLY UNDERSCORE THE FACT THAT SUPPLY UNCERTAINTIES MAY BE INCREASINGLY COMMON IN THE FUTURE.

IT WAS AGAINST THIS BACKDROP THAT A VARIETY OF ALASKAN GAS PROPOSALS WERE CONSIDERED AND FROM WHICH ANGTS WAS ULTIMATELY SELECTED. FROM THE OUTSET, THE PRIVATE SECTOR WAS EXPECTED TO ASSUME THE CENTRAL ROLE REGARDLESS OF THE KIND OF TRANSPORTATION SYSTEM ULTIMATELY SELECTED. WHILE SUCCESSIVE ADMINISTRATIONS RECOGNIZED THAT THE GOVERNMENT HAD A LEGITIMATE OVERSEER ROLE, EACH STEADFASTLY MAINTAINED, AS THIS ADMINISTRATION DOES TODAY, THAT THE PRIVATE SECTOR SHOULD BE RESPONSIBLE FOR UNDERTAKING ALL PHASES OF THE PROJECT, INCLUDING ITS FINANCING.

OUR EXPERIENCE OF THE PAST FEW YEARS CLEARLY INDICATES THAT THERE IS NO ACCEPTABLE SUBSTITUTE FOR MEETING OUR

ENERGY NEEDS WITH A MINIMUM OF RELIANCE ON OTHERS. THE BETTER WE ARE ABLE TO UTILIZE OUR DOMESTIC ENERGY RESOURCES, THE LESS THE UNITED STATES WILL BE DEPENDENT UPON FOREIGN SOURCES.

WE BELIEVE EARLY COMPLETION OF ANGTS WILL ADD SIGNIFICANTLY TO THE ENERGY SECURITY OF THE UNITED STATES. WITH DIRECT ACCESS TO APPROXIMATELY 13 PERCENT OF U.S. GAS RESERVES, IT IS ESTIMATED THAT ANGTS WILL REPLACE APPROXIMATELY 400,000 BARRELS OF OIL A DAY, THUS FURTHER REDUCING U.S. VULNERABILITY TO INTERRUPTIONS OF OUR ENERGY IMPORTS. ON AN ENERGY EQUIVALENT BASIS, GAS SHIPPED VIA THE ALASKAN PIPELINE WOULD REPRESENT NEARLY 10 PERCENT OF TODAY'S CRUDE OIL IMPORTS. MOREOVER, IT IS POSSIBLE THAT ANGTS SURGE CAPACITY, OR ABILITY TO SHIP GAS AT HIGHER THAN NORMAL FLOWS, COULD PROVIDE EVEN GREATER QUANTITIES OF ALASKAN GAS IN AN EMERGENCY.

ANGTS WOULD ALSO PROVIDE AN INDIRECT BENEFIT TO OUR EUROPEAN ALLIES. BY GREATER USE OF DOMESTIC GAS RESOURCES, THE UNITED STATES WILL REDUCE ITS NEED FOR IMPORTED GAS IN THE YEARS AHEAD. WITH ASSURED ACCESS TO ALASKAN GAS, WE WOULD NOT NEED TO COMPETE WITH OUR EUROPEAN FRIENDS FOR ACCESS TO GAS SOURCES ELSEWHERE IN THE FREE WORLD NOTABLY IN AFRICA, THE MIDDLE EAST AND EVEN IN THIS HEMISPHERE. MAKING ADDITIONAL GAS AVAILABLE TO EUROPE WILL BE ESSENTIAL IF WE ARE TO REDUCE EUROPEAN VULNERABILITY TO ENERGY CUTOFFS FROM THE SOVIET UNION AND EASTERN EUROPE.

I WOULD ALSO LIKE TO EMPHASIZE THAT APPROVAL OF THIS WAIVER PACKAGE WOULD HAVE IMPORTANT FOREIGN POLICY BENEFITS IN OUR RELATIONS WITH CANADA. ENERGY PLANNERS HAVE LONG RECOGNIZED THAT CLOSE COOPERATION WITH OUR CANADIAN NEIGHBORS WOULD BE ESSENTIAL IN PROVIDING THE LOWER 48 STATES WITH SECURE, DEPENDABLE ACCESS TO ALASKAN GAS. CANADA, FOR ITS PART, KNOWS THAT A STRONG, ENERGY INDEPENDENT UNITED STATES IS IMPORTANT FOR THE SECURITY OF THE FREE WORLD. CANADIANS RECOGNIZE, MOREOVER THAT U.S. ACCESS TO ALASKAN GAS WOULD PROVIDE CANADA WITH GREATER FLEXIBILITY IN MANAGING ITS OWN ENERGY RESOURCES BY LIMITING FUTURE U.S. DEMAND FOR CANADIAN GAS. FINALLY, MANY CANADIANS BELIEVE THAT DEVELOPMENT OF ANGTS WILL PROVIDE IMPORTANT BENEFITS TO THE CANADIAN GAS INDUSTRY AND FURTHER CANADA'S RESOURCE DEVELOPMENT.

BILATERAL COOPERATIVE EFFORTS TO BRING ALASKAN NATURAL GAS THROUGH CANADA WERE FORMALIZED BY TREATY IN SEPTEMBER 1977. THIS TREATY AND THE COMMITMENTS IT REPRESENTS HAVE BECOME AN IMPORTANT SYMBOL OF ENERGY COOPERATION BETWEEN OUR TWO COUNTRIES. WE HAVE CONTINUED TO BUILD ON THIS TREATY THROUGH NUMEROUS DIPLOMATIC EXCHANGES THAT HAVE EXPANDED THIS INITIAL EFFORT.

FROM THE BEGINNING OF OUR DISCUSSIONS, CANADA HAS STRONGLY SUPPORTED THE PIPELINE PROJECT DESPITE ITS COMPLEXITIES AND UNCERTAINTIES. IN 1980, IN ORDER TO GIVE IMPETUS TO THE PIPELINE PROJECT, THE U.S. URGED THE CANADIAN GOVERNMENT TO AUTHORIZE THE CONSTRUCTION OF TWO SOUTHERN LEGS OF THE PIPELINE (THE "PREBUILD" PORTION) THROUGH SOUTHERN

- 5 -

ALBERTA, SASKATCHEWAN AND BRITISH COLUMBIA. WE ALSO URGED THE APPROVAL OF THE EXPORT OF CANADIAN GAS THROUGH THOSE SEGMENTS UNTIL THE ALASKAN GAS BEGAN TO FLOW. DOMESTIC OPPONENTS IN CANADA, HOWEVER, PRESSED THE CANADIAN GOVERNMENT NOT TO APPROVE THE CONSTRUCTION OR GAS EXPORT AUTHORIZATION IN VIEW OF THEIR OPINION THAT THE PROJECT WOULD NEVER RECEIVE THE PRIVATE FINANCING NECESSARY TO COMPLETE THE REMAINING SEGMENTS. CANADA, THE OPPONENTS CLAIMED, WOULD BE STUCK WITH THE SOUTHERN PORTION IN PLACE BUT GOOD ONLY FOR CARRYING ALBERTA'S GAS TO THE U.S. -- GAS WHICH MANY IN CANADA ARGUED CANADA WOULD NEED FOR ITS OWN MARKETS.

PRIME MINISTER TRUDEAU MADE THE DIFFICULT DECISION TO PROCEED WITH THE SOUTHERN LEGS ON THE BASIS OF ASSURANCES FROM BOTH THE ADMINISTRATION AND THE CONGRESS. PRESIDENT CARTER SAID IN A LETTER TO THE PRIME MINISTER THAT THE U.S. GOVERNMENT WAS COMMITTED TO THE PROJECT, WAS SATISFIED THAT IT WOULD BE COMPLETED, AND WOULD TAKE "APPROPRIATE ACTION" DIRECTED AT MEETING THE OBJECTIVE OF TIMELY COMPLETION. CONGRESS, FOR ITS PART, PASSED A CONCURRENT RESOLUTION SAYING "IT IS THE SENSE OF CONGRESS THAT THE SYSTEM... ENJOYS THE HIGHEST LEVEL OF CONGRESSIONAL SUPPORT FOR ITS EXPEDITIOUS CONSTRUCTION AND COMPLETION..." THANKS TO THESE EXPRESSIONS OF SUPPORT, THE CANADIANS DID AUTHORIZE THE PRE-BUILD. THE WESTERN LEG WAS RECENTLY COMPLETED AND WORK IS ON SCHEDULE ON THE EASTERN LEG.

IT WOULD BE DIFFICULT TO OVEREMPHASIZE THE NEGATIVE IMPACT ON U.S.-CANADIAN RELATIONS IF THE U.S. GOVERNMENT DID NOT HONOR ITS ASSURANCES TO REMOVE STATUTORY IMPEDIMENTS TO PRIVATE FINANCING. THE CANADIANS WOULD UNDOUBTEDLY FEEL BETRAYED AND THE BILATERAL RELATIONSHIP WOULD SUFFER.

PRESIDENT REAGAN HAS REAFFIRMED HIS COMMITMENT TO THE PIPELINE'S CONSTRUCTION BASED ON PRIVATE FINANCING. THE WAIVER PACKAGE BEFORE THE CONGRESS TODAY IS THE CONCRETE EXPRESSION OF THIS GOVERNMENT'S WILLINGNESS TO LIVE UP TO THE ASSURANCES GIVEN TO PRIME MINISTER TRUDEAU AND THE CANADIAN GOVERNMENT. IN OUR VIEW, THIS WAIVER PACKAGE REMOVES UNREASONABLE RESTRICTIONS THAT WOULD UNNECESSARILY COMPLICATE THE PRIVATE SECTOR'S ROLE IN MAKING ANGTS A REALITY.

IN CONCLUSION, THE DEPARTMENT OF STATE BELIEVES THAT EARLY COMPLETION OF ANGTS THROUGH PRIVATE MEANS WILL PROVIDE IMPORTANT ENERGY SECURITY BENEFITS THAT THE UNITED STATES CAN ILL AFFORD TO REJECT. IT ADVANCES BILATERAL ENERGY COOPERATION WITH CANADA, YET PROTECTS THE FUNDAMENTALLY PRIVATE NATURE THAT HAS BEEN A PREREQUISITE FOR THIS ADMINISTRATION'S SUPPORT. WE BELIEVE THE PRESIDENT'S WAIVER PACKAGE ELIMINATES UNNECESSARY RESTRICTIONS THAT CAN ONLY COMPLICATE THE SPONSORING COMPANIES' ATTEMPTS TO ATTRACT FINANCIAL BACKING FOR THIS IMPORTANT PROJECT.

EMBARGOED UNTIL AFTER BRIEFING

July 18, 1980

Office of the White House Press Secretary

THE WHITE HOUSE

STATEMENT BY THE PRESIDENT

My Administration's energy policy has always recognized that the energy problem is not unique to our country. The energy burden of the 1980s is shared by all the industrialized nations and by the lesser developed nations as well.

Just as the energy burden is shared by all nations, so must the solution be borne by all in a cooperative spirit. Just last month in Venice, I met with the heads of six other leading nations of the industrialized world to establish specific goals and a series of comprehensive commitments to conservation and the development of new energy supplies. At the time we pledged increased international cooperation among ourselves and with other countries to help achieve these objectives.

When I met with Prime Minister Trudeau of Canada in Venice we agreed that one of the potential cooperative projects -- one that could be most meaningful to both our countries -- was the Alaska Natural Gas Transportation System.

I am very pleased that today the Canadian Government has announced its willingness to move forward on this vast project by approving the construction of the first major segment of what is intended eventually to be a 4800 mile pipeline from Prudhoe Bay in Alaska through British Columbia and Alberta to the heartland of the United States.

This first segment, approved today by the Canadian Government, will enable U.S. consumers in 33 states to begin receiving additional natural gas from Canada by 1981 -- replacing 200,000 barrels a day of crude oil -- even before the Alaskan and northern Canadian portions of the pipeline are completed. Eventually, too, Canadian natural gas from the north will be able to flow to consumers in Canada.

The entire project, which I approved in 1977, is intended to be completed in 1985 and will bring about 2.4 billion cubic feet of Alaskan natural gas to U.S. consumers each day, replacing more than 400,000 barrels of foreign oil. Prudhoe Bay natural gas represents 10 percent of our nation's reserves.

I have today sent a letter to Prime Minister Trudeau expressing our confidence that this project will be carried forward to completion and become an example to the world of how international cooperation can serve the common energy needs of both partners. Both Houses of Congress have recently passed resolutions of support for the Alaska pipeline, and I have been able to provide several specific assurances to Prime Minister Trudeau on our commitment as a nation to this joint project. The pipeline is one of the most complex and demanding energy ventures ever undertaken. When completed, it will be a major element in our transition to a more diversified and secure energy economy.

EMBARGOED UNTIL AFTER THE BRIEFING

JULY 18, 1980

Office of the White House Press Secretary

THE WHITE HOUSETEXT OF A LETTER FROM THE
PRESIDENT TO THE
PRIME MINISTER OF CANADA

July 18, 1980

Dear Mr. Prime Minister:

Since you last wrote to me in March, the United States Government has taken a number of major steps to ensure that the Alaska Natural Gas Transportation System is completed expeditiously.

Most significantly, the Department of Energy has acted to expedite the Alaskan project. The North Slope Producers and Alaskan segment Sponsors have signed a joint statement of intention on financing and a cooperative agreement to manage and fund continued design and engineering of the pipeline and conditioning plant. The Federal Energy Regulatory Commission recently has certified the Eastern and Western legs of the System.

The United States also stands ready to take appropriate additional steps necessary for completion of the ANGTS. For example, I recognize the reasonable concern of Canadian project sponsors that they be assured recovery of their investment in a timely manner if, once project construction is commenced, they proceed in good faith with completion of the Canadian portions of the project and the Alaskan segment is delayed. In this respect, they have asked that they be given confidence that they will be able to recover their cost from U.S. shippers once Canadian regulatory certification that the entire pipeline in Canada is prepared to commence service is secured. I accept the view of your government that such assurances are materially important to insure the financing of the Canadian portion of the system.

Existing U.S. law and regulatory practices may cast doubt on this matter. For this reason, and because I remain steadfastly of the view that the expeditious construction of the project remains in the mutual interests of both our countries, I would be prepared at the appropriate time to initiate action before the U.S. Congress to remove any impediment as may exist under present law to providing that desired confidence for the Canadian portion of the line.

Our government also appreciates the timely way in which you and Canada have taken steps to advance your side of this vital energy project. In view of this progress, I can assure you that the U.S. government not only remains committed to the project; I am able to state with confidence that the U.S. government now is satisfied that the entire Alaska Natural Gas Transportation System will be completed. The United States' energy requirements and the current unacceptable level of dependence on oil imports require that the project be completed without delay. Accordingly, I will take appropriate action directed at meeting the objective of completing the project

by the end of 1985. I trust these recent actions on our part provide your government with the assurances you need from us to enable you to complete the procedures in Canada that are required before commencement of construction on the prebuild sections of the pipeline.

In this time of growing uncertainty over energy supplies, the U.S. must tap its substantial Alaska gas reserves as soon as possible. The 26 trillion cubic feet of natural gas in Prudhoe Bay represent more than ten percent of the United States total proven reserves of natural gas. Our governments agreed in 1977 that the Alaska Natural Gas Transportation System was the most environmentally sound and mutually beneficial means for moving this resource to market. Access to gas from the Arctic regions of both countries is even more critical today as a means of reducing our dependence on imported petroleum.

Successful completion of this project will underscore once again the special character of cooperation on a broad range of issues that highlights the U.S./Canadian relationship.

I look forward to continuing to work with you to make this vital energy system a reality.

Sincerely,

JIMMY CARTER

#

Senator MURKOWSKI. Thank you, Mr. Johnston.

Would you advise the Chair of the official interpretation of the State Department with regard to this agreement with Canada that basically set the schedule for the prebill portions to begin and the negotiations with the Alberta government to proceed to supply gas through the international agreement with the Canadian Government?

My specific question is to determine whether this is a gentleman's agreement, a legal, binding agreement, a contractual type agreement. Is there any recourse that is legally at the hands of our good neighbors in Canada if, for some reason, this project should not become a reality?

Mr. JOHNSTON. No, sir, I don't think there is any legal recourse that lies with the Canadian Government.

Senator MURKOWSKI. How would you phrase the obligation?

Mr. JOHNSTON. I think the obligation was a commitment made by President Carter where he said I want to see this pipeline built, I promise that I will try to remove the obstacles that lie in the way of private financing; I will be prepared at the appropriate time to initiate action before the Congress to remove any impediment that may exist under the present law to provide the desired confidence in the Canadian portion of the line.

Senator MURKOWSKI. And that was a letter?

Mr. JOHNSTON. This is a letter which was released at the White House on the 18th of July 1980.

Senator MURKOWSKI. From President Carter to Prime Minister Trudeau?

Mr. JOHNSTON. Yes, sir.

Senator MURKOWSKI. And that letter will be submitted for the record?

Mr. JOHNSTON. Yes.

Senator MURKOWSKI. Was there a response to that letter?

Mr. JOHNSTON. There was a response in the sense that the Canadian Prime Minister decided to go ahead and permit the construction of the two southern legs, and to permit the export of Alberta gas.

Senator MURKOWSKI. But there was no written acknowledgement to the letter?

Mr. JOHNSTON. So far as I know. If there is, I will submit it for the record.¹

Senator MURKOWSKI. Has the Department of State sought to obtain for the record the comments of the Canadian Government on this waiver proposal, official comments of the Canadian Government?

Mr. JOHNSTON. We have discussed it with them. I don't think that we have an official comment, except that in the discussions that we have had—

Senator MURKOWSKI. I am interested in knowing, have we requested the Canadians to comment?

Mr. JOHNSTON. No, we have not.

Senator MURKOWSKI. Are we going to?

Mr. JOHNSTON. There have been public statements made in Canada and statements which we have gotten from the embassy officials here that the Canadians are pleased.

Senator MURKOWSKI. Would it be appropriate to request an official response from the Canadian Government, or the authorized Canadian authority, to speak to the waivers as the President has proposed them to the Congress?

I am trying to establish here the appropriateness of a formal position currently of the Canadian Government toward these waivers, or if they feel it is not a matter that is in their area of affairs.

Mr. JOHNSTON. We could seek such a comment.

Senator MURKOWSKI. Well, how does that come about? You say you could. Do you intend to?

Mr. JOHNSTON. If you feel we need one, we will.

Senator MURKOWSKI. I think it would be appropriate from the standpoint of assisting the committee in its deliberations on the issues. I think that if we, in fact, have made a commitment through a prior administration, which it appears that we have, through a letter, we have certainly a gentleman's obligation to honor that commitment. But lacking a response to that letter for the record, which you have indicated did not occur, or there was no formal response from the Prime Minister to the President saying, in effect, yes, we accept your terms or something similar, I think it would be helpful to the committee if the Canadian Government would be inclined to respond to the waivers as they affect the prior

¹ No response was submitted by the Department of State.

written communication from our President Carter to Prime Minister Trudeau, and as they pertain to the Canadian interest in the line.

While it is primarily an American project, not only does it go through Canada but there is Canadian gas that is going to go through that line.

So, I would suggest that it might be appropriate to make the request with those qualifications to see if they would care to respond.

Unless there is an objection, Mr. Johnston, we would appreciate that being done.

Mr. JOHNSTON. No, sir, there is no objection.

Senator MURKOWSKI. Thank you. We have three other questions, or there are basically two that are several parts, and it may be appropriate for you to submit them for the record, but we would appreciate your comments as they are presented.

In 1977, the President transmitted to the Congress of the United States the United States/Canadian Transit Pipeline Agreement. We have ratified that agreement, and we would like to know what the status of that treaty is in Canada today and why the Canadian Government has failed to ratify that treaty.

Mr. JOHNSTON. I will have to submit that for the record later, Mr. Chairman.

Senator MURKOWSKI. Are you familiar with that treaty?

Mr. JOHNSTON. I did not realize that the Canadians had not ratified it.

Senator MURKOWSKI. In the absence of such a treaty, will the Canadian Government be able to meet the terms of the 1977 agreement in principle between our two countries, especially with respect to nondiscriminatory taxation?

Mr. JOHNSTON. I will make that a part of the response.

Senator MURKOWSKI. The next question, the 1977 agreement in principle between the two countries committed the Canadian Federal Government to working out agreements with the Provinces of British Columbia, Alberta, and Saskatchewan to implement the agreement.

We would like to know the status of those agreements. We understand that there is no binding agreement with either British Columbia or Alberta. There is not even a commitment to negotiate an agreement on the part of the Saskatchewan Government, let alone a binding commitment. And we would like to know what action you understand the Federal Government plans to take in this area.

Mr. JOHNSTON. I think one of the points to bear in mind is that the embodiment of that agreement, if you will, is in the pipelines that exist. The Western leg is functioning and the Eastern leg is moving ahead in construction on time.

Senator MURKOWSKI. I very much appreciate the difficulty, and I would not expect you to respond to those detailed questions now. We will provide you with the questions as proposed by myself, and I very much appreciate your enlightening us in the manner in which you have in a very complete and concise manner over the conditions of the apparent agreement that was reached with Canada and the obligations of the U.S. Government to respond to

that agreement, and I thank you very much for your testimony, Mr. Johnston.

Mr. JOHNSTON. Thank you.

Senator MURKOWSKI. I would again, for those of you who perhaps came in late, advise you that the committee hearing will reconvene at 10 o'clock tomorrow in room 1202 of the Dirksen Senate Office Building.

At that time our first witness will be Mr. John J. McMillian, chairman and chief executive officer of the Alaska Northwest Natural Gas Transmission Co., and all the partners. So, we are going to have to have a pretty big witness table, which I am sure we can arrange.

I thank you for bearing with us this morning and wish you a good day.

The hearing is concluded for today.

[Whereupon, at 2:05 p.m., the hearing recessed, to reconvene at 10 a.m., Friday, October 23, 1981.]

1870

1871

1872

1873

1874

1875

1876

1877

1878

1879

1880

1881

1882

1883

1884

1885

1886

1887

1888

1889

1890

1891

1892

1893

1894

1895

1896

1897

1898

1899

1900

1901

1902

1903

1904

1905

1906

1907

1908

1909

1910

1911

1912

1913

1914

1915

1916

1917

1918

1919

1920

1921

1922

1923

1924

1925

1926

1927

1928

1929

1930

1931

1932

1933

1934

1935

1936

1937

1938

1939

1940

1941

1942

1943

1944

1945

1946

1947

1948

1949

1950

1951

1952

1953

1954

1955

1956

1957

1958

1959

1960

1961

1962

1963

1964

1965

1966

1967

1968

1969

1970

1971

1972

1973

1974

1975

1976

1977

1978

1979

1980

1981

1982

1983

1984

1985

1986

1987

1988

1989

1990

1991

1992

1993

1994

1995

1996

1997

1998

1999

2000

2001

2002

2003

2004

2005

2006

2007

2008

2009

2010

2011

2012

2013

2014

2015

2016

2017

2018

2019

2020

2021

2022

2023

2024

2025

2026

2027

2028

2029

2030

2031

2032

2033

2034

2035

2036

2037

2038

2039

2040

2041

2042

2043

2044

2045

2046

2047

2048

2049

2050

2051

2052

2053

2054

2055

2056

2057

2058

2059

2060

2061

2062

2063

2064

2065

2066

2067

2068

2069

2070

2071

2072

2073

2074

2075

2076

2077

2078

2079

2080

2081

2082

2083

2084

2085

2086

2087

2088

2089

2090

2091

2092

2093

2094

2095

2096

2097

2098

2099

2100

2101

2102

2103

2104

2105

2106

2107

2108

2109

2110

2111

2112

2113

2114

2115

2116

2117

2118

2119

2120

2121

2122

2123

2124

2125

2126

2127

2128

2129

2130

2131

2132

2133

2134

2135

2136

2137

2138

2139

2140

2141

2142

2143

2144

2145

2146

2147

2148

2149

2150

2151

2152

2153

2154

2155

2156

2157

2158

2159

2160

2161

2162

2163

2164

2165

2166

2167

2168

2169

2170

2171

2172

2173

2174

2175

2176

2177

2178

2179

2180

2181

2182

2183

2184

2185

2186

2187

2188

2189

2190

2191

2192

2193

2194

2195

2196

2197

2198

2199

2200

2201

2202

2203

2204

2205

2206

2207

2208

2209

2210

2211

2212

2213

2214

2215

2216

2217

2218

2219

2220

2221

2222

2223

2224

2225

2226

2227

2228

2229

2230

2231

2232

2233

2234

2235

2236

2237

2238

2239

2240

2241

2242

2243

2244

2245

2246

2247

2248

2249

2250

2251

2252

2253

2254

2255

2256

2257

2258

2259

2260

2261

2262

2263

2264

2265

2266

2267

2268

2269

2270

2271

2272

2273

2274

2275

2276

2277

2278

2279

2280

2281

2282

2283

2284

2285

2286

2287

2288

2289

2290

2291

2292

2293

2294

2295

2296

2297

2298

2299

2300

2301

2302

2303

2304

2305

2306

2307

2308

2309

2310

2311

2312

2313

2314

2315

2316

2317

2318

2319

2320

2321

2322

2323

2324

2325

2326

2327

2328

2329

2330

2331

2332

2333

2334

2335

2336

2337

2338

2339

2340

2341

2342

2343

2344

2345

2346

2347

2348

2349

2350

2351

2352

2353

2354

2355

2356

2357

2358

2359

2360

2361

2362

2363

2364

2365

2366

2367

2368

2369

2370

2371

2372

2373

2374

2375

2376

2377

2378

2379

2380

2381

2382

2383

2384

2385

2386

2387

2388

2389

2390

2391

2392

2393

2394

2395

2396

2397

2398

2399

2400

2401

2402

2403

2404

2405

2406

2407

2408

2409

2410

2411

2412

2413

2414

2415

2416

2417

2418

2419

2420

2421

2422

2423

2424

2425

2426

2427

2428

2429

2430

2431

2432

2433

2434

2435

2436

2437

2438

2439

2440

2441

2442

2443

2444

2445

2446

2447

2448

2449

2450

2451

2452

2453

2454

2455

2456

2457

2458

2459

2460

2461

2462

2463

2464

2465

2466

2467

2468

2469

2470

2471

2472

2473

2474

2475

2476

2477

2478

2479

2480

2481

2482

2483

2484

2485

2486

2487

2488

2489

2490

2491

2492

2493

2494

2495

2496

2497

2498

2499

2500

THE PRESIDENT'S ALASKA NATURAL GAS TRANSPORTATION ACT WAIVER RECOMMEN- DATION

FRIDAY, OCTOBER 23, 1981

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, D.C.

The committee met, pursuant to notice, at 10 a.m., in room 1202 Dirksen Office Building, Hon. Frank H. Murkowski, presiding.

Present: Senators Murkowski, McClure, and Melcher.

Also present: Howard Useem, professional staff member; and Elizabeth Moler, counsel for the minority.

OPENING STATEMENT OF HON. FRANK H. MURKOWSKI, A U.S. SENATOR FROM THE STATE OF ALASKA

Senator MURKOWSKI. We will convene the Senate Committee on Energy and Natural Resources. I want to indicate that the chairman of the full committee, Senator Jim McClure, has asked that I open the committee hearing this morning, and hopefully he will be able to be with us at a later time.

Knowing that we face a very ambitious hearing schedule, I will keep my remarks this morning very brief. I would, however, like to reiterate and underscore some of the testimony heard by the committee yesterday.

First of all, I found some of the remarks of Energy Secretary Edwards' testimony and his responses to questions most interesting.

Secretary Edwards made a very enlightening point when he characterized the 26 trillion cubic feet of proven gas reserves at Prudhoe Bay as "a strategic gas reserve" of sorts.

Given the past interest of this committee in the strategic petroleum reserve and our preparedness in the event of an energy supply disruption, I believe it is important to reiterate the importance of the Alaska Natural Gas Transportation System to our own national security interests.

The opportunity to displace 400,000 to 600,000 barrels of foreign oil daily is an opportunity we must not fail to take advantage of.

I also wanted to briefly review some of the comments made by Chairman Mike Butler of the Federal Energy Regulatory Commission relating to the producer equity participation issue and the billing commencement issue as well.

There has been a question in the minds of some that believe that the allowance of ownership participation represents a potential

antitrust danger to consumers. I believe that these fears can quickly be put to rest for several reasons.

First, Chairman Butler suggested that the critical importance of the gas producers to the financing of this project provides an implicit consumer protection, in that the energy companies—who in the words of Chairman Butler, “are not unsophisticated in predicting the marketability of their products”—appear to be an excellent indicator of the prospects of this project by virtue of their participation.

Furthermore, the chairman suggested that any erosion of the producers’ enthusiasm for this project during the arrangements for financing—resulting in the collapse of the project prior to further construction—would provide consumers with the benefit of “an important market protection from the construction of a noneconomic project.”

Chairman Butler also made some relevant points pertaining to the question of billing commencement. Arguing that a provision for precompletion billing was a necessary element of the waiver package, the chairman underscored the fact that billions of dollars of equity would remain at risk if billing were to commence prior to completion.

Any suggestion that a provision for prebilling places the project’s risk of completion squarely on the shoulders of the consumer as a subsidy to consumers is totally misleading. Instead, with producer and sponsor equity at risk, the risk of delay or noncompletion is shared between project participants and consumers.

In the view of Chairman Butler, this type of risk-taking is justifiable in cases where regulated companies are undertaking high cost and high risk projects.

Moreover, the fact that prebilling could only occur after—and I repeat, after—the Federal Energy Regulatory Commission determined the expected date of project completion makes it extremely unlikely that prebilling would ever occur in the first place.

Given the sheer number of people we will hear from this morning, I do not wish to belabor these observations and take up more time. But I do wish to reiterate the absolute need for the adoption of this package if we are to have a means to bring this tremendous amount of Alaska natural gas to market in our country.

I would like to advise you that the hearing which was scheduled for Monday, the third day on the President’s waiver proposal, has been canceled because we have been able to accommodate during today’s hearing the additional witnesses that wish to testify.

Yesterday, I announced that the hearing record would be left open for 2 weeks following the conclusion of the witnesses’ testimony. Having taken a look at the committee’s calendar since then, I am going to change that announcement.

The hearing record will stay open 1 week following the conclusion of today’s hearing. All Senators wishing to address questions to the witnesses will be requested to have those questions in by noon on Monday, October 26. We will request the witnesses to submit their replies to those questions by noon on Friday, October 30.

We feel that this tight schedule is necessary due to the schedule imposed on us by the Alaska Natural Gas Transmission Act.

I know that the committee will appreciate the cooperation of all concerned.

I am pleased to note that Senator Melcher has arrived and is with us today, and, Senator, I would ask if you have any opening remarks at this time.

**STATEMENT OF HON. JOHN MELCHER, A U.S. SENATOR FROM
THE STATE OF MONTANA**

Senator MELCHER. Thank you, Mr. Chairman.

As the author of the successful bill in the House—we had two bills—and as the author of the successful bill in the House in 1976 that set up the possibility for clearing all the hurdles that are necessary to build this gas pipeline, I have been frustrated during the past 5 years that we didn't seem to be making much headway.

If this waiver package is what is needed to make sure that the gas in Prudhoe Bay—and wherever else we find it up there in the North Slope or other parts of Alaska—can be delivered down here to the Lower 48 States, well, I would be very gratified and very happy to participate in the process of clearing out these last hurdles.

It has always seemed to me, as I am sure the chairman knows better than I, that in his home State of Alaska, unless we can do something with the natural gas in that field, it eventually must have a limiting factor on how much oil we produce out of there.

With the prohibition against flaring, which is a good prohibition, it seems pertinent to me that we make certain that we have under construction the transportation system needed to use the gas.

This is quite an auspicious group of people who are here and all of them are involved in this partnership. I know you have toiled long in putting together a package that can be financed. I commend you for that. But I want to stress very firmly that I believe it is in the best interest of this country that we make sure that the transportation pipeline can be built and that the necessary steps are taken now to permit you to go forward.

Thank you, Mr. Chairman.

Senator MURKOWSKI. Thank you, Senator. I am certainly pleased to hear the reminiscence of my colleague. I believe that your participation in the House Interior bill that was successful over the one proposed or the debate proposed by the House Commerce Committee, what was it, in 1976 or 1977?

Senator MELCHER. 1976.

Senator MURKOWSKI. You were successful in that effort, as I recall.

Senator MELCHER. We were. We won that bill. But I am curious whether any of these companies were in the opposition company at that time.

Senator MURKOWSKI. Maybe we can bring that out in the testimony, Senator.

Senator MELCHER. I think they all were but one. But we all join forces again.

Senator MURKOWSKI. Thank you, Senator Melcher. I can only make the observation from looking at the number of witnesses that we have before us this morning that there is some comparison between the size of the partnership and the ability of the Energy

Committee to find a table to accommodate all of the partners and producers.

With that, we will proceed with our first witness, Mr. John G. McMillian, Chairman, Board of Partners, Alaskan Northwest Natural Gas Transmission Co.

Mr. McMillian, we welcome you to the committee hearing this morning and look forward to your testimony. Please proceed.

STATEMENT OF JOHN G. McMILLIAN, CHAIRMAN, BOARD OF PARTNERS, ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION CO.

Mr. McMILLIAN. Thank you, Mr. Chairman. It is an honor to be here today before your committee.

The transmission industry is represented on my right by nice looking guys, producers on the other end of the table here. I would like to talk about the partnership in general because I think what we have established here to make this project a possibility is an outstanding partnership of a group of the largest transmission companies in the industry and, of course, the producers that own the majority of the gas reserves in Prudhoe Bay.

We have formed this partnership, we have been working together. All parties have been working in a very positive manner.

To date, we have about \$550 million spent on the preengineering, preplanning, predevelopment work for the project.

The partnership is in place, it is working, and it is moving toward a goal to make the project a workable project.

I will not describe the project. I will not describe the waiver package. I think that has been done adequately by others. I would like to speak to the fact that we look at this project as not just a gas pipeline to bring the 26 trillion cubic feet from Prudhoe Bay, which is important, but we also look at it as a gas energy corridor to remove all the gas that might be discovered in Alaska and allow that gas a market. It also allows our Canadian friends to bring their frontier gas to their markets when needed.

So, we think it is an important project for the future energy resources of our country and also for Canada, who exports a lot of gas to us today.

This project has immense national economical benefit to this country. It is somewhere between \$40 and \$90 billion. It is not only the world's largest project, but it is the project that has the greatest impact to our national economical benefit.

The first year balance of payments alone, which will be the minimum year of the project, will be \$7 billion, and that is an impressive number.

We feel that it is sometimes not really understood, but the Alaskan project is now being constructed in the Lower 48 and in Canada with the prebuilt that was approved by the National Energy Board and our FERC last year. The western leg is now complete. The eastern leg is under construction. And in 1982 we will be importing about a billion cubic feet of gas from Canada.

This project, in itself, represents about a \$2 billion expenditure, and in dollar expenditure it will be the largest gas project in the Lower 48.

So, that part of the project is underway.

Also, a lot of commitments were made with both countries and parties when the prebuilding was approved. The Canadians have held up to their end of the bargains that were made and the commitments that were made at that time, and I think that this waiver package will allow us to stand behind the commitments that we made at that time.

The physical aspects of this project have not changed since 1977, but some of the economic factors have undergone drastic changes. And because of these fundamental changes, we are here today to ask for this waiver package.

Initially, with the size of the project, the magnitude of the project, we thought that the transmission companies wouldn't have the sufficient credit strength to carry the pipeline project, because over time and with inflation the cost has escalated to where it is today, and we need the financial resources of the producing companies to help us privately finance this project.

Without their help, we could not do that.

Several factors have led to the cost increase over the last 4 years, and we have had a 4-year delay, rather than a 1-year delay. We were looking for these regulatory factors to be put in place in 1 year, rather than 4 years. We thought that the IROR, the incentive rate of return mechanism, the design specifications, the wellhead pricing, the Federal right-of-way, we were looking to get those things in place in the first year of operation. But it has taken us nearly 4 years to get all those things in place. We blame no one for these factors and these delays, because some of the things that we were doing, like the incentive rate of return, were new ideas, a new concept that was experimental. It just took time.

The biggest factor that has increased our cost over this period of the last 4 years has been the double digit inflation and high interest costs.

If you look at the 1980 cost of our project of a little over \$10 billion, and you escalate those to any reasonable escalation and interest factors that you wish to assume, and you more than double the cost of the project.

So, those two factors alone add more to the cost of the project than any other factor.

As I mentioned to you, everybody here is making a major contribution, both financially and in time and effort, to the project. We need the producer equity and debt support, as we mentioned to you.

To obtain this support, we need to integrate the plant into the system where it should be, and we need to do this for several reasons.

One is that the project needs to be an entire project. We have to have a gas processing plant up there. Without it, we cannot transport the gas.

So, the waiver package that we are bringing forth to you today, we think, is a minimal waiver package in our opinion. We hope that it is approved by this body.

That is all the remarks that I really have to say, and I will stand ready to answer questions at a later time. We have so many here, and I am sure that everybody else would like to make a few comments.

Thank you, Mr. Chairman.

[Due to the voluminous nature of Mr. McMillian's prepared statement, it is printed in the appendix of this document.]

Senator MURKOWSKI. Yes. I think we will go through the panel, and then—Senator Melcher, do you have any objection to that?

Senator MELCHER. No. Mr. Chairman, I think that would be helpful, if we would go through the entire panel.

Senator MURKOWSKI. All right. With your concurrence, then, we will certainly thank you, Mr. McMillian, for your testimony. I am sure we will have questions of you.

We would like to call, in order of the witness list as it appears before me, Mr. John A. Sproul, chairman of the board, Calaska Energy Co., a subsidiary of Pacific Gas & Electric Co.

Mr. Sproul, we wish you a very good morning, and look forward to your testimony. Please proceed.

**STATEMENT OF JOHN A. SPROUL, EXECUTIVE VICE
PRESIDENT, PACIFIC GAS & ELECTRIC CO.**

Mr. SPROUL. Mr. Chairman and Senator Melcher, my name is John A. Sproul. I am an executive vice president of Pacific Gas & Electric Co. and chairman of the board at Pacific Gas Transmission Co.

I would like to thank the committee at this time for inviting me to appear today on behalf of P.G. & E. and its affiliates participating in the Alaska Natural Gas Transportation System.

We support approval of the waiver package proposed by the President. We believe such approval to be vital to the timely and successful completion of the project.

We believe that the project's successful completion is essential to our ability to continue meeting our customers' needs for reasonably priced and reliable sources of gas supply.

I have submitted a written statement for the record which discusses these matters in some detail and which describes our long-standing and substantial commitment to the construction of a gas pipeline from the Alaskan North Slope through Canada to California and the other lower 48 States.

This morning I just want to highlight briefly some of my written remarks.

In addition to participation through our subsidiary, Calaska Energy Co., in the Alaskan Northwest Partnership, P.G. & E. and its 50 percent owned subsidiary, Pacific Gas Transmission Co., will build the U.S. Western Leg for the project.

We estimate that together the two companies will invest more than \$1.5 billion in this endeavor.

We are proud of the special role we have in assuring that western gas consumers have direct and equal access to the North Slope gas reserves. Many Senators and Representatives worked to make such access a statutory mandate in the Alaskan Natural Gas Transportation Act, and we are very appreciative of those efforts.

We are also proud of the fact that 160 miles of the PGT Western Leg facilities are among the first portions of the project that became operational, on October 1 of this year, as part of the project's prebuild phase.

PGT's facilities went into service on time and within their approved cost estimate.

P.G. & E. and the 9 million people who live in our service area in northern and central California have a great deal at stake in this project. We, of course, have a contract to purchase Prudhoe Bay gas with Exxon. That gas will satisfy almost 10 percent of our projected requirements, and we believe that completion of the gas pipeline will create opportunities, as Mr. McMillian mentioned, to purchase additional North Slope gas.

Equally important to P.G. & E. and to California, however, is the continuation of our Canadian gas supply.

Canadian gas now represents 40 percent of P.G. & E.'s gas supply. It has been by far our most reliable source of supply and its continued long-term availability after existing export licenses expire is a top priority of my company. *

It is plain to us that how the Congress acts on the waiver package will play a critical role in shaping future United States-Canadian relations and, in particular, future Canadian gas export policy.

However we in the United States may wish to characterize it, failure by the Congress to approve the waiver proposal will be viewed in Canada as a breach of commitment by the United States, a commitment which Canada believes was made by the President and the Congress to assure that Canada's authorization of the prebuild project would be followed by favorable U.S. governmental action on overall project completion.

If Congress turns down the waiver package, it will preclude private financing of a system which is required by law to be privately financed. That will put into question the timing and availability of the benefits Canada expects from the project. We cannot deny Canada those benefits and at the same time assume that Canada will go out of its way to make substantial gas export volumes available to the United States.

It is our hope that Congress, in its deliberations on the waiver proposal, will concentrate on the facts. Those facts tell us that the Alaska Natural Gas Transportation System is and continues to be in the best interest of this Nation and our customers, that the project can and must be built, that the waiver proposal is a small price to pay for our future energy security, and that with congressional approval of the package, the project sponsors can move ahead to try to achieve private financing of the Alaskan portion of the system.

Mr. Chairman, I appreciate the opportunity to make those few brief remarks, and I also will be pleased to respond to questions.

[The prepared statement of Mr. Sproul follows.]

Prepared Statement

Of

JOHN A. SPROUL

I appreciate the opportunity to appear before this Committee on behalf of Pacific Gas and Electric Company (PGandE), its subsidiary Calaska Energy Company (Calaska), and its other affiliates participating in the Alaska Natural Gas Transportation System (ANGTS), to express our support for the President's proposed waiver of law under Section 8(g) of the Alaska Natural Gas Transportation Act of 1976 (ANGTA).

PGandE is a combined gas and electric utility, serving a population of more than 9 million people in northern and central California. Since 1972, PGandE and its affiliates have been working actively to create a direct pipeline system from Alaska, through Canada, to bring gas from Prudhoe Bay to California and the other lower-48 states. Our substantial and continuing commitment to the ANGTS reflects our view that its successful completion is essential to our ability over the long term to continue supplying our customers with reasonably priced and reliable gas supplies.

In my remarks, I wish to describe more fully the nature of our participation in the ANGTS, the importance of the project to PGandE's gas supply future, and the reasons why we believe Congressional approval of the proposed waiver of law to be vital to the timely and successful completion of the project, and to continued cooperation with Canada, which is the source of about 40% of PGandE's existing gas supply.

I. PARTICIPATION BY PGandE AND ITS AFFILIATES IN THE ANGTS

PGandE and its affiliates are participants in the Alaskan, Canadian and U.S. Western Leg segments of the ANGTS. Our involvement began in 1972, when we joined the Arctic Gas Project, which proposed construction of an overland pipeline from the Alaskan North Slope, through Canada, to the lower-48 states. After the Arctic Gas route was rejected by the Canadian and United States Governments in 1977, PGandE joined with Northwest Energy Company, the selected Alaska Highway Pipeline Project's original United States sponsor, and other gas transmission companies, including former Arctic Gas members, in sponsoring the Alaskan pipeline portion of the ANGTS. Through its subsidiary, Calaska, PGandE has been a member of Alaskan Northwest Natural Gas Transportation Company, the partnership which will build the Alaskan portion, since the partnership's formation in early 1978.

Our special contribution to the ANGTS is the construction of its western delivery leg. The U.S. Western Leg is the sole responsibility of PGandE and its 50%-owned subsidiary Pacific Gas Transmission Company (PGT), which were designated in the 1977 Decision and Report to Congress on the Alaska Natural Gas Transportation System (President's Decision) to construct, own and operate the new pipeline facilities that will assure direct delivery of Alaskan North Slope gas to markets west of the Rockies.

Direct and equal access of western consumers to the North Slope supplies was not always assured. We owe a special thanks to the many Senators and Representatives who saw to it that contemporaneous direct delivery of Alaskan gas to markets both east and west of the Rocky Mountains, and construction of the necessary new facilities, became a statutory mandate. The inclusion of that requirement in ANGTA made this project truly national in scope.

The Western Leg is a simple expansion of the existing PGT/PGandE pipeline system that has delivered Canadian natural gas to northern and central California and other western markets since 1961. The pipeline runs from the International Boundary near Kingsgate, British Columbia, to Antioch, California, in the San Francisco Bay Area. PGT owns and operates the facilities in the states of Idaho, Washington and Oregon. PGandE owns and operates the facilities within California. This 911-mile, 36-inch diameter pipeline delivers up to approximately 1 billion cubic feet per day of Alberta natural gas to PGandE. The pipeline facilities also transport for Northwest Pipeline Corporation (Northwest Pipeline) up to approximately 150 million cubic feet per day of Alberta natural gas, which is delivered by PGT at various points in Idaho, Washington and Oregon for distribution to gas consumers in the Pacific Northwest.

The Western Leg is a paralleling or "looping" of these facilities, through the installation of approximately 885 miles of additional pipe. With minor exception, the new facilities will be installed within the same right-of-way as the existing pipeline. No new compressor stations or compressor horsepower will be necessary for the volumes of North Slope gas expected to be initially available. The President's Decision left final determination of the pipe size and capacity of the ANGTS lower-48 facilities to the Secretary of Energy. As a result of decisions of the Secretary of Energy issued in 1980 and in January of this year, it now is planned that 42-inch diameter pipe will be used for the entire length of the PGT/PGandE expansion.

The Western Leg originally was proposed by PGT and PGandE in 1974, in connection with the Arctic Gas Project. However, because the PGT/PGandE proposal also was compatible with the competing and ultimately selected Alaska Highway Pipeline proposal, it was designated in the President's Decision as the project's western delivery leg. North Slope gas destined for California markets will be carried over the full length of the PGT/PGandE facilities to the San Francisco Bay Area, with gas destined for southern California delivered over southern portions of the PGandE system to Southern California Gas Company. Through interconnection with the Northwest Pipeline system, the Western Leg also will be able

to provide other western markets, in the Rocky Mountain area and the Pacific Northwest, with direct access to North Slope gas.

On October 1 of this year, the first portions of the ANGTS became operational. We are proud of the fact that this included 160 miles of the PGT Western Leg facilities, between Kingsgate, British Columbia, and Stanfield, Oregon, which were installed as part of the early construction or "prebuild" phase of the ANGTS, to deliver new Canadian gas imports to Southern California Gas Company. PGT's facilities went into service on time and within their approved cost estimate of \$176 million. This was a major, but manageable, undertaking for PGT, which financed the facilities on a corporate credit basis, and which, through this expansion, has tripled the size of its pipeline investment.

PGT and PGandE will build the remainder of the Western Leg in the same general time frame as the Alaskan portion of the project. In "as spent" dollars, we currently estimate that the 431 miles of PGT's remaining Western Leg facilities will cost approximately \$870 million, including AFUDC, and that PGandE's 294 miles of Western Leg facilities from the Oregon-California border to the San Francisco Bay Area will cost about \$590 million, including AFUDC. A corporate credit form of financing is planned by both PGandE and PGT,

with PGandE to be responsible for raising all of the capital associated with its Western Leg facilities, and for 50% of the equity investment in the remaining PGT Western Leg construction. In total, PGandE's additional Western Leg investment presently is estimated at almost \$800 million.

Finally, PGT's Canadian affiliate, Alberta Natural Gas Company Ltd (Alberta Natural), is a participant in the Canadian portion of the project. Alberta Natural is a 49% interest holder in Foothills Pipe Lines (South B.C.) Ltd., which is to construct a total of 106 miles of 36-inch diameter pipeline for the ANGTS in southeastern British Columbia, parallel to Alberta Natural's existing pipeline. Approximately one-half of these facilities were installed for the "prebuild" phase and are now in service.

II. THE IMPORTANCE OF THE ANGTS TO PGandE'S GAS SUPPLY FUTURE

Our participation in the ANGTS is key to our long-term strategy to assure a continuing, reliable and adequate supply of gas for the millions of people in northern and central California. PGandE's existing sources of gas supply are Canadian natural gas brought to California by PGT; gas, principally from the southwest, purchased from El Paso Natural Gas Company (El Paso); California-source natural gas,

and a small amount of Rocky Mountain gas produced by our gas exploration and development affiliates.

Although our natural gas requirements are projected to remain relatively stable, with moderate growth in our non-power plant requirements and a decline in fuel requirements for power plant use, our total existing supply is projected to decline significantly. Let me provide some statistics which illustrate this point:

1. Decline in El Paso supplies. In 1981, the gas supply from El Paso is projected to satisfy about 43% of PGandE's natural gas requirements. By 1987, however, when the ANGTS is scheduled for completion, available El Paso supplies are projected to satisfy less than 33% of such requirements, and by 1995, only about 21% of such requirements.
2. Decline in California supplies. Our California-source gas presents a similar case. In 1981, these supplies are projected to satisfy about 17% of our natural gas requirements, but by 1987 and continuing into the 1990's, available California gas supplies are projected to satisfy

no more than 9% of PGandE's natural gas requirements. Generally, with the exception of a recent, and what is projected to be short-term, upswing in available El Paso and California supplies, both our El Paso and California sources of supply have been declining since the early 1970's.

3. Expiration of existing Canadian gas export licenses.

Since Canadian gas was first delivered to PGandE in 1961, it has been our most reliable source of gas supply, never having been curtailed or cut back. Nevertheless, without renewal of the gas export licenses issued to our Canadian supplier and subsidiary, Alberta and Southern Gas Co. Ltd. (Alberta and Southern), our available supplies from Canada will be reduced starting in late 1985, and they will be cut almost in half by 1987. By 1990, without license renewals, our Canadian supply will be reduced to about 20% of the currently authorized level, and by the end of 1993, all of Alberta and Southern's existing export licenses will have expired.

Simply stated, in addition to the decline in supplies from El Paso and California sources, PGandE stands to lose almost another 20% of its present gas supply by 1987. By that year, without renewal of the Alberta and Southern licenses, supplies from these three sources, which now satisfy more than 99% of PGandE's natural gas requirements, are projected to satisfy less than two-thirds of such requirements, and by 1995, less than 30% of such requirements.

Since the early 1970's, PGandE has been engaged in a number of endeavors to augment this decline in its existing major gas supply sources. Our Rocky Mountain gas exploration and development programs are one such effort, but the new supplies we expect to develop will be only a partial solution. There will still be a substantial and growing drop in total supply as our existing major sources decline. At this time, PGandE has no assured source of natural gas to make up for this drop in supply.

Our chances for a reliable gas supply future turn on the successful completion of the ANGTS. More of that future is at stake in this project than in any other gas supply

option on PGandE's drawing boards. There are several reasons why this project offers the greatest potential for continuing supply security for our customers.

First, the North Slope gas we expect to purchase from Exxon Corporation (Exxon) will satisfy almost 10% of our projected natural gas requirements. In 1979 PGandE contracted with Exxon to purchase one-third of its production from the Prudhoe Bay Reservoir under leases in the Prudhoe Bay Unit -- which is estimated at about 220 million cubic feet per day, assuming an average day Prudhoe Bay output of 2.0 billion cubic feet.

Second, the long-term prospects for development on the North Slope lead us to believe that the initial volumes are only a beginning, that this source of supply will be available for years to come, and that deliveries from Prudhoe Bay eventually will exceed the 2.0 billion cubic feet per day level. Therefore, we see the ANGTS as opening the door to North Slope gas supply opportunities which extend beyond the volumes and term of our existing contract with Exxon.

Third, and for us, most significant, we link our chances for continuation of our Canadian gas supply to the completion of the ANGTS. As I have explained, about 40%

of our existing gas supply is from Canada, and obtaining maximum available renewal of the Alberta and Southern export licenses is a top priority of PGandE.

Alberta and Southern now has on file with the National Energy Board of Canada (NEB or Board) an application to extend its licenses at currently authorized levels through late 1993, so that the Canadian gas available to PGandE would remain at the level of about one billion cubic feet per day through that period. In view of the Board's recently issued report, Canadian Energy, Supply and Demand 1980-2000, it is not clear whether, in the near term, the Board will be prepared to act favorably on Alberta and Southern's request. It is clear to us, however, that over the long term, our opportunity for export license extensions -- and indeed, the opportunity of this nation to continue to look to Canada as a major natural gas supplier -- will turn on whether we in the United States are in fact, and are perceived as, willing and able to proceed to completion of the ANGTS. There are many factors which could affect Canadian gas export policy, and our own prospects for extended export volumes, but, in our view, there is no single factor as significant as the ANGTS.

This project should allow Canada to connect its own sizable northern frontier reserves in the Mackenzie Delta-

Beaufort Sea area to market on an economic basis. Progress toward completion of the ANGTS should encourage further exploration and development in that area. It also should cause the NEB to modify its policy which now excludes Canada's established frontier reserves from the tests applied to determine whether there is a surplus of natural gas available for export -- a policy which the Board consistently has indicated will continue until it is satisfied that there is an assured means for bringing these reserves to market.

Most important, perhaps, are the consequences which we believe would flow if the ANGTS did not progress toward completion. This is a larger issue than access to the Mackenzie Delta gas. At stake is the credibility of the United States as an energy partner, and future Canadian gas export relations with the United States.

Our 20 years of reliance on Canadian natural gas and our long-standing relationship with Canada make us especially sensitive to this issue, and especially appreciative of the continued showing of good faith which the Canadian Government has made toward completion of the ANGTS, as best evidenced by its decision to authorize the prebuild phase of the project following the concurrent Congressional resolution and Presidential letter of support for the project

in July 1980. Without further progress on the project, we believe that the Canadian Government may be increasingly cautious over how much additional gas is to be exported and who is to receive it. Generally, even though gas exports to the United States are a major source of revenue to Canada, it may become more difficult to justify increased export volumes, given a perception within Canada that the increased availability of Canadian supplies would allow the United States to defer or abandon completion of the ANGTS.

III. WHY THE PROPOSED WAIVER OF LAW MUST BE APPROVED

For PGandE and its customers, it is essential that the Congress act favorably on the proposed waiver of law submitted by the President. However we in the United States may wish to characterize it, failure to do so will be viewed in Canada as a breach of commitment by the United States -- a commitment which our Canadian neighbors believe was made by the President and the Congress, to assure Canada that its authorization of the prebuild phase would be followed by favorable United States Government action on overall project completion. To repeat, at stake for us is not only our future North Slope gas supply, but also the long-term continuation of our Canadian gas supply.

More specifically, the proposed waiver of law presents this Congress with a make-or-break choice concerning the financing and eventual completion of the project. If there is to be any hope of satisfying the private financing directive of the President's Decision, this proposed waiver of law must be approved. Such approval cannot guarantee that financing for the Alaskan portion of the project will be achieved. However, without this waiver of law, private financing can be ruled out completely, with the future of the project left uncertain.

Since the time of the President's Decision, it has been a recognized fact that the project's gas company sponsors do not, by themselves, have the capability to finance the Alaskan segment. Participation by the major North Slope producers is essential, but, as we have learned, no producer participation will be forthcoming without their receiving an equity interest in the project and without incorporation of the Prudhoe Bay conditioning plant into the designated ANGTS.

The largest banks in the country, who we hope will be major lenders to the project, also have told us that it is essential that there be mechanisms in place which help assure that the project debt will be repaid. These mechanisms include the proposed waiver of law to limit certain future

regulatory action on the project, and the proposed provision on billing commencement.

It is undeniable that the billing commencement provision will impose some risks on our customers and other North Slope gas consumers which were not contemplated when the President and the Congress authorized this project in 1977. As a gas distribution company, we share the concern of our regulatory body, the California Public Utilities Commission, over the imposition of such risks. We would rather not ask that our customers bear such risks if there were another way to achieve private financing. However, we know of no such other way. Moreover, we are convinced that the risks to be shared are manageable and minimal. If, for some reason, it is actually necessary to use this provision to accommodate project delay, the short-term costs which are imposed will be far outweighed by the project's long-term benefits.

I firmly believe that this country will find a way to make this project a reality. It must. It is in the long-run best interests of the country's economy and security. When ideological disputes are set aside and the facts are examined, we believe that this proposed waiver will be seen as a rational and fair way to overcome a critical roadblock to the private financing of the project. Therefore, we

respectfully urge the approval of the waiver package submitted by the President. If approval is not forthcoming, the ANGTS will suffer a major setback, to the detriment of our customers' and this nation's future energy security.

Thank you for inviting me to submit this statement on behalf of PGandE and its related companies. I would be pleased to answer any questions which the Committee may have concerning my remarks.

Senator MURKOWSKI. Thank you very much. Your complete testimony will become a part of the record, and we very much appreciate your remarks, and we will have some questions for you upon the termination of the panel presentation.

Mr. SPROUL. Thank you.

Senator MURKOWSKI. It may have appeared that we overlooked Mr. James Trebilcote, and I would assure you, Mr. Trebilcote, that we have not. We welcome you to the committee, president, American Natural Gas Co., a subsidiary of American Natural Resources Co.

You may proceed with your testimony, Mr. Trebilcote.

STATEMENT OF JAMES J. TREBILCOTE, PRESIDENT, AMERICAN NATURAL ALASKAN CO.

Mr. TREBILCOTE. Thank you, Mr. Chairman. I was sure I was not overlooked. My name is James J. Trebilcote, and I am president of American Natural Alaskan Co., which is a subsidiary company of American Natural Resources Co. I also hold the position of executive vice president of American Natural Resources Co. and senior officer positions in several other American Natural affiliated companies.

I also want to thank you, Mr. Chairman, for the opportunity to discuss this very important matter which your committee now has under consideration. And in the interest of time, I will not make any significant remarks on the great importance of this project to our Nation. I think it is well understood, and Mr. McMillian has said it very well, what an important project this is to our Nation and to the gas industry, in general.

So, I will concentrate my remarks this morning on American Natural and its interest in the project.

American Natural Resources Co., which is the parent company of American Natural Alaskan, is a diversified resource company which has assets of over \$4 billion and gross revenues in excess of \$2.8 billion.

Ninety percent of these assets and revenues have been dedicated to the natural gas business that we are in.

American Natural Alaskan Co. joined the Alaskan Partnership in January of 1980, and I have served on the board of partners since that time. Various companies of the American Natural system have been involved in studying methods for transportation of Alaskan gas for more than 10 years, and we are most anxious to see that the Alaskan Northwest Pipeline is built, and built promptly.

Michigan-Wisconsin Pipeline Co., which is the basic gas supply arm of the American Natural system, has maintained an aggressive and ongoing program to acquire gas reserves to maintain service to our market areas. Although we deliver gas to customers in nine States, over 70 percent of our deliveries are to the States of Wisconsin and Michigan.

Michigan-Wisconsin sales in 1980 were 675 billion cubic feet, and our total system gas sales were in excess of 800 billion cubic feet.

Our market is of relatively high quality, with about 70 percent of our sales made to residential and commercial users. The remaining 30 percent is used by industrial plants in the automotive, steel

making, heavy machinery and paper industries. Now, most of our reserve acquisitions in the recent past have been obtained from the newly discovered reserves in the lower 48 States. We predict, however, that by the late 1980's and early 1990's, we will be unable to acquire sufficient lower 48 reserves to maintain service to our present market. We, therefore, must look to supplemental sources of gas, such as that available in Alaska.

With this objective in mind, Michigan-Wisconsin in May of 1979 executed a contract with the Exxon Corp. for a portion of their Prudhoe Bay gas. Michigan-Wisconsin, therefore, will need to purchase transportation services from Alaskan Northwest Pipeline Co.

In addition to transporting this gas on a current basis, we see the pipeline as an important catalyst for the development of additional gas reserves in the Prudhoe Bay area and a potential long range solution to a major part of our gas supply problems.

We recognize that the delivered cost of Alaskan gas in the early years may be higher than some of our other gas sources. But we have studied our situation and we believe that we have enough roll-in capability to avoid any serious marketability problems.

The Alaskan pipeline should be built and we respectfully suggest that your committee submit a favorable report on the waiver package so that we can pursue the other steps necessary to develop an appropriate financing plan.

Further delay in commencing the construction of the pipeline will very likely result in higher costs that can seriously impair the viability of the project.

I thank you again for letting me appear before you, and I will be pleased to answer your questions at an appropriate time.

[The prepared statement of Mr. Trebilcote follows:]

STATEMENT OF AMERICAN NATURAL ALASKAN COMPANY

American Natural Alaskan Company is pleased to have this opportunity to submit this statement in connection with your Committee's deliberations on the "waiver package" relating to the Alaskan Natural Gas Transportation System submitted by President Reagan to the U.S. Congress.

American Natural Alaskan is a wholly-owned subsidiary of American Natural Resources Company, a holding company which is, among other things, through various subsidiaries, engaged in the business of exploration and production of oil and gas, transmission and wholesale sales of natural gas in interstate commerce and retail distribution of natural gas. The gross revenues of American Natural Resources System for the 12-month period ended June 30, 1981 were about \$2.6 billion with a net income for such 12-month period of about \$128 million.

The concept of an Alaskan gas pipeline has been supported for many years by American Natural Alaskan and its affiliate Michigan Wisconsin Pipe Line Company, a wholly-owned pipeline subsidiary of American Natural Resources Company. American Natural Alaskan is a general partner in the Alaskan Northwest Natural Gas Transportation Company, the partnership which has been designated to construct the Alaska Natural Gas Transportation System. To date American Natural Alaskan and its affiliate Michigan Wisconsin have expended more than \$30 million in sponsoring proposals for the construction of an Alaska gas pipeline.

In May, 1979, Michigan Wisconsin entered into a contract with Exxon Corporation for the purchase of approximately 200 million cubic feet per day of Exxon's natural gas in Alaska. Because contractual deadlines for completing certain arrangements and obtaining regulatory approvals for the Alaska Natural Gas Transportation System have not been met, the contract must be renegotiated since it is currently subject to termination by either party. It is obvious that the only method likely to be available to transport Michigan Wisconsin's gas from Prudhoe Bay to the lower 48 is ANGTS.

Michigan Wisconsin's pipeline system supplies gas to 52 gas distribution customers serving markets in Michigan, Wisconsin, Iowa, Illinois, Indiana, Kansas, Missouri, Ohio, and Tennessee. Approximately 81% of Michigan Wisconsin's gas supply is purchased from numerous producers in Oklahoma, Kansas, Texas, Wyoming, Mississippi, Louisiana and the Texas and Louisiana offshore areas, the balance is obtained from four pipeline suppliers. During 1980, Michigan Wisconsin sold 675 billion cubic feet of gas to its customers, of which approximately 71% was sold to its three largest customers in the States of Michigan and Wisconsin. Michigan Wisconsin's largest distribution customer serves the city of Detroit and certain surrounding areas, the important industrial cities of Grand Rapids and Muskegon and the communities of Ann Arbor and Ypsilanti. Its two largest distribution customers in Wisconsin serve the Milwaukee metropolitan area and numerous other surrounding areas including the industrial cities of Racine, Kenosha and Appleton.

The long-term gas supply and requirements projection of Michigan Wisconsin show that the Company must pursue an aggressive gas acquisition program to meet the requirements of its customers. For example, if the requirements of the Company remain at its 1980 sales level of 675 billion cubic feet during the 1980's, the Company must acquire substantial additional gas supplies from new sources in order to meet its requirements. Our requirements for new supplies are expected to be obtained from onshore and offshore areas in the lower 48 states into the late 1980's. Subsequent to that time and into the early 1990's, gas supplies having an annual deliverability aggregating 80 to 100 billion cubic feet must be available from sources other than these conventional gas supply areas in order to maintain our current sales level. In view of the inherent uncertainty of such long-term projections we have been pursuing several sources of supplemental gas supplies such as coal gas, Canadian gas, liquefied natural gas and Alaskan gas. Although we have been pursuing all such sources of supplemental supplies, our specific course of action will depend upon the circumstances prevailing at the time final decision is required with respect to obtaining any or all such supplies.

The cost of Alaskan gas should, over the life of the Project, be competitive in our market area. Under the conventional methods of determining cost of service, however, the cost of Alaskan gas could be at a level that may cause marketability problems in the early years of operation. The extent of these problems

would depend on the amount of roll-in capability available and whether or not innovative measures to levelize rates can be developed and approved by appropriate Federal and State agencies.

American Natural has not made a final determination of the extent of our financial participation in the project. We have major financial requirements for other projects which serve to limit our financial capability. The decision as to the level of our financial participation will depend upon the quantity of gas we ultimately decide to purchase, the terms of the financing arrangements as finally concluded, the availability of capital to American Natural in light of our other capital commitments, and other factors.

In conclusion, we believe passage of the "waiver package" is an important step in the continuing effort to privately finance the Project. It is obvious that without a meaningful participation by the producers in the financing of the Project, it cannot be privately financed. In addition, the waiver package addresses the fact that the pipelines transporting gas through the Project cannot pay charges they are unable to pass through to their customers. While the "waiver package" may not assure private financing of the Project, it will remove the impediment for producers participation in the Project and alleviate some of the risks perceived by the lenders.

James J. Trebilcott - President
American Natural Alaskan Company

Senator MURKOWSKI. Thank you very much, Mr. Trebilcott.

We will proceed now to the next witness, Mr. John H. Croom, president, Columbia Alaskan Gas Transmission Corp., a subsidiary of the Columbia Gas System Service Corp.

We welcome you to the committee this morning, Mr. Croom, and would ask that you proceed with your testimony.

Excuse me. I just want to welcome the Chairman, Senator McClure.

The CHAIRMAN. Thank you. I wanted to express my thanks to you for your work on this bill yesterday in conducting the hearings and, again, your willingness as well as your interest in doing it today, and to express my own appreciation to the witnesses who have come.

As you know, we don't always control our own schedules around here, and although we had scheduled that hearing yesterday and today, we also have a bill on the floor of the Senate that is being considered which I have to manage. So, my absence is not an absence of interest, but because I am required to be somewhere else.

I do thank you, Senator Murkowski, for the attention you have given to the matter; not only in these hearings but over the weeks and months preceding this.

Senator MURKOWSKI. Thank you very much, Senator. I want to point out again that it is unique that we have with us the entire partnership before you of all the gas transmission companies, as well as the producer companies. And I did remark that it just about filled up the room.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Senator MURKOWSKI. Mr. John Croom, whom I have introduced, you may proceed.

STATEMENT OF JOHN H. CROOM, PRESIDENT, COLUMBIA GAS TRANSMISSION CORP.

Mr. CROOM. Mr. Chairman and members of the committee, my name is John H. Croom. I am executive vice president of the Columbia Gas System, Inc., and president of the Columbia Gas Transmission Corp., a wholly owned subsidiary of the Columbia Gas System, and one of the sponsoring companies of the Alaskan gas pipeline.

I thank you for your invitation to appear today before this committee. I have submitted copies of my prepared statement and I will summarize highlights from that at this time.

I am here today to urge that you approve the waiver of law submitted by the president on October 15, 1981.

The Columbia Gas System is one of the largest integrated natural gas companies in the United States and last year delivered 1.2 trillion cubic feet, or approximately 6 percent of the gas consumed in this country.

Columbia supplies directly through its retail operations or indirectly through sales to other utilities the gas requirements of over 4 million customers in an area having a population of approximately 18 million people.

Columbia's customers are located in the States of Ohio, Pennsylvania, West Virginia, Maryland, Kentucky, Virginia, New York, and New Jersey, and the District of Columbia.

Columbia supports the Alaska natural gas transportation system and the proposed waiver because the project is essential to the Nation's as well as to our service area's long-term gas supply.

The Prudhoe Bay gas represents 13 percent of the Nation's proven gas reserves. The building of the Alaskan pipeline can be expected to stimulate further development on the North Slope and increase these reserves significantly.

While the delivered price will be relatively high in the early years, it will substantially decline in later years as the large rate base becomes depreciated. On the average, it will be below the price of imported oil.

If the waiver is approved, the Federal Energy Regulatory Commission will still have to implement it, and the banks will still have to agree to finance the project. But without congressional approval, the transportation system cannot be privately financed.

Columbia expects to obtain over 100 billion cubic feet annually, which in 1987 will represent over 7 percent of its gas supply.

The importance of the Alaskan gas to Columbia's customers cannot be overstated. The latest 10-year demand-supply projections, which are detailed in the attachment to my prepared statement, indicate that Columbia must make a strenuous effort to replace declining volumes of committed gas supplies.

Even with the inclusion of natural gas from Alaska, appreciable volumes must be sought and secured from reserves which are yet to be found and developed in such areas as the Rocky Mountains, Appalachian Basin, and the Gulf of Mexico.

Columbia strongly believes that the relatively certain assurance of a secure, consistent, and domestic source of supply, which this project promises for all of Columbia's customers, outweighs any conjectural load loss due to possible temporary price increases.

The delivered cost of Alaskan gas declines over the life of the project. In real dollars, its cost will fall significantly below that of distillate oil and other alternates after the first few years of the operation of the pipeline.

In addition to supplying long-term natural gas supplies at competitive prices, the Alaskan pipeline project will contribute to the economic and security interests of all of the Nation's consumers.

Columbia is prepared to commit over a billion dollars to this project. Your approval of the President's proposed waiver of law is an essential step toward this objective.

I thank you for your invitation today, and I will answer questions when you are ready.

[The prepared statement of Mr. Croom follows:]

STATEMENT OF
JOHN H. CROOM,
EXECUTIVE VICE PRESIDENT,
THE COLUMBIA GAS SYSTEM, INC.

Mr. Chairman and Members of the Committee:

My name is John H. Croom. I am Executive Vice President of The Columbia Gas System, Inc. and President of Columbia Alaskan Gas Transmission Corporation, a wholly-owned subsidiary of The Columbia Gas System, Inc. and one of the sponsoring companies of the Alaskan gas pipeline project. I am here today to urge that you approve the Waiver of Law submitted by the President on October 15, 1981.

The Columbia Gas System is one of the largest integrated natural gas companies in the United States and last year delivered 1.2 trillion cubic feet or approximately six percent of the gas consumed in this country. Columbia supplies directly through its retail operations, or indirectly through sales to other utilities, the gas requirements of over four million customers in an area having a population of approximately eighteen million people. Columbia's customers are located in the states of Ohio, Pennsylvania, West Virginia, Maryland, Kentucky, Virginia, New York and New Jersey, and the District of Columbia.

The Need for the Proposed Waiver of Law

Columbia supports the Alaska Natural Gas Transportation System and the proposed Waiver because:

- the project is essential to the nation's as well as to our service area's long-term gas supply.

- the Prudhoe Bay gas represents 13 percent of the Nation's proven gas reserves. The building of the Alaskan pipeline can be expected to stimulate further development on the North Slope and increase these reserves significantly.
- while the delivered price will be relatively high in the early years, it will substantially decline in later years as the large rate base becomes depreciated. On the average, it will be below the price of imported oil.
- if the Waiver is approved, the Federal Energy Regulatory Commission will still have to implement it and the banks will still have to agree to finance the project. But without Congressional approval, the transportation system cannot be privately financed.

Columbia's Need for the Alaskan Gas

In the late 1960's Columbia recognized the need to look beyond its traditional sources of gas to assure an adequate supply for its customers. Included in studies of these nonhistoric sources were liquefied natural gas from overseas, deep domestic gas, synthetic natural gas from heavier hydrocarbons, gas from tight sands and Alaskan gas.

Following the discovery of the Prudhoe Bay Field in 1968, Columbia participated in studies which lead to the determination that it was technically and economically feasible to bring these reserves to the Lower 48 states.

Over the period 1971 through 1975 Columbia loaned 175 million dollars to Sohio for the rights to purchase a portion of Sohio's Prudhoe Bay gas reserves. Under the agreement with Sohio, the loan was repaid during the one-and-one-half year period after the crude oil pipeline was placed in operation. Columbia expects to obtain over 100 billion cubic feet annually which in 1987 will represent over seven percent of its gas supply.

The importance of the Alaskan gas to Columbia's customers cannot be overstated. The latest 10 year demand-supply projections, detailed in the attachment, indicate that Columbia must make a strenuous effort to replace declining volumes of committed gas supplies. Even with the inclusion of natural gas from Alaska, appreciable volumes must be sought and secured from reserves yet to be found and developed in such areas as the Rocky Mountains, Appalachian Basin, and the Gulf of Mexico.

The Marketability of the Alaskan Gas in Columbia's Market

Columbia strongly believes that the relatively certain assurance of a secure, consistent and domestic source of supply which this project promises for all of Columbia's customers outweighs any conjectural load loss due to possible temporary price increases. The magnitude of any price increase and resultant load loss is expected to be minimal on Columbia's system. Assuming continuation of the Natural Gas Policy Act, the expected delivered cost of Alaskan gas averaged with other committed lower-priced

-4-

volumes will result in a net gas cost to Columbia's residential, commercial and industrial customers below that of distillate oil, the principal alternate fuel for most of Columbia's high priority industrial loads. We expect the industrial customers will continue to use lower priced natural gas for some time, thus providing price and supply stability for all of Columbia's customers. Furthermore, the delivered cost of Alaskan gas declines over the life of the project. In real dollars, its cost will fall significantly below that of distillate oil after the first few years of the operation of the pipeline.

Conclusion

In addition to supplying long-term natural gas supplies at competitive prices, the Alaskan pipeline project will contribute to the economic and security interests of all of the Nation's consumers. Your approval of the President's Proposed Waiver of Law is an essential step toward this objective.

COLUMBIA GAS SYSTEM
DEMAND-SUPPLY PROJECTIONS
(Billions of Cubic Feet)

<u>Year*</u>	<u>Demand</u>	<u>Supply**</u>	<u>Alaskan Gas</u>	<u>Supply Deficiency</u>
1982	1,327	1,493		(166)
1983	1,364	1,509		(145)
1984	1,378	1,465		(87)
1985	1,409	1,313		96
1986	1,420	1,212		208
1987	1,432	1,127	104	201
1988	1,449	1,053	104	292
1989	1,468	999	104	365
1990	1,492	958	104	430

* Demand-supply years are from November 1 of the preceding year to October 31 of the year shown.

** Anticipated supply from identifiable sources.

Senator MURKOWSKI. Thank you very much, Mr. Croom.

Taking the prerogative of the Chair, since the other senators are going to be in and out, I am going to be asking questions as I go along, and we will go back to those that have already preceded you and conclude with their questions after we have finished the entire witness list.

You indicated, I believe, in your statement that the gas, as you see it coming on board, will be priced below the price of an equal amount of Btu equivalent imported oil. Is that what I understood you to say in your testimony?

Mr. CROOM. What our studies project, that under the current NGPA, the gas when rolled in with our other committed supplies will permit us to be marketing this gas at a price below what we perceive distillate oil to be selling for in our marketplace. That is correct.

Senator MURKOWSKI. At the time that this is contemplated to be completed?

Mr. CROOM. That is correct.

Senator MURKOWSKI. Which is about 1987, 1986?

Mr. CROOM. That would be in the late fall of 1986 or winter period.

Senator MURKOWSKI. You mentioned, with your roll-if gas were deregulated, what would that do to you.

Mr. CROOM. Under that scenario, we would contemplate having contractual provisions with our supplier on the North Slope that would permit a net back to make the gas marketable.

Senator MURKOWSKI. But you would reinforce your statement by saying that in that event, it would be marketable, in your opinion, at that time, even with deregulation?

Mr. CROOM. Yes. Given those conditions, we can see this gas still being marketable, even under a deregulation scenario.

Senator MURKOWSKI. You indicated that you were prepared to contribute, I understand, as equity a billion dollars?

Mr. CROOM. That represents a combination of equity and debt support during the construction period of this project.

Senator MURKOWSKI. In the conventional sense, how much of that would be equity that would be at risk, in effect, if the prebilling waivers were ever applicable?

Mr. CROOM. We are rotghly talking about one-third of that is equity and the other two-thirds as debt support during the construction phase.

Senator MURKOWSKI. And this represents 7 percent of your total supplies anticipated input, is that right, at the time that it would come aboard?

Mr. Croom. That is correct.

Senator MURKOWSKI. And if you didn't have this in 1986 or 1987, what would you propose to do to fill that void?

Mr. CROOM. At the present time, as I indicated and my attachment shows, our committed supplies principally from the Gulf of Mexico are declining at a rather appreciable rate. We anticipate having some sources of gas from Canada, some sources are still built into our supply from Algeria in LNG, but these are minor volumes.

The principal volumes will still have to be secured in the Lower 48. We are active in projects in the Rocky Mountains. We are active in projects in the midcontinent and in the Gulf of Mexico.

We cannot identify at this time specifically how much volume and where those sources will come from. Everything indicates that without the Alaskan gas our job is just going to be that much more difficult as to where we are going to find the gas to replace the declining volumes.

At the present time, we do not have those sources identified, and we show it as another source requirement.

Senator MURKOWSKI. Thank you very much, Mr. Croom.

Senator Melcher, I have departed a little bit by asking each witness as we move along, because it is kind of hard to keep track of some of the questions that come up.

We are on Mr. Croom, we are moving on to Mr. Latimer, if you have any.

Senator MELCHER. No questions.

Senator MURKOWSKI. We will call on our next witness, Mr. Radcliffe Latimer, president, TransCanada PipeLine Alaska, Ltd., a subsidiary of TransCanada PipeLine Ltd.

Please proceed.

STATEMENT OF RADCLIFFE R. LATIMER, PRESIDENT AND CHIEF EXECUTIVE OFFICER, TRANSCANADA PIPELINE ALASKA, LTD.

Mr. LATIMER. Thank you, Mr. Chairman. My name is Radcliffe R. Latimer, and I am president and chief executive officer of TransCanada Pipelines, and the president of TransCanada Pipelines Alaska Ltd., a member of this partnership. I very much appreciate the opportunity to appear before you in support of this waiver package which we feel is necessary to the ongoing process of financing and putting in place the Alaska Northwest Natural Gas Pipeline.

I have filed written material with the committee describing our company and our interests in this project, and I think this morning I would just like to highlight three points which, taken together, have brought our company to this massive project and to this partnership and to the table here this morning.

The first point that I would like to draw your attention to is that virtually since its inception, TransCanada, while a major pipeline system in Canada, has had substantial interest in the export of Canadian gas to the U.S. market.

We currently export approximately 250 billion cubic feet a year to the U.S. market. That is about 18 percent of our total throughput, and it makes us the largest non-U.S. supplier of natural gas into the U.S. markets.

That is an interest we have had for more than 20 years and we see it continuing on through this decade and into the end of the century as one of the important expanding and very, very significant areas of our company's business. And that is one of the reasons that we have been members of the prebuild, are members of this partnership, and are so vitally interested in its future.

The second point I would like to stress is that TransCanada believes that a very significant portion of the natural gas resources and, in fact, of the hydrocarbon resources of North America lie in the Arctic areas, and we want to participate in the full development of those resources and in the transportation systems to service them.

The discovery of hydrocarbons on the North Slope, in the MacKenzie Delta, in the Beaufort Sea, and in the high Arctic islands in recent years all demonstrate to our company, and we think to the world, the confirmation of our belief that this is a massive hydrocarbon resource area stretching across the northern areas of our two countries.

We also believe that there is great need for the economical transportation system or systems put in place to bring these resources to market, and in 1969 TransCanada was one of the founding members of the study group, Canadian Arctic Gas Group, that devoted considerable time to an initial attempt at an Arctic pipeline down the MacKenzie Valley.

In the fullness of time, that project passed into history and has been succeeded by this Alaska gas line, which we are members of.

In any event, we are fully committed and prepared to participate in a very major way as an investor in the phases of this project.

In early 1980, TransCanada, through a subsidiary, became an important member of the Eastern Leg of the prebuild Northern Border, and in doing so we were able to offer a particular function to the Eastern Leg of the prebuild, and that was to provide the necessary long-term backstop use in the unlikely event, in our view, that Alaska gas were never to come through that part of the prebuild.

So, at that time we became a major partner in the Eastern Leg prebuild, which is under construction now and we expect will be finished and in service in the fall of 1982.

And it is through that interest and its development that we came, in the fall of 1981, to join the main Alaska gas pipeline partnership as a partner, and have been deeply involved with it since that time. 

Taking this position to its logical conclusion, we see in this coming decade and in the period beyond that that the development of the major natural gas resources in both the United States and the Canadian Arctic areas are going to be a very important part of the gas supplies of North America and of the United States.

We think that the development of them and the investment opportunities in the transportation facilities to service them is going to be massive and exciting and our company wishes to be a significant partner in those ongoing developments.

So that we would see this Alaska line as a forerunner of other very substantial increments to it or developments coming off from it through the Arctic area.

Finally, our analysis shows that the ANGTS investment is a sound investment for TransCanada, and we believe for our partners.

Although it is unprecedented in magnitude, we believe it is technologically feasible and that it can be constructed within the time-frame and the range of costs that are projected.

We think that new discoveries will, the energy that will stem from this will enhance the energy security of both the United States and Canada, and that ANGTS will clearly be a valuable and growing asset for investors, for gas consumers, as well as a secure source of domestic energy for the United States.

Now, these benefits are not coming easily. It is the largest energy project in history. We know that the credit of the pipeline sponsors taken alone is not sufficient to get it launched. We know that innovative financing techniques will be required if the project is to be financed and constructed through private financing without Government guarantees. And we believe that the approval of the waiver package the President has submitted to Congress now is a vital step in getting on with the negotiations and discussions to put these important matters in place.

Finally, I would like to say that, in our view, if ANGTS is not constructed in a timely manner, we think that development of the frontier energy resources will be set back for many years, and that

this will be a very substantial detriment to the United States and to my country.

We think that it is imminent good sense that we continue to make progress on this ANGTS project, and we fully support the passage of the waiver package that is submitted to Congress now.

Thank you.

[The prepared statement of Mr. Latimer follows:]

STATEMENT OF RADCLIFFE R. LATIMER

PRESIDENT, TRANSCANADA PIPELINE ALASKA, LTD.

Before
The Committee on Energy and Natural Resources
October 23, 1981

My name is Radcliffe R. Latimer. I am President and Chief Executive Officer of TransCanada PipeLines Limited and President of TransCanada Pipeline Alaska Limited, which is a partner in the Alaskan Northwest Natural Gas Transportation Company. I appreciate this opportunity to appear before you today in support of the Alaska Natural Gas Transportation System (ANGTS) and the Waiver of Law Package submitted to the Congress by President Reagan.

TransCanada is the major west-to-east pipeline and the largest pipeline company in Canada. Since it commenced operation in 1958, TransCanada has constructed 6,000 miles of large diameter pipeline. At present, the TransCanada system extends from the Alberta-Saskatchewan border in Western Canada to Montreal in Eastern Canada, a distance of 2,500 miles.

TransCanada has an annual throughput of approximately 1.4 trillion cubic feet of natural gas, of which in excess of 250 billion cubic feet or approximately 18% is exported to the United States, making it the largest exporter of natural gas to the United States from all sources.

TransCanada, along with its United States partner American Natural Resources, were the sponsors and are equal owners of the Great Lakes Gas Transmission Company, which traverses the upper midwestern United States for a distance of approximately 1,200 miles and transports over 400 billion cubic feet of natural gas annually.

TransCanada believes that a significant portion of the natural gas resources of North America lies in the Arctic regions of the United States and Canada and that the full development of those resources will make a substantial contribution to the long-term energy security of both countries. The discovery of hydrocarbons on the North Slope of Alaska and the MacKenzie Delta, Beaufort Sea and Arctic islands regions of Canada confirms our beliefs.

These discoveries demonstrated the need for an economical transportation system to bring Arctic gas to market. As early as 1969 TransCanada became a charter member in a consortium formed for the purpose of developing a transportation system for the natural gas reserves at Prudhoe Bay in Alaska and in Canada's Mackenzie Delta. We firmly believe that transportation of natural gas from the Arctic is economically and technologically feasible but will require a substantial financial investment. TransCanada is committed and is prepared to participate as an investor in this financial investment.

In early 1980, TransCanada, through a U.S. subsidiary, became a partner in the Northern Border Pipeline "prebuild project" to bring Canadian gas to U.S. consumers prior to the later delivery of Alaskan gas. In doing so, TransCanada provided the assured gas throughput volumes that enabled the entire financing of the eastern leg prebuild. In August 1980, TransCanada, through another U.S. subsidiary and along with three other interstate pipeline companies, elected to become a partner in the Alaska segment of

the ANGTS. TransCanada's commitment to the project is based on a thorough review and analysis of TransCanada's interests and the economic and engineering feasibility of the overall ANGTS system.

Our analysis shows that the ANGTS is a sound investment for TransCanada and its partners. Although unprecedented in its magnitude, it is technologically feasible and can be constructed within the time and range of costs currently projected. The ANGTS will provide producers with the incentive to undertake new exploration in frontier regions. New discoveries will enhance the energy security of both the United States and Canada. Clearly, the ANGTS will be a valuable asset for investors and gas consumers, as well as a secure source of domestic energy for the United States.

These substantial benefits will not come easily. The ANGTS will be the largest energy project in history. The credit of the pipeline sponsors will not be sufficient to assure the successful financing of a project of this magnitude. Innovative financing techniques will be required if the project is to be constructed through private financing and without government guarantees. Approval of the waiver proposal submitted by President Reagan is the essential first step to permit the sponsors and producers to develop such a financing plan.

The ANGTS is necessary in the development of Arctic natural gas resources. If the ANGTS is not constructed in a timely manner development of frontier energy resources will be set back many years with substantial detriment to the United States and Canada. It is imperative that we continue to make progress on the ANGTS. Passage by Congress of the Waiver of Law package is critical to that progress.

A PROFILE

TransCanada PipeLines

Presented to:

United States Congress

Washington, D.C., October 23, 1981

TransCanada PipeLines is a major Canadian energy company with extensive activities in both Canada and the United States. The company was established as a natural gas transportation link between western and eastern Canada by a special Act of Parliament on March 21, 1951, and has broadened its activities to include petroleum exploration, development and production, petrochemicals, and frontier energy transportation development.

THE PIPELINE

TransCanada's Canadian pipeline right-of-way is one of the longest in the world. It is about 2,500 miles long, extending from the Alberta/Saskatchewan border eastward to Montreal. In this right-of-way, the company has over 6,000 miles of pipeline ranging up to 48 inches in diameter. Powering the system are 48 compressor stations producing more than one million horsepower of compression.

In 1980, TransCanada transported nearly 1.4 trillion cubic feet through its system, 255 billion cubic feet of which was exported to the U.S. The company currently has pending before the National Energy Board proposals for additional exports to the U.S. totalling 360 billion cubic feet per year.

TransCanada's pipeline network has achieved international recognition for its technological sophistication, safety and operating efficiency. The company is a pioneer in the use of computers to control and monitor the operations of its system.

PIPELINE SUBSIDIARIES

Besides operating its Canadian pipeline network, TransCanada is also a partner and participant in pipeline projects in Canada and the U.S. These projects include both pipelines currently in operation and others that are planned.

TransCanada holds a 50 percent interest in the Great Lakes Gas Transmission Company. This company operates a 1,200 mile long gas transmission system joining the TransCanada system at the Manitoba/Minnesota border and extending across Wisconsin and Michigan. In 1980, Great Lakes transported over 400 billion cubic feet of Canadian natural gas to markets in the midwestern U.S. and eastern Canada.

TransCanada also holds a 50 percent interest in Trans Québec & Maritimes Pipeline Inc., which is constructing a transmission line from the eastern end of the TransCanada system at Montreal into new market areas in Quebec, New Brunswick and Nova Scotia.

Through a wholly-owned subsidiary, TransCanada owns a 30 percent interest in the first phase of the Northern Border Pipeline. This pipeline will stretch from the Saskatchewan/Montana border to Ventura, Iowa, and is part of the first phase of the Alaska Natural Gas Transportation System. TransCanada, which holds the largest share of the project, is the only Canadian company participating in the Northern Border Project. In addition, when Northern Border is expanded to transport Alaskan gas, TransCanada will own 17.7 percent of the extension from Ventura to Dwight, Illinois.

Besides Northern Border, TransCanada is also a partner in the Alaska segment of the transportation system.

Unlike other participants in the Northern Border Project and the Alaskan segment of the transportation system, TransCanada's sole interest is that of an investor. It will not act as an operator of either; it is not a producer of gas in the area to be served and it does not intend to purchase gas from that area.

SPECIAL PROJECTS

The company is project manager for the Polar Gas Project, a consortium planning to construct a pipeline to transport natural gas from Canada's Arctic Islands and the Mackenzie Delta/Beaufort Sea areas to southern markets.

TransCanada is involved with another northern project, the Arctic Pilot Project. The Arctic Pilot Project, a consortium of four companies, is planning to liquefy natural gas on Melville Island in the high Arctic and transport it south by icebreaking ocean-going carriers. TransCanada, while not a member of the consortium, will build, own and operate the LNG receiving terminal in eastern Canada. TransCanada will regasify the LNG and ship it to southern markets. This project is currently before governmental and regulatory authorities.

In addition to the Arctic Pilot Project, TransCanada continues to study a similar project for moving natural gas from the Ellef Ringnes and King Christian Island regions of the Arctic. Ice-breaking vessels would deliver LNG to European or U.S. markets.

OIL AND GAS ACTIVITIES

In late 1979, TransCanada began diversification efforts by entering into agreements that acquired for the company interests in oil and gas properties in both Canada and the U.S. Through a wholly-owned subsidiary, TCPL Resources, the company now ranks twentieth among oil and gas landholders in western Canada.

With an increase in reserves of 133 percent in 1980, the company's oil and gas reserves grew to the equivalent of over 110 million barrels in western Canada. In addition to its onshore activities in western Canada, TransCanada is looking closely at investment opportunities in Canada's Arctic and the east coast.

TransCanada is also involved in a joint venture agreement whereby the company has a 17.33 percent interest in 1.1 million acres of oil and gas properties located in 18 U.S. states.

PETROCHEMICALS

TransCanada took its first step into the petrochemical field in October of 1981 when it purchased Cancarb Ltd., a producer of thermal black. Cancarb, located in Medicine Hat, Alberta, produces 40 million pounds of thermal blacks per year in one of the world's most modern facilities. Thermal black is used mainly in the manufacture of industrial rubber products.

FUTURE PLANS

TransCanada plans to continue its pattern of growth over the next few years in both utility and non-utility activities. Besides continued support for the participation in major pipeline activities in both Canada and the U.S., the company will be seeking investment opportunities in new energy transportation projects, oil and gas development ventures and other business prospects as they become available.

While utility activities will continue to provide the base for the company's continued operations, diversification will be a decisive element in TransCanada's growth. As a result, the company will play an increasingly prominent role in both Canada and the U.S.

STATISTICS

Operations	1980
Operating Revenues	\$3,143,382,000
Net Income	102,460,000
Funds Provided from Operations	255,536,000
Plant, Property and Equipment (Gross)	
Gas Transmission Plant	1,929,187,000
Oil and Gas Properties	555,037,000

Senator MURKOWSKI. Thank you, Mr. Latimer.

As a Canadian, you obviously are familiar with the Canadian national energy plan, and you have indicated in your testimony that should the project not go through, it would obviously stand in the way of future energy developments from the high north and Arctic through Canada and Alaska, as well.

Recognizing, as the State Department stated in their testimony yesterday, that President Carter had indicated in a communique certain conditions concerning this project, and, as a consequence, the Canadian Government, in good faith, took that to be more than, obviously, an informal agreement and proceeded with certain prebuilds and authorizations, commitments and contracts and so forth, in your opinion, might the present gas that is coming from Canada, while I recognize it is under contract, be in jeopardy upon renewal of certain contract dates should this project fail to go forth as proposed by Congress favorably addressing these waivers? I would assume that gas is coming in from Alberta at this time?

Mr. LATIMER. Mr. Chairman, speaking simply as a private citizen and in no way representing any knowledge of a formal Canadian position, I don't think that there would be any wish on Canada's part to jeopardize the present gas supply if this line wasn't to be built.

I think that our support of this line and our feeling that it is very probably going to be built stems not just on reliance on letters or pieces of paper, but because we think it is imminently sensible for both countries that it be built now.

I do think that if the Alaska line were not proceeded with, that Canada wouldn't feel under any moral obligation to continue gas exports beyond the terms initially set, if there was other use for the gas at that time. But I also don't think that we would cut off the gas exports, because I think that would be very, very foolish economically and politically on our part, too.

In fact, I think that the reasons for proceeding with this line should be looked on as the fact that it is a very sensible thing for both countries to do, and not simply because it is something that the United States promised Canada they would do sometime ago, although I do think that that is a consideration as well.

Senator MURKOWSKI. Senator Melcher.

Senator MELCHER. Mr. Latimer, when you build pipelines in Canada, I am assuming that they are without Government subsidy. Is that true?

Mr. LATIMER. It has been true in recent years. There were certainly elements of government help in the initial construction of my company. The difficult section through northern Ontario was initially built by the Federal Government because it was noneconomic to do it privately at that time, and subsequently purchased by our company when it became economic, which was a very few years later.

Senator MELCHER. The portions that are under construction now in Canada for this pipeline are with or without Government subsidy?

Mr. LATIMER. They are without Government subsidy.

Senator MELCHER. What is the amortization period ordinarily in Canada for a pipeline?

Mr. LATIMER. Twenty years.

Senator MELCHER. In Canada, under Provincial and Federal law, does it permit owners of the gas to own the pipeline?

Mr. LATIMER. Yes. Technically, TransCanada is the owner of the vast majority of the gas that is in our pipeline. We purchase it through a wide variety of supply contracts at the producer end, and we resell it to transmission companies or distribution companies at the other end. And it is the ownership of the gas and those contracts that support most of our funded debt.

Senator MELCHER. One final question, then. Under Canadian law, both Provincial and Federal, can the producers own the pipeline?

Mr. LATIMER. I am sorry, Senator, I am not an expert in law, and I don't personally know of any reason why they couldn't. They don't in our case, except that our company's major shareholder, not a controlling shareholder, but our company's major shareholder, of course, is Dome Petroleum, and it is also a producer. And we have producing interests ourselves.

So, without ever having examined the question in its entirety, I don't think there is any prohibition on producers owning gas pipelines in our country.

Senator MELCHER. Thank you very much.

Senator MURKOWSKI. Thank you, Mr. Melcher.

Thank you very much, Mr. Latimer. We appreciate your complete testimony and certainly welcome you with us this morning.

The next witness presenting his testimony this morning will be Mr. Robert P. Raasch, president, Northern Arctic Gas Co., a subsidiary of InterNorth, Inc.

STATEMENT OF ROBERT P. RAASCH, PRESIDENT, NORTHERN ARCTIC GAS CO.

Mr. RAASCH. Mr. Chairman, my name is Robert Raasch. I am president of Northern Arctic Gas Co., the InterNorth subsidiary which is a partner in the Alaskan Northwest Natural Gas Transportation Co.

On behalf of InterNorth, thank you for the opportunity for this appearance. I have submitted my written testimony earlier.

If we just changed some of the names and numbers and locations, much of what the others have said today in their testimony I would repeat. Rather than doing that, I will summarize my written statements.

We, too, went through and remember too well some of the dark days in the 1970's when our production was greater than our new acquisitions, times of curtailment and shortages, moratoria, times of rejected applications for service to new homes and businesses.

We, too, searched the old fields, pushed to the new, the gulf coast, Montana, the western overthrust, Canada, and examined closely synthetic natural gas.

We, too, stressed conservation, insulation and more efficient equipment and efficient utilization of natural gas.

And after we did all that, we were faced by the inescapable conclusion that a widening gap existed between the demand for natural gas and the supply.

Now, most energy solutions are expensive and, in addition, some are insecure.

Against that backdrop we turned with vigor to Alaska with much encouragement from our customers. Subsequently, we signed natural gas purchase contracts which make us one of the larger, if not the largest, holder of Prudhoe Bay gas reserves.

We are thus positioned to be one of the larger shippers of Alaskan gas through the ANGTS.

In terms of natural gas reserves, our 4 to 50 trillion cubic foot share of Prudhoe Bay gas would represent a 60-percent increase in our 1980 year end reserves. This is more gas than we have been able to acquire in the last 9 years.

In other words, if we are able to add our Alaskan gas to our presently dedicated reserves, it would increase our reserve life index from 9 to 15 years.

Continuity of supply is important to us and our customers. And just a word about our customers.

They are 74 utility customer companies providing gas service to over 1½ million homes and businesses, primarily in seven States. Those States are Michigan, South Dakota, Minnesota, Nebraska, Wisconsin, Kansas and Iowa.

In one of those States, Minnesota, we provide over 90 percent of the natural gas consumed in that State. Our charter, our challenge, our charge, to secure supplies for those customers, is something we treat gravely.

We treat equally gravely the possible loss of such supplies, and that is why I am here today.

This supply, as indicated by other evidence you have seen or will see, promises to be a most attractive supply. Projecting the price of one energy is risky. Projecting simultaneously the price of several energies borders on the foolhardy. But our considered conclusion is that Alaskan gas is better than most available alternatives, especially imported oil.

We earnestly ask your approval of this waiver proposal so that we may continue this important work.

[The prepared statement of Mr. Raasch follows:]

STATEMENT OF ROBERT P. RAASCH
PRESIDENT, NORTHERN ARCTIC GAS COMPANY
A Wholly Owned Subsidiary of INTERNORTH, INC.

Before
The Committee on Energy and Natural Resources

October 23, 1981

Messrs. Chairmen and Members of the Committee, I am Robert P. Raasch, President of Northern Arctic Gas Company, the subsidiary of InterNorth, Inc. which is a partner in the Alaskan Northwest Natural Gas Transportation Company. I appreciate the opportunity to appear before you today to discuss the significance of the Waiver Package which is before you and the importance of the Alaskan Natural Gas Transportation System to our corporation and the customers we serve.

Let me briefly describe the significance of this Project to us and our customers.

InterNorth's existing natural gas purchase contracts make it one of the larger, if not the largest, holder of Prudhoe Bay gas reserves. It is thus positioned to be one of the larger shippers of Alaskan gas through the ANGTS. Our current gas dedications in Alaska equate to about 400 MMCF/D. This would represent approximately 20% of our estimated 1987 natural gas sales. In terms of natural gas reserves, our 4-5 TCF share of Prudhoe Bay gas would represent a 60% increase in our 1980 year-end reserves. This is more gas than we have been able to acquire in the last nine years. In other words, if we are

able to add our Alaskan gas to our presently dedicated reserves, it would increase our reserve life index from 9.1 years to 15 years.

Why is this important to us? Well, for over ten years now we have been actively working to bring the vast natural gas reserves of Alaska to the lower 48 states. In the meantime, we have made extensive efforts to geographically diversify our supply sources. In 1969 we stepped outside our traditional Kansas, Oklahoma, Texas and New Mexico supply areas to acquire gas in Montana. In 1975 we purchased our first off-shore gas from the Gulf Coast area. In 1979 we acquired our first Rocky Mountain gas. Since then we have completed arrangements to purchase Canadian gas.

In spite of all these efforts, we still are not replacing our reserves as fast as we are using them. We concur with much industry analysis indicating that lower 48 natural gas reserves will continue to decline gradually. We believe it would be unwise for our company or our country to rely totally on lower 48 natural gas supplies to meet our long term market needs.

We also find it inconceivable that our nation should continue to rely on insecure foreign energy supplies when we have such tremendous untapped potential in our own state of Alaska. Further, once installed, the pipeline itself will be a springboard for expanded exploration, development, and production of even more natural gas reserves, taking advantage of the very attractive economics of expanding the capacity of the pipeline.

Our primary market area includes states which, for the most part, have few indigenous sources of energy. Through our corporation's Pipeline Division, Northern Natural Gas Company, we serve approximately 74 natural gas distribution companies and we deliver to approximately 1,100 communities in the

midwest and upper midwest. These states include Iowa, Kansas, Michigan, Minnesota, Nebraska, South Dakota, and Wisconsin.

Our distributor companies provide service to over one and one-half million homes and businesses in this area. Several of these states receive more than half of their natural gas through our company. One state, Minnesota, obtains over 90% of its supplies from our company.

We also provide service to natural gas distribution companies who will use our share of Alaskan gas to provide service in the states of Illinois, Texas, and a few rural customers in the state of Montana.

Since many of these states have no oil and gas production of their own, the consumers in these states must rely on our company to ensure long-term supplies of natural gas to meet their heating and other energy needs. We believe we are carrying out that obligation by working to complete the Alaskan Natural Gas Transportation System in the best tradition of a supplier concerned about continuity of service. As far as price is concerned, the fact that transportation costs, a significant part of the delivered cost of Alaskan gas, will decline as the investment is depreciated, promises long term price attractiveness.

As over 25 million barrels of oil were consumed in 1980 in our market area by prospective natural gas users, we surely have an opportunity to do our part in reducing our country's reliance on imported oil.

Having already made a substantial financial, manpower, and time commitment to this Project, we are willing and anxious to undertake the challenging negotiations which lie ahead in order to attempt to obtain private financing for this Project. Our work to date has shown us that the Waivers of Law and Regulation which are before you are the minimum waivers which are required in order to proceed with our financing discussions.

We urge you to approve the proposed waivers which remove roadblocks to further progress.

Senator MURKOWSKI. Thank you very much for that very informative testimony, Mr. Raasch.

You indicated that Alaska gas meant to your group an increase in reserves from 9 to 15 years. Without Alaska gas, what alternative do you have at this time, should this project not become a reality?

Mr. RAASCH. Well, we have, as I indicated, studied synthetic natural gas. I think you are aware of some of the pitfalls and problems that that addresses, such as the water problem and things like that.

It takes a good deal of time to marshal the resources and get the engineering and work done in order to have that happen, and there are some people at the table here who can speak to that better than I can.

Solutions such as that are clearly in the late 1980, early 1990 timeframe, and those do not help us very quickly.

We think we are aggressively attempting to purchase new supplies. We are a partner in the pipeline which seeks to tap the western overthrust. But there simply, according to, I think, industry consensus and certainly our judgment, is not a capability of adding supplies in the Lower 48 States that we would like to do in order to provide continuity of service to our people.

What that ultimately means is that there will be an energy gap which will most likely be filled by less desirable or less dependable sources of energy, one of which would be imported oil.

Senator MURKOWSKI. In these alternatives which you have indicated, is there any that may be cheaper than the contemplated relief that we are looking for from this project?

Mr. RAASCH. If the volumes were there—I think I used the word, either in my written or oral testimony, “available”—other available sources, and I believe that at the current time the United States is doing about as much drilling as the resources allow it to do.

To the north, we have begun to buy Canadian gas, which we are very pleased about. We have some more on tap in the future, after the Northern Border Pipeline is built, and we would hope that there will be more gas available, at least in the shorter term, from Canada. But this, as Mr. Latimer indicates, would certainly be a stepping stone to releasing additional supplies from Canada for the United States.

Senator MURKOWSKI. Let me phrase my question a little differently. Are any of your other alternative supplies, might they be cheaper with the volumes that are necessary than what we are talking about here, which is the gas pipeline?

Mr. RAASCH. No, we don't see that they are.

Senator MURKOWSKI. Thank you. I think it most significant, and I wouldn't expect any of you to have the answer, although you may, but most of the testimony has indicated that there is a dependence on this source for sufficient reserves, varying with each individual company and its own reserve capabilities. But you have indicated, Mr. Raasch, that you serve approximately 1½ million consumers, and I think it would be interesting, for the record, to know the gas transmission company consortium represents roughly how many consumers in this country.

I know this gas is going to be distributed in the 48 States, but if anyone has that figure, or maybe we will ask that at the end of the questions, because I think it is relevant to what we are talking about here with regard to consideration for the best interest of the consumer, and it may be whether we have the reserves.

Senator Melcher.

Senator MELCHER. Mr. Raasch, you are probably the owner of more gas than anybody else on the Prudhoe Bay field?

Mr. RAASCH. Yes, sir.

Senator MELCHER. Mr. McMillian has told us the costs have gone up on the pipeline tremendously, so the transportation charge from Prudhoe will be substantial. If the waiver package is not sufficient, if it is adopted and is still insufficient to gain the proper financing, what would be the next step?

Mr. RAASCH. I can only speak for myself, Senator. I believe that there will be a reexamination of the partnership. There will certainly be some consideration given to bringing the project down in a fashion that would allow it to be relatively easily, economically and quickly reactivated.

Right now the world situation does not look as bad as it once did, and with a bit of an upset or turnaround, we think there would be tremendous demand to bring this resource back up again.

I think that all of us have said—as a matter of fact, just yesterday—have said that we cannot promise you we will not be back. We think that it is so important that this resource and those resources which this could springboard us to once it becomes the magnet that attracts more development drilling and production, that it is just too great a resource to leave there, to let lie.

So, conceivably, we could be back. Is that a sufficient answer?

Senator MELCHER. What do you think the transportation charge will be through this pipeline to Minneapolis from Prudhoe?

Mr. RAASCH. The numbers that the operator has presented, if I recall right, are about a little over \$2 in 1980 dollars over the life of the project in real 1980 dollars.

You would be welcome to have someone at the table—

Senator MELCHER. That is all right. I will find it in Mr. McMillian's statement here. It is a very expensive document, I can tell, and I am sure it is in here. But I wanted to get your reaction, personally.

Now, that would be 1980 dollars and be over the life of the system?

Mr. RAASCH. That is correct.

Senator MELCHER. Is one of the alternatives an amortization over a longer period of time? I assume we are talking about 20 years, are we not?

Mr. RAASCH. Yes. I think such proposals as that would have to be considered by the partnership, the members, to see if they can live with things like that, and FERC, also.

Senator MELCHER. That would not require any action by Congress, or would it?

Mr. Raasch. I couldn't say for sure. FERC may have the capability of doing that within its powers.

Senator MELCHER. \$2.20, that is in the ball park for the transportation charge?

Mr. RAASCH. There are some people at the table who might now be willing to help me with that.

Mr. McMILLIAN. What do you want?

Senator MELCHER. The transportation charge from Prudhoe to Minneapolis, the Twin Cities.

Mr. McMILLIAN. The overall average total gas cost for 20 years, Senator Melcher, is \$4.85, and the transportation is about \$2.70, a little over \$2.70.

Senator MELCHER. Now, that is everywhere?

Mr. McMILLIAN. Yes. We can't pick out a particular area, but that is a kind of system average.

Senator MELCHER. That is all right. That is a system average, and that is figuring the cost of the gas at \$1.45; is that correct? Or what is the cost of the gas right now?

Mr. McMILLIAN. This is using an overall average of \$2.13. It started at \$1.45, and there is some escalation in that to bring it to \$2.13.

Senator MELCHER. So, when we are talking about 1980 dollars, almost 1982, we should then add what to it? To talk 1982 dollars, would we add 20 percent? Would that be a good ballpark figure?

So, we are talking about \$5.50 gas then in 1982 dollars. To the consumer or to the company?

Mr. McMILLIAN. Well, that is the delivered cost to the consumer through our system to the city gate.

Senator MELCHER. City gate. Then the gas company would have to add on their charges?

Mr. McMILLIAN. Yes. The city gate distribution system would be on top of that. We were asked a question, and I will answer that question; Alaskan gas will be delivered to all 48 States, and it will also be delivered to about 80 percent of the gas customers. For example, this will represent some 35 million residential customers and, if you take the residential, commercial and everybody else, it represents or will approach the figure of some 50 million customers that this gas will reach.

Senator MELCHER. Fifty million?

Mr. McMILLIAN. Yes.

Senator MELCHER. Mr. McMillian, I suspect that the answer to this question is in here, in this very, very substantial, very fine statement. But I want to ask you the same thing that I asked Mr. Raasch.

If the waivers do not permit the financing, there would be a likelihood that you would seek other means, then, of allowing the financing that might involve actions of Congress; is that true?

Mr. McMILLIAN. Yes sir; that is true.

Senator MELCHER. Has the subject of loan guarantees been a possibility that has been considered?

Mr. McMILLIAN. We believe, first, with this waiver package and this proper credit support from this group which you see at this table, which have over \$150 billion worth of assets—of course, one party has a few more assets than the others—but with the combined asset group that we have here, I mean, we can—if the transmission companies will step up to the table, and they have, they have stepped up to over \$8 billion and we are still working, and I think we are going to come up with more than that.

We think we can privately finance this project with this waiver package.

Now, we have talked, and I have talked to some of you Senators, and I have had Senator Jackson explain this to me very clearly, that if anything like this ever happened this project would be restructured in a manner that we might not like. And with the political problems and the financial problems that we see in the world today, to come forward and ask for a Government guarantee or something of that nature, we know it is not practical and not timely, and we believe we can do this privately in this manner. And that is what we are trying to do.

And if we are given this opportunity—and we think we should be given this opportunity to do it—we think it will work.

Senator MELCHER. I thank you for that. I thank you, too, Mr. Raasch.

Are the producing companies going to testify, too, Mr. Chairman?

Senator MURKOWSKI. Yes; the producing companies are on the second page of the list of witnesses.

Senator MELCHER. If I can be here when we get to them, I want to have explained to me how the field operates. Maybe by talking about it now we can have a briefer explanation when we get to it.

Senator MURKOWSKI. All right.

Senator MELCHER. It was my understanding that if the field were going to be properly used at Prudhoe, the question of delivering the gas would have to be resolved in a fairly short period of time. That time, it seems to me, has already elapsed. If you don't have gas deliveries, I thought it would damage the production of the oil from the field itself, or prevent some production from occurring.

I would like to have that explained to me when we get to the producer companies. Second, I am a little bit mystified on why it is bad policy and was prevented in the original bill, even though I authored the House version of that bill, why it is bad policy to have the producing companies as partial owners or owners period of the transportation system to deliver this part of the petroleum products from Prudhoe Bay.

Maybe by posing the questions now, when we get to the producing companies I can get briefer answers and ones I can understand rather readily.

Thank you, Mr. Chairman.

Mr. MURKOWSKI. I want to assure my colleague that those are questions that we have had prepared and submitted by other Senators as well, specifically.

I would like to reiterate: The letter accompanying the waivers, Senator, to the Congress from our president was most explicit, and I quote, "The endorsement that the pipeline should be built by privately financed sector."

With that, we will move on to the next witness, Mr. Harry L. Lepape, president, Pacific Interstate Transmission Co., a subsidiary of Pacific Lighting Co.

Please proceed.

STATEMENT OF HARRY L. LEPAPE, PRESIDENT AND CHIEF EXECUTIVE OFFICER, PACIFIC INTERSTATE TRANSMISSION CO.

Mr. LEPAPE. Mr. Chairman, thank you for inviting me to appear before your committee.

My name is Harry L. Lepape. I am president and chief executive officer of Pacific Interstate Transmission Co. and Pacific Interstate Transmission Co.-Arctic, and a vice president of our parent company, Pacific Lighting Corp. I am also secretary of the design and engineering board of the Alaska Highway project.

Mr. Chairman, I have a prepared written statement. With your permission, I would like to submit it to the record and then briefly summarize.

Senator MURKOWSKI. It will be ordered into the record.

Mr. LEPAPE. Mr. Chairman, we are a member of the partnership which will build and operate the Alaska segment of the Alaska Highway project.

Pacific Interstate has signed a letter of intent with the Atlantic Richfield Co. for the purchase of 33 percent of its share of the Prudhoe Bay gas production. This will be about 10 percent of the total Prudhoe Bay production.

Pacific Interstate will resell this gas at the California border to Southern California Gas Co., the gas distribution subsidiary of Pacific Lighting Corp.

The southern California area is heavily dependent on natural gas. Approximately 50 percent of the area's total nontransportation energy requirements are met with natural gas. Over 90 percent of southern Californians use natural gas in their homes for water and space heating, and over 75 percent use natural gas for cooking.

Southern California Gas Co. serves an area encompassing central and southern California with a population of about 12.5 million people.

Mr. Chairman, I believe the statements earlier, when we were referring to the amount of coverage in the Nation that would be served by this project, we tend in our business to refer to meters when we talk about number of people served. I believe that 35 million customers would be 35 million meters, and the actual number of people who are going to benefit from this gas is a much larger figure, and I would like permission to submit that in writing to the committee as soon as we can.

Senator MURKOWSKI. The Chair would certainly welcome that submission. I was under the impression that the figure that had been, I believe, given us by Mr. McMillian was 50 million customers.

Mr. LEPAPE. We have 12.5 million people in our service area that are going to benefit. So, I would like to have the opportunity to check that number for you.

Senator MURKOWSKI. All right. We will look forward to a figure that you would all agree is an accurate figure.

Please proceed, Mr. Lepape.

Mr. LEPAPE. Southern California Gas Co. is the largest gas distribution company in the Nation.

Unlike some areas of the country, southern California does not have a fuel oil distribution network for home use. Likewise, coal is

not a viable alternative to natural gas in our area, primarily for environmental reasons.

The vast majority of small commercial and industrial gas users in southern California do not have the necessary facilities to use any fuels other than natural gas.

Large customers, including the electric utilities, rely heavily on gas and must use gas, if it is available, during the serious smog episodes.

Although southern California currently has enough gas to meet residential and commercial customer requirements, as well as a significant portion of the electric utility generating requirements during a hot or average temperature year, additional gas supplies will be needed soon if we are to maintain current delivery volumes.

Gas supply from the Lower 48 States is expected to decline sharply between now and the earliest date gas could be received from this project.

Two developments have been important in helping us solve our critical near-term gas needs.

First, there has been a significant improvement in the short-term availability of natural gas since enactment of the Natural Gas Policy Act of 1978.

Unfortunately, this improvement is expected to be short term because the gas continues to be consumed in the lower 48 States at a rate faster than new reserves are being added.

Since 1970, production has exceeded discoveries in the lower 48 States by over 100 trillion cubic feet.

Second, commencing October 1, 1981, Pacific Interstate started importing through the prebuilt western leg of the Alaska Highway project up to 240 million cubic feet a day of gas from the Province of Alberta.

However, this important import so far has only been approved until 1988. We are proud that this represents the first gas to move through a portion of the Alaska Highway natural gas transportation system.

The long-term supplies of gas, however, from Alaska will be essential if we are to meet the future gas needs of our customers.

We are concerned that any significant further delays in commencing construction of this project will mean increased costs of a magnitude which would eliminate any chance it could be privately financed.

If the financing requirements do increase to a point beyond the capacity of the private sector, the gas consumers of the Nation can only expect to receive this domestic resource after additional delays, which would cause greatly increased cost and, in our opinion, in turn require a significant level of direct Government financial participation.

I am convinced that over the life of the project the gas will be marketable at a price competitive with new supplies from whatever source, domestic or foreign.

It is a secure domestic supply and justifies a significant degree of customer support.

I wish to take this opportunity to express our continuing strong support for the Alaska Natural Gas Transportation System. We are

convinced the project is in the best interest of the consumers in California and throughout the Nation.

Because of this, we believe the Government should continue to vigorously endorse and support the project. This includes prompt approval of the President's waiver package.

It is our firm conviction that this Nation will need the Alaska gas reserves no later than the earliest timeframe that they could be made available.

It will reduce our dependence on OPEC oil and will help meet this country's vital energy needs.

The Alaska Highway project is a project which the Nation cannot afford not to build.

Mr. Chairman, once again, thank you for inviting me to appear before your committee. I will try to answer any questions.

[The prepared statement of Mr. Lepape follows:]

[Faint, mostly illegible text of the prepared statement follows, appearing as bleed-through from the reverse side of the page.]

STATEMENT OF HARRY L. LEPAPE
PRESIDENT AND CHIEF EXECUTIVE OFFICER,
PACIFIC INTERSTATE TRANSMISSION COMPANY
PACIFIC INTERSTATE TRANSMISSION COMPANY (ARCTIC)

My name is Harry L. Lepape. My business address is 720 West Eighth Street, Los Angeles, California 90017. I am President and Chief Executive Officer of Pacific Interstate Transmission Company and of Pacific Interstate Transmission Company (Arctic), and a Vice President of our parent company, Pacific Lighting Corporation. I am also a Director of Foothills Pipe Lines (South B.C.) Ltd., which is not affiliated with Pacific Lighting but is one of the four Canadian companies responsible for a portion of the Alaska Highway Pipeline Project in Canada.

Pacific Lighting Corporation is a Los Angeles based holding company which is engaged in a number of business activities, most of which are energy related.

Pacific Interstate Transmission Company and Pacific Interstate Transmission Company (Arctic) are subsidiaries of Pacific Lighting Corporation. Pacific Interstate Transmission Company is a natural gas company which purchases, transports and sells natural gas to its affiliates in southern California. Pacific Interstate Transmission Company (Arctic) is a partner in the Alaskan Northwest Natural Gas Transportation Company, the partnership formed to build and operate the Alaskan segment of the Alaska Highway Pipeline Project. Pacific Interstate has executed a letter of intent with the Atlantic Richfield Company ("Arco") for the purchase of 33% of its share of the Prudhoe Bay or about 10% of the total Prudhoe Bay production.

It is a pleasure to be here today and it is a privilege to have the opportunity to make a statement in support of the

Alaska Highway Pipeline Project. Alaska has this nation's largest untapped natural gas resource. In addition to the 26 trillion cubic feet of proven gas reserves in Prudhoe Bay on the North Slope, there are other significant hydrocarbon formations believed to exist in the northern Alaska area. On behalf of our companies, I personally have been involved for over a decade in the efforts to bring a portion of this vast gas resource to consumers in southern California.

Pacific Interstate is a charter member of the partnership selected by the governments of the United States and Canada to build a pipeline system south from Prudhoe Bay along the Alaska Highway through Canada to the lower 48 states. We are a member of this partnership because we believe in the importance of linking this significant domestic energy source with the lower 48 states and, more specifically, because it will provide, through the Western Leg of the project, a direct transportation system for the delivery of Alaska gas to southern California.

Southern California is heavily dependent on natural gas. Approximately 50% of the area's non-transportation energy requirements are met with natural gas. Over 75% of southern Californians use natural gas for cooking and over 90% use natural gas for water and space heating.

Southern California Gas Company, the gas distribution subsidiary of Pacific Lighting Corporation, serves an area encompassing central and southern California with a population

of 12.4 million people. We sell 5% of all the natural gas distributed in the entire United States. In addition, Southern California Gas Company sells gas at wholesale to San Diego Gas & Electric Company and the Gas Department of the City of Long Beach, which together have approximately 600,000 meters in southern California.

Metropolitan Los Angeles, defined by a 60-mile radius from downtown Los Angeles, has the second largest concentration of population, employment, business, industry and finance in the United States, exceeded only by the Greater New York area. The gross regional product of Metropolitan Los Angeles is exceeded by the gross national product of only 13 nations in the world. The Los Angeles area accounts for nearly half the economy of California, and the area is experiencing a population growth rate nearly twice that of the United States as a whole. Natural gas is vital to the economy of the area.

Unlike some areas of this nation, southern California does not have a fuel oil distribution network for home use, and coal is not a viable alternative to natural gas, primarily for environmental reasons. The vast majority of small commercial and industrial gas users in southern California lack facilities for the use of fuels other than natural gas. Large customers including the electric utilities rely heavily on gas and must use gas, if it is available, during serious smog episodes.

Although Southern California Gas Company currently has enough gas to meet residential and commercial customer requirements, as well as a significant portion of electric

utility generating requirements, additional gas supplies will be needed if we are to maintain current delivery volumes. Gas supply from the lower 48 states is expected to decline sharply between now and the earliest date gas could be received from this project.

Two developments have been important in helping us solve our critical needs in the interim period before the anticipated date of the delivery of Alaska gas to the lower 48 states. First, there has been a significant improvement in the short-term availability of natural gas since the enactment of the Natural Gas Policy Act of 1978. This improvement will be short term because gas continues to be being used in the lower 48 states faster than new reserves are being added. Since 1970, production has exceeded discoveries in the lower 48 states by over 100 trillion cubic feet. Second, commencing October 1, 1981, we started importing through the prebuilt Western Leg of the Alaska Highway Project up to 240 million cubic feet a day of gas from the Province of Alberta in Canada. However, it is the long term delivery of gas from Alaska that will be critical to meeting our future gas needs.

We were pleased to learn that the President has sent you the waiver package and of your decision to start early hearings on this matter. It reflects a recognition of the urgency and the tremendous national importance of this project. Lenders to the project will require the waiver package and satisfactory assurances that the sponsor companies are capable of fulfilling the financial obligations they undertake for this

project. The project's commercial bank advisors have indicated that some creditworthy party or parties will have to provide unconditional completion undertakings, or, in the event of noncompletion, unconditional promises to repay the debt.

We believe that the tariff, as approved by FERC, together with those related portions of the waiver package (i.e., early billing commencement and regulatory certainty) will provide the necessary credit support for the debt once the facilities for a particular segment are completed and/or gas begins to flow. Until such events occur, the full risk of completion rests on the sponsors who must assume the risk for the debt as well as their equity. We are confident that the risks of noncompletion are very remote and that the project can be built within budget. However, the sheer magnitude of dollars require that this remote contingency be considered seriously in determining the maximum financial commitment Pacific Lighting can undertake.

If the waiver package is not approved and the sponsors are therefore unable to proceed promptly with the effort to develop a total financing package in the private sector, the team of experienced people in both the sponsors' and contractors' organizations who have been assembled over the many years would undoubtedly be disbanded. To reassemble such talent would be difficult and time-consuming.

We are also concerned that any significant delay in commencing construction of this project will mean increased costs of a magnitude which would eliminate any chance it could

ever be a privately financed project. If the financing requirements do increase to a point beyond the capacity of the private sector, the gas consumers of the nation could only expect to receive this vast domestic resource at a greatly increased cost and with a significant level of direct government financial participation.

I am convinced that over the life of the project, the gas will be marketable at a price competitive with new supplies from whatever source, domestic or foreign. It is a secure domestic supply and justifies a significant degree of customer support. This is no more than will be required for any major new energy project where the capital costs are as significant when compared to the financial strength of potential sponsors.

The pipeline sponsors' equity is at a greater risk on this project than for some other major new gas supply projects because of the IROR provisions which will penalize the equity return if costs exceed the approved final cost estimate.

Sponsors' balance sheets can be stretched only so far to also support the debt during construction for this highly leveraged project. For this project to proceed, it must continue to have the full support of the Congress, the Administration and the federal and state regulatory agencies.

I wish to take this opportunity to express our continuing support of the Alaska Highway Pipeline Project. We

are convinced the project is in the best interests of the

consumers in California and throughout the nation. Because of this we believe the government should continue to vigorously endorse and support the project.

It is our firm conviction that this nation will need the Alaska gas reserves within the time frame that they can be obtained. It will reduce our dependence on OPEC oil and will help meet this country's vital energy requirements. The Alaska Highway Pipeline Project is a project which that nation cannot afford not to build.

Senator MURKOWSKI. Thank you very much, Mr. Lepape.

I note in the distribution of Alaska gas by State that the State of California would rank as the No. 1 recipient of that gas, and I believe the State of Ohio would be the second largest recipient of that gas.

In your comments with regard to alternatives in the event that this project does not take place and in your testimony you indicated that, I believe, you were going to use approximately 10 percent of that gas.

What do you have in mind?

Mr. LEPAPE. Well, for one, I hope that forecast comes to pass and California does receive the largest quantity of this gas.

Senator MURKOWSKI. I am just looking at a distribution sheet of where it is supposed to go. So, that is the extent of what I am talking about.

Mr. LEPAPE. Well, Mr. Chairman, I am not sure of the count, but I think back the last time I looked at it, California had approximately 1 out of every 6 or 1 out of every 7 gas meters in the entire United States. The State is heavily dependent upon natural gas, and with the absence of alternative fuel we are vitally concerned with obtaining a share of this initial 26 trillion cubic feet.

We are very vitally concerned in the additional potential of gas which we think is significant in the North Slope area, and we are delighted to see the producers continue to explore aggressively up in that area, and we hope we can make sufficient progress with this project so that they will continue an aggressive exploration program, so that we can likewise have an opportunity to buy a portion of the potential additional reserves which they and others have indicated is likely to be made available for the lower 48 markets.

Senator MURKOWSKI. Then can I conclude that your alternative is basically continued increasing dependence on OPEC oil as an alternative?

Mr. LEPAPE. That would be the largest other source. We are seeking other supplies, both domestic drilling and we are seeking LNG supplies. We attempted to build a gasification plant and spent

a lot of time and money on that. We were unsuccessful. And we see our area having to use additional quantities of imported oil absent the availability of this supply.

Senator MURKOWSKI. Do you have other alternative gas supplies available to you?

Mr. LEPAPE. We are seeking and utilizing all of those. Nothing that we think—

Senator MURKOWSKI. Nothing of this magnitude?

Mr. LEPAPE. Nothing that could replace this. We are seeking LNG supplies. We are likewise seeking additional domestic supplies. But we do not see any available supply that would be a substitute for this supply and eliminate the need for access to this North Slope region.

Senator MURKOWSKI. In your opinion, then, this gas, when it comes on under the present schedule, although the date certain has not been established—we assume we are looking at late 1986 or 1987—it will be able to be marketed within your distribution mode?

Mr. LEPAPE. Yes, sir.

Senator MURKOWSKI. And we are not talking about the prerequisites of deregulation or partial deregulation? You are convinced that you can market the gas at the price that it is going to be delivered?

Mr. LEPAPE. Whether we continue to have the NGPA provisions or whether there is deregulation I do not believe will affect the need for or viability of this project.

Senator MURKOWSKI. It has been indicated that the California State Public Utility Commission has expressed some concern about the high price of Alaskan gas which will be coming into the State. Could you comment on the current atmosphere surrounding the Public Utility Commission with regard to its attitude toward Alaska gas as proposed under the price structure which we have discussed this morning?

Mr. LEPAPE. I wouldn't presume to express views of the State of California Public Utility Commission.

Senator MURKOWSKI. No, I understand.

Mr. LEPAPE. In terms of environment, I think I can speak for that, because we are primarily at the consumer level. Our largest subsidiary is a gas distribution subsidiary.

So, we feel very much the pressures that are felt in the marketplace with the increasing cost of gas, with the deregulation program that we have even now. Obviously, the market feels the large increase which must be passed on to the consumer.

A very small percentage of our total cost of service is attributable to anything other than the cost of gas, and we are now in recent years filing very large increases in the retail rates.

That necessarily drives us to seek supplies at the lowest possible cost for our customers. We understand and have our obligations to our customers to do our very best to bring supplies in at the lowest cost, not only on a 1- or 2-year basis. We have to look at it on a very long period of time.

We can't put our head in the sand and there is not a better alternative for transporting this large energy base, 13 percent of our proven reserves and a large percentage of our potential, than this pipeline system.

Senator MURKOWSKI. You indicated that you had worked on a proposed liquification program to facilitate the movement of gas and ruled it out, and you have reiterated that this is the best way.

Could you elaborate just a little bit more on why it is more practical to pursue the pipeline than go back and resurrect, if you will, the LNG proposal? I am sure the committee is still confronted with suggestions to go back and pursue the LNG proposal.

Mr. LEPAPE. Mr. Chairman, if I may, so there is no confusion, one of the options we are aggressively following is an LNG project that would bring liquefied natural gas from southern Alaska, and we are continuing that.

Senator MURKOWSKI. That is Nasake, is that not?

Mr. LEPAPE. This would be out of the Cook Inlet area.

Senator MURKOWSKI. How long have you been working on that project?

Mr. LEPAPE. Oh, golly. Almost as long as we have been working on this project, and I have been working on this one more than 12 years. So, it has been not quite that many years, but quite a long time. We have invested a great deal of front money, and we are continuing to pursue that project.

So, yes, we are involved in and we hope someday we will be successful in obtaining approval.

Senator MURKOWSKI. Why would not it be, if you have been working on that project for a long time and it evidently hasn't reached fulfillment, why is it not feasible to move the gas that we are talking about from Prudhoe Bay by LNG?

Mr. LEPAPE. Mr. Chairman, the gas could be moved that direction, and—

Senator MURKOWSKI. That was one of the earlier proposals.

Mr. LEPAPE. We studied that proposal, but our company has never advocated moving the Prudhoe Bay volumes that direction. Provided we were able to obtain from Canada adequate assurance of the fair treatment of the transit of this gas through Canada, once we had that alternative—we have made very careful studies, as did all of the proponents in the various pipeline hearings, of the comparative costs of moving Prudhoe Bay gas via the presently approved route, or via the alternative of a pipeline system across Alaska in liquefaction.

The economics clearly demonstrated to us at that time and continue to demonstrate to us that the most efficient way to move the Prudhoe Bay gas would be to move it through this pipeline system.

Senator MURKOWSKI. Your project, the Nasake project, while it is not related to the conversation, I just want to bring out for the record, the time that you have had and the involvement, the delays, are they primary environmental? The economics of the project? Could you explain why it has taken so long?

You still, evidently, have not reached a green light to go.

Mr. LEPAPE. No. We have been past many of the hurdles and we are continuing our efforts in that regard. There has never been a problem on the economics as we were moving forward, basically. It has been the environmental, regulatory, other delays that have come about, so that we have had just about everything you could imagine on that project.

Senator MURKOWSKI. So, unlike this project, which is the choice of the environmental community of the three proposals, why is your other project not?

Mr. LEPAPE. It had many problems. We believe we have satisfied the majority of those problems as they came up. Some of them I think we have written a book on. But I believe we will overcome those and we will eventually see that vitally needed project also available to supply our customers.

Senator MURKOWSKI. I thought you had to come to Washington to write a book.

Thank you very much. I appreciate your valuable testimony, Mr. Lepape.

Senator Melcher.

Senator MELCHER. Mr. Lepape, after 12 years and substantial investment, is the debt-equity ratio of, if I understand this right, 75 to 25, is that what you believe to be proper?

Mr. LEPAPE. We hope it can be. In terms of being highly leveraged like that, it will reduce the cost to the customers by having a greater amount of debt than equity. That is one of the reasons why it does make sense for the customer to provide this contingent support for the debt of the project until we have been far enough along in our construction and completion that the project itself can support that debt. We consider it an advantage that this pipeline project be highly leveraged.

Senator MELCHER. What is the usual, 90 to 10? Or what is the usual?

Mr. LEPAPE. I think there is quite a range, but 75 to 25, I think, would be considered relatively high in leverage. But I could ask some of my compadres here what would be an industry average.

Senator MELCHER. But the 75 to 25, in your judgment, is the most practical in this instance?

Mr. LEPAPE. And I believe we approached it on what would be the greatest amount of leverage we felt we might be able to work in order to keep these costs down.

Senator MELCHER. I have here a set of figures that indicate a higher price for first-year, 5-year average, and 20-year average.

Mr. LEPAPE. Yes, sir.

Senator MELCHER. Will it be necessary to charge consumers on that basis or not?

Mr. LEPAPE. Basically, the way the charges are normally derived on a pipeline cost of service tariff, the large component of that cost is attributable to depreciation. And as we continue to depreciate the system, the rate base portion, the remaining rate base investment declines. And therefore, the cost of service and the related taxes would be less.

Therefore, if you look at a pipeline project like this that is capital intensive at the beginning, very low on operation and maintenance costs, then you will find that there is a built in advantage in getting your steel purchased as soon as possible, get it into the ground, and start depreciating that system. You beat inflation and you have something which offsets any increases in the wellhead price over the years.

I might mention that operation and maintenance cost is one of the factors when the chairman was asking me about the compari-

son with LNG. That has a higher operation and maintenance cost per unit of energy moved than does the pipeline transmission system.

Senator MELCHER. I understand that. But my question is, will consumers be paying these higher figures in the first year as compared to the 5-year average and the 20-year average?

Mr. LEPAPE. Senator, they will unless in the final analysis there is some tilting of the tariff or there is some adjustment that would be built in where there could be some modification of the front end costs and increased at a later time. But the basic philosophy of this type of an investment is that the total return is regulated, all prudent costs are to be borne by the customer, and they have to be paid sooner or later. And costs that are paid sooner, then, aren't capitalized and you don't earn on those through the life of it.

So, there are advantages sometimes to not defer costs in terms of the ultimate cost to the consumer over the life of the project.

Senator MELCHER. I have a set of figures here that indicates a range for first year between \$11 and \$18. Do you agree with that?

Mr. LEPAPE. Well, Senator, it—

Senator MELCHER. And that is in 1987 dollars.

Mr. LEPAPE. Well, Senator, it would be a function of what inflation rate was used at that time. It wouldn't surprise me to see the \$11 or \$12 figure. I believe you can get there with about a 9-percent inflation and 12-percent interest cost. I am trying to reflect now back on that.

There is submitted in the direct testimony a range of costs, and I believe that \$12 figure was related to about a 9-percent rate of inflation.

Senator MELCHER. Thank you.

Mr. LEPAPE. Senator, if I may, I do have verification of that, that that cost was \$9.25 the first year, the 5-year figure was \$7.58, and the 20-year average was \$4.85.

Senator MELCHER. Thank you very much.

Senator MURKOWSKI. At the request of Senator Melcher, we are going to depart a little bit from the witness list. The Senator has some commitments that require him to excuse himself shortly, but he was very interested in the testimony of the producers.

As a consequence, I would ask that we proceed. Before I do, I think it appropriate to, in view of the late hour, give you some idea of what we have in mind.

We are going to finish the panel—that is, the group at the table—and then break for lunch, no more than a half hour. Then we will reconvene and go until we finish.

Any of you gentlemen that want to excuse yourself for a few moments, why, we certainly will not be offended.

The witnesses that we will be calling upon now will be W. D. Leake, vice president, Atlantic Richfield Co., Sidney Reso, senior vice president of Exxon, U.S.A., and Frank Mosier, senior vice president, Supply and Transportation for the Standard Oil Co. of Ohio.

Gentlemen, we welcome you to the committee this morning, we welcome your testimony, and we hope that we have not inconvenienced you by catching you by a little surprise, but I think I have

given you a lengthy introduction which has given you some warning.

If you would like to change the order of your testimony, why, that is up to you individually. I am sure that you are all acquiescing to the gentleman on your right. So, that leaves, certainly, Mr. Mosier, in the preferred position.

So, whoever is first, please go ahead.

STATEMENT OF WILLIAM D. LEAKE, VICE PRESIDENT, ALASKA NATURAL GAS TRANSPORTATION SYSTEM PROJECT, ATLANTIC RICHFIELD CO.

Mr. LEAKE. Mr. Chairman, I am William D. Leake, a vice president of Atlantic Richfield Co., currently assigned to the Alaska Natural Gas Transportation System project.

Copies of my written statement have been distributed to the committee, and I ask that it be included in the record.

I would like to discuss the circumstances that have brought our involvement in this project and to highlight the importance of certain of the proposed waivers to Atlantic Richfield Co.

In 1977, Atlantic Richfield appeared before the Congress in support of the prompt construction of an Alaska Gas Transportation facility.

At that time, we were somewhat distressed at President Carter's determination in his report that "the producers of Alaska gas may not be equity members of the sponsoring consortium."

Our distress was not occasioned by any desire for equity participation for we did not wish to enter the gas transmission business, but rather by the implication that the producers were somehow obligated to guarantee the debts of the project sponsors, and a deep concern that the Department of Justice's theorizing might result in failure of northwest Alaska's financing plans.

We informed the Congress in 1977 that Atlantic Richfield would not be able to commit its assets to any type of debt guarantees of others, particularly when we had no equity participation.

In August of 1979, Secretary of Energy James Schlesinger informed Atlantic Richfield and other Prudhoe Bay producers that the pipeline system could not be privately financed without their participation and urged the producers to propose plans for participation.

In response to the Secretary's request, on February 28, 1980, Atlantic Richfield informed Secretary of Energy Charles Duncan that it was willing to discuss possible financing plans on the basis of producer equity participation and inclusion of the conditioning facilities in the transportation system and tariff, and other considerations, including a reliable cost estimate.

Thereafter, in response to further requests from the Department of Energy and others, Atlantic Richfield and the other producers and pipeline sponsors entered into a design and engineering agreement to share the cost of development a reliable pipeline design and cost estimate for the Alaska portion of the transportation system and the gas conditioning plant.

As a result of this agreement, by the end of this year Atlantic Richfield will have spent approximately \$70 million.

On May 21, 1981, Atlantic Richfield, the pipeline sponsors and other producers agreed upon an outline of a financing plan whereby the producers would provide the lesser of either 30 percent of the expected cost of the Alaska segment of the pipeline and of the gas conditioning plant or up to a maximum of \$9 billion, provided that all the conditions precedent to participation in that or any subsequent financing plan were met.

These conditions are: The conditioning plant would be included in the Alaska Natural Gas Transportation System; each company's investment would be limited to a sum certain; all debt and equity participants would issue acceptable firm commitments prior to construction; all necessary governmental approvals and authorizations would be issued and accepted; all parties would be assured that the project was economically viable; the Canadian segment would be financed and completed without U.S. company involvement;

And that each financing layer would be afforded equal terms and conditions.

One of these conditions in particular merits explanation to you. I refer to our second requirement, each company's investment will be limited to a sum certain.

Here, we are not trying to avoid risk per se, only risk beyond our financial capability. Indeed, we find considerable risk in the thought of investment a sum of several billion dollars in this very costly system to send gas to a difficult to define future market in an economic outlook ill defined as to inflation and the cost of capital.

Rather, our concern is to reasonably limit our stockholders' risk capital to viable outer limits. Within those limits we are concerned about the risk of overruns from unexpectedly high interest cost or inflation, about the risk of adverse political or economic events, and about the risk of insufficient financial commitment from creditworthy parties to assure that the expected project costs and possible overruns will be fully funded.

We are equally concerned that wellhead or tariff revenue might be reduced to facilitate financing. We are trying to lessen our concerns by, one, elaborate early project engineering and costing, and two, adequate contingent financing up front and/or some form of completion insurance.

Your proceedings will consider many of the same conditions in these waiver hearings. We support your approval of the waivers because, in our judgment, without their adoption the project will be delayed or will fail.

They will remove some of the obstacles to ownership and construction, and will improve the chances of project financing by narrowing the field of negotiation and search for remaining solutions.

The billing commencement waiver addresses appropriately some of the risks associated with this project after physical completion. However, even if the full waiver package is approved, satisfactory financial commitments among lenders and equity participants must be negotiated. Until they are we must remain uncertain as to whether or not the project can be privately financed.

Utilization of the North Alaska gas appears to be in the nation's interest as well as ours. The ANGTS project will be extremely

expensive and difficult to finance. Our possible share of the cost is nearly twice as much as the highest annual net income ever recorded by Atlantic Richfield.

This project competes for funds with many other domestic energy imperatives available to us. We have worked long and hard to solve the problem of bringing Alaskan gas to market and will continue to do so.

That is the end of my statement, Mr. Chairman. I would be happy to answer any questions now or later.

[The prepared statement of Mr. Leake follows:]

STATEMENT OF WILLIAM D. LEAKE, VICE PRESIDENT
ALASKA NATURAL GAS TRANSPORTATION SYSTEM PROJECT,
ATLANTIC RICHFIELD COMPANY, BEFORE THE COMMITTEE
ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE, OCTOBER 23, 1981

On behalf of Atlantic Richfield Company, I wish to express my appreciation for being afforded the opportunity to present my company's views regarding the Waivers of Law submitted by President Reagan to the Congress in accordance with the Alaska Natural Gas Transportation Act.

In 1968, Atlantic Richfield, operating for itself and Exxon Company, U.S.A., discovered near Prudhoe Bay, Alaska the largest single deposit of hydrocarbons ever encountered in the North American continent. It was later determined that the reservoir contained in excess of 9 billion barrels of recoverable oil and approximately 26 trillion cubic feet of natural gas reserves. Development of this enormous field in North Alaska commenced almost immediately and in 1977, after completion of the Trans-Alaska Oil Pipeline, production of crude oil and natural gas commenced. Since that time, the Prudhoe Bay Field has produced approximately 2 billion barrels of crude oil and the field is currently producing approximately 1.5 million barrels per day, all of which has been consumed in Alaska or in the lower 48 states. At the present time, there is also being produced from the field approximately 2 billion cubic feet of gas per day. Approximately 120 million cubic feet per day of this gas is used as field fuel; approximately 30 million cubic feet per day is delivered to the Trans-Alaska Pipeline System to fuel the first 4 pump stations and the remainder is reinjected into the reservoir to aid in pressure maintenance and to be conserved until a gas transportation system is constructed.

Atlantic Richfield was an early advocate of the construction of a gas transportation facility to permit gas sales from the Prudhoe Bay Field. Our company participated in and contributed to feasibility studies of both the Trans-Alaskan and Arctic Gas transportation routes, and as will be detailed later in these comments, we have made a significant contribution in money and manpower to the ANGTS design effort.

In 1977, the President and the Congress determined that the Alaska Natural Gas Transportation System should be constructed along the Alcan Highway and selected Northwest Pipeline Company to construct and operate the system.

Shortly thereafter, the Congress enacted the Natural Gas Policy Act of 1978 wherein, for the first time, they established a permanent ceiling price for Prudhoe Bay gas at \$1.45 per million BTUs to be adjusted only by an amount equivalent to annual inflation.

Subsequent to the selection of the transportation route and the enactment of the pricing legislation, Atlantic Richfield negotiated Letters of Intent for the sale of its share of the Prudhoe gas production with six potential purchasers, Pacific Lighting Corp., Panhandle Eastern Pipeline Company, Texas Eastern Corporation, Texas Gas Transmission Company, United Gas Pipeline Company and Transwestern Pipeline Company. Definitive gas sales agreements have not been negotiated with all potential purchasers; however, we anticipate that these necessary negotiations will be completed prior to the certification of the Alaska Natural Gas Transportation System.

In his 1977 Decision and Report to the Congress on the Alaska Natural Gas Transportation System, the President stated that producers of significant amounts of Alaska gas, their subsidiaries and affiliates, should not participate in the ownership of the Alaska Natural Gas Transportation System except that the producers could provide guarantees for project debt prior to project completion only. In his report, the President stated, "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 operation 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 abuses, including power to veto pro-competitive policies." (Decision, p.39) While Atlantic Richfield had no interest in owning an interest in or assisting in the financing of a gas pipeline system, we informed the Congress in 1977 that such limitations were unwarranted and unprecedented in any financial transaction that we have ever encountered and that it was our opinion that such limitations would severely discourage any prospective creditor or guarantor. In spite of the concerns of Atlantic Richfield and of others that were expressed to the Congress, the requirement of the President's Decision that producers be excluded from financial participation in the Alaska Natural Gas Transportation System was adopted.

In August 1979, Secretary of Energy James R. Schlesinger urged the principal gas producers in the Prudhoe Bay Field to propose plans for producer participation in the ownership and construction of the Alaska Natural Gas Transportation System. The Secretary informed the producers that, in his opinion, the pipeline system could not be privately financed without the participation of the major producers.

In response to the Secretary's request, Atlantic Richfield, on February 28, 1980, informed Secretary of Energy Charles W. Duncan, Jr. that it was willing to discuss possible financing plans with the pipeline sponsors but that it would not assume responsibility for guaranteeing the debts of any other participant nor could it assure or guarantee the completion of the project. Atlantic Richfield also informed Secretary Duncan that it could not participate in the project unless all conditions necessary to finance and construct an economically viable system were satisfied and that it was unwilling to provide more than its proportionate share of the debt of the pipeline project.

In its communications with Secretary Duncan, our Company summarized its concerns relating to the financeability of the transportation system, pointing out that the Company could not provide the guarantees referred to in the President's Decision without placing the Company in severe financial jeopardy. The Company went on to enumerate the points that it believed necessary to make the project financeable and economically viable. Among the more important points highlighted by the Company at that time were the following: (1) approval of producer equity participation, (2) assurances that the entire project, including the Canadian leg, was economically viable and would be completed, (3) inclusion of the conditioning facilities in the transportation system and tariff, (4) tariff protection for the lenders against permanent or temporary interruption of service, and (5) a reliable cost estimate. As we noted at that time, there were other considerations; however, the foregoing list was of such importance that it was considered necessary to place special emphasis on the items contained herein.

In June, 1980, in response to further requests from the Department of Energy, Atlantic Richfield negotiated with the other producers and the pipeline

sponsors a Cooperative Agreement which enabled the producers and the sponsors to share the cost of developing a reliable pipeline design and cost estimate for the Alaska portion of the Transportation System, including the Gas Conditioning Plant. As a result of this Agreement, by the end of 1981 Atlantic Richfield will have contributed approximately \$70 million toward the cost of the Design and Engineering study. The system cost estimate has now been delivered to the Federal Energy Regulatory Commission and is being reviewed by the Commission as a part of its certification process.

Concurrently, with the execution of the Cooperative Agreement, the pipeline sponsors and the producers signed a Joint Statement of Intention to Work together in an effort to develop a financing plan which could be presented to potential lenders and to the government to determine whether or not the project was viable. As a result of the efforts of the parties, on May 21, 1981, Atlantic Richfield, the pipeline sponsors and other producers agreed upon an outline of a financing plan and presented it to Secretary of Energy James Edwards. Included among the concepts set forth in the plan was an agreement by the Prudhoe gas producers and pipeline sponsors whereby the producers would be permitted to own 30% of the Alaska portion of the transportation system including the conditioning plant by providing equity in the amount of \$2.25 billion and arranging debt contribution up to \$6.75 billion. Atlantic Richfield's agreement upon these financing concepts was conditioned upon the following circumstances:

- (1) The conditioning plant to be located on the North Slope of Alaska would be included as an integral part of the Alaska portion of the ANGTS.
- (2) The debt/equity ratio for all capital investments in the system would be 75:25.

- (3) The investment limits for all participating companies would be defined at the outset of the financing effort. As a group, the producer companies would provide equity in an amount not to exceed \$2.25 billion.
- (4) Debt funds (pipeline and plant) would be sought on a project credit basis. The transmission group would be responsible for arranging \$15.75 billion in project debt and the producer group would accept responsibility for arranging \$6.75 billion in additional project debt. Producer debt would be accorded terms and conditions equivalent to the terms and conditions accorded other project debt. All financing layers would be guaranteed equal terms and conditions.
- (5) Each company's investment would be limited to a sum certain defined in the financing plan.
- (6) The Alaska Northwest partners would own 70% of the pipeline and the plant and the producing companies would own 30% of the pipeline and the plant. Equity commitments to the completion assurance pool would be on a 70:30 ratio.
- (7) All debt and equity participants would issue firm commitments, acceptable to all participants, prior to commencement of construction of the pipeline or plant.
- (8) All necessary governmental approvals and authorizations (including producer equity ownership) would be issued and accepted by the participants.
- (9) All parties would be assured that the project was economically viable.
- (10) All parties would be assured that the Canadian segment would be financed and completed without U.S. company involvement.

Based upon the comments received from potential lenders, on June 17, 1981, the pipeline sponsors submitted to the President their recommendations for waivers considered to be necessary to permit the producers to consider participating in the project and to facilitate negotiations with potential lenders for the financing of the Alaska Natural Gas Transportation System.

Among the proposed waivers is a recommendation that the Alaska Natural Gas producers be permitted to own an equity interest in the transportation system. As we informed the Congress in 1977, we were not disturbed economically by being then excluded from equity participation in the project; however, we were deeply concerned that the President and the Congress would assume or suggest that our company had an obligation to put at risk a nonfinite sum of money in the form of open-ended guarantees of debts incurred by others while denying our Company any voice in management or voting power over expenditures. Even the fee for providing such guarantees was deemed by the President's Decision to be minimal and left to be determined at a later time. In 1977, we did not seek an opportunity to participate in the ownership or financing of the transportation system, on any basis. Until contacted by Dr. Schlessinger in 1979, our position remained the same. Since then, we have been informed by the Secretary of Energy, other administration officials and the pipeline sponsors that the gas pipeline project cannot be privately financed without producer participation. While we remain convinced that gas pipeline projects of this type should be owned and financed by gas pipeline companies, we are willing to consider participation in the ANGTS, but we have reservations about doing so.

To enable Atlantic Richfield to participate, even to a limited extent, it is necessary that the Congress approve a waiver of that part of the President's

Decision that excludes Atlantic Richfield and other producers from equity ownership in the pipeline. It is our belief that this barrier to producer participation was unwarranted in that it was based upon unrealistic judgmental theorizing by the Department of Justice which concluded that the producers should be excluded from transportation system ownership since such ownership in some manner might be construed to violate the antitrust laws. In our opinion, such determination was in error in 1977 and is equally in error at this time.

Our Company does not seek control of the transportation system, but it is neither able nor willing to commit the assets of Atlantic Richfield without ownership of an interest in the project which will enable it to ensure that our investment is properly managed. For example, our Company has no desire to influence or control access to the pipeline so long as the system is not jeopardized and so long as we are not required to contribute financially to permit such access. Similarly, we would want to participate in decisions relating to pipeline expansion only to the extent necessary to insure that our pre-existing investment in the pipeline system was not endangered by such expansion. Of course, all questions of access or expansion will come before the FERC for hearing and will be subject to Department of Justice review. We support the desirability of such Department of Justice review, and we are confident that this direct antitrust oversight will insure that the specific language in Section 13 of the Alaska Natural Gas Transportation Act and the policy behind such language will be strictly enforced.

While we firmly believe that producer equity ownership and debt responsibility in the pipeline system in no way violates the antitrust laws, to alleviate the apparent concern of some on this point, we suggested that the waiver language be accompanied with a provision stating that the waiver does not imply or effect an amendment to, or exemption from, any provision of the antitrust laws. Such a provision was included as Section 14 of the Alaska Natural Gas Transportation Act, and it would be appropriate to repeat the language in the waiver. We believe that it is inappropriate to create any antitrust standard applicable to producers only other than the standard set forth in Section 14, which seems to clearly reflect congressional intent to afford equal protection of law to all participants. Further, as noted in Alaska Northwest's June 17, 1981 waiver submittal to the President, producer ownership will, both initially and throughout the life of the project, be subject to FERC review. Thus, assurance will exist that producers cannot inhibit reasonable access or expansion.

Also included in the President's waiver proposals, is a recommendation that the conditioning plant required to prepare Alaska gas for shipment in the pipeline be included as an integral part of the Alaska segment of the ANGTS. The terms "gas processing" and "gas conditioning" have, during the history of this project, been used interchangeably as if synonymous. This is improper usage of these terms. Gas conditioning is properly defined as the act of rendering natural gas compatible with the design and quality specifications of a particular pipeline system. Gas processing refers to the act of removing liquid hydrocarbons for sale as natural gas liquids. It is important to keep this distinction in mind.

The gas conditioning plant to be constructed at Prudhoe Bay has been designed solely to meet the pipeline specifications selected by the sponsors. These specifications will require: (1) compressing the gas to unusually high pipeline inlet pressure; (2) establishing its hydrocarbon dew points at unusually stringent levels; (3) chilling the gas to below freezing temperatures; and (4) reducing the carbon dioxide content of the gas to a level significantly lower than the level ordinarily accepted for pipeline transmission. Such unique pressure and quality requirements will be imposed to provide initial pipeline compression, to facilitate the transportation of the gas, to prevent melting the permafrost and increase pipeline throughput capacity by chilling and to reduce transmission costs by eliminating carbon dioxide. These conditioning costs are therefore all properly a part of the cost of transporting the gas. The extraordinary specifications established by the pipeline sponsors for gas entering the ANGTS were designed to minimize the investment and operating costs of the transportation system. Further, the natural gas transmission companies which have already made public their arrangements for the purchase of Prudhoe Bay gas have contracted to take title to the gas including all entrained liquids at the inlet side of the gas conditioning plant. This reinforces the concept of the conditioning plant appropriately being considered a part of the overall transportation system.

The correctness of this concept has been demonstrated recently by Commission orders issued in March and June of 1981 in a proceeding involving Pacific Offshore Pipeline Company (POPCO), FERC Docket CP74-35. The Commission there granted a certificate of public convenience and necessity to POPCO to construct an offshore pipeline and onshore gas conditioning facilities. Under the Commission approved plan, POPCO, a wholly owned subsidiary of Pacific Lighting Corporation, would purchase gas from the producer at the offshore production facilities, transport the gas onshore where it would be conditioned (or

treated) to pipeline specifications and then resold to Pacific Lighting. The main conditioning plant components included (1) removal of sulfur, (2) extraction of carbon dioxide and (3) removal of liquids necessary to achieve hydrocarbon dew point control. Thus, the conditioning plant certificated in POPCO is similar in essential purpose to the Prudhoe Bay conditioning plant. In certificating the conditioning facility, the Commission recognized the basic distinction between gas treating or conditioning and gas processing.

The POPCO proceeding demonstrates that inclusion of the Prudhoe Bay plant in the ANGTS is compatible with current Commission practice. Further, numerous certificated pipeline projects heretofore constructed in the lower 48 states have included conditioning facilities and the cost of service of such facilities have been included in approved tariffs.

The producer/sponsor May 21, 1981 agreement on financing concepts recognized financing realities that had been increasingly apparent as design and cost estimate work proceeded, discussions between sponsors developed, and preliminary opinions from the financial community were received. As the investment banking advisors stated in their analysis of the project, "One financing absolute is that, in terms of financial risk assessment, the natural gas transportation related functions of the gas conditioning plant constitute an indispensable part of the ANGTS. It performs functions which should be part of the System. The gas conditioning plant function that is dedicated to readying gas for transmission is creditworthy only to

the extent that the credit support for the ANGTS affords it security. By the same token, the other components of the System cannot obtain private financing unless the gas conditioning plant can be financed and constructed, and the debt and equity investment therein protected through the tariff mechanism underlying ANGTS. For financing purposes, this link in the chain forged by the ANGTS requires the same quality support afforded other components." In summarizing their position, the advisors observed, "Private financing without some such sharing would not be possible, for no lender could assess the risks of the project absent an evaluation of the gas conditioning plant risk, and could not provide funds to the truncated project without the same assurances being provided to the plant that the pipeline segments of the project is accorded. The financial community will not accept a situation where one integral part of the project is subject to regulatory treatment creating credit support materially weaker than another integral part."

The President's waiver proposals contain other recommendations that are deemed necessary by potential lenders and the sponsors if the project is to go forward. As a participant in the other large pipeline project in Alaska, the TAPS oil pipeline, we can attest to the difficulties which are to be encountered and the additional costs to be incurred if the regulatory review process is permitted to continue without limits. To the extent that Alaskan Northwest is required to participate in unnecessary evidentiary hearings prior to the commencement of each segment of the pipeline system, it could significantly prolong the time for completion of the project and add billions of dollars in cost.

This project has been reviewed as extensively as any similar project ever undertaken in the United States. The sponsors have stated that further regulatory hearings should be kept to a minimum and that the proceedings that are required should be handled expeditiously. We concur with this recommendation and support the President's proposed waivers relating to further hearings.

Potential lenders have informed the ANGTS sponsors that private financing of the project depends upon many factors, not the least of which is regulatory certainty. As we have learned from our TAPS experience, the need to clarify all regulatory standards prior to commencement of a project cannot be overemphasized, and the failure to establish the binding guidelines for determining the tariff can have unforeseen and detrimental consequences. Though the TAPS owners were convinced in 1963 that Interstate Commerce Commission regulations relating to oil pipeline tariffs were well-established and predictable, our company is now engaged in a protracted proceeding before the FERC to determine retroactively to the commencement of operations in 1977 the proper tariff to be charged for the pipeline shipment of Alaska oil. This proceeding has required that we commit thousands of hours of management time to defend a regulatory approach that we believed to be "certain". The ANGTS project will require a capital commitment between five and six times the amount expended on TAPS, and we share the concern of the lenders that a future regulatory agency, when confronted with the actual tariff, may feel compelled to revisit the decision of a prior commission and reduce the amount to be paid or modify the shipper tracking mechanism in a manner that deprives owners and shippers of the recoupment that they require to justify their respective investments and obligations. The proposal to waive Sections 4, 5, 7 and 16 of the Natural Gas Act is designed to provide potential lenders and the sponsors the assurance that once commitments have been

made to this project there will be no arbitrary regulatory action which will jeopardize the recovery of cost of service or tariff. If Congress does not provide this degree of certainty, it could lead to the refusal of large segments of the financial community to participate in this financing because of their concern that the obligors on the documents of indebtedness might be unable to fulfill their obligations to the lenders. The TAPS owners were able to finance their project because of the willingness of their parent corporations to guarantee the debts of their respective affiliates involved in the project. No such assurance will exist in this undertaking, and the lenders will expect assurance of regulatory certainty before proceeding with the development of the financial plan.

Like other possible participants in this project, Atlantic Richfield requires assurance that Alaskan Northwest Natural Gas Transportation Company will be considered a "natural gas company" under the Natural Gas Act at the time that it or its affiliated company as a co-owner in Alaskan Northwest participates in the acceptance of the certificate of public convenience and necessity authorizing the owners of the project to proceed with construction and operation of the system. Thus, we concur with the recommendation of the President that Section 1(b) and 2(b) of the Natural Gas Act be waived to the extent necessary to classify Alaskan Northwest and any shipper of natural gas through the Alaska segment of the approved system as natural gas companies.

Perhaps the most controversial feature of the President's waiver proposals relates to the waiver of Section V Condition IV-3 of the President's Decision. This waiver would authorize the Federal Energy Regulatory Commission to permit billing to commence and collections to be made prior to actual delivery of Alaska gas if the Canadian, Alaskan pipeline or conditioning plant segment of the system

were completed and capable of operation and after a date established for payment by the FERC. We have been informed that some form of precommencement billing is necessary to fulfill a commitment of the United States to the government of Canada to permit investors in the Canadian segment to recover their investments if the entire project is not timely completed. Similar treatment is accorded the Alaska segment and the conditioning plant though the recovery is limited to debt service. Authorizing the Commission to permit collection of tariffs as to segments completed prior to the actual flow of Alaska gas should facilitate the financing of the project. Certainly, it will go a long way toward providing the assurances required by Canada prior to their issuing the necessary permits for the construction of the Canadian segment. The billing commencement waiver appropriately lessens some of the risks after physical completion. However, even if the full waiver package is approved, satisfactory financial commitments among lenders and equity participants must be negotiated. Until they are, we must remain uncertain as to whether or not the project can be privately financed.

Our company has specified the maximum commitment that it can make to the project. We are not trying to avoid risk per se, only risk beyond our financial capability; indeed, we find considerable risk in the thought of investing a finite sum of several billion dollars in this very costly system to send gas to a difficult-to-define future market in an economic outlook ill-defined as to inflation and cost of capital. Rather our concern is to reasonably limit our stockholders' risk capital to viable outer limits. Within those limits, we are concerned about the risk of overruns from unexpectedly high interest costs or inflation, about the risk of adverse political or economic events and about the risk of insufficient financial commitment from credit-worthy parties to assure that the expected project cost and possible overruns will be fully funded. We are equally concerned that wellhead

or tariff revenue might be reduced to facilitate financing. We are trying to lessen our concerns by (1) elaborate, early project engineering and costing, and (2) adequate contingent financing up front and/or some form of completion insurance.

If additional financial support for the project is required, the sponsors must look to other sources. Absent further participation, such as from other pipeline companies, State of Alaska, industrial users or other producers, the only other source may be the government.

We strongly believe that the project is in the national interest and that its construction will not only bring Prudhoe gas to the lower 48 states but it will also ensure that North Alaska is fully explored for oil and gas reserves. Absent an Alaska natural gas transportation system, many producers will be discouraged and exploration which would be in the national interest will not occur or will be deferred for decades.

In summary, while we cannot state that the Waiver package will be sufficient to satisfy the potential lenders' needs and ensure financeability of the project, it would appear that appropriate legislative action to clear away legal barriers is necessary to permit solicitation of project participation and to set in place some of the key economic and regulatory terms necessary for all to decide if the project is economically feasible. We consider construction of the ANGTS to be in the national interest and are hopeful of its success.

Senator MURKOWSKI. Thank you, Mr. Leake.

You indicated, I think, a reference to a difficult and undefined market. Is that generally correct?

Mr. LEAKE. It may well be, Senator.

Senator MURKOWSKI. Was that the reference or the inference?

Mr. LEAKE. Yes, it was.

Senator MURKOWSKI. And yet on the other side of the table, without exception, of the gentlemen representing the transmission companies that are selling the gas to the consumer, they have been rather optimistic in the likelihood of their being able to market this gas. And I am wondering what this difference is, as you see it. You heard the testimony that I did about the very positive nature of marketing this gas, the necessity of having it because of the necessity of building up reserves.

Each witness, I think, indicated that it could be marketed within the price structure that it would have to bear, and I am wondering if you would comment on that?

Mr. LEAKE. Senator, I didn't hear any of them say that it would be easy to define what the future market was going to be like, and that was the thrust of our remarks.

Senator MURKOWSKI. No; but they did indicate they could sell it, assuming it came on in the timeframe date certain, 1986, 1987, at the contemplated price structure. At least that is the impression that the Chair got.

Mr. LEAKE. I heard the same testimony you did, and I stand by my feeling that the market may well be difficult to define at this point, given the transition that the gas industry, the energy industry, the economy, and the world energy supply is currently facing.

Senator MURKOWSKI. Your company has had considerable experience operating in Alaska, as one of the major operating companies on the North Slope and your activity in the oil pipeline is certainly an enviable one from your company's operating capability and certainly a commitment to develop resources of the Arctic in harmony with the environment and the ecology.

In your testimony you indicate extensive concern over risks and, of course, any venture involves a degree of risk and it is the obligation of the officials associated with any company to eliminate that risk for the benefit of the shareholders, which we are all very much aware of.

Could you outline for the committee the areas of particular identification as high risk associated with this project?

We have already seen the American ingenuity and engineering capabilities build a hot line through permafrost and develop the environmental information to safeguard the ecology and the environment, all of which appear to be somewhat in place inasmuch as there is a high degree of infrastructure established already, in view of the fact that for the most part the line parallels the oil line at least in the more difficult and more expansive area of geography associated. And then when it gets down to the other areas of Canada and the United States, why, I gather that the technical aspects of the pipeline building are somewhat the same, there is not a great deal of uniqueness.

So, in view of your testimony indicating these areas of risks, and I am not talking about the normal financial risk that is associated

with any venture, but what is particularly peculiar about this project that you might care to comment on?

Mr. LEAKE. Senator, I understand your question, and I think our understanding of the risks associated with building this pipeline are probably the same.

I was not referring to the risk of frustration in building this pipeline at all. In part, our emphasis of the use of risk were anticipatory remarks that perhaps we would be characterized as risk avoiders by coming here in support of a waiver package.

I did want to point out to you and your colleagues that there were residual risks in this project, even though the risk of technological success in building a pipeline is not one that we are concerned about nor one that I meant to imply to you was substantial.

We are confident in the design. We are confident in these transmission companies' ability to build the pipeline and within the confines of the final cost estimate.

We are concerned, as we always are and should be, about our inability to predict the future economic conditions in a period of time that we are now in where it looks as if both economic and political policy in this country and, in part, in the energy supplying world are in a period of great transition.

So, there is some uncertainty and humility, if you will, in our ability to predict what the precise economic and political conditions will be which control, in part, our potential rewards to us for being a participant in this project in the late 1980's and 1990's and early 10 or 20 years of the next century.

There is some risk left to us as investors that our dreams may not come true, and I wanted to point that out to you folks, that the waiver package does not guarantee either to us or to the pipeline companies that this is a risk-free situation, and that was the thrust of our remarks.

Senator MURKOWSKI. I certainly agree. I think the waiver package is nothing more than the commitments from the financial community to date, at least, on what they have to have before they will move on to the next step.

Let me clarify just a moment, because I think for the sake of the record that it is important that we pursue a bit.

You are satisfied that you and the producers, along with the transmission companies, have the technical capability to build this pipeline. Is that the general statement?

Mr. LEAKE. Without a doubt.

Senator MURKOWSKI. All right. That being the case, then this committee is continually concerned with the prepayment waiver, prebilling, which would put the consumers of this country in a position of paying in advance, a time delivery of gas, and as a consequence the reference would be that if one of the three segments or two of the three segments were not completed, those segments that were completed would be able to prebill.

Now, the risk there from the standpoint of the chairman's analysis is a technical one. It is not an economic evaluation of how your venture ultimately pays out with world conditions and unknown alternate energy sources and so forth, and it is somewhat able to be defined, is it not, that the risk that we are bringing before potentially the consumers of this country is more directly associat-

ed with your capability to build this pipeline as designed and as proposed within the regulatory requirements, within a timeframe certain, once that date is established?

What I am leading up to is, how severe is that particular risk? What is, in your opinion, the risk to the consumer in this country that he will likely expose himself to prebilling?

Mr. LEAKE. Senator, within those elements within the control of the participants in the project, I think the risks to the consumer are from slim to none, quantified in a percent or so or less.

I think the risk to the consumer of completion frustration is a political risk that we all share.

Senator MURKOWSKI. In your opinion, it is negligible?

Mr. LEAKE. From a technical standpoint or from the commitment and the ability of the participants, I think the risk is zero.

Senator MURKOWSKI. Testimony has been made before this committee that, in effect, this is a subsidy by the consumer, this project, or words to that effect.

Mr. LEAKE. In our analysis of the impact of the waiver package on the economics to Atlantic Richfield Co., we assign zero worth of that commitment, zero benefit to us. You have heard from others an exact and correct detail of how the waiver package would work.

Senator MURKOWSKI. Thank you, Mr. Leake.

Senator Melcher.

Senator MELCHER. Mr. Leake, your testimony has answered some of my questions. But specifically, you recommend the debt-equity ratio of 75 to 25, is that correct?

Mr. LEAKE. We have agreed that that was a workable combination and, yes, sir, we would recommend it.

Senator MELCHER. What then is this part about the investment limits for all participating companies would be defined at the outset? You have defined that for the producer companies at \$2.25 billion.

Mr. LEAKE. Senator, if I could correct that a little bit, that statement is meant to imply that once all the participants, including the lenders, have agreed to the funded cost, and that cost, which would be compiled of debt and equity but would be the total anticipated cost of the Alaskan segment of this project, that all those commitments, every single dollar, are identified with a creditworthy sponsor, they are firmly and irrevocably committed to the satisfaction of all the parties who are then party to the agreement.

So, for example, if the Alaskan segment—the numbers used in our conceptual financing plan—added up to \$30 billion, some \$27 billion of estimated cost in current dollars and a \$3 billion completion assurance pool, that statement means to us that every one of those \$30 billion are spoken for by a creditworthy party, committed to provide them on time irrevocably up until the 30 billionth one was used.

Senator MELCHER. Are the conditions which are now part of this proposal dependent upon a certain fixed dollar amount as your obligation, as Arco's obligation?

Mr. LEAKE. Atlantic Richfield Co.'s obligation is limited to the lesser of 30 percent of the project cost or our proportionate share of a maximum of up to \$9 billion.

So, in our view, our maximum commitment to this project is approximately \$3½ billion.

Senator MELCHER. Is that your position, too, Mr. Mosier?

Mr. MOSIER. Our position, since we own a slightly lower percentage of the gas, is consistent with that concept and at a lower number of \$2¼ billion.

Senator MELCHER. In other words, if the financing isn't there or if it is delayed too long and construction costs are greater, what you are saying, Mr. Leake, is that Arco will take another look at it and may drop out?

Mr. LEAKE. What I am saying is that we will take another look at it.

Senator MELCHER. And may drop out?

Mr. LEAKE. Or may do whatever is appropriate at that time.

Senator MELCHER. Your commitment for that amount is solid, is it not?

Mr. LEAKE. Given that all the other conditions which I listed, perhaps at some length, are satisfied.

Senator MELCHER. Is that yours, too, Mr. Mosier?

Mr. MOSIER. I haven't had an opportunity to give my testimony yet, but I think you will find in my written testimony that at any time, if we determine—and I don't think this determination is necessarily unilateral, but it is determined that there is some question on the economic viability of this project, we are not likely to commit billions of dollars to it, and we have so stated.

Senator MELCHER. But you do use a dollar figure?

Mr. MOSIER. Yes, sir.

Senator MELCHER. Just like Arco does?

Mr. MOSIER. That is correct, Senator.

Senator MELCHER. It was only section 13, then, of the original act, the 1976 act, that caused any problem with or brought the Justice Department in on their review of antitrust in relationship to the producing companies owning a portion of the pipeline. Is that right, Mr. Leake? Do I read your testimony correctly?

Mr. LEAKE. Yes, sir, that is correct. The Justice Department theorized, we think, incorrectly.

Senator MELCHER. I agree with you on that. But this is what I want to be enlightened on.

Is it customary for Arco or Sohio or any producing company to own a portion of a gas transmission line?

Mr. LEAKE. If we go forward in this project, this would be our first participation in an interstate gas pipeline, and I can't speak for Mr. Reso or Mr. Mosier, or for the rest of the industry, for that matter.

Mr. MOSIER. We are not now in the gas transmission business.

Mr. RESO. Nor is Exxon. We are in the gas transmission business, but we are not into the interstate gas transmission business.

Senator MELCHER. But within a State?

Mr. RESO. We do own some gas pipelines that are intrastate.

Senator MELCHER. All right. I think I agree with you on that point, Mr. Leake.

I was under the impression that after the oil had been produced out of Prudhoe for a period of years, the cost of not having the gas transported would be detrimental to the producing companies—I

thought it was around 5 or 6 years, or 7 or 8 years. It has been producing now how long, 5 years?

Mr. LEAKE. Yes.

Senator MELCHER. Is the gas being reinjected?

Mr. LEAKE. The gas is being reinjected. Approximately 100 to 150 million cubic feet a day are being used as fuel in the field and in powering the first four pump stations of the Trans-Alaska Pipeline System. The total current gas production is nearly 2 billion cubic feet a day. The balance of the gas that is not being used is being reinjected.

Senator MELCHER. Less than 10 percent is being used as fuel?

Mr. LEAKE. Yes, sir.

Senator MELCHER. Over 90 percent is being reinjected?

Mr. LEAKE. Yes.

Senator MELCHER. Now, tell me about this. How long do you do that without it being a heavy cost?

Mr. LEAKE. Senator, there has been a misunderstanding widespread in the country, perhaps, that the field could not be long operated and continue to inject gas, and physically that is not correct.

You are right at the heart of a problem though, that you don't reinject the gas without spending some money to do it. Now, that cost is not tremendous at this time, but over time it will increase. But the field can physically be operated in a safe and efficient manner and continue to inject gas until the economic limit is reached.

Senator MELCHER. That is my question.

Mr. LEAKE. It can be.

Senator MELCHER. I understand it can be. My question is, what is the economic consideration?

Mr. LEAKE. In very rough terms, it currently costs some \$50 million a year to reinject the gas. That number will build over time. I don't have a projection in hand for how that would be, but it would affect adversely the economic limit of the oilfield at some time.

If gas is never sold, the economic limit of the oilfield would likely be reached sooner than it otherwise would. But that is 20 or 30 years into the future.

Senator MELCHER. We are talking about production at about 1.5 million barrels a day from Prudhoe, and you are reinjecting 90 percent of the gas. I guess you can probably feel that as long as it is producing at 1.5 million barrels a day that you are going to be reinjecting about the same amount of gas, isn't that correct?

Mr. LEAKE. Over time, the gas production rate will increase and the oil production rate will decrease.

Senator MELCHER. All right. What point would you be at in 1990? I guess we are discussing here a possible completion by 1987. Let's say that it wasn't completed by 1987. What point would you be at in 1990 in that field? Would you still be producing 1.5 million barrels a day?

Mr. LEAKE. No, we wouldn't. I don't have that number in mind, either, and I am sorry. We could supply that to you for the written record. But we will probably be able to stay in Prudhoe at 1.5 million barrels a day until about half the reserves are produced.

And we have already gotten 2 billion barrels. Half the reserves are 4 or 5 billion barrels. So, we would go another 5 years at this rate and then start to decline, and probably tend to decline at 10 percent a year.

We may be down still at 1.2 million or so at 1990, and the gas rate would be higher by maybe up to 2.5 billion by then.

Senator MELCHER. At that time, if your \$50 million is about right for the cost of reinjection per year, at that time you might have a cost of reinjection of the gas at over \$100 million?

Mr. LEAKE. Clearly.

Senator MELCHER. Clearly that much. Then I get to this point, Arco, Sohio, Exxon, and BP, the three of you and throw BP in there with Mr. Mosier, own practically all of the oil up there in the field, and you must own practically all the gas. Is that correct?

Mr. LEAKE. Yes.

Senator MELCHER. What happens, then, if there isn't any transportation system for that gas? You know, you have got your conditions, you are going to invest so much, up to your capability, your prudent capability. It is a limiting factor on the field, is it not, if there is not a transportation system built and completed around 1987 or 1988? Isn't that true?

Mr. MOSIER. Senator, that is not true.

Senator MELCHER. Oh, that is not true?

Mr. MOSIER. I am not going to get into the details. Mr. Reso is a reservoir engineer and a petroleum engineer. I will only comment that our people have informed me, who are expert in this area, that the increased costs associated with reinjecting the gas offset costs which would be necessary for other facilities to support an artificial gas lift to continue producing the oil, and that over these periods of time there is no significant negligible—the difference in costs of reinjecting the gas versus to maintain a level of production is basically not materially different, whether or not the gas is produced and transported to market.

I don't know whether that goes to the last barrel of oil. I doubt it. But certainly well beyond 1990.

Senator MELCHER. Mr. Reso, I take it you agree with that?

Mr. RESO. I do agree with that. Basically what we are saying is that we can manage the reservoir in a way to maximize economic oil production regardless of the timing of a gas outlet.

Senator MELCHER. All right. Then what it really boils down to, if this project doesn't come in under what your companies feel is a prudent amount of investment for your individual companies, you are going to leave part of the property you own, both oil and gas, on the North Slope.

Mr. RESO. I beg your pardon? I didn't understand what you said.

Senator MELCHER. Well, you have set the limitations on what your investment is going to be. And if this package, this proposal isn't financed and all these conditions that you have set met, which you have determined to be prudent for your individual companies, there will come a point in the 1990's when you are going to leave some of your property sitting in the ground on the North Slope. That is, part of the oil and all the natural gas, because you have no other proposals, do you?

Mr. RESO. We will not be leaving any of the oil, and we will be looking for other ways to put together a transportation system.

Senator MELCHER. Isn't there some oil that will be left there because it isn't economically prudent to remove it because you are reinjecting too much gas?

Mr. RESO. I suspect that what Mr. Mosier said is correct, we cannot calculate that down to the last barrel. But all of our studies indicate that regardless of the timing of the gas outlet, that we can manage the oil reservoir in a way to maximize the economic production of oil. But there is an economic limit.

Senator MELCHER. There does come a point, does there not, when the reinjection of the gas costs so much that you don't remove the oil?

Mr. RESO. There will come a point when, under a system where we are not selling gas, the reinjection of gas will be a big factor in the economic limit calculation. However, there also will come a time with the sale of gas where other factors will be the most important factors in the economic limit calculation, and I suspect within our ability to predict those things right now they are about the same things.

Senator MELCHER. Let me rephrase it, because I think we are fuzzing it now.

If the Prudhoe Bay was down here in the continental United States, instead of at North Slope, you would have a gas pipeline built already to take that gas off the field and you wouldn't be reinjecting it and spending the \$50 million a year that Mr. Leake talked about for the cost of reinjection.

Mr. RESO. Correct.

Senator MELCHER. But the field is not here, and so the question now is, should there be a gas pipeline and what are the limitations on what the producing companies are willing to invest in it. You have set that term and I am not going to argue with the terms you have set. You have set them up as prudent for your individual companies.

But the point is that since it costs more to operate Prudhoe than it would have in Louisiana or Texas or Montana, there will come a point where the cost of the reinjection of the gas is at an amount to where you don't really believe it is profitable, economically feasible or prudent to remove any more oil. And since there isn't a gas transportation system there, that point is going to come quicker than if the field were down here in the lower 48 where you would have a gas transportation system built simultaneously with your production of the oil. Isn't that true?

Mr. RESO. I think you are right. If you take Prudhoe Bay field and move it down to Louisiana or Texas, or anywhere in the lower 48, that it would be a more profitable operation and you would reach the economic limit on anything later as opposed to sooner.

But we don't see where that factor would have any significant or any impact on the rate of oil production until very, very far into the future.

Senator MELCHER. In the 1990's?

Mr. RESO. No. Past the 1990's. And we think that by that time—I am convinced personally, by that time we will have a gas outlet. What we are talking about here is not whether or not there is

going to be a gas outlet from Prudhoe Bay. Eventually there will be a gas outlet from the North Slope of Alaska, because it is not only Prudhoe Bay, but there is other exploration going on up there, and there are other reserves being found, and there will be more reserves found. There will be an outlet for gas.

The question is whether this is the way to do it, not whether or not there is going to be one.

Senator MELCHER. Yes, I appreciate that very much.

Mr. RESO. And the question of whether or not this is the way to do it is a question of whether to do it now, as opposed to later, which I think is significant.

Senator MELCHER. I appreciate your adding that, because I think that would be a point that might escape me in my thinking right now, and I appreciate that.

But can I ask you this, if you are not satisfied with this proposal and it doesn't fly, what are you, as producing companies, thinking of, other than a gas pipeline? Because if this gas pipeline isn't going to fly now, it isn't going to fly in the next 5, 6, 7, or 8 years from now. Do you have other plans to do something else with the gas?

Mr. RESO. In the first place, we believe this is a good thing to do, this pipeline should be built, to make sure that there is no misunderstanding about that.

Senator MELCHER. I understand that, but it is only up to a certain point.

Mr. RESO. Just as every investor sitting at this table has a certain level of investment they are willing to commit, just as we do each individual. We would like to sometimes invest in things that we just can't invest in, and we sometimes are tempted to invest in things that we don't because of prudence and judgment.

If this pipeline does not get built as currently planned, with the current makeup, and everybody involved here, everyone you are looking at will be back thinking of other ways to put together another pipeline.

Senator MELCHER. Oh, a pipeline.

Mr. RESO. You see, the job is to bring that gas down to the Lower 48 States, and technically, physically, the most effective and efficient way to do that, without any questions is by pipelining.

Senator MELCHER. But it would be another pipeline?

Mr. RESO. It would be this pipeline, in effect, arranged in a different way.

Senator MELCHER. All right. You are not thinking of liquefied natural gas or doing something else with it?

Mr. RESO. No.

Senator MELCHER. Then, to specifically answer my other point, the producing companies in no way are thinking of leaving the gas up there without some form of transportation down here? You are thinking of it currently in terms of the next decade or so?

Mr. RESO. We think that there will be a gas outlet. The forces that are driving us toward that being a good thing to do, both for we as investors and producers and for the country, will get stronger and stronger as time goes by.

Senator MELCHER. Thank you very much, and Mr. Leake and Mr. Mosier, too.

Senator MURKOWSKI. I am going to refer back to just a couple more questions of Mr. Leake.

Again, to the statement in your testimony of difficult to define future markets and an economic outlook ill defined as to inflation and cost of capital, wasn't there a parallel existing at the time that your company participated in the oil pipeline?

Mr. LEAKE. Yes, there was a parallel, Senator.

Senator MURKOWSKI. And is it because of your experience in that that you have become more concerned, if you will, to spell out the extremes of exposure that are involved in these type of projects?

Mr. LEAKE. It would be naive to say no, but—

Senator MURKOWSKI. Or are there other specific reasons?

Mr. LEAKE. The more specific reasons are the times in which we find ourselves right now with the prime interest rate at 18 or 19 percent, and the inflation rate, at the moment, falling off, and the inability of—the disagreement amongst expert economists in the country and in our company as to what all this means. We are very uncertain about what inflation and interest will be by year between now and—

Senator MURKOWSKI. But at the time that you went into the oil pipeline, the oil was not deregulated, was it?

Mr. LEAKE. No, of course not.

Senator MURKOWSKI. And you didn't know necessarily or have any assurance it was, so you ventured into a risk, and as a consequence, with the windfall profits not applying to certainly the high percentage of Alaskan oil, I am sure it has proven to be a worthwhile investment.

Mr. LEAKE. Senator, to correct one thing, because it is near and dear to our bank account, windfall profits tax does apply to all the oil being produced at Prudhoe Bay right now.

Senator MURKOWSKI. Is that correct?

Mr. LEAKE. Every last barrel.

Senator MURKOWSKI. Why am I getting the impression that that is not the case?

Mr. LEAKE. Other oil north of the Arctic Circle, other than Prudhoe Bay.

Senator MURKOWSKI. Other than Prudhoe Bay?

Mr. LEAKE. Yes.

Senator MURKOWSKI. The State of Alaska, then, pays for its oil, no windfall profits, is that right? Maybe that is what I am thinking of.

Mr. LEAKE. Yes. The royalty oil.

Senator MURKOWSKI. The royalty oil is exempt from the windfall profits. I stand corrected.

You indicated in your testimony, absent further participation such as from other pipeline companies, the State of Alaska industrial users or other producers, the only other source may be the Government. And I think Senator Melcher touched on that. When you say "source may be the Government", could you be specific?

Mr. LEAKE. Yes; say, for example, after the waiver is passed and the financing plan is put together that there are not enough creditworthy parties backing all the then agreed upon costs.

Senator MURKOWSKI. Which specifically means what? Where does the Government come in? As a partner or a guarantor?

Mr. LEAKE. There would be two or three alternatives to consider at that time. One, the participants and the lenders could agree we can't do it, and stop. Two, they could say, well, we will come back and see the Senate Energy Committee and see if they have any proposed solutions.

An alternative—we are not proposing this, but just listing the possibilities—the project is in the Nation's interest and the consumer's interest and our interest. We are not the sole beneficiary. If we can't raise enough capital to put together the most expensive project that this Nation has ever faced, then perhaps at least the opportunity should be given to the other beneficiaries to see if they want to contribute.

Senator MURKOWSKI. Obviously, Mr. Leake, I concur we are presuming some things here that are dictated by the financial community anyway. So, I think the question is somewhat academic.

Mr. LEAKE. I would agree that I just speculated with you.

Senator MURKOWSKI. I think we have worked you over quite well, and perhaps we had best move on to the next witness, Mr. Sidney Reso, senior vice president of Exxon, U.S.A.

Mr. Reso.

**STATEMENT OF SIDNEY RESO, SENIOR VICE PRESIDENT,
EXXON COMPANY, U.S.A.**

Mr. RESO. Thank you, Senator.

I, as others, have submitted a written statement and I ask that that be considered my basic testimony.

Senator MURKOWSKI. It will become a part of the record, so ordered.

Mr. RESO. I will just summarize the main points of that statement right now.

Senator MURKOWSKI. Please proceed.

Mr. RESO. We at Exxon do believe that the natural gas pipeline should be built from Alaska now. We think the Alaska Natural Gas Transportation System is in the Nation's interest.

It will transport gas from the Prudhoe Bay field, which is the single largest gas reserve in the United States. It will also provide incentive and encourage exploration for natural gas in Alaska as well, because the availability of a gas outlet will, of course, cause people to be less concerned about marketability of that gas and therefore more inclined to be bullish in their exploration activities.

Two years ago the Secretary of Energy urged the principal Prudhoe Bay producers to propose terms under which they could provide financial support for the Alaska segment of the transportation system.

Now, at first Exxon was reluctant to become involved in the Alaska gas pipeline project for several reasons. We were not then engaged, and we are not now engaged in the interstate gas transmission business, and we are really not inclined to commit funds to a new venture in that highly regulated business.

We are also barred by law from owning equity in the project, and we are still barred by law, and one of the parts of this waiver package is removal of that impediment.

Providing indirect financial support, such as loan guarantees, would have been far afield from our normal lines of endeavor, and we believe firmly not in our shareholders' interest.

However, at the urging of the Secretary and after negotiations, Exxon joined with Arco, Sohio, and the pipeline sponsors in a cooperative agreement to participate in the design and engineering phase of the project. The object was to achieve a reliable cost estimate for the Alaska gas pipeline and conditioning plant.

By the end of this year the group will have spent about \$400 million on design and engineering phase alone, and Exxon will have spent about \$70 million of this effort. And as a result, all the participants, as Mr. Leake said, are now confident that we have a good cost estimate.

Under the terms and conditions of the financial plan currently being considered, Exxon has agreed to be responsible for its share of 30 percent of the project equity and debt allocated to the Prudhoe Bay producers. Exxon could be responsible for about 11 percent of \$30 billion maximum for the Alaska segment, which includes the pipeline, conditioning plant, and the compression and refrigeration substations in Alaska. This could require Exxon being responsible for up to \$3.4 billion.

Now, we don't know whether the project can be financed, even with the producer participation. We leave that assessment to the financial community.

While I do not know what the final answer will be, I can tell you that Exxon is prepared to support its share of the project on the basis outlined in the statement that I have submitted to you.

We believe that the Alaska gas transportation system should be constructed, and we are prepared under the appropriate conditions to invest in that system.

We have already invested out time, effort, and money in Alaska over a period of two decades and are confident that Alaska will be a source of additional natural gas reserves for the Nation for many years to come.

Senator, I will just leave it at that and rely on your questions and my written statement.

[The prepared statement of Mr. Reso follows:]

STATEMENT OF S.J. RESO,
 SENIOR VICE PRESIDENT, EXXON COMPANY, U.S.A.,
 BEFORE THE COMMITTEE ON ENERGY AND NATURAL RESOURCES,
 UNITED STATES SENATE
 OCTOBER 23, 1981

On behalf of Exxon, I am here today to testify concerning the project to construct and operate a system for transporting Alaska natural gas to the 48 contiguous United States.

PROJECT IN NATIONAL INTEREST

A transportation system for Alaska gas is in the national interest, first of all, to permit utilization of the large known gas reserves at Prudhoe Bay. The project will also provide a basic system which can be used or expanded to transport other gas that may become available on the North Slope or the interior of Alaska. In this way, the Alaska gas transportation system should serve to encourage further exploration for natural gas in Alaska.

BACKGROUND FOLLOWING 1977 DECISION

On November 2, 1977, Congress approved a Presidential Decision designating the Alcan Project as the approved Alaska gas transportation system. That decision prohibited producers of Alaska gas from participating in the ownership of the transportation system. Two years ago, however, the Secretary of Energy invited the principal Prudhoe Bay producers to his office and at the meeting urged them to

propose terms, under which they could provide financial support for the Alaska segment of the transportation system.

Exxon was reluctant to become involved in the Alaska gas pipeline project for several reasons. Exxon was not engaged then and is not now engaged in the interstate gas transmission business and not inclined to commit funds to a new venture in that highly regulated business. We were barred by law from owning equity in the project. Providing indirect financial support, such as loan guarantees, would have been far afield from our normal lines of endeavor and not in our shareholders' interest.

At the urging of the Secretary and after negotiations involving the Department of Energy, the Justice Department, and the Alaskan Northwest group of pipelines sponsoring the project, we joined with Arco, Sohio, and the pipeline sponsors in an agreement (the Cooperative Agreement) to participate in the design and engineering phase of the project to achieve a reliable cost estimate for the Alaska gas pipeline and conditioning plant. The Cooperative Agreement was signed in June, 1980, and since then the producers have contributed 50 percent of the money spent over the life of the project for design and engineering of the Alaska segment. By the end of this year, the producers and pipelines will have spent almost \$400 million on the design and engineering phase. Exxon alone will have spent more than \$70 million in this effort. As a result, all of the participants are more confident now that the cost estimate for the project is reliable.

FINANCINGProducer Support

Also in June of 1980, at the urging of the Secretary of Energy, the Prudhoe Bay producers agreed to work with the pipeline sponsors to develop the sponsors' financing plan. In January of this year, Arco, Exxon and Sohio advised the project sponsors that each of the producers was prepared to support a modification of the sponsors' financing plan for the purpose of approaching the financial community, which would be asked to commit funds. Under the modified plan, each producer would have provided its share of 30 percent of the equity in the project and be responsible for arranging for its share of 30 percent of project debt based upon a project cost not exceeding \$30 billion. The financing plan as modified covered all project facilities, including the conditioning plant, pipeline and compression and refrigeration stations in Alaska. The plan incorporated an essential concept, that each equity owner take responsibility for arranging for a share of project debt equal to its share of equity. The plan also included important conditions which are required for Exxon's participation in the project in any event; such conditions are: All funds for the project must be committed before start of construction; each participant's investment commitment must be limited and defined from the outset; the financing to be arranged by each participant must be accorded equal terms and conditions; there must be assurance that the Canadian segment will be financed and

completed without our involvement; all necessary government actions must be taken; and finally, the whole project must be economically viable.

Exxon's Support at Maximum

We have advised the Alaskan Northwest pipeline group that Exxon will not commit to support or arrange for more than its share of the 30 percent of project equity and debt allocated under the plan to Prudhoe Bay producers. That is Exxon could be responsible under the plan for about 11 percent of \$30 billion (maximum) for the Alaska segment. This could require our company being responsible for providing or arranging for up to \$3.4 billion pro-rata with funds brought to the project by the sponsors and the other producers. We believe that is a significant commitment to the project.

Financing Uncertain

We do not know whether the project can be financed even with producer participation. We leave the assessment of this issue to the financial community. They are in the process of evaluating the sponsors' plan and the ability of the participants to support their respective commitments. While I do not know what the final answer will be from the financial institutions regarding the private financing of the project, I can tell you that Exxon is prepared to support its share of the project on the basis I have outlined.

Waiver Proposal

You have before you, now, a proposal by the President for a waiver of law to facilitate implementation of the sponsors' financing plans. I will comment on the two parts of the waiver request which concern producer ownership participation and the conditioning plant.

PRODUCERS' EQUITY PARTICIPATION

The President's Decision in 1977 prohibited producers of Alaska natural gas from participating in the ownership of the ANGTS. As mentioned before, if the project can be privately financed, Exxon is willing to invest in the project on the basis I outlined earlier, provided that the funds we invest receive equal treatment with funds invested by others and provided we have a voice in project management commensurate with our investment. The impediment to our investing in the project on such a basis is the prohibition in the Decision against such investment; therefore, waiver of the prohibition is necessary.

CONDITIONING PLANT IN SYSTEM

The 1977 Decision did not include in the system description the plant which will be required at Prudhoe Bay to condition gas for transportation. The conditioning plant is required because of the design of the transportation system. To reduce pipeline construction costs, the pipeline will be buried underground and therefore the gas must be refrigerated

to prevent thawing of the permafrost. To allow transportation of refrigerated gas, certain liquefiable hydrocarbons must be removed from the gas. Prudhoe Bay gas contains about 12 percent carbon dioxide, an inert gas. The carbon dioxide content does not prevent the use or the transportation of the gas, as is evident from the use at Prudhoe Bay and along the oil pipeline of more than 100 million cubic feet of gas per day for the last four years; but it would be costly to transport so much carbon dioxide through the transportation system. Accordingly, the conditioning plant will remove carbon dioxide from the gas. The plant will refrigerate the gas, and to power the pipeline, the conditioning plant will compress the gas to about 1,260 pounds per square inch. All of these plant functions are necessary only because of the pipeline design. Also, there will be seven stations along the pipeline in Alaska to compress and refrigerate the gas. The conditioning plant and seven on-line substations will be an integral part of the transportation system. Construction of the plant as designed would be undertaken only in conjunction with construction of the rest of the pipeline system; the two segments are interdependent. The 1977 Decision of the approved transportation system excludes the conditioning plant. Waiver of that description is necessary to include the plant in the approved transportation system and in the final certificate for the system.

Conclusion

Exxon believes that the Alaska gas transportation system should be constructed and is prepared under the appropriate conditions to invest in that system. We have already invested our time, effort and money in Alaska over a period of two decades, and we are confident that Alaska will be a source of additional natural gas reserves for the nation over many years to come.

Senator MURKOWSKI. Thank you, Mr. Reso.

It has received some publicity that there is an effort on behalf of the Soviet Union to develop a gas project across Russia to serve northern Europe, and that is occurring now, or efforts are being made to generate the necessary capital sources in Europe, and also pursue the availability of the necessary pipe, which to my understanding would be of a similar diameter to the proposed pipeline from Alaska, and that Exxon is somewhat involved with Ruhr Gas in an indirect participation.

I would appreciate, for the benefit of the record, you advising us what Exxon's position is in that, and whether or not you feel that there is any reason to think that these two projects might be competitive from the standpoint of the availability of capital. Because it is my understanding that the ultimate cost of completion might be comparative, and that they would potentially be going to the same sources of supply for pipe and there might not be an adequate manufacturing capability for both projects within a reasonable timeframe.

Mr. RESO. First, I will speak to the question about Exxon's involvement in this project.

Exxon is a minority shareholder in several gas companies in continental Europe that are purchasers of gas or potential purchasers of gas under this project. We own less than 15 percent of Ruhr Gas, which is the major company in Germany that is organizing this effort.

We have about a 25-percent interest in Thyssengas in Germany, a 50-percent interest in a company that I can't pronounce, BEB we call it, and we have a 25-percent interest in Gasunie in the Netherlands.

This Russian gas flowing into western Europe is nothing new. Russian gas has been coming into western Europe for about the last 8 or 9 years. This is an expansion of that gas sale. It increases the gas by about 1½ billion cubic feet a day.

The companies that Exxon has a minority shareholding interest in are customers, and in this new deal that is all they are, customers. They will be buying some more gas at the border if the project

of expansion goes through, and the expansion is based on tying into another large gas reserve in Siberia.

So, we are not involved in the financing of the project. We are merely minority shareholders in companies that are purchasing the gas and delivering gas to customers within western Europe.

It is our understanding that most of the financial arrangements, essentially all of the financial arrangements, are a result of government-to-government negotiations, and very different from anything that we do in this country. I don't want to do things that way, as an aside.

The Russian Government and the other governments involved have negotiated the terms and conditions. There is a considerable amount of supplier credit involved in this deal; manufacturers, compressor manufacturers and so forth are providing credit for the material part of the pipeline.

I do not think that there is any financial assistance to the actual installation part of it. I think that is going to be done by the Russians themselves.

But what I am telling you now is my understanding from what I have heard. I have no special information on this.

Senator MURKOWSKI. Your contention is that they are not going the conventional free financial market?

Mr. RESO. There will be some access to private markets under the terms arranged through Government-to-Government negotiations. The people that I have spoken to that we have asked to look at this tell us that they do not think that there will be any meaningful competition for equipment and pipe that would be competitive with the Alaskan gas pipeline that is being proposed here today.

Senator MURKOWSKI. Do you understand that the industry has the capability of supplying that much pipe?

Mr. RESO. That the industry does have the capability. Now, it is a big project, and to the extent that there will be bidding taking place and that there will be access to financial supplies, I think you can't say that there will be no impact; but we think the impact will be minimal both on the financial side and on the material supply side.

Senator MURKOWSKI. So, basically this project is not in competition, in your opinion?

Mr. RESO. The two are not mutually exclusive by any means, and the impacts one on the other will be minor, in our view.

Senator MURKOWSKI. Are you familiar with a proposal that has been drafted by Electric Boat Co. for the movement of Prudhoe Bay gas to northern Europe as an alternative to the Russian proposal to build the pipeline across Siberia and northern Europe by liquefying the gas in a new type of submarine vessel and taking it under the shortest route, which is under the polar ice cap?

Mr. RESO. I have heard about it, but I am not familiar with it.

Senator MURKOWSKI. Do you know if it is seriously being considered as an alternative by your company?

Mr. RESO. I know that it is not being considered seriously as an alternative by my company.

Senator MURKOWSKI. Senator Melcher.

Senator MELCHER. I am going to have to leave in a moment. I apologize for that, Mr. Chairman.

I think the companies have pretty well stated their position. I have read through Mr. Mosier's testimony, too.

But I do have this question of all of you. I think the bankers are going to testify this afternoon and the bonding houses are going to testify that they think it is only feasible to raise about \$12 to \$18 billion. And you add the \$7.5 billion that you people are talking about, that is 25.5, taking the 18, the upper range. What happens then? It is going to cost \$30 billion, isn't it?

Are you all going to sit down together again?

Mr. RESO. What I understand is going to happen right now is that if this waiver package is passed, then all the parties concerned here, both the gas transmission companies and the producers and the financial institutions, will sit down with those ground rules being set and attempt to make whatever adjustments are required to finance the pipeline as it is.

Now, if it comes up short, if there is not enough—if this package, the environment that is developed by this package is such that the capital cannot be raised, then the pipeline can't be built as currently planned and other alternatives will have to be investigated.

Senator MELCHER. Well, I think I am somewhat relieved to hear that. I am also relieved that you seem to have all agreed that the pipeline is the best method, and you are not looking at some weird scheme such as the submarines.

Senator MURKOWSKI. That is Senator Bradley's submarines.

Senator MELCHER. Well, I would be very discouraged if that were floating around very seriously.

I want to commend all of you for being persistent enough to try to put this package together, because I firmly believe that it will be much cheaper for consumers in the long run, if you can finance it privately, than having Government involved very much in any financing scheme.

I would think that as much as pipelines do cost to build, it must cost a lot more if Government builds them, and that eventually has to be paid by the consumers. Consumers and taxpayers are being used interchangeably in this instance.

So, I am pleased that you are this persistent, to put together a workable package. None of the waivers, as I understand it, that are proposed seem to me to be out of hand at all or unreasonable. I will review this document more carefully as I have time, but the proposals that you are making seem to me to be consistent with pretty prudent judgment. I hope it works, and I hope it works without our participation.

If push comes to shove and we are in it somehow on the basis of loan guarantees, that wouldn't be inconceivable with me, if we could make it strictured enough to where it wouldn't add to the overall cost of construction—in other words, keep Government out of it as much as possible. I fear that we would go the European route or some of these other countries' routes. We may find that pipeline construction, which is menacingly high now, would be an awful lot higher in the future because of Government involvement too much.

I think you are very competitive as you sit before us now in your proposals, and I think that helps consumers and taxpayers both, and I do use that term interchangeably in this instance.

Thank you very much.

Thank you, Mr. Chairman.

Senator MURKOWSKI: Thank you, Senator Melcher.

Mr. Reso, then Exxon's position in the consortium is unique in the United States in that you have not been involved in an equity position in a transmission company, but you do take that position in your international posture when it may be appropriate and it is not precluded?

Mr. Reso. We are involved as minority shareholder in some gas pipelines in the Netherlands and some gas pipelines in Germany. Those investments are different than the regulated interstate gas transmission business in the United States. We are not in the interstate gas transmission business in the United States nor are we inclined to invest in that business because of its highly regulated nature.

Senator MURKOWSKI. You indicated in your testimony, your participation in this case was more or less indirectly requested by the Secretary and Energy and obviously—

Mr. Reso. It was not indirectly requested. It was directly requested.

Senator MURKOWSKI. All right, directly requested by the Secretary of Energy. I do stand corrected. And your participation, obviously, strengthens the entire financial package, so to speak.

Mr. Reso. We have been told that it does, yes.

Senator MURKOWSKI. But you are limiting your guarantee, I assume, to the amount of your participation.

Mr. Reso. What we have said there. The negotiations that followed that request that you referred to led to an arrangement, and some of the factors in that arrangement are that the producers would accept responsibility for 30 percent of the capital, and we have agreed that we would accept responsibility for our share of that 30 percent based on our share of ownership of the gas.

Senator MURKOWSKI. Is that 11 percent?

Mr. Reso. It is 11 percent of the total.

Senator MURKOWSKI. And that doesn't preclude, though, you, as one of the three producers, from changing that participation in the 30 percent should you so desire?

Mr. Reso. It is highly unlikely that we would so desire, Senator.

Senator MURKOWSKI. The last question I have is somewhat of a repetitive question, but I think in view of the perception of the prebilling, it is appropriate to ask for the record. And it is the same question I asked Mr. Leake.

With regard to the exposure to the consumer in this country from the prospects of prebilling, could you give us your assessment of what the likelihood might be that the consumer in the United States would actually be exposed to prebilling?

Mr. Reso. I agree with Mr. Leake, and I think everyone sitting at the table would agree with what he said, that this project has been well engineered. It has included the involvement of almost all of the major pipeline companies in the United States, the involvement of the three major producers on the North Slope who have all

of the experience in construction in Arctic conditions, involvement of our friends from Canada that have experience in those conditions as well.

We think that we have a well engineered, well cost estimated project. I think the risk, from a technical standpoint of whether or not the plan can be implemented, is de minimus. The risks are only in the political sphere that something would happen in the political arena that may stop the project from going forward in midstream.

Insofar as our ability to execute, I think the risks are de minimus.

Senator MURKOWSKI. And your equity, of course, as a producer is at risk?

Mr. RESO. During the construction up until a date certain and up until a time when any major segment is completed, our equity plus any part of the debt that we are supporting would be at risk, yes.

Senator MURKOWSKI. And that, of course, would be substantial inducement for you, along with the others, to make sure that—

Mr. RESO. We will be mighty anxious to get it going, right. You are right.

Senator MURKOWSKI. Then can you tell me why, in your opinion, at least, there seems to be so much confusion about the exposure of the American consumer to the risks associated with the three segments of this project? Have we not been able to explain this to the American consumer? Because I continually am confronted with the charge that this is a subsidy by the American consumer, and you gentlemen have indicated that there is virtually no risk to the American consumer that this project, as proposed in the three segments, from a technical standpoint, cannot be built.

Were we not told a story or what?

Mr. RESO. Senator, I can't answer why some people have misunderstood, and I am very happy to say that we have all the people here that know what those arrangements are and can answer all questions to shed as much light as is possible on that question.

Senator MURKOWSKI. Well, maybe the media has misunderstood it. Have you attempted to explain in detail how this affects the American consumer and the risks to the American consumer to the media?

Mr. RESO. No, I have not, and I don't think anyone else has made any attempt to enlighten the media on this subject.

Senator MURKOWSKI. Well, I will leave that with you to deliberate.

I do appreciate very much your excellent testimony, Mr. Reso.

The last of the producing witnesses, Mr. Frank Mosier, senior vice president, supply and transportation, the Standard Oil Co. of Ohio.

Mr. Mosier, we welcome your testimony and look forward to your comments.

**STATEMENT OF FRANK E. MOSIER, SENIOR VICE PRESIDENT
AND DIRECTOR, THE STANDARD OIL CO.**

Mr. MOSIER. Our testimony and views on the key issues are similar, Mr. Chairman, to those you have heard, so I will just summarize the main points.

We believe that natural gas from the North Slope of Alaska is a viable new source of energy for the United States.

We further believe that a large diameter pipeline from Prudhoe Bay through Alaska and Canada to the lower 48 States is as good as any means to transport Prudhoe Bay gas and other Alaskan gas.

The alternatives to this proposal would present similar problems in financing, and we would lose all the benefits of the far advanced engineering and related work.

Sohio has no desire to be in the natural gas transmission business. But we recognize that without the producers' participation, this project cannot be financed.

We have indicated a willingness to commit over \$2 billion to the project under certain conditions, including the right to be an equity owner consistent with our investment; and also provided that the conditioning plant is part of the project; and further, that the \$30 billion Alaskan segment and the Canadian segment of the project can be adequately financed.

This is the largest up-front financial commitment Sohio has ever made to a project except for the transalaska oil pipeline and the Prudhoe Bay oilfield.

Sohio believes that this waiver package is necessary to allow the project to proceed, but it is not clear to us that a project of this magnitude can be financed in the private sector.

This summarizes the key elements of our testimony. I will be happy to answer questions.

[The prepared statement of Mr. Mosier follows:]

STATEMENT OF F. E. MOSIER
BEFORE THE SENATE COMMITTEE ON ENERGY
AND NATURAL RESOURCES

October 23, 1981

Mr. Chairman, my name is Frank Mosier. I am a Senior Vice President and a Director of The Standard Oil Company, in charge of its supply and transportation activities. My responsibilities in the transportation area include, among other things, Sohio's interest in this gas pipeline project, the trans-Alaska oil pipeline, and a fleet of ocean-going tankers transporting the Alaskan North Slope crude oil.

By way of background, following the discovery of the Prudhoe Bay oil field, the importance of the 26 trillion cubic feet of natural gas in this reservoir was recognized and studies were conducted to determine how best to move this gas to market in the lower 48 states. Sohio, as an owner of approximately 25% of the gas, participated in certain of these studies. We were convinced that this was an important future source of energy for the United States. Subsequent events have borne out that the production of the largest reservoir of natural gas yet discovered in North America is of vital importance to the United States. At a gas delivery rate of 2 billion cubic feet per day, this reservoir will supply approximately 5% of U.S. natural gas usage. Moreover, the availability of a transportation system will likely stimulate exploration on the North Slope of Alaska, which could result in additional significant natural gas discoveries.

Through the years we have been in a continuing process of evaluating alternative systems for the transportation and marketing of the Prudhoe Bay gas. We believe that the concept of a large diameter pipeline from Prudhoe Bay through Alaska and Western Canada to the lower 48 states is as good as any means to bring this gas to market. The Alaska Natural Gas Transportation System, frequently referred to as ANGTS, employs this physical concept. Other alternatives including an all-Alaskan line, conversion to methanol on the North Slope, and the use of ice breaking tankers, have several key characteristics in common with the ANGTS project. Initial investments of the same order of magnitude are indicated, and each of these projects has its own unique risks and regulatory problems. Selection of any of these alternatives would encounter similar problems in financing, and we would lose all the benefit of the far-advanced engineering and related work.

In testimony before Congress in 1977 when the President's Decision was under consideration, Sohio made it clear that we were not in the gas transmission business and had no desire to enter that business. We still have no desire to be in the gas transmission business. We also expressed the opinion that the project could not be financed without government participation, and we questioned the viability of the project under the conditions set forth in the President's Decision. However, in 1979 we were urged by the Department of Energy to consider becoming a part of this project because it could not be financed without the participation

of the Prudhoe Bay gas producers. In June 1980, Sohio, along with Arco and Exxon, signed a cooperative agreement with the gas transmission companies to carry out design, engineering, and cost estimation work on the Alaskan segment of the pipeline and gas conditioning plant on a shared cost basis. The producers also signed a Joint Statement of Intention with the sponsoring partnership, pledging to work toward a financing plan. We believe that the producers have carried out their obligations under these agreements. Sohio's share of costs under these agreements has totaled approximately \$40 million to date.

We have indicated a willingness to take on a commitment of up to \$2.25 billion which represents a share of the producers' overall 30% interest in the Alaskan segment of this project. Our share will be based on our percentage of gas reserves supplying this facility. This participation is subject to certain conditions and limitations. Two of the conditions are satisfied by elements of the waiver package which is the subject of these hearings. Sohio must have an equity interest in the project consistent with its level of investment, and the gas conditioning plant must be part of the transportation system. Other conditions and qualifications which must be satisfied include the following: the total project must retain economic viability; all necessary governmental approvals must be obtained on a timely basis; there must be assurance that the Canadian segment will be financed;

all funds for the Alaskan segment must be committed before construction commencement; and the financing must be on the same terms and conditions which apply to other investors in the project.

The fact that Sohio has agreed to commit over \$2 billion to this project is a statement of our current attitude on its importance, the appropriateness of the physical concept and its prospective economic viability. However, if world events or governmental processes or decisions change the viability of this project, we would have to reassess our participation prior to major expenditure of funds.

This project is the second largest, upfront financial commitment that Sohio has ever made, exceeded only by our initial \$4 billion commitment to the trans-Alaska oil pipeline and the Prudhoe Bay field development. During the next 5 years, while this project is under construction, Sohio's capital expenditures are anticipated to be about \$20 billion. Over 80% of these expenditures are for domestic energy-related projects and programs. Approximately \$6 billion represent expenditures to maintain the Prudhoe Bay oil production. No other single project will carry with it an upfront commitment as large as \$2.25 billion. Unlike ANGTS, other projects and programs can be accelerated or slowed down as circumstances dictate. The lack of flexibility in a commitment of this size, and other risk factors such as uncertainty of

future gas prices, gas markets, capital cost overruns, and completion delays, make it less than prudent for us to commit more than \$2.25 billion to this project. I want to emphasize that this commitment of \$2.25 billion is the upper limit of our participation.

An additional condition to Sohio's participation in this project is that initial financing arrangements for the Alaskan portion must be for at least \$30 billion. This amount, which includes a \$3 billion overrun pool, is based on definitive estimates prepared by contractors at a cost to the participants of about \$400 million. Our experience with high rates of inflation for construction on the North Slope of Alaska substantiates the need for the included contingencies and overrun pool.

As indicated above, two important elements of the waiver package are necessary to obtain our participation in the project. If we are going to provide financial support, we must have the right to be an equity owner, and the conditioning plant must be included as part of the transportation system in Alaska. Equity ownership is required because those who invest in a project are entitled to the full benefits of ownership. The conditioning plant must be included because it is necessary solely to prepare the gas for entry into the pipeline. The design basis selected for the pipeline dictates the degree of conditioning required. Alternative pipeline designs could have been selected at higher capital costs

and lower operating efficiency which would have eliminated the need for this facility. The conditioning plant is a part of the transportation system selected and should be included in the system for tariff and other purposes.

In conclusion, the equity and gas conditioning plant provisions of the waiver package are critical to our participation. Other provisions such as regulatory certainty and billing commencement are critical to the sponsors and bankers. It is not clear to us that a project of this magnitude can be financed without Federal government participation. However, it is clear that without the waiver package the project cannot go forward.

Senator MURKOWSKI. Thank you, Mr. Mosier. You live in Ohio?
Mr. MOSIER. Yes, I do, Senator.

Senator MURKOWSKI. Have you had an opportunity to explain this project to some of the Senators on this committee that might take issue with the concept of prebilling as it applies to the risk to the American consumer?

Mr. MOSIER. We have not taken the opportunity to do that, Mr. Chairman.

Senator MURKOWSKI. Do you anticipate attempting to take that opportunity?

Mr. MOSIER. We will consider the situation and determine whether or not that might be a fruitful effort.

Senator MURKOWSKI. Well, I have only been here about 7 months, so I cannot speak from any authority as to what advice I would propose, so I won't propose any.

In the event that the Alaska natural gas transmission system is not completed, what would you do with the undelivered gas? Do you concur with the comments of Mr. Reso and Mr. Leake, that it will be reinjected for some time, and then you will look at other alternatives to develop the field?

Mr. MOSIER. That is right. I concur with the others.

Senator MURKOWSKI. You, I believe, were the only witness to indicate that you were looking forward to this and recommended this project for the movement of Prudhoe Bay gas, and you said "other Alaska gas." Would you care to elaborate on that?

Mr. MOSIER. Yes, let me expand. One of the advantages of this physical concept is that it can be expanded at relatively—well, comparatively minor capital expenditures to accommodate much larger volumes of gas than those anticipated from the Prudhoe Bay oilfield. And I know that our company, and I believe that many other companies have plans to explore for and develop new hydro-

carbon resources, hopefully find and exploit or produce other hydrocarbon resources in the north of Alaska.

So, there is a great deal of optimism that additional gas will be discovered, and this particular physical concept could accommodate other large reservoirs, other large deposits of natural gas, if and when they are discovered.

Senator MURKOWSKI. Recognizing that you are not involved with the marketing of gas, but since it is a subject that concerns a number of the committee members, perhaps it is appropriate to hear your views on what the consequences might be of the economics, as your company sees this project in light of deregulation.

Mr. MOSIER. A brief response to that question, our views in participating in this project certainly would not be influenced in any negative way if there were decontrol of natural gas. And, in fact, we could see circumstances under which we may be even more enthusiastic.

Senator MURKOWSKI. Would you care to comment just briefly, and the point has been made again, on the risk to the American consumer associated with the prebilling waiver of this proposal?

Mr. MOSIER. Our views are the same as those expressed by Mr. Leake and Mr. Reso.

Senator MURKOWSKI. I think that amply concludes the questions, and I certainly thank you, Mr. Mosier, for your testimony. It has been very helpful.

We will proceed with the witness list as listed, and I think the next witness is Mr. Kenneth E. Kalen, president of Pan Alaskan Gas Co.

Mr. Kalen, we are sorry to keep you waiting. Please proceed.

**STATEMENT OF KENNETH E. KALEN, GROUP VICE PRESIDENT,
PANHANDLE EASTERN CORP.**

Mr. KALEN. Mr. Chairman, at this late time, I believe that most of the points I wanted to make have been thoroughly covered, so I will attempt to summarize my summary at this time.

I also request that my full statement be made a part of the record.

Panhandle Eastern Pipe Line Co. intends to be a purchaser of Prudhoe Bay gas and a shipper through this proposed pipeline system.

As Mr. Reso just said, the design and engineering board concept seems to me has provided the project a tremendous reservoir of expertise and knowledge in the pipeline business and also in the operation of facilities in the Arctic area.

I would like to point out that under normal pipeline business, it is extremely difficult to build a new project into a frontier area where there has not been much exploration activity, and with the size of this project and the fact that we do have an anchor point of the Prudhoe Bay gas reserves is a unique opportunity, in our opinion, not only for our country but for Canada and the United States.

We believe that as far as our system is concerned, we have made numerous projections continuously, as my compatriots have said.

We are of the opinion that in order for us to continue to serve our market, which is approximately 130 utility customers in 12

States, that we must look at all areas of potential supply, and we have done that. We are working very diligently on importing LNG. We have spent a lot of engineering money and time and effort on trying to develop a coal gasification facility. We have been involved in this tremendous effort to try to get a pipeline to the Prudhoe Bay for some 10 or 12 years.

Taking all of those things into account, we still see a tremendous challenge ahead for us to supply the needs of our customers.

I would like to point out that, as covered in my filed testimony, that the present excess deliverability from existing reserves, along with the reduced demand, commonly referred to today as the gas bubble, is often erroneously interpreted as a permanent solution to this Nation's gas supply needs.

However, as one of my compatriots said, the industry as a whole has not been able to find reserves to match production for the last 10 or 11 years, and also, if we study the statistical analysis of drilling activity, we find that the drilling activity has increased materially since the passage of the Natural Gas Policy Act.

However, the number of reserves found per foot drilled has reduced substantially.

In conclusion, I respectfully request this committee to support the President's waiver request.

We also would be less than honest with you if we did not say that we cannot assure the committee at this time that with these waivers we will be able to privately finance this project.

We do feel, however, that without the waiver package we can absolutely not privately finance this project with the consortium here before you at this time.

We believe that it is absolutely necessary that we move forward with this most vital pipeline project.

Thank you, Mr. Chairman. I will be happy to answer questions. [The prepared statement of Mr. Kalen follows:]

Before The
COMMITTEE ON ENERGY AND NATURAL RESOURCES
of the
SENATE

October 23, 1981

Statement of Kenneth E. Kalen, Group Vice President
of Panhandle Eastern Corporation

Panhandle Eastern Corporation is a diversified energy company whose activities include the acquisition, transmission and sale of natural gas in interstate commerce. Its two gas transmission subsidiaries, Panhandle Eastern Pipe Line Company and Trunkline Gas Company, operate a gas transmission system consisting of 16,000 miles of pipeline and 1.2 million horsepower installed in field and mainline compressor stations. The systems supply natural gas to 130 investor-owned utilities and municipal distribution companies. The utility customers, in turn, supply gas to a market area of 24 million people in 12 states, primarily Michigan, Ohio, Indiana, Illinois and Missouri. The systems supply approximately 6 percent of the national total gas consumption. The assets devoted to natural gas transmission amounted to \$1.982 billion at the end of 1980 and transmission employees number 4,245. The principal source of Panhandle Eastern Pipe Line Company's supply is the Anadarko Basin, the Denver-Julesburg Basin, the Powder River Basin and Green River Basins of Texas, Oklahoma, Kansas, Colorado and Wyoming. The principal source of Trunkline's supply is the on- and off-shore Gulf coast area of Louisiana and Texas. Attachment 1 shows the location of the pipeline systems and present sources of gas supply.

There is a clear and urgent need for the Prudhoe Bay gas, and in our view, the gas will be marketable in our service area when it comes on-stream. Transportation of natural gas by pipeline is clearly the most efficient and least costly method of getting gas to consumers. Further, as you gentlemen are well aware, the pipeline will offset the need to import 400,000 to 600,000 barrels of foreign oil per day. I will briefly discuss each of these points.

Need for the Prudhoe Bay Gas

Panhandle and Trunkline have long been actively seeking to develop new sources of gas through programs for both conventional and supplemental supplies. Generally, our share of national gas reserves has declined about the same as the decline for national reserves.

Attachment 2 shows the production, reserve additions and the reserve inventory for the lower 48 states during the period 1968 through 1979. The blue bars on the upper portion of the graph show the amount of natural gas produced each year from wells in the lower 48 states. You will note that production peaked at just over 22 trillion cubic feet during 1972 and 1973, and has declined to just under 20 trillion cubic feet during 1979. Production during 1980 amounted to 19.5 trillion. The yellow bars on the upper graph show the annual additions to proved reserves resulting from drilling in the lower 48 states. At no time since 1968 has industry in the United States been able to add proven reserves to inventory in volumes that come close to equalling annual production. The best performance in this period came in 1979 when approximately 14 trillion cubic feet of proved reserves were added as compared with 20 trillion cubic feet of production. During the five years ending with 1979, only 56 percent of production was replaced by additions to proved reserves. The lower portion of this chart shows the impact of producing more gas than is being found in the lower 48 states for the period 1968 through 1979 and clearly shows the tremendous need for Alaskan gas.

Attachment 3 shows the millions of feet of hole drilled during the period 1966 through 1980. The graph separates the drilled footage into three categories:

1. The top line connecting the circles represents the total feet of hole drilled. This includes both development and exploratory footage.
2. The middle line which connects the boxes shows the drilling footage for development wells.
3. The third line which connects the triangle shows exploratory footage drilled.

Attachment 4 records footage drilled in the lower 48 states. Again, the top line connecting the circles shows total footage drilled, both exploratory and developmental. The middle line connecting the boxes shows the total footage of hole in wells that were completed as producers of oil or gas. The bottom line connecting the triangles shows the footage of hole contained in all wells completed as gas wells during the years 1965 through 1980. Attachment 5 is a plot of natural gas

finding rates for the period 1966 through 1979. You will note that the finding rate is recorded in terms of "Mcf" (thousand cubic feet) of reserves per foot of successful gas wells drilled. During 1967, for each foot of successful gas wells completed, approximately 600 Mcf of new reserves were found. Since that time, the finding rate has declined steadily, and in 1979 only 120 Mcf was found for each foot of successful gas well drilled. The message of this chart is that gas is getting harder and harder to find.

Attachment 6 combines the footage and finding rate projections into a projection of proved reserve additions through the year 2000. The left hand side of this chart shows historical reserve additions averaging somewhere in the order of 10 trillion cubic feet per year during the last ten years. We forecast that reserve additions in the lower 48 states will increase to a level of 14 or 15 trillion cubic feet for 1985, and then will start to decline during the last 15 years of the century. Although we may have a few big years for reserve additions during the next 20 years, we do not think that, on the average, reserves can be added in the lower 48 states to continue to support production rates of 20 trillion cubic feet per year. In forecasting future reserve additions we assumed that the pricing incentives of the Natural Gas Policy Act of 1978 would remain intact.

Panhandle and Trunkline system anticipates (forecasts) that the annual deliverability from committed gas supply will decline from approximately 930 billion cubic feet to approximately 350 billion cubic feet in 1987 when Prudhoe Bay natural gas comes on stream.

Attachment 7 shows our forecast of the annual volumes available for sale from the combined Panhandle Eastern and Trunkline systems. Of course, the figures shown prior to 1981 reflect actual sales figures. Sales declined during the early 1970s to a low of 771 billion cubic feet during 1976, reflecting the serious shortage of gas in those years. Since that time sales have gradually increased to 951 billion in 1979 and 927 billion in 1980.

The yellow bars shown on this graph for 1981 and the future years are what we refer to as "committed supply". This reflects our estimate of the volumes that will be available for the Panhandle and Trunkline systems under presently existing gas purchase contracts covering conventional lower 48 production. This is all of the gas that the two companies presently have under contract in the lower 48 states. We have our work cut out for us if our companies are to serve a 900 billion cubic feet annual market requirement in future years, and we are totally committed to that objective.

The green bars reflect 450 million cubic feet per day of LNG we have contracted to purchase from Algeria.

The solid blue portion of the bars represents 150 million cubic feet per day of Canadian purchases. Approximately 50 billion cubic feet per year of this gas will be made available to our systems through Northern Border pipeline over the 12-year period commencing in 1983.

The cross-hatched blue portion of the bars represents 150 million cubic feet per day of Alaskan gas to be purchased from the Prudhoe Bay field on the North Slope. This gas will reach the Panhandle system through the Alaskan gas transportation system which we hope will be in service by 1987.

The stippled blue portion of the bars represents volumes we had expected from our proposed coal gasification project in Wyoming into our system. That project has been delayed at least two to four years. This is the lease certain of future supply because of the enormous cost involved, perhaps \$2 billion.

The red portion of the bars represents the volumes of conventional gas that we must purchase. If the Alaskan gas and LNG does not come on stream as expected, the shortfall required to be covered will be substantially larger as indicated by the graph.

Panhandle and Trunkline's gas supply forecasts are quite representative of the interstate pipeline industry as a whole--particularly as regards presently committed lower 48 supplies of conventional gas.

The foregoing demonstrates the immense need by Panhandle and Trunkline for the Alaskan gas. Not only is the gas tentatively contracted for, but we need to have available an opportunity to contract for the additional Alaskan gas expected to be discovered and developed. We believe 100 trillion to 200 trillion of gas reserves may be discovered and developed. Further, we believe that there is a possibility that gas will be discovered at various points along the Overthrust Belt which is within reasonable distance of the pipeline; hence, making more gas available. We will be permitted to compete for a share of these expected discoveries.

Because of today's excess natural gas producing capacity in the lower 48 states, many people are losing sight of the country's long term gas supply situation. Clearly the current surplus of gas productivity will not be long lived. Those people would probably look on this gas supply presentation as being very pessimistic. Panhandle's forecasts of future gas supply are not out of line with the great

majority of definitive studies prepared by others. Attachment 8 shows the results of three of these studies. This chart compares forecasted natural gas demand to forecasted conventional gas supply for the years 1980 through 2000. The top graph represents Exxon's estimate. Of course, the difference between the demand line and the supply line represents Exxon's estimate of the shortfall in conventional domestic supply from meeting demand. The second graph shows the forecast of the Department of Energy. The third graph shows the forecast of the Gas Research Institute. Although each study differs somewhat, they all reflect a need for additional sources of gas if we are to meet the needs of the United States consumers.

Marketability

Jensen Associates, Inc. have prepared a marketability study for the pipeline group. That firm has for some time provided consulting services to Panhandle and Trunkline as to the demand for natural gas and alternative fuels. We believe that the Jensen report, covering the demand for the Alaskan natural gas, is conservative. The probability that the gas will not be marketable in the earlier years, unless it can be rolled in with the price of cheaper gas, is small. We believe the most likely scenario is that conditions by 1987 will be such that the gas will be marketable. If the conditions are not as expected, we would expect that the spread between the cost of Alaskan gas at the city-gate and the price at which it could be sold, will be small enough that a workable solution can be made through the regulatory process before the FERC.

Need for the Waiver of Law Package

Panhandle and Trunkline subscribe to the statements and presentation made by Northwest for the Partnership and subscribe to the statement of needs made by representatives of the lead banks with which the Partnership is dealing. The pipeline companies simply do not have the financial capacity to fund the Alaskan pipeline and the related gas conditioning facilities. Producer's equity and construction debt support participation will go a long ways towards creating conditions under which necessary capital can be raised.

We believe that the inclusion in the waiver of the provision which would permit the commencement of billing upon completion of a segment of the pipeline or a date certain, whichever occurs last, does not create an unreasonable risk assumption by consumer's groups. We believe that our customers want to be assured of a gas supply in the late 1980's and in the 1990's and want our companies to take action now so as to assure that supply.

Our companies cannot commit large amounts in an open-ended commitment to a project as large and risk-laden as the Alaskan project and be assured the companies remain financially viable so as to be able to continue to supply gas consumers' requirements. Further, the President's Decision in 1977 did not contemplate that the companies would support project debt. We believe that the greatest exposure to not completing the pipeline on a date certain would arise from actions of government including delays caused by litigation, not from the hostile environment through which the pipeline must be constructed. The waiver provision which would permit collection of billing upon completion of a segment of the pipeline will motivate the pipelines to complete sections on time by the date certain, and likewise, may afford some encouragement to governmental units to not unreasonably take any action which would delay completion of the project and placing it in service. It would, of course, permit collection of debt service revenues during such period of delay, and thereby, hopefully prevent the pipeline's Sponsors from being thrown into insolvency by reason of the money required to be paid during such delay.

The waiver seeking conditions of regulatory certainty for servicing debt, we submit, poses little if any risk to consumers. On the other hand, this waiver will provide assurance to potential lenders that a stream of income will always be there to repay debt and interest. This additional assurance, we hope and believe, will create necessary incentives to lenders to commit debt money to the project.

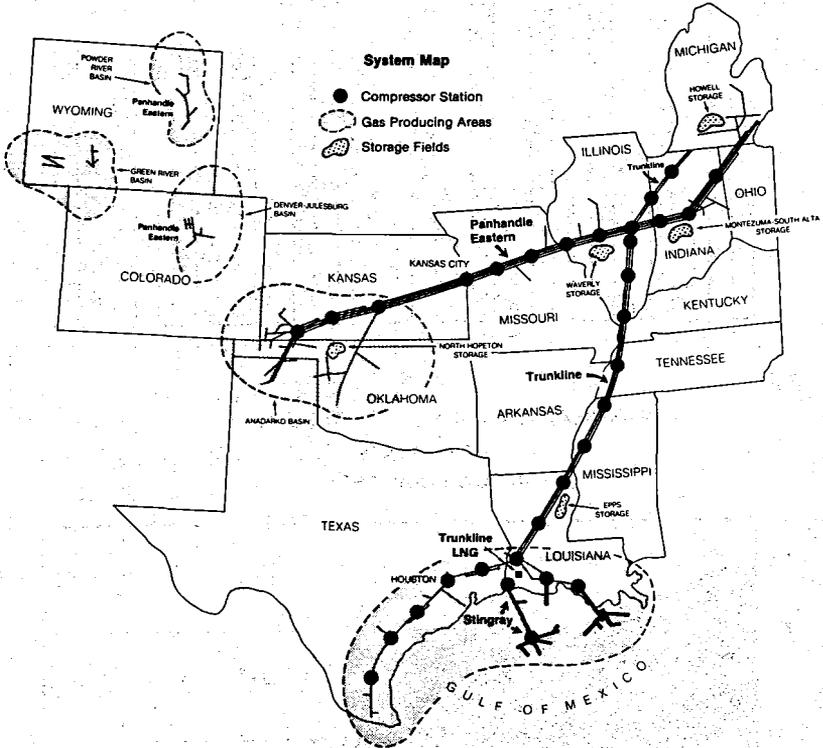
National Interests

The President, Secretary of State Haig and numerous others, in and out of government, have alluded to the enormous benefit to the nation by completion of the pipeline and the natural gas supplies it will make available. We agree. On the other hand, we must remain mindful of our duty to not place our pipeline companies in a position of financial vulnerability. We believe the pipeline will serve to strengthen ties between the countries of North America and will otherwise enhance security by reducing reliance upon foreign sources of oil and natural gas and improve this nation's balance of payments position.

Conclusion

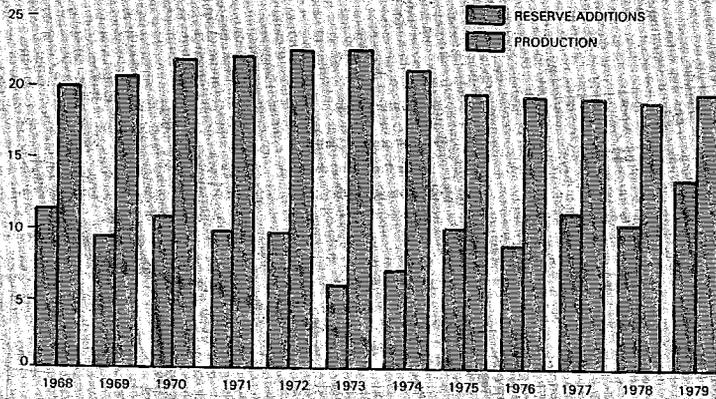
Alaskan natural gas will be urgently needed in the late 1980's and thereafter. The proposed Alaskan pipeline offers the best mode of transportation of the gas to consumers. The proposed waivers of law are necessary for the obtaining of financing. We urge that the waivers be approved.

PANHANDLE EASTERN PIPE LINE COMPANY AND TRUNKLINE GAS COMPANY

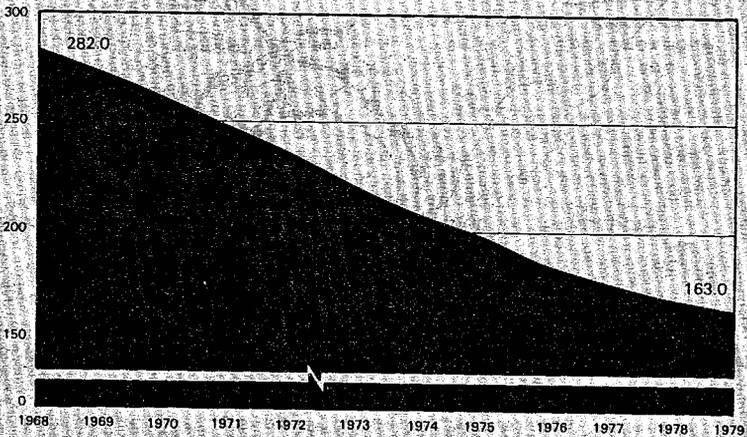


ATTACHMENT 1

**NATURAL GAS—PRODUCTION AND RESERVE ADDITIONS
LOWER 48 STATES
(TCF/YEAR)**



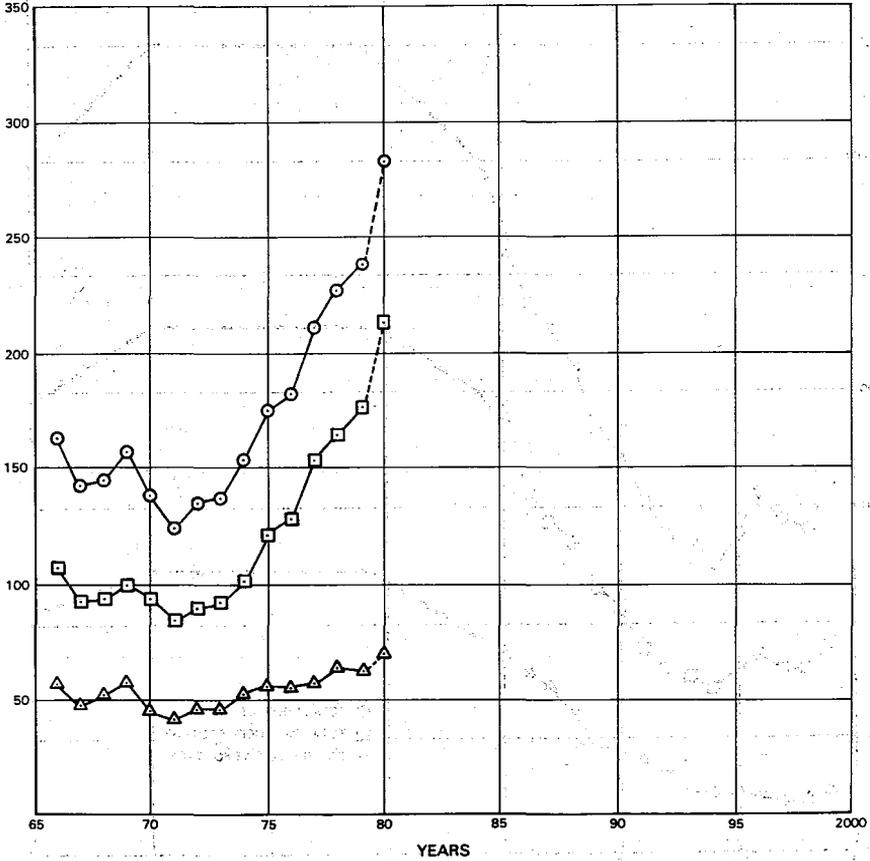
**NATURAL GAS—PROVED RESERVES
LOWER 48 STATES
(TRILLION CUBIC FEET)**



April 1980

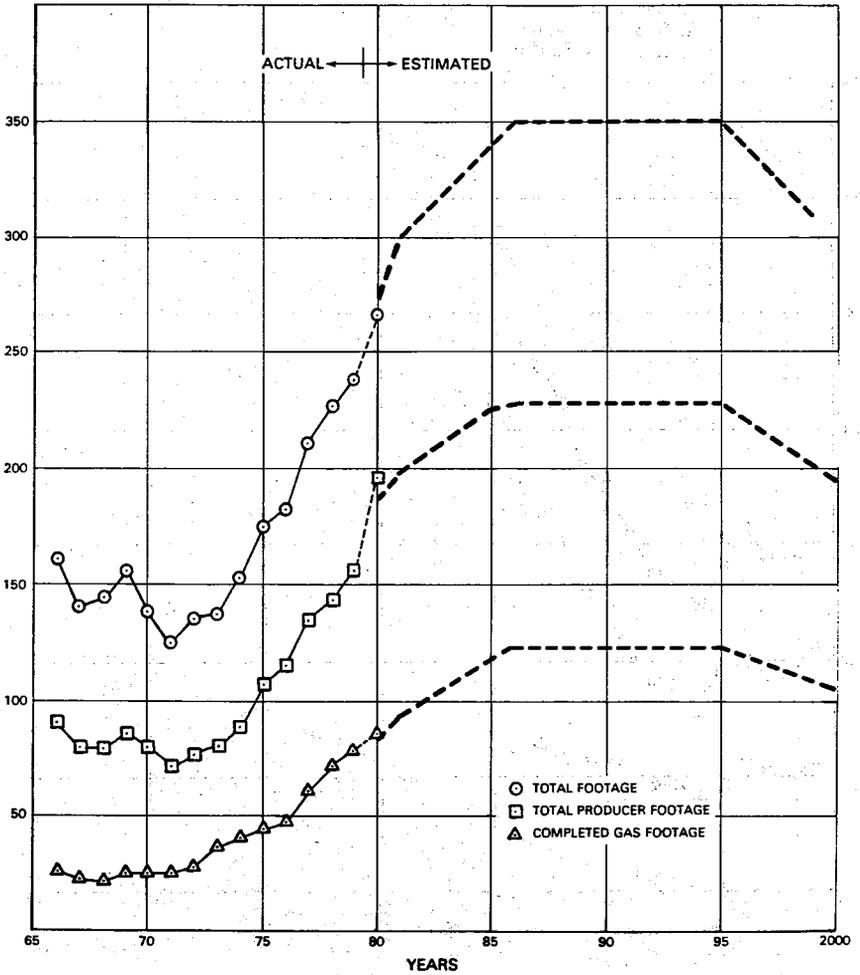
**CONTIGUOUS UNITED STATES
DRILLING
MILLION FEET PER YEAR**

- TOTAL FOOTAGE
- DEVELOPMENT FOOTAGE
- △ EXPLORATORY FOOTAGE



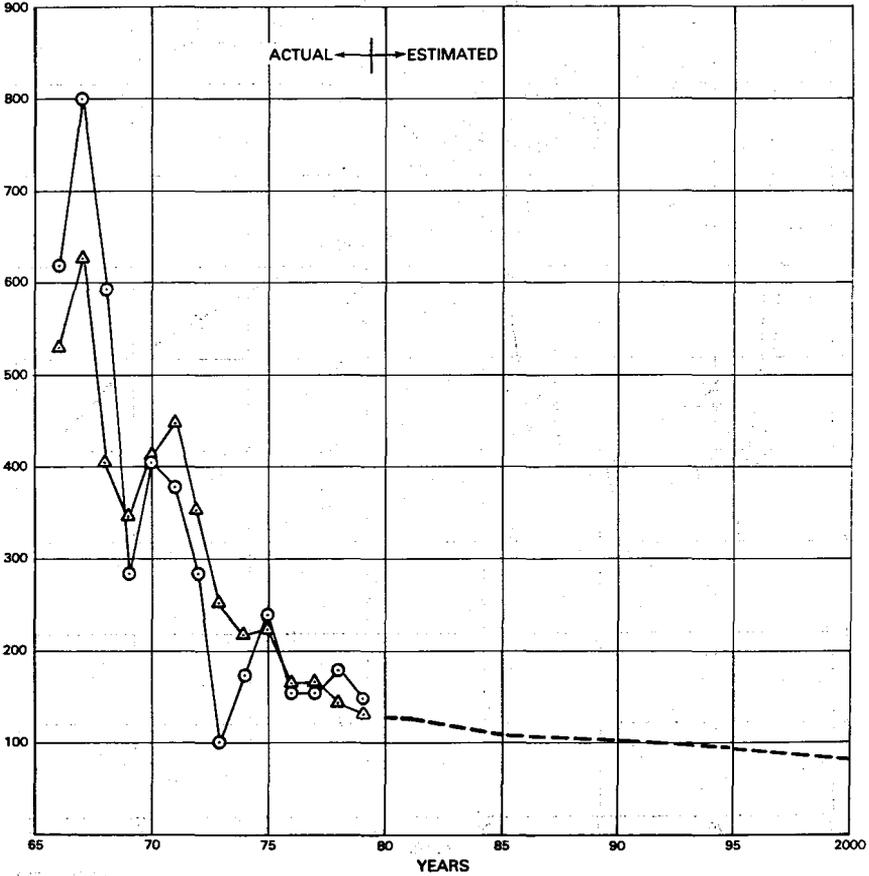
APRIL/1981

CONTIGUOUS UNITED STATES
TOTAL DRILLING
MILLION FEET PER YEAR

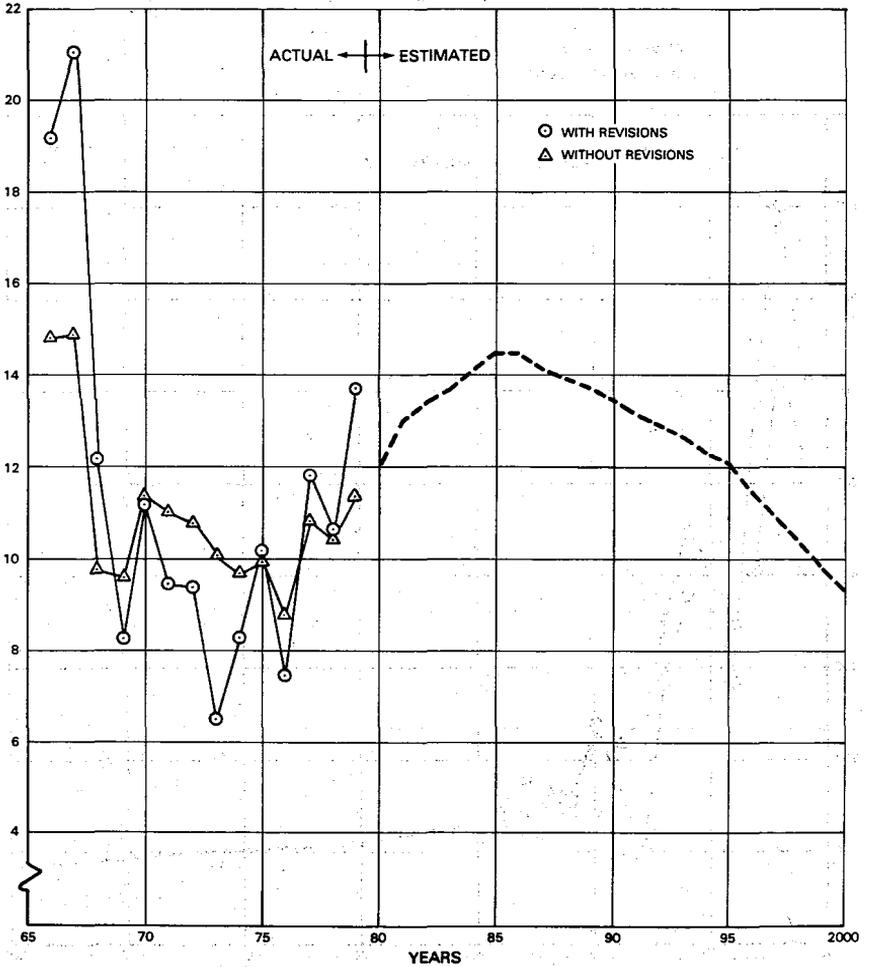


**CONTIGUOUS UNITED STATES
NON-ASSOCIATED GAS ADDITIONS
MCF PER COMPLETED GAS FOOT
TOTAL DRILLING**

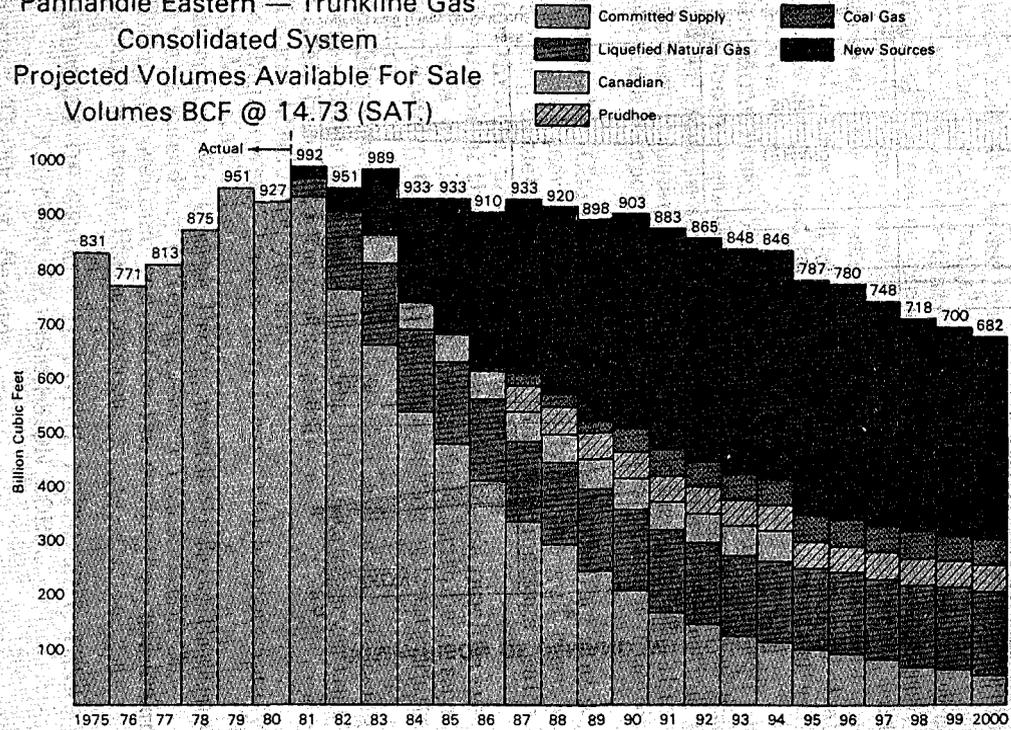
○ WITH REVISIONS
△ WITHOUT REVISIONS



CONTIGUOUS UNITED STATES
 ADDITIONS FROM TOTAL DRILLING
 TCF PER YEAR

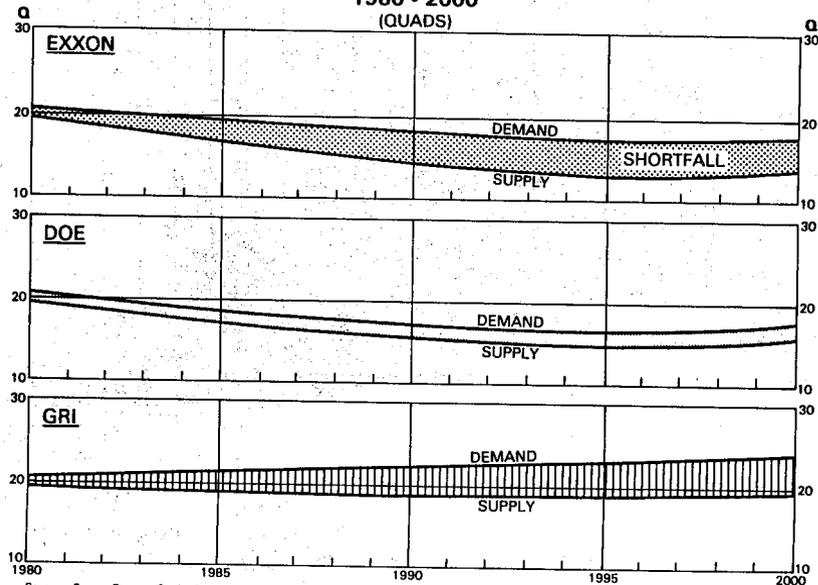


Panhandle Eastern — Trunkline Gas
 Consolidated System
 Projected Volumes Available For Sale
 Volumes BCF @ 14.73 (SAT.)



APRIL 1981

**COMPARISON OF DEMAND WITH CONVENTIONAL DOMESTIC SUPPLY
1980 - 2000
(QUADS)**



Senator MURKOWSKI. Thank you, Mr. Kalen.

In your prepared statement, you mention the marketability of Alaska gas characterizing the Jensen report covering the demand for Alaska's natural gas as "conservative." Could you elaborate a little bit on that specific point?

Mr. KALEN. We believe that the amount of gas, with the proper distribution of the gas as expressed by this group before you, we feel that it will be marketable. And even with deregulation, we feel that there will be necessary provisions in the negotiation with contracts that this gas absolutely will be marketable, and it absolutely cannot be replaced by any other form of energy that will be less expensive.

Senator MURKOWSKI. You spoke of the gas bubble. Are you referring to the inconsistencies we have had in our treatment of gas as a commercial fuel, where at one point we are converting and saying no new commercial activities will utilize gas, and then we seem to have a temporary excess? Can you comment a little bit on that?

Mr. KALEN. Mr. Chairman, I was referring to the fact that we do have many gas reserves now, particularly in the gulf coast area, that are being depleted very rapidly. And this message really has not gotten through, probably, as it should have.

But if you look at the total reserves added to the pipeline system, you will see a continual decline, and simple arithmetic says we cannot continue on that course without having extreme shortages in the future.

Senator MURKOWSKI. So, your contention is that we are using up our reserves faster than we are finding adequate reserves that are economical to bring into the marketplace?

Mr. KALEN. Absolutely, yes, sir.

Senator MURKOWSKI. Thank you. I very much appreciate your testimony, Mr. Kalen.

We will call on Mr. George Ewing, president, Texas Eastern Gas Pipeline Co., a subsidiary of Texas Eastern Transmission Co.

Mr. Ewing, we welcome you before the committee and look forward to your testimony. Please proceed.

STATEMENT OF GEORGE H. EWING, PRESIDENT, TEXAS EASTERN TRANSMISSION CORP.

Mr. EWING. Thank you, Senator.

I, too, would like my formal presentation put into the record.

Senator MURKOWSKI. So ordered. It will be in the record, sir.

Mr. EWING. I am George H. Ewing, and I represent Texas Eastern Transmission Corp.

Texas Eastern Transmission Corp. is the parent of Texas Eastern Gas Pipeline Co., and Transwestern Pipeline Co., and I am the President of these last two companies.

These two companies have commitments to purchase Prudhoe Bay gas supplies and propose to ship that gas over the Alaskan system to help meet the respective market requirements in the Lower 48 States.

Both Texas Eastern and Transwestern are major interstate natural gas pipeline companies. They serve major markets across the

country from the east coast to the west coast, and some service to the midwestern areas of the lower 48 States.

Texas Eastern's annual requirements are a little over 1 trillion cubic feet, and Transwestern's annual requirements total approximately 380 billion cubic feet.

Texas Eastern has been actively engaged in furthering an Alaskan pipeline system to make Prudhoe Bay gas supplies available to the lower 48 States since 1969.

Throughout this period, it has found that because of the sheer magnitude of the cost of this project, it cannot be financed like other projects.

We believe that approval of the waiver package is a necessity if there is to be any chance of privately financing the Alaskan pipeline system.

Our company projections indicate that we will urgently need the Alaskan natural gas to help meet our commitments to our customers in the late 1980's.

The cost of the Prudhoe Bay gas supplies will be rolled into Texas Eastern and Transwestern's system gas supplies, and we presently believe such supplies will be marketable over the life of the project.

I would like to emphasize that in my judgment a very important benefit of the pipeline will be the resulting security of energy supplies in terms of the national defense requirements of the United States and North America.

I respectfully urge that this committee and the Senate approve the President's waiver package.

Thank you, Mr. Chairman, for letting me summarize my presentation.

[The prepared statement of Mr. Ewing follows:]

Prepared Statement

of

George H. Ewing

on behalf of

Tetco Four, Inc.
Texas Eastern Transmission Corporation
Transwestern Pipeline Company

We appreciate this opportunity to appear before this honorable committee on behalf of Tetco Four, Inc., and its parents, Texas Eastern Transmission Corporation (Texas Eastern) and Transwestern Pipeline Company (Transwestern) in support of the waiver package submitted by the President pursuant to the Alaska Natural Gas Transportation Act.

Tetco Four, Inc., is one of the pipeline sponsors of the Alaska Natural Gas Transportation System and is a subsidiary of Texas Eastern and Transwestern. Both Texas Eastern and Transwestern have commitments to purchase Prudhoe Bay gas supplies and propose to ship that gas over the Alaskan system to help meet their respective market requirements in the lower forty-eight states.

My name is George H. Ewing. My business address is P. O. Box 2521, Houston, Texas 77001. I am Senior Vice President of Texas Eastern Transmission Corporation and President of its natural gas pipeline division, Texas Eastern Gas Pipeline Company, and President of Transwestern Pipeline Company, a subsidiary, and Tetco Four, Inc. I am responsible for making decisions respecting Texas Eastern's and Transwestern's gas acquisition policies and the construction of projects to make additional gas supplies available to their pipeline systems and markets.

Both Texas Eastern and Transwestern are major interstate natural gas pipeline companies. They have been in operation for many years and are regulated by the Federal Energy Regulatory Commission under the Natural Gas Act. They serve major market areas on the East and West Coasts and in middle and midwestern areas of the lower forty-eight states.

Texas Eastern's pipeline system consists of approximately 9000 miles of natural gas pipeline extending from the Texas-Mexico Border and offshore Louisiana to the New York City area. It serves five interstate pipeline companies and ninety-two distributor companies and municipalities. While it supplies various markets in the states it traverses, its principal market area is in Pennsylvania, New Jersey, and Ohio. It is the sole supplier of pipeline natural gas to Algonquin Gas Transmission Company which serves various distributor companies in the New England States. Texas Eastern's annual requirements total slightly in excess of 1 trillion cubic feet and its daily requirements average approximately 2.9 billion cubic feet. The great majority of its sales are for high priority uses.

Transwestern's pipeline system is separate from Texas Eastern's system and consists of approximately 3700 miles of natural gas pipeline extending from West Texas and the Texas-Oklahoma Panhandle through New Mexico and Arizona to the California-Arizona Border. Approximately three-fourths of its sales of natural gas are made to Pacific Lighting Service Company for distribution in the Los Angeles and San Diego areas and approximately one-fourth of its sales are made to Cities Service Gas Company for distribution in Midwestern market areas. Small quantities are also delivered to various other parties for local consumption along its route. Transwestern's annual requirements total approximately 383 billion cubic

feet and its daily requirements average a little in excess of 1 billion cubic feet. The great majority of its sales are also for high priority uses.

In order to meet these substantial annual and daily requirements, it is essential that both Texas Eastern and Transwestern attach substantial new supplies of natural gas on a continuing basis to replenish existing gas supplies as they are depleted. Both companies have vigorous gas acquisitions programs seeking new sources of gas supplies. The Prudhoe Bay gas supplies represent a significant and vital part of this acquisition effort. The proved gas reserves of this field are estimated to be approximately 26 trillion cubic feet, and it is of great importance to the security of the United States and the welfare of the gas consumers that they be made available to markets in the lower forty-eight states without undue delay. However, without Congressional approval of the waiver package, private financing of the Alaska pipeline system is not even a remote possibility.

Texas Eastern has been actively engaged in furthering an Alaskan pipeline system to make Prudhoe Bay gas supplies available to the lower forty-eight states since 1969. It has spent considerable time, effort, and money in trying to make the pipeline a reality. Throughout this period it has found that because of the sheer magnitude of the cost of the project, it cannot be financed like other projects. For the same reason, it cannot be likened to any other investment opportunities, corporate or individual. Thus approval of the waiver package is a necessity if there is to be any chance of privately financing the Alaska pipeline system. The alternative of non-approval will, at best, result in very substantial delays in making the project a reality, loss of benefits of the project during the delay,

and very substantial increases in the cost of the pipeline, and thus increased costs to the nation's consumers, due to inflation.

Texas Eastern and Transwestern each have commitments to purchase approximately 70,000 Mcf of Prudhoe Bay natural gas a day, for a total of approximately 140,000 Mcf of natural gas a day. Each of them urgently need this additional natural gas to help meet their commitments to their customers at current levels. I have attached two graphs to my statement which reflect each company's requirements based on present commitments to its customers and its present and projected gas supplies for the years 1981 through 1989. The projections assume that Texas Eastern and Transwestern will be able to attach their fair share of future gas supplies that may be available to each of their systems. Even so, you will note that beginning in 1987, when it is projected that Prudhoe Bay gas supplies will first be available to the lower forty-eight states, Texas Eastern will need an estimated 300,000 Mcf of natural gas a day in addition to the 70,000 Mcfd of Prudhoe Bay gas supplies just to meet its commitments to its customers at current levels. You will also note that this deficiency in gas supplies will grow larger in future years. Similarly, you will note that in 1987 Transwestern will need an estimated 100,000 Mcf of natural gas a day in addition to the 70,000 Mcfd of Prudhoe Bay gas supplies to meet its current commitments to its customers. And, like Texas Eastern, this deficiency in gas supplies will grow larger in the future. Thus, Texas Eastern and Transwestern have a very real need for Prudhoe Bay gas supplies to help meet their respective commitments to their customers.

5.

The cost of the Prudhoe Bay gas supplies will be rolled into Texas Eastern's and Transwestern's system gas supplies and we presently believe such supplies will be marketable over the life of the project. However, our interest in the Alaska pipeline system is not limited to transporting Prudhoe Bay gas supplies -- as important as that is to the nation's welfare and public interest. We firmly believe that once the pipeline becomes a reality, it will provide access to the lower forty-eight states of the substantial additional natural gas reserves in Alaska -- reserves which have been estimated by the United States Department of Interior to be potentially in excess of 100 trillion cubic feet. The proposed Alaska pipeline system has been sized so that it will be able to transport substantial quantities of those additional supplies of Alaskan gas to the lower forty-eight states by the addition of compression, which will result in lower unit transportation costs for all Alaskan gas as these supplies are attached to the system.

The provisions of the waiver package, while they do not ensure private financing of the project, are essential if we are to hope to secure private financing of the Alaska pipeline system. The pipeline sponsors, as a whole, because of the magnitude of the cost of the project, simply do not have sufficient financial capability to finance it. Therefore, it is essential that the producers be permitted to participate in the ownership and financing of the Alaska pipeline segment. The regulatory waivers with respect to billing by the pipeline and tracking by the shippers are necessary in order to assure the lenders of the enormous sums required that they will receive payments of principal and interest from the project on a timely basis. And the regulatory waivers to expedite issuance of final project approvals, are necessary to avoid delays which could substantially increase the cost of the project and make private financing even

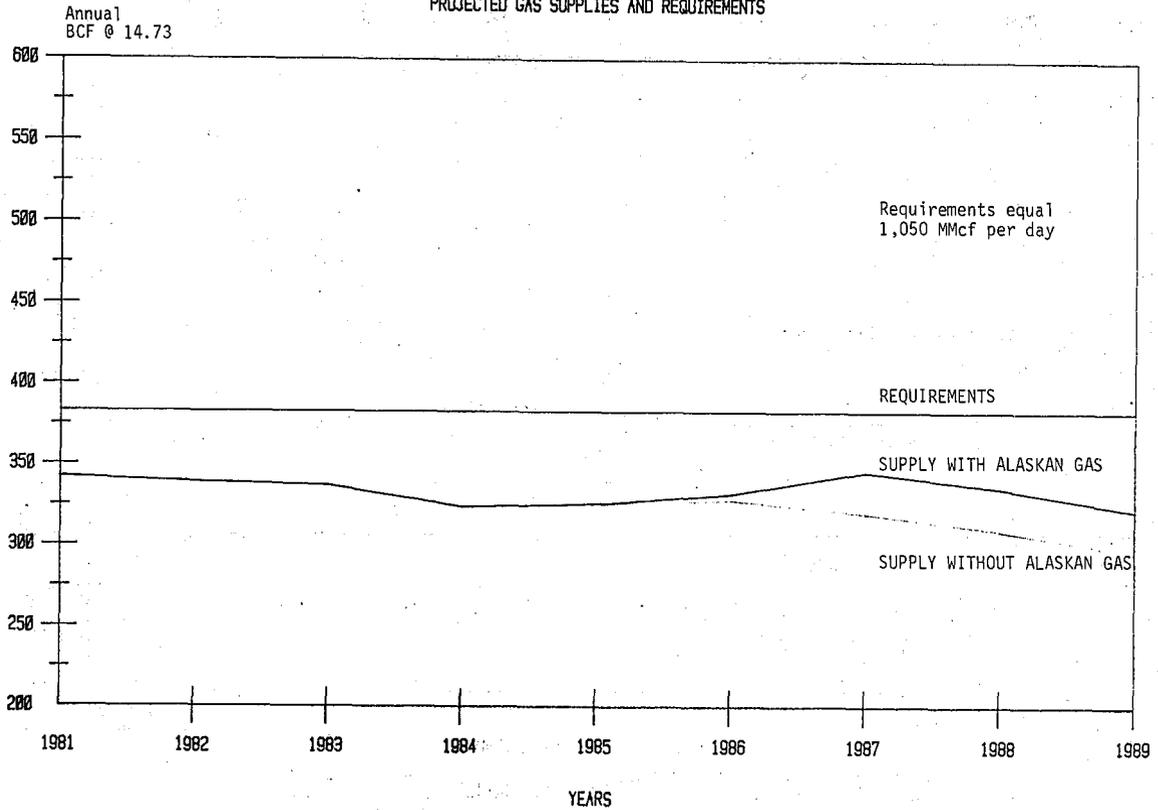
more difficult. In addition, they will avoid needlessly imposing substantial additional pipeline costs on the nation's consumers.

Others will testify in detail with respect to the great public interest benefits that will result from building the Alaska pipeline system, such as reducing natural gas supply shortages, stimulating additional natural gas exploration and development of substantial additional Alaskan gas reserves, and substantially improving the United States balance of payments. Accordingly, I will not dwell on them. However, I would like to emphasize that in my judgment a very important benefit of the pipeline will be the resulting security of energy supplies in terms of the national defense needs of the United States and North America. Our nation simply cannot afford to further delay attaching the significant Alaskan natural gas reserves to the lower forty-eight states.

I respectfully urge this honorable committee and the Congress to approve the President's waiver package.

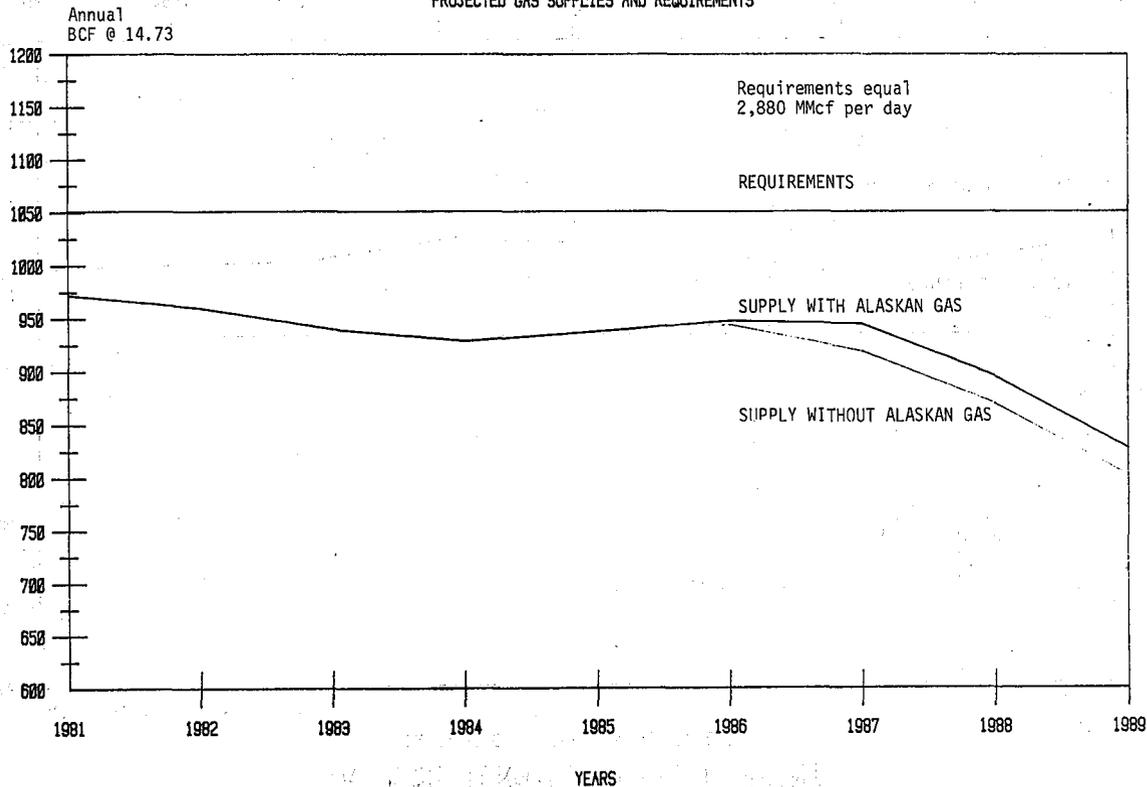
TRANSWESTERN PIPELINE COMPANY

PROJECTED GAS SUPPLIES AND REQUIREMENTS



TEXAS EASTERN TRANSMISSION CORPORATION

PROJECTED GAS SUPPLIES AND REQUIREMENTS



Senator MURKOWSKI. Thank you, Mr. Ewing.

In your statement you were quite explicit in stating that these waivers were mandatory in order to obtain private financing, and without them the implication being that private financing wouldn't be coming forth.

Did you have any other alternative in mind to private financing?

Mr. EWING. Senator, I think that with a waiver package we will be going to the financial community, who will testify later, and try and put a package together that can privately finance this project.

But if this cannot be done, even with the waiver package, I think that we will have to come back and ask for some other modification that will allow the financing of this very important project.

Senator MURKOWSKI. I thank you, Mr. Ewing, and we very much appreciate your testimony.

The last witness on the panel to be heard from is Mr. J. Hugh Roff, Jr., president and chairman of the board of United Energy Resources, a subsidiary of United Gas Pipe Line Corp.

Mr. Roff, we welcome you to the committee and look forward to your testimony.

STATEMENT OF J. HUGH ROFF, JR., PRESIDENT AND CHIEF EXECUTIVE OFFICER, UNITED ENERGY RESOURCES, INC.

Mr. ROFF. Thank you very much, Mr. Chairman.

I am Hugh Roff. I am chairman and chief executive officer of United Energy Resources, which is the parent company of United Gas Pipe Line Co., and United Gas is a partner in the Alaska Natural Gas Transportation System, both in the Alaskan segment and in the northern border segment, which will bring gas from the Canadian border to the midwestern part of the United States.

I also have a written statement which I have submitted and which I would like to ask be made part of the record.

Senator MURKOWSKI. All written statements will be part of the record.

Mr. ROFF. I will keep us only very briefly.

I would say only that the United Gas Pipe Line Co. is the major interstate supplier in the Gulf South. Our particular pipeline company has a very low reserve life index. We have a considerable need for the Alaskan gas when it will come on line.

We are looking forward to those supplies being available.

For all the reasons that have been discussed here, we also support the system and the waiver package, and we urge its adoption by the Senate.

I am available for any questions, Mr. Chairman.

[The prepared statement of Mr. Roff follows.]

PREPARED STATEMENT
OF
J. HUGH ROFF, JR.
PRESIDENT AND CHIEF EXECUTIVE OFFICER
UNITED ENERGY RESOURCES, INC.

WRITTEN STATEMENT OF J. HUGH ROFF, JR.

Mr. Chairman, members of the committee, my name is J. Hugh Roff, Jr. I am appearing as Chairman of the Board and Chief Executive Officer of United Gas Pipe Line Company (United Gas), which is a subsidiary of United Energy Resources, Inc., of which I am also Chairman and Chief Executive Officer. United Gas intends to purchase natural gas produced on the North Slope of Alaska and transport that gas through the Alaska Natural Gas Transportation System (ANGTS). One of the subsidiaries of United Gas, United Alaska Fuels Corporation, is a partner in the Alaskan Northwest Natural Gas Transportation Company, which proposes to construct the Alaskan segment of ANGTS. Another subsidiary, United Mid-Continent Pipe Line Company, is a partner in Northern Border Pipeline Company, which is presently constructing facilities to transport initially Canadian, and ultimately Alaskan, gas from the U. S. - Canadian border into the Mid West.

United Gas is a strong supporter of the Alaskan project. The determination to become involved in the project was based upon the belief that gas from Alaska could be a substantial factor in alleviating future natural gas shortages on the system of United Gas and throughout the United States as a whole. Projects of this magnitude, of necessity, require many years from the time of conception through completion. Because this is the largest project ever attempted by private industry, the lead times have been even longer than initially anticipated. However, although perceptions of the current gas supply situation in the U. S. may vary from those of a few years ago, it remains the belief of United Gas that Alaskan gas will be needed when this project is complete.

Even after all the governmental approvals and financing arrangements are in place, three years will be required to construct the Alaskan segment of this system. We cannot afford to wait until a national emergency is upon us before expediting completion of the project. During the early 1970's questions were raised of the necessity for a pipeline to transport the oil from the North Slope to markets in the U. S. Those doubts vanished with the shortages resulting from the Arab oil embargo in 1973. The shortfall in overall supplies would not have been significant if the oil pipeline had been constructed on schedule. However,

when a consensus finally developed that the nation's economy needed oil from Alaska, it could not be made available for almost three more years. Natural gas from the same field will most assuredly also be needed. The transportation system for that project should be completed in an expeditious but orderly manner, not constructed in a crisis atmosphere at a time when severe gas shortages are causing economic dislocations.

United Gas is the principal interstate supplier of natural gas in the Gulf South region of the U. S., serving approximately 400 distribution systems, 170 direct industrial customers, and 12 power plants in the States of Texas, Louisiana, Mississippi, Alabama and Florida. Additionally, United supplies gas to five major interstate pipelines which in turn supply gas to the Midwest and East Coast. Thus, natural gas transported through the system of United Gas is consumed in virtually every state in the eastern half of the United States. United Gas expects that gas delivered from this project will be marketable in its service area. The wellhead price of natural gas produced from the North Slope and transported through ANGTS is subject to a ceiling price under Section 109 of the Natural Gas Policy Act of 1978 (NGPA). As of October 1981, the maximum lawful price under which that gas could be sold is \$2.08 per million Btu's and is subject to further adjustment for inflation. United Gas presently projects that the cost of transporting this gas to its service area will be greater than United Gas anticipates its average systemwide cost of gas from all other sources, as delivered into its system, will be at that time. However, United Gas expects to purchase a volume of gas from the Prudhoe Bay reserves which will be equivalent to between 5% and 15% of its total sales volume over the next two decades. Section 208 of the NGPA assures that the acquisition and purchase price of Prudhoe Bay gas may be priced on a "rolled in" basis. The averaging effect of including a small volume of gas, relative to the total gas supply of United Gas, should not significantly increase the cost to United's customers at the time deliveries commence. In fact, since the transportation costs decreased as ANGTS is depreciated, the costs of Alaskan gas to United's customers may ultimately be less than the average cost of the remainder of the gas in United's system.

Generally, customers of United Gas, without regard to the class in which they may fall, are charged rates which reflect the actual cost to United Gas of purchasing gas

during the month of delivery. United Gas's participation in the project requires regulatory assurances that all costs of purchasing and transporting Alaskan gas into its system may be flowed through to its customers, who are the ultimate beneficiaries of the project. To the extent that these costs result in an increase in the average purchased gas costs on its system, that increase will be reflected in the average price per million Btu's purchased by each of the United Gas' customers. United Gas will not be able to participate in the project unless it receives regulatory assurance from the outset that it may flow these costs through to its customers. The waiver proposal is essential to assure that these regulatory approvals, once given, may not be modified in a manner which would preclude the recovery by United Gas of costs associated with the transportation of Alaskan gas.

Failure to approve the waiver proposal will mean, at a minimum, substantial delays in completion of the project. If these delays occur, it is certain that the ultimate cost of completing the ANGTS will be significantly higher than the cost of completion by 1986. Cost increases resulting from further delays can only inhibit the marketability of Alaskan gas. Thus, to the extent the waiver proposal expedites completion of the project, the marketability of Alaskan gas has been assisted.

United has continued its participation in this project subsequent to the partial deregulation of natural gas permitted by the NGPA. United does not anticipate that such further deregulation legislation as is reasonably foreseeable would affect its participation in the project. Under the present structure of the NGPA, gas produced from the Prudhoe Bay Unit remains under regulation indefinitely. Should legislation subsequently remove those wellhead price controls, United assumes that contracts with producers will be negotiated in a manner which would recognize the relatively high transportation costs involved in delivering the gas from wellhead to market.

United Gas' financial involvement in ANGTS includes both its equity participation in the Alaskan portion and the eastern U. S. leg (Northern Border) and its obligations as a transporter of both Canadian and Alaskan gas in ANGTS. The following table summarizes the extent of United Gas' financial involvement in the total project as compared to its other business activities at June 30, 1981.

(1) Total Assets of United Gas.....	\$1,252 million
(2) Total Capitalization of United Gas.....	\$ 543 million
(3) Shareholders' Equity of United Gas.....	\$ 340 million
(4) 1981 Capital Budget of United Gas.....	\$ 220 million
(5) Anticipated Cash Investment in Project.....	\$ 216 million
(6) Anticipated Contingent Liabilities in Project.....	\$ 624 million
(7) 1981 Cash Investment in Project.....	\$ 62 million
(8) (5) as a % of (1).....	17.5%
(9) (5) as a % of (2).....	39.7%
(10) (5) as a % of (3).....	63.5%
(11) (6) as a % of (1).....	50.6%
(12) (6) as a % of (2).....	114.9%
(13) (6) as a % of (3).....	183.5%
(14) (7) as a % of (4).....	28.2%

While anticipated cash investments and contingent liabilities will be subject to upward or downward revisions as final financing requirements and the terms of financing are established, the preceding table clearly indicates that United Gas' involvement in the project is substantial in relation to its size and will impact materially upon its ability to undertake other capital projects that are considered necessary if United Gas is to continue bringing improved service to its customers.

United Gas has entered into a letter of agreement to conduct negotiations towards an execution of a Gas Purchase Contract with ARCO Oil and Gas Company. This agreement contemplates the purchase by United Gas of 15% of ARCO's working interest in the Prudhoe Bay Reservoir. The agreement contemplates a negotiated contract price, not less than that provided in Section 109 of the NGPA, and states that customary deregulation and price escalation provisions permitted by any future statute or regulation will be included.

United Gas presently expects to purchase approximately 5% of the Prudhoe Bay natural gas reserves currently offered for sale and to participate in approximately the same percentage equity share. United Gas' percentage of the total equity and debt-related financing commitments would be the same as its percentage of the total equity subscribed for by all such purchasers, and United Gas would not provide credit support to any other project sponsor.

With or without the waiver proposal, the potential liabilities of United Gas' customers will be a function of the transportation capacity contracted for by United Gas.

If United Gas has available to it approximately 5% of the Alaskan gas, it will contract for the same percentage of total transportation capacity, and its payment obligations will represent the same percentage of the total cost of service. Once billing commences, United Gas will be obligated to pay this percentage of the cost-of-service charges regardless of the volumes actually received by it, with or without the waiver proposal.

As an interstate natural gas pipeline company, United Gas is regulated at the Federal level. At this time, the Federal Energy Regulatory Commission is the primary agency exercising economic regulatory control over United Gas. It has been our experience that the flexibility of FERC regulation fluctuates to reflect the general political atmosphere and the views of the current membership of the Commission. Since this a long-term project, United Gas seeks assurances that future Commissions, operating under unforeseeable circumstances, will abide by commitments of prior Commissions made at the time substantial financial exposures are incurred. Thus, United Gas seeks assurance that future regulatory authorities would continue the initial policy of permitting United Gas to flow the costs which it incurs through to its customers.

United Gas views the Alaska project as one which will make available a very substantial quantity of gas to consumers throughout the United States. Proven reserves of 26 trillion cubic feet will undoubtedly be enlarged by new reserves added by drilling when the system becomes operational. The availability of these new supplies will significantly alleviate the possibility of natural gas shortages in the future. The approximately 5% of the total Prudhoe Bay supply which United Gas is acquiring is substantial when compared to most other gas supply options available to United Gas. While some volume of conventional gas might be acquired at lower cost, there are not adequate amounts of such supplies available on a long-term basis for United Gas to meet the needs of its customers into the next century. United Gas has followed an aggressive gas acquisition program for years in the lower 48 states, but recognizes that supplies from Alaska, synthetic gas and imports will be required in order to meet the reasonable demands of gas consumers in this country over the next decades. In comparison with these other "non-conventional" sources of supply, United Gas believes the Alaskan project will provide significant long-term supplies at a lower cost and with less

risk of consumer liability or danger to the security of the supply than virtually any other source. Any project to import gas involves some degree of risk, varying with the country of production, since the foreign government can control both the price and continued availability of supply. Although the ANGTS passes through Canada, the transit of that gas is protected by treaty so that any security risks are minimal.

Accordingly, United Gas strongly believes ANGTS is in the national interest and urges Congress to approve the waiver package.

Senator MURKOWSKI. In the event that this project does not go ahead, what alternative sources are you looking at?

Mr. ROFF. Mr. Chairman, we are looking for sources of gas wherever we can find them. We have pipeline projects proposed to extend our system into the midcontinent region of the United States.

We think we will need all of these sources. We have also tried to participate in LNG projects in the past, but so far without success.

We think that absent this project and other projects working that we will be in a curtailment situation and be short of gas again later in the decade.

Senator MURKOWSKI. In your opinion, with regard to the prepayment waiver, as it applies to the consumer, would you care to comment on the risk to the consumer, as you see it, that this project might not be built by date certain, the date established by FERC, and as a consequence a segment being charged back to the consumer?

Mr. ROFF. We certainly regard that risk as very low. You know, it only comes into play after the full Alaskan segment is built or when the processing plant is built, or when the Canadian system is built.

So, the likelihood of one of those three major segments being built and one or two of the other segments not being complete we regard as very unlikely.

Senator MURKOWSKI. Thank you very much. I appreciate your testimony, Mr. Roff.

There are a few other questions, and I will try and be brief.

Mr. Latimer, there seems to be some concern on behalf of the committee members with regard to—and I think it has been clarified in the testimony today, but perhaps we should go over it one more time. While Canadian gas is going to move through this pipeline, the majority of the gas by a high degree is ultimately going to be the Alaska gas.

What I am getting at is, in the waiver agreement covered for the Canadian segment, there is the additional coverage of not only equity, but debt, all costs in that vis-a-vis the other two segments; namely, the conditioning plant and the Alaska-U.S. section, which cover exposure to the consumer ultimately for debt only.

The companies that are investing basically risk their equity. And I think that there is some degree of haziness as to why there is a difference with the Canadian segment, as opposed to the two non-Canadian segments.

Would you care to briefly, in your words, justify why the Canadian segment should be treated substantially different on all costs vis-a-vis the other two?

Mr. LATIMER. Mr. Chairman, while I am representing a Canadian company, we are only members of the Alaska segment and the prebuild, and if I could ask, I know that this afternoon you have a panel with the three participants, Mr. Blair, Mr. Pierce and Mr. Phillips, of the Canadian segment, and I wonder if I could ask you to address that question to them.

Our company is not part of that segment.

Senator MURKOWSKI. I would be very happy to do that, and I thank you.

A question for Mr. Trebilcott, who is American Natural Alaskan Co.'s executive vice president.

In your statement you discuss the efforts you are making to secure gas supplies from several sources, including coal, Canadian gas, liquefied natural gas, and Alaskan gas.

Do your projections show any supplemental gas supplies coming in below the price of crude oil? Basically, what I am asking you is, is the Alaska gas any more expensive than any other supplemental sources at the contemplated time, to your best estimate?

Mr. TREBILCOTT. No. I think that when you look at the cost of the Alaskan gas over the life of the contract, why, this is the most reasonable gas that we could look toward.

One of our affiliated companies is a partner in the Great Plains coal gasification project, and that particular project, the outlet gas will have a reverse effect, where the gas price will increase in accordance with the trends in the price of other energy costs.

But we believe that any other supplemental sources would probably be higher priced than Alaskan gas over the life of any contract we might have.

Senator MURKOWSKI. Thank you very much, Mr. Trebilcott.

I have one other question for Mr. John Sproul.

You indicated approximately 10 percent of your needs would be coming from the Alaska pipeline ultimately in your projections.

What other alternative sources do you have in mind in the event that this project should not be completed?

Mr. SPROUL. We are, Mr. Chairman, doing the same sort of thing that others have previously testified to. We are involved with Mr. Lepape in the Pacific-Alaska LNG project. We are looking very seriously and expending a fair amount of money in an exploration program in the Rocky Mountains. We have a considerable degree of confidence that those efforts will be successful.

But in the event that this project were not to go forward, and in the event that our other efforts to bring forth gas were not to succeed, the inevitable result of that is going to be curtailment of our customers.

Senator MURKOWSKI. Curtailment of your customers is going to be the result for your company?

Mr. SPROUL. And increased reliance upon imported oil to burn in California steam electric generating plants.

Senator MURKOWSKI. Thank you. I appreciate that very complete and concise answer.

Mr. McMillian, you have not had any questions posed, although there are a number of them before me.

So, the first one I might ask is not totally relevant, but in view of the fact that your project and that of your participants covers 48 States, with the exception of Hawaii and Vermont, and I have the privilege and pleasure of being on the Subcommittee of Environment and Public Works chaired by Mr. Bob Stafford, Senator Stafford of Vermont, the question is going to come up, why Vermont has been left out of this.

Somebody suggested that they burn wood in Vermont, but I thought you might have an appropriate answer, Mr. McMillian. A reassuring one, that is.

Mr. McMILLIAN. We understand our colleague, Trans-Canada, is trying to build a line through eastern Canada to serve portions of the northeastern part of the United States. Maybe Mr. Latimer would be nice and kind enough to serve Vermont.

Senator MURKOWSKI. Well, I will pass that word on and we hope that pacifies the process. Because having lived in Alaska and my colleagues from Hawaii, we were usually left out of the free phone calls for the odds and ends that you really don't need, but we feel somewhat chagrined when we are left out.

Mr. McMILLIAN, would you comment briefly for the record as to the significance, as you see it, from the standpoint of your project and your associates' being chosen, I think, in about 1977 by President Carter as the preferred route and received the support of the environmental community as being the preferred route over the then, I believe, Canada-Arctic route and the alternative El Paso route, and perhaps elaborate a little bit on the significance of why this proposal is the choice of America's environmental community?

Mr. McMILLIAN. I think the overriding factor is that we are using the same right-of-way that has been used by the oil line and the highway through Alaska. We are using a similar infrastructure, the same infrastructure that in most cases Alyeska used.

We are just doing less damage to the environment. In other words, we are building a gas pipeline where an oil pipeline is today.

In Canada it is a very similar situation. We are going down the Alcan Highway and traversing a lot of the terrain in Canada that now has existing pipeline networks through that area.

So, the overall effect I think of the environmental aspect is just that we are in a pipeline corridor route that has been established and there is just less damage that way.

Senator MURKOWSKI. Would you elaborate for the committee the significance, in the opinion of yourself and your associates, of what, in 1987 dollars or thereabouts, a \$40 billion construction project, obviously the largest in the history of any contemplated in the free world, and the employment of some 13,000 to 16,000 workers means to the economy of this country at a time when we have an acknowledged slight recession taking place?

How significant is this in relationship to everyday construction projects that are occurring?

Mr. McMILLIAN. The 13,000-man figure that you use is for Alaska only. The entire impact on the economy or how it affects the economy in a positive manner is really hard to define except, I think, with our net economic benefit studies that are used as kind of a standard today. And that will be somewhere between \$40 and \$90 billion, with most of that going to the Lower 48. I mean, that impact, the \$40 to \$90 billion is just to the Lower 48.

I think that is the best measure of the impact of this project on our economy.

The other factors, of course, the \$40 billion and the trade benefits between our two countries, Canada and the United States that are positive to the United States will be immense. But I think the \$40 to \$90 billion, that economical benefit is the biggest factor there.

Senator MURKOWSKI. Would you speak on behalf of your consortium with regard to how you would foresee the signal that we would be projecting to the OPEC countries if, on one hand, we speak that we are committed to a higher degree of energy independence as a national priority and then do not support this waiver package, and as a consequence it does not become a reality and it is perceived by the OPEC countries, in your view, as to what, Mr. McMillian, we might expect them to respond with?

Mr. McMILLIAN. I think it will certainly have an impact, not only to that area of the world that you are speaking about, the OPEC countries, but to our Western European allies where we are encouraging them to do things and to impose the same type of energy planning that we are, and I think they would doubt our intentions if we have an energy reserve as large as this one that we really wouldn't take advantage of.

I think it was very unfortunate that Mr. Nixon's energy independence never took place. I think it is equally unfortunate that President Carter did not win his moral equivalent war. And it seems like we are now making an expenditure in the Middle East for materials and items, for armament in the Middle East with our troops, but the real solution to the Middle Eastern problem is probably strengthening our own energy bases here, because once we are more self-reliant and self-sufficient in energy here in this country from all the sources that we do have available to us, the less will be the crisis in the Middle East to us.

So, I think that we would be sending the OPEC nations a very clear message, one that we are not the powerful Nation and all-leading Nation that we once thought we were if we can't even build a project to obtain this major energy source, where the Russians are able to do it. I think the impact would be terrific, both as to our allies and to the overall ultimate cost of energy from those sources.

Senator MURKOWSKI. One last question. Could you comment with regard to the risk to the consumer under prebilling as you contemplate the segmentation of the pipeline project and studies that you and your associates have done to date?

Mr. McMILLIAN. Senator, the only really uncontrollable factor that we have with this project, as has been mentioned, is government itself.

Senator MURKOWSKI. Is government itself?

Mr. McMILLIAN. Both direct and indirect. That is the only really uncontrollable force we have. We think this has been so well engineered and well planned and with the experience of all the parties around this table, we can build this project.

So, we think it is slim to none, as has been expressed. But the one fact that hasn't been brought out, that if something like this would happen, rather than the ultimate cost to the consumer, if we had to prebill them, it would be cheaper in the long run to the consumer, because as the consumer is paying for this possible delay that we would have, if these dollars or these figures were capitalized and put into the rate base, then the consumer would be paying for that delay or that factor for the next 20 years. And it amounts to, if you would have a 6-months delay, which none of us think will

happen, in net dollar benefit, the consumer would save over \$2.6 billion over 20 years.

So, the consumer would save money if this unfortunate circumstance did happen.

Senator MURKOWSKI. But it is on the inflation application then?

Mr. McMILLIAN. And we would have to capitalize those funds and put them in a rate base where the consumer would be paying for them for the rest of the life of the project.

Senator MURKOWSKI. Let me ask you, Mr. McMillian, what the application of the conventional—and maybe this terminology is not correct because it would be applicable to a project of this size—I assume there are construction risks insurance down the line at certain points that is required by various contractors.

Let's assume that you had something insurable that caused a delay. I assume that to the extent that it is feasible to carry that type of insurance for that degree of risk that that would be applicable first to satisfy the costs associated with an undue delay, before proceeding ahead with any prebidding.

Mr. McMILLIAN. There could be a factor like that, and we have investigated those kinds of factors as far as the completion of the project is concerned, a completion type of insurance, and there is just not a re-insurance company or insurance company in the world that has the resource to really take on that type of insurance. But an intermediate type of a premium like you are talking about with a factor like this might be a way. We haven't looked at it from that standpoint.

Senator MURKOWSKI. This is a question I will pose later to the bankers, which I assume are waiting out there in the harder chairs.

But there has been a concern expressed that the financing requirements are of such a gigantic magnitude that it will encompass not only the domestic banks going up to their legal maximum limits, but the international bankers as well.

The question that continues to pop up is, what is the exposure or likelihood that some of the OPEC nations may come in here and invest?

It is my understanding that this investment is limited to debt participation, and I think there is some misunderstanding on, perhaps, the concept of how this project is going to be construed from the standpoint of raising debt vis-a-vis equity. And I guess my question is in two parts.

In your opinion, is there any exposure that an OPEC country may end up with an equity position in this project?

Mr. McMILLIAN. No, sir, that has not been—I don't think that is a possibility.

Senator MURKOWSKI. You think that is extremely remote?

Mr. McMILLIAN. Very extreme.

Senator MURKOWSKI. Might there be a possibility of OPEC money participating indirectly in debt as an investment through the conventional international banking facilities?

Mr. McMILLIAN. There is a possibility. I really don't see that as a disadvantage, if that could happen. They are really not known as long term investors. I mean, 6 months is a long-term investment

for them. But if we could get it, you know, we will need to go to the world money markets.

Senator MURKOWSKI. Well, it would speak well of your project if they decided to participate for an extended period of time in a debt position. I certainly agree, I see no problem in anybody participating in the debt, but there is some concern over the equity, of course.

I think that we have pretty well gone over the questions that had been proposed by the other Senators. I want to thank you, Mr. McMillian, and I want to thank all of you individually, the transmission companies and the producers for your testimony.

I think it has helped to build a record that can be fully scrutinized by those wishing to take the time to generate knowledge of the excellent testimony presented here.

I think we brought out some very pertinent facts that we have structured, if you will, a good deal of information as to just what the potential risk might be to the American consumer as far as the prebilling application is concerned.

I think we have had good testimony on the realities that this gas can be marketed into the marketplace to coincide with a date certain, and I think the producers have testified of their support of the project as conceived, subject to the further conditions that develop subject to the commitments of the financial community.

I commend you all for the excellence of your submission.

I should note for the record that this committee has asked the National Association of Regulatory Utility Commissions to appear. They have advised us that they have declined because they have no position on the waiver package, although we don't have any assurance that individual commissions may be opposed. But evidently the national group is not or they indicate not being opposed by their no position.

There is going to be an announcement later on concerning a witness that is going to be testifying on Monday, and as soon as we have a time certain on that, we will advise you. I had indicated earlier that we were going to finish today. We will finish with the entire witness list today, but we have had a request for testimony on Monday, and it is the prerogative of the Chair to acquiesce to that request, and we will be announcing, as soon as we have a time certain, who that witness will be and what it will concern.

I have one other observation to make. Something that I inadvertently brought up that I think, for the record, should be elaborated on a bit more. It was my generalization concerning the windfall profits on Prudhoe Bay.

I wonder if either Mr. Reso, Mr. Leake or Mr. Mosier could establish the application in Alaska as it differentiates Prudhoe Bay from the Caparac field, which I understand is exempt from the windfall profits tax.

Mr. RESO. The Prudhoe Bay field production is subject to the decontrol excise tax, which you refer to as windfall profits tax. The other part in the Arctic Circle will be exempt, but the Prudhoe Bay field is subject to the tax.

Senator MURKOWSKI. Thank you. I appreciate you clarifying that for the record.

Do you, Mr. Mosier and Mr. Leake, have any further comments on that?

Mr. MOSIER. No.

Mr. LEAKE. That reflects my understanding, Senator Murkowski.

Mr. RESO. I think the term is "north of the Aleutian Chain" will be exempt.

Senator MURKOWSKI. North of the Aleutian chain?

Mr. RESO. I think so. It is the other gas that is up in the North Slope for sure. It is exempt.

Senator MURKOWSKI. I think we have better quit while we are ahead.

Gentlemen, I want to thank you.

The panel will reconvene in half an hour, 10 after 2.

Thank you.

[Whereupon, at 1:45 p.m., the hearing was recessed, to reconvene at 2:10 p.m., this same day.]

AFTERNOON SESSION

Senator MURKOWSKI. We will reconvene the hearing on the Alaskan natural gas transportation proposed waiver package.

Our next panel is Mr. Robert Blair, president and chief executive officer, NOVA, an Alberta Corp.; Mr. Robert L. Pierce, chairman and chief executive officer, Foothills Pipe Lines Yukon Ltd.; Mr. Edwin C. Phillips, chairman and chief executive officer of the Westcoast Transmission Co., Ltd.

Gentlemen, I believe you have another associate.

Mr. PIERCE. George McHenry, our counsel.

Senator MURKOWSKI. Welcome to the committee, Mr. McHenry. I would ask the panel to proceed with their testimony. I believe you have one statement that is going to be presented by Mr. Pierce. You may proceed. We will insert your prepared statement into the record.

STATEMENT OF ROBERT L. PIERCE, PRESIDENT AND CHIEF EXECUTIVE OFFICER, FOOTHILLS PIPE LINES (YUKON) LTD., ACCOMPANIED BY S. ROBERT BLAIR, PRESIDENT AND CHIEF EXECUTIVE OFFICER, NOVA; EDWIN C. PHILLIPS, CHAIRMAN AND CHIEF EXECUTIVE OFFICER, WESTCOAST TRANSMISSION CO., LTD.; AND GEORGE McHENRY, COUNSEL

Mr. PIERCE. Thank you, Mr. Chairman. We will summarize our statement which has been inserted into the record.

My name is Robert Pierce. I am president and chief executive officer of Foothills Pipe Lines Yukon. Appearing with me today are Mr. Robert Blair, chairman of Foothills as well as president and chief executive officer of NOVA; Mr. Edwin C. Phillips, vice chairman of Foothills and chairman and chief executive officer of Westcoast Transmission Co., Ltd.

NOVA and West Coast share in the ownership of Foothills. Also attending this hearing on our behalf as well as Mr. George McHenry of Washington are three executive vice presidents of Foothills, Mr. W. Deyell, executive vice president of projects; Mr. Edwin Lemieux, executive vice president of finance and Mr. Murray Stewart, executive vice president, corporate and Bruce Simpson, vice president of Foothills and NOVA.

We are here to support the expeditious passage of a joint resolution approving the waiver package submitted to Congress by President Reagan on October 15.

Like our American cosponsors we believe that favorable action on the waiver package has become essential for this project to achieve private financing.

We also remind you of the commitment which the United States made to Canada in July of 1980 at the time the Canadian Government approval of new gas exports and the commencement of construction of phase I of the project which is also called the prebuild.

You will recall that in order to allay Canadian fears that the entire project would not be completed if the prebuild phase went forward, Congress passed a bipartisan and practically unanimous joint resolution on July 1, 1980, declaring that the entire system remained "an essential part of securing this Nation's energy future" and it would be given "the highest level of congressional support for its expeditious construction and completion."

In addition President Carter sent Prime Minister Trudeau a letter on July 18, 1980, reassuring Canada that the United States stood ready to take additional steps to insure the completion of the entire system.

One of the specific steps proposed in President Carter's letter was the initiation of proceedings before Congress to remove any impediment to the ability of the Canadian sponsors to collect their full cost of service from U.S. shippers as soon as the Canadian segment is completed and capable of rendering service for the benefit of American consumers.

The waiver package submitted by President Reagan supports that previous White House commitment. Specifically it proposes that the Federal Energy Regulatory Commission be authorized to approve shipper tracking of Foothills' full cost of service "upon completion and testing" of the pipeline in Canada provided that such date is "not before a date certain" as determined by the Commission in consultation with the Federal inspector.

Although the arrangements for tracking upon completion and its necessity have been described thoroughly in our testimony before the United States and Canadian authorities for many years, I am advised we should review it again today for completion of your record and describe why it is essential to the private financing of the Canadian segment.

Before doing this in detail it may be helpful to briefly describe the role of the Canadian project sponsors and review some of the contributions we have already made and summarize the regulatory progress which has occurred in Canada since the selection of the project.

Because of our experience as builders and operators of gas pipelines in Western Canada, it was only logical that NOVA and West Coast would involve themselves in the transportation of Alaskan gas to markets in the lower 48 States. Through Foothills as our project company we joined with a subsidiary of Northwest Energy Co. in 1976 to cosponsor the pipeline project which was ultimately selected by our two countries as the Alaska natural gas transportation system.

We believed then and we believe now that a conventional overland pipeline which follows the TAPS oil pipeline corridor and then the Alaska Highway and which utilizes the resources and expertise of existing Canadian companies is the most economic and environmentally sound means of transporting Alaskan gas to markets in the lower 48 States.

In 1977 following many years of regulatory litigation and exhaustive review in both Canada and the United States, our two countries consummated an agreement on principles relating to the construction and operation of the project.

That agreement among other things committed both Governments to the expeditious completion of all remaining regulatory proceedings. As you are aware the targeted completion date of January 1, 1983, has now fallen behind. The completion date for the project has now slipped to approximately 4 years to November of 1986.

This delay in turn has increased the total cost of the project greatly and has naturally imposed an additional financial load upon the sponsors.

Notwithstanding these delays, the Canadian sponsors have continued their work on the project and have continued to invest their money in resources toward successful completion.

Canadian sponsors through Foothills have already invested a total of approximately \$560 million in the project as of the end of August.

Based upon the assurances given by the President and the Congress in the summer of 1980, we have devoted a substantial portion of this investment to phase I, comprising approximately 25 percent of the length of the Canadian segment in order to transport new gas exports of more than 1 billion cubic feet per day to the United States.

For the western delivery leg the prebuild facilities have already been completed and are presently flowing gas to southern California. The eastern delivery leg is presently under construction and will be completed and ready for service by the fall of next year.

Concurrently we have made substantial progress on phase II which comprises the remainder of the system. In this regard detailed route location work for the entire pipeline has been completed; pipe burst tests have been successfully concluded; geotechnical, frost heave and environmental studies have been undertaken and design work is at an advanced stage.

In performing this work, Foothills has used the services of more than 700 people, 630 of which are employed directly and the remainder of which are consultants.

The National Energy Board has attempted to expedite the Canadian regulatory process. It has issued necessary approvals for phase I of the project, established an incentive rate of return mechanism pursuant to the agreement on principles and issued orders on both the mainline and prebuild tariffs of Foothills.

In short, Mr. Chairman, we believe that the Canadian sponsors and Government have worked diligently to fulfill every commitment made thus far in connection with the ANGTS.

If I may turn to the specifics and concentrate on the billing commencement issue which is the focal point of our concern.

In this regard it is important to focus upon the physical and financial requirements of the task which lies ahead for the Canadian sponsors. Given the size of our investment responsibility, Foothills must be paid its full cost of service upon completion of the Canadian segment.

In sheer physical terms, the 2,000 mile Canadian segment will be the longest of the four pipeline segments which comprise the system. It will be approximately twice as long as either the eastern or western delivery leg and almost three times the length of the Alaskan segment.

The financial requirements for the Canadian segment are also considerable. As the owners of Foothills, NOVA and West Coast start with the responsibility to invest about \$1.5 billion Canadian each in order to provide the equity component of the Canadian capital costs which will total approximately \$17.6 billion on an escalated basis in Canadian dollars. At today's exchange rate, approximately \$15 billion U.S.

For comparison each of the 13 pipeline and producer sponsors of the Alaskan segment will be required to invest an average of approximately \$460 million U.S. in order to generate the equity component of the total Alaskan pipeline and plant costs of \$24 Million.

As well as furnishing equity funds, the Canadian sponsors must demonstrate corresponding credit strength to raise a substantial amount of debt.

To justify the investments required for phase II, the Canadian sponsors as well as the lenders of their debt funds must be sure Foothills will be in a positive cash flow situation as soon as the project which is the subject of their investment, that is the Canadian segment, is successfully completed.

A positive cash flow at this point in time is absolutely essential in order that the equity sponsors of Foothills can compensate their shareholders, retire their debts and finance their ongoing business operations.

In addition Foothills must be able to maintain the line upon completion, service its own debts and proceed with work on the Dempster lateral which will connect the ANGTS with the Mackenzie Delta region of the Canadian Arctic.

In this regard you may recall this was a condition of the National Energy Board requiring Foothills to proceed with an application for the Dempster lateral as a condition to receiving a certificate for the mainline.

In considering these future needs, the Canadian sponsors must face the fact that they will receive absolutely no cash flow benefits during the construction of the Canadian segment, anticipated to be completed by 1986.

Unlike the situation in the United States in general, law on taxation in Canada will not permit NOVA and West Coast to claim tax credits for their investments in the project. Canadian law does not permit Canadian corporations to file their income tax returns on a consolidated basis and thereby reduce their taxes through the deduction of expenses attributable to subsidiaries or affiliates.

As a result NOVA and West Coast will receive no tax advantages from the interest paid by Foothills on its debt.

The Canadian sponsors must be placed in a positive cash flow situation as soon as they have completed their segment of the project and are ready, willing and able to transport gas to the U.S. consumers.

Neither the sponsors nor the lenders to the Canadian system can assume any construction, political or regulatory risk present or which might occur in the future for the American segments since those are matters completely beyond our experience, control or ability to influence.

In this connection the recoument of investments made thus far by the Canadian sponsors has already been delayed approximately 4 years primarily as a result of regulatory proceedings in the United States.

Under these circumstances our companies cannot continue to make additional investments in the project without firm assurances that we will begin to recover our investments plus a reasonable return at a certain point in time when we have done what we have always said we would do, which is build the Canadian segment of the system.

For these reasons Foothills' position on the billing commencement issue has been candid and unequivocal since the inception of the project.

In our testimony before the National Energy Board, the Federal Energy Regulatory Commission and various parliamentary and congressional committees, we have stated and reaffirm today that the Canadian sponsors cannot participate in the project unless Foothills is permitted to collect its full cost of service including a return of and on equity as soon as all Canadian segments are completed and leave to open has been granted by the National Energy Board.

This assurance is absolutely essential in order for NOVA and West Coast to invest in the equity of the project. It is a fundamental link in the credit strength which must be demonstrated to lenders before they will advance the required debt.

In making this point, we do not expect that the Alaskan facilities will be delayed, thereby making it necessary for Foothills to commence billing prior to the flow of gas. To the contrary, we believe especially in light of our experience on the prebuild that careful planning of construction will lead to coordinated completion of all segments.

For purposes of financing, the Canadian equity sponsors and lenders must be protected against the unexpected event of a delay in the completion of the Alaskan pipeline or the conditioning plant.

The National Energy Board has approved the billing commencement provisions and other aspects of Foothills' proposed tariff. Standing alone, the National Energy Board's approval does not guarantee that Foothills will in fact be paid upon completion of the Canadian segment.

To complete the "economic lifeline," U.S. shippers must contractually agree to pay all charges approved by the National Energy Board under Foothills' tariff. The shippers will not enter into such agreements unless they are permitted by FERC to automatically track such charges through to their customers.

It is for that reason that condition IV-3 of President Carter's 1977 decision is currently an impediment to financing. As interpreted by FERC that condition would prohibit the tracking of payments made to Foothills until all pipeline segments of the entire project are completed and commissioned for service.

If the proposed waiver is approved and as we think it should be, the Commission would have the authority to permit automatic tracking of Foothills' charges upon completion and testing of the Canadian segment provided that such date is not before a targeted completion date for the entire project.

Assuming that the targeted completion date established by the FERC does not significantly depart from our present construction schedule, we believe that the waiver would pave the way for privately financing the Canadian segment.

That concludes my testimony, Mr. Chairman. We would be happy to answer any questions.

[The prepared statement of Mr. Pierce follows:]

BEFORE THE
UNITED STATES SENATE
COMMITTEE ON ENERGY AND NATURAL RESOURCES

Prepared Statement
of
ROBERT L. PIERCE
President and Chief Executive Officer
of
Foothills Pipe Lines (Yukon) Ltd.
on Behalf of the Canadian Sponsors
of
The Alaska Natural Gas Transportation System

Mr. Chairman, my name is Robert L. Pierce, and I am President, Chief Executive Officer, and a member of the Board of Directors of Foothills Pipe Lines (Yukon) Ltd., the Canadian company which is responsible for the Canadian segment of the Alaska natural gas transportation system ("ANGTS"). I am also Executive Vice President and a member of the Board of Directors of NOVA, AN ALBERTA CORPORATION, which owns fifty percent of the outstanding shares of Foothills' capital stock.

Appearing with me today are Mr. S. Robert Blair, who is Chairman of Foothills, as well as President and Chief Executive Officer of NOVA, and Mr. Edwin C. Phillips, who is Vice Chairman of Foothills and Chairman and Chief Executive Officer of Westcoast Transmission Company Limited, which owns the other half of Foothills' stock.

Together, we are appearing before this committee to support the expeditious passage of a joint resolution approving the waiver package which was submitted to Congress by President Reagan on

October 15, 1981. Like our American co-sponsors, we believe that favorable action on the waiver package has become essential for this project to achieve private financing in 1982 and successful completion by 1986. Such a completion schedule is already four years behind the schedule set out in the United States/Canada agreement entered in 1977.

We also remind you of the commitment which the United States made to Canada in July of 1980 at the time of Canadian government approval of new gas exports and the commencement of construction on Phase I of the project, which is also referred to as the "prebuild" phase. You will recall that, in order to allay Canadian fears that the entire project would not be completed if the "pre-build" phase went forward, Congress passed a bipartisan and practically unanimous joint resolution on July 1, 1980, declaring that the entire system remained "an essential part of securing this Nation's energy future", and that it would be given "the highest level of Congressional support for its expeditious construction and completion ...".

In addition to this commitment, President Carter sent Prime Minister Trudeau a letter on July 18, 1980, reassuring Canada that the United States stood "ready to take additional steps" to insure the completion of the entire system.

One of the specific steps proposed in President Carter's letter was the initiation of proceedings before Congress to remove any impediment to the ability of the Canadian sponsors to collect their full cost of service from U.S. shippers as soon as

the Canadian segment is completed and capable of rendering service for the benefit of American consumers. In making this commitment, President Carter recognized that the Canadian sponsors have a "reasonable concern ... that they be assured recovery of their investment in a timely manner if, once project construction is commenced, they proceed in good faith with completion of the Canadian portions of the project and the Alaskan segment is delayed". 1/

The waiver package submitted by President Reagan on October 15th honors and supports that previous White House commitment. Specifically, it proposes that the Federal Energy Regulatory Commission ("FERC") be authorized to approve shipper tracking of Foothills' full cost of service "upon completion and testing" of the pipeline in Canada, provided that such date is "not before a date certain", as determined by the Commission, in consultation with the Federal Inspector, "to be the most likely date for the approved transportation system to begin operation".

Although the arrangements for tracking upon completion and its necessity have been described thoroughly in our testimony before the United States and Canadian authorities for many years, I am advised that we should review it again today, for completion of your record, and describe why it is essential to the private financing of the

1/

The full text of President Carter's letter to Prime Minister Trudeau is appended to my prepared statement.

Canadian segment. Before addressing this matter in detail, however, it may be helpful to briefly describe the role of the Canadian project sponsors, review some of the significant contributions which we have already made, and summarize the regulatory progress which has occurred in Canada since the selection of the project. Viewed in this context, we believe the tariff arrangements which the Canadian sponsors require remain fair, reasonable, and consistent with the long-term interests of all concerned.

The owners of Foothills -- namely, NOVA and Westcoast -- own the main gas transmission systems in western Canada. During the past twenty-five years, we have constructed more than 16,000 kilometers of mainline and gathering pipelines which currently provide service to both domestic and export markets. These systems presently gather and transport in the West virtually all of the gas which is marketed in Canada, as well as the substantial volumes which are exported daily to the United States.

Because of our experience as builders and operators of gas pipelines in western Canada, it was only logical that NOVA and Westcoast should involve themselves in the transportation of Alaskan gas to markets in the lower forty-eight states. Accordingly, through Foothills, as our project company, we joined with a subsidiary of Northwest Energy Company in 1976 to co-sponsor the pipeline project which was ultimately selected by our two countries as the Alaska natural gas transportation system. It was our opinion then -- and it is our opinion now -- that a conventional

overland pipeline which follows the TAPS oil pipeline corridor and then the Alaska Highway, and which utilizes the resources and expertise of existing Canadian companies, is the most economic and environmentally sound means of transporting Alaskan gas to markets in the lower forty-eight states.

In 1977, following many years of regulatory litigation and exhaustive review in both Canada and the United States, our two countries consummated an Agreement on Principles relating to the construction and operation of the project. That agreement, among other things, committed both governments to the expeditious completion of all remaining regulatory proceedings. As you are aware, however, the targeted completion date of January 1, 1983, has now fallen behind. Primarily as a result of delays associated with the Alaskan segment, the completion date for the project has now slipped approximately four years to November of 1986. This delay, in turn, has increased the total cost of the project greatly and has naturally imposed an additional financial load upon the sponsors.

Notwithstanding these delays and their resultant cost impacts, the Canadian sponsors have steadfastly continued their work on the project, and they have continued to invest their money and resources toward its successful completion. Indeed, through Foothills, the Canadian sponsors have already invested a total of approximately 560 million dollars in the project, as of the end of August. With this level of investment responsibility in Canada, it

is clear that we have extended ourselves in total faith that the project is valid and committed. This has not always been easy for us to do and we have on many occasions faced questions on that total faith, particularly measured against the delays which we have endured, but to date we have been absolutely steadfast in "hanging in there".

Based upon the assurances given by the President and the Congress in the summer of 1980, we have devoted a substantial portion of this investment to Phase I, comprising approximately 25% of the length of the Canadian segment of the project, in order to transport new gas exports of more than one billion cubic feet per day to the United States. For the western delivery leg, the prebuild facilities have already been completed and are presently flowing gas. The eastern delivery leg is presently under construction and will be completed and ready for service by the fall of next year.

Concurrent with Phase I, Foothills has made substantial progress on Phase II, which comprises the remainder of the system. In this regard --

- detailed route location work for the entire pipeline has been completed;
- pipe burst tests have been successfully concluded;
- geotechnical, frost heave, and environmental studies have been undertaken; and
- design work is at an advanced stage.

In performing this work, Foothills has used the services of more than 700 people, 630 of which are employed directly, and the remainder of which are consultants.

Substantial progress has also been made during the past four years by the Canadian government. Indeed, within five months after Congressional ratification of the President's 1977 decision selecting the project, the Canadian Parliament passed the comprehensive Northern Pipeline Act, which gave full force and effect to the agreement which had been reached by our two countries. Among other things, that act granted final certificates of public convenience and necessity to Foothills; it established procedures and standards for the filing and review of Foothills' tariff; and it restricted judicial review of decisions issued by the National Energy Board in connection with the pipeline.

The Northern Pipeline Act also established the Northern Pipeline Agency, and vested it with both the responsibility and the authority to oversee the construction of the pipeline in Canada. Pursuant to that authority, the agency commenced operations at a very early date, and has already issued final terms and conditions on the technical, socio-economic, and environmental aspects of most of the pipeline.

The National Energy Board has also worked assiduously to expedite the Canadian regulatory process. It has issued necessary approvals for Phase I of the project; established an incentive

rate of return mechanism pursuant to the Agreement on Principles; and issued orders on both the mainline and prebuild tariffs of Foothills.

In short, Mr. Chairman, the Canadian sponsors and the Canadian government have worked diligently to fulfill every commitment made thus far in connection with the ANGTS. It is against this background that we ask you to consider the waiver package which has been submitted by the President.

Let me now turn from the general to the specific and concentrate on the billing commencement issue, which is the focal point of our concern. In this regard, it is important to focus upon the physical and financial requirements of the task which lies ahead for the Canadian sponsors. Given the size of our investment responsibility, Foothills must be paid its full cost of service upon completion of the Canadian segment.

In sheer physical terms, the 2,000 mile Canadian segment will be the longest of the four pipeline segments which comprise the ANGTS. It will be approximately twice as long as either the eastern or western delivery leg, and almost three times the length of the Alaskan segment.

The financial requirements for the Canadian segment are also considerable. As the owners of Foothills, NOVA and Westcoast start with the responsibility to invest about \$1.5 billion (Canadian) each in order to provide the equity component of the Canadian

capital costs, which will total approximately \$17.6 billion on an escalated basis in Canadian dollars. For comparison, each of the thirteen pipeline and producer sponsors of the Alaskan segment will be required to invest an average of approximately \$460 million (U.S.), in order to generate the equity component of the total Alaskan pipeline and plant costs of \$24 billion.

As well as furnishing equity funds, the Canadian sponsors must demonstrate corresponding credit strength to raise a substantial amount of debt. In this connection, we recognize that the Canadian segment is supported by the other two major Canadian pipelines, TransCanada Pipelines Limited and Alberta Natural Gas Company Ltd., both of whom will participate in the ownership of certain portions of the line. Thus far, however, the basic core of investment has stayed with our two companies.

To justify the investments required for Phase II, the Canadian sponsors, as well as the lenders of their debt funds, must be sure that Foothills will be in a positive cash flow situation as soon as the project which is the subject of their investment -- i.e., the Canadian segment -- is successfully completed. A positive cash flow at this point in time is absolutely essential in order that the equity sponsors of Foothills can compensate their shareholders, retire their debts, and finance their ongoing business operations. In addition, Foothills must be able to maintain the line upon completion, service its own debts, and proceed with work on the Dempster Lateral, which will connect the ANGTS with the

Mackenzie Delta region of the Canadian Arctic. In this regard, you may recall that the National Energy Board required Foothills to proceed with an application for the Dempster Lateral as a condition to receiving a certificate for the mainline.

In considering these future needs, the Canadian sponsors must face the fact that they will receive absolutely no cash flow benefits during the construction of the Canadian segment. Unlike the situation in the United States, in general, law on taxation in Canada will not permit NOVA and Westcoast to claim tax credits for their investments in the project. Moreover, Canadian law does not permit Canadian corporations to file their income tax returns on a consolidated basis, and thereby reduce their taxes through the deduction of expenses attributable to subsidiaries or affiliates. As a result, NOVA and Westcoast will receive no tax advantages from the interest paid by Foothills on its debt.

It is imperative, therefore, that the Canadian sponsors be placed in a positive cash flow situation as soon as they have completed their segment of the project and are ready, willing, and able to transport gas to U.S. consumers. Neither the Canadian sponsors nor their lenders can assume any construction, political, or regulatory risk present, or which might occur in the future, for the American segments, since those are matters completely beyond our experience, control, or ability to influence. In this connection, recoupment of investments made thus far by the Canadian sponsors has already been delayed approximately four years, primarily as a

result of regulatory proceedings in the United States. Under these circumstances, our companies cannot continue to make additional investments in the project without firm assurances that they will begin to recover their investments, plus a reasonable return, at a certain point in time.

For these reasons, Foothills' position on the billing commencement issue has been candid and unequivocal since the inception of the project. In our testimony before the National Energy Board, the Federal Energy Regulatory Commission, and various Parliamentary and Congressional committees, we have stated -- and we can reaffirm today -- that the Canadian sponsors cannot participate in the project unless Foothills is permitted to collect its full cost of service, including a return of and on equity, as soon as all Canadian segments are completed and leave to open has been granted by the NEB. This assurance is absolutely essential in order for NOVA and Westcoast to invest in the equity of the project. Moreover, it is a fundamental link in the credit strength which must be demonstrated to lenders before they will advance the required debt.

In making this point, we do not expect that the Alaskan facilities will be delayed, thereby making it necessary for Foothills to commence billing prior to the flow of gas. To the contrary, we believe, especially in light of our experience on Phase I, that careful planning of construction will lead to coordinated completion of all segments. For purposes of financing, however, the Canadian equity sponsors and lenders must be protected against the unexpected

event of a delay in the completion of the Alaskan pipeline or the conditioning plant.

In view of such considerations, the National Energy Board has approved the billing commencement provisions and other aspects of Foothills' proposed tariff. Standing alone, however, the NEB's approval does not guarantee that Foothills will, in fact, be paid upon completion of the Canadian segment. To complete the necessary "economic lifeline", U.S. shippers must contractually agree to pay all charges approved by the NEB under Foothills' tariff. The shippers will not enter into such agreements, however, unless they are permitted by the FERC to automatically track such charges through to their customers.

It is for this reason that Condition IV-3 of President Carter's 1977 decision is currently an impediment to financing. As interpreted by the FERC, that condition would prohibit the tracking of any payments made to Foothills until all pipeline segments of the entire project are completed and commissioned for service. If the proposed waiver is approved, however -- as we think it should be -- the Commission would have authority to permit automatic tracking of Foothills' charges upon completion and testing of the Canadian segment, provided that such date is not before a targeted completion date for the entire project. Assuming that the targeted completion date established by the FERC does not significantly depart from our present construction schedule, we believe that the waiver would pave the way for privately financing the Canadian segment.

That completes my testimony, Mr. Chairman. If the Committee has any questions, my colleagues and I will be more than happy to respond.

ATTACHMENT A

EMBARGOED UNTIL AFTER THE BRIEFING

JULY 18, 1980

Office of the White House Press Secretary

THE WHITE HOUSETEXT OF A LETTER FROM THE
PRESIDENT TO THE
PRIME MINISTER OF CANADA

July 18, 1980

Dear Mr. Prime Minister:

Since you last wrote to me in March, the United States Government has taken a number of major steps to ensure that the Alaska Natural Gas Transportation System is completed expeditiously.

Most significantly, the Department of Energy has acted to expedite the Alaskan project. The North Slope Producers and Alaskan segment Sponsors have signed a joint statement of intention on financing and a cooperative agreement to manage and fund continued design and engineering of the pipeline and conditioning plant. The Federal Energy Regulatory Commission recently has certified the Eastern and Western legs of the System.

The United States also stands ready to take appropriate additional steps necessary for completion of the ANGTS. For example, I recognize the reasonable concern of Canadian project sponsors that they be assured recovery of their investment in a timely manner if, once project construction is commenced, they proceed in good faith with completion of the Canadian portions of the project and the Alaskan segment is delayed. In this respect, they have asked that they be given confidence that they will be able to recover their cost from U.S. shippers once Canadian regulatory certification that the entire pipeline in Canada is prepared to commence service is secured. I accept the view of your government that such assurances are materially important to insure the financing of the Canadian portion of the system.

Existing U.S. law and regulatory practices may cast doubt on this matter. For this reason, and because I remain steadfastly of the view that the expeditious construction of the project remains in the mutual interests of both our countries, I would be prepared at the appropriate time to initiate action before the U.S. Congress to remove any impediment as may exist under present law to providing that desired confidence for the Canadian portion of the line.

Our government also appreciates the timely way in which you and Canada have taken steps to advance your side of this vital energy project. In view of this progress, I can assure you that the U.S. government not only remains committed to the project; I am able to state with confidence that the U.S. government now is satisfied that the entire Alaska Natural Gas Transportation System will be completed. The United States' energy requirements and the current unacceptable level of dependence on oil imports require that the project be completed without delay. Accordingly, I will take appropriate action directed at meeting the objective of completing the project by the end of 1985. I trust these recent actions on our part provide your government with the assurances you need from us to enable you to complete the procedures in Canada that are required before commencement of construction on the prebuild sections of the pipeline.

In this time of growing uncertainty over energy supplies, the U.S. must tap its substantial Alaska gas reserves as soon as possible. The 26 trillion cubic feet of natural gas in Prudhoe Bay represent more than ten percent of the United States total proven reserves of natural gas. Our governments agreed in 1977 that the Alaska Natural Gas Transportation System was the most environmentally sound and mutually beneficial means for moving this resource to market. Access to gas from the Arctic regions of both countries is even more critical today as a means of reducing our dependence on imported petroleum.

Successful completion of this project will underscore once again the special character of cooperation on a broad range of issues that highlights the U.S./Canadian relationship.

I look forward to continuing to work with you to make this vital energy system a reality.

Sincerely,

JIMMY CARTER

#####

Senator MURKOWSKI. Thank you very much, Mr. Pierce. Your full prepared statement has been inserted into the record including the letter from President Carter dated July 18, 1980, which I can assure you is in the prepared submission of testimony for the record as well and I would reiterate that portion of that letter of July 18 which states "I recognize the reasonable concern of Canadian project sponsors that they be assured recovery of their investment in a timely manner if once project construction is commenced * * *" et cetera.

To your knowledge, was there ever an acknowledgment or formal acceptance of this letter by the Prime Minister?

Mr. PIERCE. I cannot speak from my own knowledge, Mr. Chairman. I do know the Parliament or the Cabinet of Canada changed certain conditions that related to our certificate and authorized the export of gas through the prebuild and the commencement of the prebuild.

Certainly there has been \$700 million spent as a result.

Senator MURKOWSKI. We have had testimony by the State Department witness yesterday with regard to the interpretation of just what type of agreement was made, whether it was a contractual obligation and so forth.

They are going to be submitting additional research for the record.

It certainly constitutes an understanding of best efforts on the knowledge that has been submitted up to this time. Rather than belabor that particular point, we can assume this agreement was entered for the mutual benefit of both our nations and the energy development which corresponds.

Let me refer to the consideration that this is basically depicted as an American pipeline traversing Canada, yet a portion of it is going to carry Canadian gas and we seem to get a little foggy on whether the Canadian gas enters the pipeline in Canada and is taken out of the pipeline or what portion of the gas if any actually goes into the pipeline and goes back into Canada.

Could you generally enlighten us on whether any Canadian gas that goes into that pipeline goes back out in Canada?

Mr. PIERCE. Mr. Chairman, at the moment the Canadian gas we are talking about putting into the pipeline—

Senator MURKOWSKI. In phase II.

Mr. PIERCE. It would come out of the Mackenzie Delta. In the absence of export approvals for that gas from Canada, it could not leave Canada.

Senator MURKOWSKI. It could not be exported?

Mr. PIERCE. It could not be exported without approvals and hearings held.

Senator MURKOWSKI. Is the plan to export that gas at this time?

Mr. PIERCE. I could not speak to that but I could say that at the moment there is a large surplus of gas existing particularly in the Province of Alberta. There are many who would testify that it is much greater than the foreseeable needs of Canada and it has no market.

Senator MURKOWSKI. With regard to the Alberta gas which is flowing now through a portion of phase I, I assume under a contractual agreement that has some term associated with it, in the

event this project is not approved either ultimately by the Congress through approval of the waivers or ultimately for some other means, whether it be the financial community or others, and you indicated there was an excess of gas at least temporarily in Alberta, and these contracts would come up for renewal in 7 years or thereabouts and it is my understanding that the present flow rate is 100 million cubic feet a day and there is a call up to 240 or some such number.

Do you see any likelihood there may be a reaction which would result in the curtailment of Alberta exports through Phase I as it now exists to the United States?

Mr. PIERCE. I do not know that I can answer that question specifically. We have been at this for a long time and this is a large creature in Canada.

I think as you said earlier, Mr. Chairman, what we are essentially talking about is moving American gas through Canada to the American consumers. As a result of the need of the United States to do that and originally I think a lot of this started because of legislation that happened in the United States and as a result of that determination that gas into the U.S. market was in the interest of the country, Canada got involved.

As a result we agreed to do certain things. Throughout we have been working together as good neighbors should.

I can remember my big brother doing some things to me that in his sight was not very important but were terribly important to me and it took me an awful long time to forgive him. I remember throwing an ax at him when I was 14 and I forgave him when I was 40. If I had hit him, I may have forgave him earlier.

Senator MURKOWSKI. With that long memory you would make a good Republican.

Mr. PIERCE. Perhaps you will not need long memories in the future as you have had to have in the past, Mr. Chairman.

I think it is a very serious matter. Canada historically has tended to keep its agreements. We were brought up as you were down here that when you say you are going to do something, you should do it. If you are not going to do it, you had better have a very good excuse, not that you have just changed your mind but something else has come up.

The gas we are talking about in the prebuild totals about 1,040,000,000 cubic feet a day, 240 million on the western leg and 800 million on the eastern leg.

It has been certified for export over a period of 6 to 7 years and that certification exists. If it is going to be exported past that period of time, there would have to be another fight. It was certified and approved in 1980 as a result of representations which were made in communications which were carried on between our two governments, it was as a result of a project which was decided upon by two governments.

We are private companies and in it but I did not sign the agreement. We were just asked from time to time what we thought about it and I can say quite frankly not everything we thought about it is reflected in the agreements.

Mr. Chairman, it is a serious matter in our view in Canada.

Senator MURKOWSKI. To relate a little more to the conditions associated in the waiver package with the Canadian segment which requires full recovery of all costs and the justification that it is basically an American line going through Canada with American gas originating in Alaska and being dispersed in the United States for the benefit of consumers in the United States, what percentage of the Canadian gas will be in that pipeline?

Can you give us a definitive equation that is readily understandable by the Chair relative to this? Obviously it is not all American gas that is going to originate and come out the other end. There is a portion that is going to carry Canadian gas as well.

Can you give us a percent?

Mr. PIERCE. It will only carry Canadian gas if the existing exports approved are continued, and there is gas tied in from the Delta through the Dempster Lateral which would have to be built.

The agreement between the two countries contemplates a particular amount of Delta gas that might be carried by the joint pipeline. I think that is the best I can do.

The reason for payment on completion is not because this is American gas going through Canada to American markets. That is one of the factors involved. The reason is we are going to build this pipeline over a period of between now and 1986, a period of 5 years and we are going to put out substantial sums of money during that time.

We do not get tax credits in Canada for doing this nor do we get interest write offs in Foothills for doing this. As a result we are spending substantial sums of money over a 5-year period for which we get no service on at all. We are saying the only way we can reasonably make such an investment is when we have done what we have said we would do because we think we are capable of doing what we say we are going to do, then we have to get paid because we cannot carry it any longer. The amounts are very large.

Senator MURKOWSKI. From the standpoint of the perception of the project and the application of the waivers as they differentiate, if you will, between the conditioning plant and the Alaska-U.S. segment vis-a-vis the Canadian segment, the relationship is all cost in the case of the Canadian segment vis-a-vis debt and some other incidental costs but not equity.

As a consequence as that is perceived it would assist the record which you have attempted to clarify as to the justification of why the circumstances are different and I agree that they are different because the line is designed to carry American gas from Alaska to the 48 states.

Where it does get cloudy, there is a benefit to move Canadian gas through that portion of the pipeline within Canada and that is quantifiable but not yet I guess.

Mr. PIERCE. Only if the Canadian gas moves through. When the agreement was originally made it was contemplated that this pipeline would move both Alaska gas and Mackenzie Delta gas as well. Mr. Blair may comment further.

Senator MURKOWSKI. Please.

Mr. BLAIR. In explaining the particular need for billing on completion by the Canadian companies, I would like to add some points.

The Canadian companies have no position whatsoever in the Alaskan resource. We have no position in the ownership. We have no customer base which could take even in part the responsibility for a situation in which we became exposed to the payment of very large carrying costs in a situation where we may not be reimbursed. Our other customer base is basically domestic within Canada and we have no participation in the Alaskan resource.

No matter how hypothetical the question may be, if one ever conceived a situation in which we had laid out including the allowance or funds used during construction and the escalation of costs during construction, over \$10 billion of capital and were taking those carrying costs onto our own accounts without any future resource or customer base which might absorb some of them, we would be putting our companies in absolute total commercial jeopardy.

The carrying costs on sums of that amount would hypothetically wipe us out in very short order.

While our companies are medium sized in terms of some international industry comparison, they are companies of vital significance in their regions of industrial activity and our companies are prominent in the Provinces of Alberta and British Columbia and their financial health is needed in those two provinces.

It really comes down to a practical question as to if we can do the job physically and we have a long history of economy and meeting our commitments in providing gas transmission service but it would not be prudent or practical for us to expose our companies in this situation where our one function would be to provide a transmission service except on the basis that we would receive payment for what we had done as soon as we had put it ready for operation.

Senator MURKOWSKI. Thank you, Mr. Blair.

Mr. PHILLIPS. Mr. Chairman, on behalf of the company I represent, Westcoast Transmission, if I may make a specific reference to the scenario painted by my colleague, Mr. Blair, truly, being in the middle of the circumstance, we do not have the refuge upstream or security downstream and that is precisely what we are saying.

Evidence has been given by others to demonstrate the extent of commitment to this project that the exposure and the amount of risk represented 20-percent of the assets of the particular companies.

The essential difference between the U.S. sponsors and the Canadian sponsors is each one of the Canadian sponsors is at three times the risk of the average sponsor.

To be specific about the company I represent, because of the delay which had nothing to do with progress in Canada our exposure has now grown to the extent where we will be required to provide \$1.5 billion of equity money for this pipeline.

That happens to equal the total assets of my particular company. Those who are suggesting that a 20-percent exposure is hazardous, I would ask them to look at the difference in the circumstance we claim where we are 100 percent exposed by reason of being in the middle of this project.

Senator MURKOWSKI. Thank you, Mr. Phillips. Out of that \$1.5 billion, which I understand is from the private sector, nongovernment. Is that correct?

Mr. PHILLIPS. Private, nongovernment equity contribution by each of our companies.

Senator MURKOWSKI. The Canadian Government is not participating?

Mr. PHILLIPS. No, sir.

Senator MURKOWSKI. Might I ask if it is a condition of those involved in the financing of your company's collective participation that this be an all cost billing?

Mr. PHILLIPS. Absolutely. It is physically impossible for us to do otherwise without cash flow. That is the reason I make the point. Our total companies are at risk without cash flow. The risk which has been extended over a number of years, not by any reason of delay in Canada.

Senator MURKOWSKI. In the testimony given by Mr. Pierce, the statement was made that in order to provide the equity component of the Canadian capital costs which would total approximately \$17.6 billion on an escalated basis in Canadian dollars, that is equity, combined equity and debt?

Mr. PIERCE. The \$17.6 billion is a combination of equity and debt. The \$3 billion does not turn out to be 25 percent. The reason is as you put the money in it it accrues interest during construction and when you add the interest during construction on at the end, it does make 25 percent.

Senator MURKOWSKI. What is the breakdown of equity and debt of the \$17.6 billion?

Mr. PIERCE. 75/25.

Senator MURKOWSKI. How much of the debt is provided by the conventional investment community vis-a-vis the Government?

Mr. PIERCE. We do not anticipate there will be any Government money in this at all.

Senator MURKOWSKI. No Government money in the \$17.6 billion?

Mr. PIERCE. No.

Senator MURKOWSKI. Will there be Government money in the Canadian participation in the project?

Mr. PIERCE. No, sir.

Senator MURKOWSKI. You indicated in your testimony that on phase II, you have already progressed and we have had some questions submitted by various Senators leading up to the pipe burst tests which you indicated have been successfully concluded.

Is this 48-inch pipe?

Mr. PIERCE. Forty-eight-inch pipe, 42-inch pipe and 56-inch pipe.

Senator MURKOWSKI. The pipe you would contemplate in the portion that you would be responsible for would be 48 inch?

Mr. PIERCE. No, 56, 42, and 36.

Senator MURKOWSKI. Where is this pipe made?

Mr. PIERCE. We have burst pipe used on the northern border. The Canadian pipe is made in Canada, the pipe used in the Canadian system is made in Canada.

Senator MURKOWSKI. That will be how many miles?

Mr. PIERCE. Slightly over 2,000. It has all gone to bid and it has been dealt with in accordance with the agreement between the two

countries. In effect with regard to the quality and price requirements, it was awarded to Canadian mills.

Senator MURKOWSKI. Who makes that pipe in Canada?

Mr. PIERCE. Steelco.

Senator MURKOWSKI. A wholly owned Canadian corporation?

Mr. PIERCE. Essentially.

Senator MURKOWSKI. It is not owned by an American interest?

Mr. PIERCE. No. The other mill is Interprovincial Pipelines.

Senator MURKOWSKI. Do you have any requirement in Canada that you use Canadian pipe? Was this pipe economical?

Mr. PIERCE. It was the best choice as to price and quality.

Senator MURKOWSKI. It was less than Japanese or German pipe?

Mr. PIERCE. Strangely enough, it was. It depends on the time you bid it. We have a Canadian dollar which is not leading the world like the American dollar is.

Senator MURKOWSKI. We are not leading the world in large diameter pipe either.

Mr. PIERCE. There may be a very valid reason for that. The Canadian mills and the Canadian pipelines have been building up their pipe specifications for quite a number of years of construction. There has been more pipeline construction going on in Canada. Our mills essentially have been providing us with the pipe. You have to have a market.

Senator MURKOWSKI. We built an 800-mile pipeline with Japanese pipe. I guess it is fine quality pipe.

Mr. PIERCE. It is in your State. I am sure if it was not fine quality you would know about it.

Senator MURKOWSKI. We are a State and not a nation.

This is something that obviously is not in your particular area of responsibility but it is something which concerns the members of the committee, the type of pipe that is going to be used in this project. It is generally the consensus of the committee members that for reasons that are not too clear and I think we intend to direct a letter to the appropriate American pipeline association to determine whether or not the American industry has the capability and competitive factors necessary to be a party to that portion obviously that is not in Canada.

I very much appreciate your reference and bringing out the fact that Canadian pipe will be used and it is a large diameter. I assume Canada has the capability to make 48-inch pipe if the orders were substantial enough.

Mr. PIERCE. The capability is from 56 down.

Senator MURKOWSKI. The quality of the steel is satisfactory for your pressure tests?

Mr. PIERCE. Very high quality steel. Our companies have tended over the years to almost be leaders in the use of that steel. It is not something that is new to us.

Senator MURKOWSKI. Does the Alberta Heritage Fund have participation in the Canadian portion?

Mr. PIERCE. No, sir. We do not anticipate it will have either.

Senator MURKOWSKI. I thank you very much for your worthwhile and informative testimony.

Mr. PIERCE. We would like to thank you very much, Mr. Chairman.

Senator MURKOWSKI. I think it is noteworthy that we have the entire participants in this significant project here under one roof today before the Congress indicating the commitment and willingness not only between our two countries which I think is extremely gratifying but between the owners and those involved in the distribution. I think it really is quite a significant event.

Your commitment in a cooperative sense to further the mutual expansion of energy resources from North America for the benefit of the citizenry of both our countries is edification of the good neighbor policy that exists between our two countries.

I want to thank you, gentlemen, for your testimony.

Mr. PIERCE. Thank you, Mr. Chairman.

Senator MURKOWSKI. It is after 3 so we can call the bankers up.

Mr. Anton Tucher, Mr. Lewand, Mr. Graham, and Mr. Jenks. I want to welcome you to the committee. We have Mr. Collins with us.

Mr. TUCHER. Mr. Collins is the special regulatory counsel for the banks and Mr. Ross is lead financial counsel for the banks.

Senator MURKOWSKI. I welcome Mr. Ross and Mr. Collins to the panel as well. I hope you gentlemen had an opportunity to hear the testimony this morning of the producers and gas consortium distributors. I think it was extremely worthwhile and if I were still a banker I would be somewhat gratified by the testimony given as to the assurances of the marketability of the gas at the price structure anticipated and the expressions concerning the waiver prebilling application to the consumers.

With that editorial, I will ask Mr. Tucher to lead off and I would request you pull the microphone a little more to the right and proceed with your testimony.

I know there are a lot of people here who are very interested in the position of the financial community with regard to this project. Please proceed.

We will insert your prepared statement into the record.

STATEMENT OF H. ANTON TUCHER, VICE PRESIDENT, BANK OF AMERICA N.T. & S.A.

Mr. TUCHER. Mr. Chairman, good afternoon. My name is H. Anton Tucher. I am the vice president of the Bank of America N.T. & S.A., one of four banks that has been asked to consider the financing of the Alaska gas pipeline project and the waivers requested by the President.

Each of the bankers has submitted his own written testimony. These statements cover considerable common ground and rather than each summarizing his statement, we would ask they be incorporated in the record and we will attempt between us to highlight the issues which we believe are most important.

If it meets with your approval, sir, I would suggest that we first make our initial comments and then respond to your questions as a panel.

Senator MURKOWSKI. Please proceed. All statements have been inserted into the record.

Mr. TUCHER. It would probably be useful at the outset to clarify the role of our four banks in this project.

In late May we were asked by the pipeline sponsors to review the outline of their financing plan and to consider a series of waivers proposed by them and intended to facilitate the financing.

We are here today as prospective lenders and prospective lead managers of debt financing. We are not present lenders to the project in Alaska. We are not financial advisers responsible for formulating a financing plan. We are reacting to a loan request presented to us by the sponsors.

We are not equity investors. As lenders, banks are in the business of taking credit risks, risks which I would define as if the borrowers and guarantors might not be able to meet their obligations to us, rather than taking direct equity risks such as completion.

This group of banks have been asked to give their professional assessment of what terms and conditions the world capital market will require in order to make available to the project the unprecedented amount of money required for the project.

The purpose of our participation in these hearings is not to advocate or persuade but rather to tell you what we believe it will take in practical terms to meet the requirements of the world capital markets.

I do not need to tell you that in the private market the funding requirements for this project are truly monumental. The largest loans indicated on a global basis to my knowledge is \$6 billion and that is to a triple A rated corporate borrower.

Using the \$27 billion capital cost estimate that we have been given to work with and the proposed 75 to 25 debt equity ratio, the resulting \$21 billion debt requirement is 3½ times as large as the largest loans indicated up to this time.

The principle of this project must stand the test of economic liability. It has often been the inference that the ability to raise the debt is the test of economic liability.

I would suggest this is only partly true. Projects are economically viable if they can attract both the necessary debt and the necessary equity financing. They can obtain the necessary debt only if the equity or other parties can provide credit worthy undertakings to repay the debt. These undertakings must be acceptable to the lenders. The lenders must be satisfied that the project makes economic sense.

Projects are economically viable within a particular framework. For this project, this framework would in part be provided by Congress with these waivers. The reliable legislative and regulatory climate will be an important part of the framework in which lenders and equity investors will assist this project.

In my prepared remarks I have outlined the scope of work the banks have done in assisting the project, the conclusions we have reached and our bank's view of the waivers you are considering.

As my colleagues will tell you in more detail, the banks have not yet made a determination of the financeability of the project. We have neither been authorized to begin the necessary in depth technical studies nor has it been determined whether adequate precompletion debt support can in fact be developed.

With regard to the waivers, let me simply say speaking for Bank of America that we support the waiver package as a means of

facilitating private financing. While I cannot assure you that with the adoption of these waivers private financing can be arranged, I know of no practical way of obtaining private financing if the package should fail to be approved.

I will be glad to expand on my remarks during the questioning period.

[The prepared statement and accompanying submissions presented by Mr. Tucher follow:]

STATEMENT OF

H. ANTON TUCHER
Vice President
Bank of America NT & SA

BEFORE THE

SUBCOMMITTEE ON FOSSIL AND
SYNTHETIC FUELS OF THE HOUSE
ENERGY AND COMMERCE COMMITTEE

AND

SUBCOMMITTEE ON ENERGY AND
THE ENVIRONMENT OF THE HOUSE
INTERIOR AND INSULAR AFFAIRS
COMMITTEE

ON

October 22, 1981

AND BEFORE THE

UNITED STATES SENATE COMMITTEE
ON ENERGY AND NATURAL RESOURCES

ON

October 23, 1981

WASHINGTON, D.C.

Mr. Chairman and Distinguished Members of the Committee--

My name is H. Anton Tucher. I am a Vice President of Bank of America NT&SA with responsibility for oil and gas pipeline, electric utility, synthetic fuel and alternate energy project financings. I am here today as a financial witness regarding the waiver package you are considering.

I appreciate the opportunity to appear before you today to discuss the financing of the Alaska segment of the Alaska Natural Gas Transportation System (ANGTS). The purpose of my testimony is to give you an overview, from a banker's perspective, of the problems and risks perceived by lenders in assessing the financeability of the Alaska segment, to indicate the types of assurances lenders can be expected to require before extending funds to this project, and to comment on the waiver package submitted to Congress by the President. My purpose is to inform, not persuade. Ultimately, the President and Congress must resolve the fundamental public policy issues involved in the requested waivers.

Let me say at the outset that I will focus my remarks principally on the Alaskan segment of the pipeline and the conditioning plant. I shall refer to this portion of the overall system as the project. You are aware that the Canadian segment will be separately owned and financed -- the lead financing responsibility presumably will be handled by Canadian institutions. The system in the lower 48 states has already been partially "prebuilt" and financed. The issues involved

in the expansion and financing of the "lower 48" facilities required to carry the Alaskan gas have not yet been addressed by the bank group but the problems are clearly secondary to the issues confronting us in the Alaska segment.

Before I discuss specific issues involved in financing the Alaska segment, I would like to give you a very brief history of Bank of America's involvement in the project.

Bank of America has been involved with the pipeline sponsor group for the Alaskan Natural Gas Transportation System from the outset in 1976. For some time we served as commercial bank advisor on limited aspects of the project, particularly the types of tariff provisions needed to permit the pipeline to be project financed. This advisory relationship was terminated by mutual agreement in January 1980.

In late May 1981, we were asked, together with the three other banks represented here today, to review the financing plan presented to us by the sponsors with a view to making a substantial loan commitment for the project and arranging debt financing for the project as a lead managing bank. At the same time, we were asked to comment on a package of waiver requests prepared by the sponsors for submission to the President.

The essential parameters of the financing plan presented by the sponsors were as follows:

1. Capital costs on an "as spent" basis of \$21 billion for the pipeline and \$6 billion for the conditioning plant, with a completion assurance pool of an additional \$3 billion.
2. A debt equity ratio of 75%/25%, and an equity split of 70%/30% between sponsors and producers.

3. The risk of non-completion to be covered by a "completion pool of funds", i.e., irrevocable commitments from lenders and no formal undertakings from creditworthy parties to assure debt repayment in the event of non-completion by a date certain and/or pre-completion abandonment.

During the summer, we began our review of the project. We looked at the questions of gas marketability, capital cost and technical feasibility of the project only to the point of considering how these questions should be studied in depth by the banks. We are in the process of identifying independent consultants to assist us in conducting technical studies necessary to evaluate the marketability of the gas, the capital cost estimates and construction programs, and the adequacy and deliverability of the gas reserves. While we therefore do not yet have an independent view on the technical and economic viability of the project, we are for the present operating on the assumption that the sponsors and producers - all responsible companies experienced in major energy projects - are proceeding with this project because, in their view, it is technically and economically viable. Independent verification of this assumption with the assistance of consultants retained by the banks can and will be made in due course in accordance with usual practice in major project financings.

To date, we have focused our investigation and analysis on three areas:

First, we surveyed on a global basis the likely availability of funds from the debt markets in amounts commensurate with the enormous size of this project. Without going into detail, let me say that we found that the debt requirements of this project are likely to test the limits of the world's capital markets. Just one set of numbers will

illustrate the magnitude of the problem. The aggregate legal lending limits of the 100 largest banks in the United States amounted to approximately \$4.7 billion at the end of last year. The next 200 banks collectively could lend only a maximum of \$1.4 billion and are not likely to be a very significant source of funds. In mentioning legal lending limits, I should point out that banks lend up to their legal limits only to their best and most creditworthy customers. For most major banks, loans up to their legal limits are the exception rather than the rule. In an effort to manage and diversify the risks in their portfolios, many banks have self-imposed "house" or "policy" limits that are considerably smaller than their legal limits. It would be reasonable to expect that these house limits would be applied to this project.

The ability to raise the enormous amount of debt financing implicit in the \$27 billion capital expenditure estimate will depend on several factors, the overall financing structure, the unquestioned strength of the credit being offered, the terms being sought and the condition of world financial markets. It will also depend on lenders' perceptions of the U.S. government's attitude towards this project.

Lenders throughout the world will be looking for a reliable legislative and regulatory framework within which the financing can be arranged.

I wish I could be more definitive on the question of funding availability than to say that, under the right set of conditions, it may well be possible to raise the required amounts. However, because it

will be necessary to obtain the participation of literally hundreds of the world's major lenders, the financing structure must be sufficiently strong to satisfy all of them.

Second, we analyzed the proposed financing structure presented by the sponsors. Our unanimous conclusion here was influenced very heavily by what we found in our funding availability study. To raise the required amount of money, the credit had to be very strong. Practically speaking, very strong means that lenders must be assured that there are creditworthy parties who have the financial capacity and incentive to assure timely project completion or, failing to accomplish completion by a date certain, have the financial capacity and obligation either to repay or to assume the debt in the event of non-completion. In the operating phase, the project must be capable of transporting a sufficient volume of gas, at a cost resulting in an assuredly marketable price; tariffs and tracking provisions must be unquestionably effective from the outset, and throughout the life of the financing; and these tariffs must generate a reliable cash flow to meet operating costs, interest and principal repayment obligations, normally with a margin of safety represented by return on and of equity.

We have given considerable thought to possible sources of credit support during the pre-completion phase. The banks were unanimous in their view that a completion pool of funds by itself did not provide sufficient assurance that the project could and would be completed on time. The size of the project relative to both the financial capacity of the sponsors and the size of the world capital

markets is simply far too great; the risks and uncertainties inherent in the project are too large; and the size of any reasonably attainable pool of funds would be too small. We told the sponsors and producers that in the professional opinion of the four banks, the project could only be financed if lenders were assured that creditworthy parties had undertaken to assume or repay the project debt in the event of non-completion of the project by an agreed upon date.

The banks reported our findings during the first phase of our work in a letter to John McMillian dated August 28, 1981. We are submitting a copy to you with the request that it be incorporated in the record.

We have not yet begun detailed discussions with individual pipeline sponsors and producers about the amount or terms of equity and pre-completion debt support that each party is prepared to provide, but it is apparent that the development of sufficient pre-completion debt support from this group, given the \$27 billion capital cost estimate, represents a major challenge that will require considerable negotiations among the various parties.

Third, we considered the waivers presented to us by the sponsors. As I indicated, the banks' involvement with the waivers of law as a means of resolving lenders' concerns previously identified began in late May of this year when we were asked to comment on the proposed set of waivers prepared by the pipeline sponsors. We provided our views on that set of proposed waivers in our letter to John McMillian of June 3, 1981. A copy of the letter is being submitted to you for incorporation in the record. We identified certain of the

waivers as being of particular importance in facilitating the financing. As I will discuss later in more detail, we also suggested that the waiver request in regard to the commencement of billing under the tariff should preserve flexibility as to the possibility of further segmenting the Alaskan segment for commencement of billing or of establishing some other basis of earlier billing commencement as to some or all charges.

During June and July, we met with a number of Administration and Congressional principals and staff members to explain the banks' views on the waiver package. I think that it is important to point out that all the waivers included in the President's request were included in substantially the same form in the original package which was given by the sponsors to the banks in May. That package at that time also included items not now before you for consideration. None of the waivers originated with the banks.

With this background, let me now turn to the specific waivers being requested. Let me reiterate my purpose is not to persuade or to advocate but simply to tell you how the various provisions affect the financeability of the project, as we understand them.

I will focus my comments on waivers concerning producer ownership participation, billing commencement date, and authority to modify or rescind orders. These are the waivers which we believe have the most direct impact on lenders. The remaining waivers affect the financing but indirectly.

Producer Ownership Participation

In our judgment, producer participation in the equity of the project will significantly facilitate the financeability of the project. Lenders will understandably be very concerned that the ownership group have the financial capacity to assure timely completion and to provide necessary pre-completion debt support. The substantial equity participation by the three producer companies adds substantial financial capacity and thus important comfort to the lenders. Furthermore, we had it explained to us that the producers' willingness to provide any formal pre-completion debt support would be strictly on a pro-rata basis relative to their share of ownership vis-a-vis the pipeline sponsors. Thus, since the existing pipeline sponsor group does not have the capacity to provide all the necessary pre-completion debt support and insufficient support appears to be available from other sources, significant producer involvement in the equity and pre-completion debt support arrangements would seem to be practically essential. For that reason, we support the waiver to permit producer ownership participation in the project.

Billing Commencement Date

A number of fairly complex, distinct but related issues come into play here. Understandably, therefore, this waiver has caused the greatest misunderstanding. There appears to be misunderstanding of its purpose and effect, and misunderstanding of the position of the banks.

Let me first tell you what we understand the present waiver request would and would not accomplish for lenders to the project. For tariff purposes, it would essentially divide the project into two

segments in Alaska, the conditioning plant and the pipeline. It would authorize the FERC to approve tariff arrangements that would permit minimum bill charges, for operating costs, actual taxes, and debt service payments (principal and interest), relating to either of these two Alaskan segments, to commence after a date approved by the FERC, and upon completion of that segment. It would not, however, provide lenders for either portion of the project protection against the risk of non-completion of the portion to which they are lending. All that it would provide is protection against the risk of non-completion of the other Alaskan portion, or of the Canadian segment, or of other facilities needed to ship gas through the system. In our judgment, this limited protection against non-completion of facilities other than those being directly financed is, in practical terms, essential to permit private financing. Lenders will certainly not assume the risk of non-completion of other facilities. We see no creditworthy private party - not the pipeline sponsors or producers, nor the Canadian sponsors - who could reasonably be expected to assume this risk. Financial capacity limitations and considerations of prudence preclude this possibility.

Three additional points regarding this requested waiver should be made.

First, while this waiver provides limited protection to lenders, equity owners will have to wait until the total system is completed before the tariff provisions for return on and of equity come into force.

Secondly, it should be pointed out that this waiver is not a total departure from the present situation. Under existing law and FERC orders, the tariff relating to the Alaskan facilities is set to begin charges to the consumer once the system is completed and commissioned, but without the necessity of gas actually flowing. As things stand now, without the proposed waivers, the pipeline tariffs begin to operate even if gas cannot flow because the plant or gathering facilities have not been completed. The billing commencement waiver with regard to the Alaska project segments largely restores the situation that exists without the waiver change that incorporates the plant into the ANGTs.

The third point concerns the impact of a separate billing commencement date for Canada on the financing of the Alaskan facilities. The basic purpose of this provision is to facilitate the financing of the Canadian segment. This aspect is appropriately addressed by other witnesses, but from the perspective of a lender to the Alaskan project one can say that separate Canadian billing commencement will directly facilitate financing of the Alaskan project facilities. By facilitating the Canadian financing, it should remove one area of uncertainty for the Alaska financing.

At this point, you might reasonably ask just how large the risk of non-completion of the various segments is in the perception of lenders, and exactly what assurance anyone can have that the overall system will in fact be completed. As I mentioned, the banks have not yet made an in-depth review of the construction plans, and I have no testimony on the precise risk of non-completion. I can, however, assure

you on two points. We will not go forward until we have done a "due diligence" investigation to satisfy ourselves on the technical, economic, financial and regulatory feasibility of completing the whole system. Secondly, even if the present waiver package is approved, no lender or equity owner in any segment would have any reason to proceed with his individual segment unless he were satisfied that his segment will in fact be completed. No money would be available from the tariff to lenders or equity owners unless their segment is completed.

Many distinguished Members of this Committee will probably be aware that the banks have strongly suggested to the sponsors, and in conversations with Administration and Congressional officials and staff have urged, that the waiver package preserve flexibility to permit some form of pre-completion billing commencement in Alaska beyond that contemplated in the present waiver request that would provide some form of consumer risk-taking or actual tariff charges to commence prior to completion of the Alaskan segment. A memorandum dated July 13, 1981, briefly outlining the banks' views on the early billing commencement issue, was supplied to Administration officials and to Committee Staff in both houses. A copy of this memorandum is submitted for inclusion in the record. We continue to believe that the delegation of authority to FERC to permit some limited but expanded form of pre-completion billing commencement would have been enormously helpful in facilitating private sector financing. With Congressional approval of the present narrower billing commencement waiver, the task of developing the needed pre-completion debt support will be far more ambitious. I cannot overemphasize the magnitude of the challenge that faces the sponsors and

producers in this regard. We will work with them. I wish I could give you assurance that we will succeed. All I can say is that without the requested waiver, as a practical matter, private financing cannot be arranged, and that with it we will give it our very best try.

Authority to Modify or Rescind Orders

So long as lenders to the project can look for payment of interest and repayment of principal after completion of the ANGTS solely to the project's ability to generate the necessary cash flows from charges passed on through the FERC approved tariff arrangements, including the tracking provisions by the individual shipper pipeline companies - and we know of no other practical source of post-completion credit support - lenders will lend only if they have confidence that they can rely on these FERC approved tariffs throughout the life of their loans. We have read with interest the recent opinion of the General Counsel of the FERC dealing with the present state of the law.

While it is true that lenders, including this bank, have on occasion been willing to assume this type of regulatory risk in much smaller transactions, those transactions are so different, both in size and in the nature of the underlying situations, as to make those cases, in our opinion, practically irrelevant for this project. To raise the required amounts of money in the capital markets of this country, and particularly abroad, will require the elimination of what has come to be known as "regulatory risk." In my opinion, this makes adoption of the requested waiver in this regard absolutely mandatory if private financing is to be arranged.

It is important to point out here that neither commencement of billing under a tariff nor regulatory certainty of that tariff will guarantee lenders payment of any money. They simply provide a reliable regulatory framework within which contracts may be made. Performance under these contracts and the marketability of the gas involve risks that lenders must appraise in order to determine the acceptability of the credit.

I have focused my comments on those items of the waiver proposal which we view as the most critical for achieving private financing of the project. The remaining items, some of which are of a purely technical nature, may each add perceptibly to the feasibility of attaining private financing for the project, either by facilitating the certifications for the project as with the evidentiary hearing waiver, or by necessary clarifications as with the regulatory status of the project as a natural gas company. However, from a lender's standpoint, they are clearly overshadowed by the importance of the three items I have discussed today. I cannot emphasize enough that without approval of these waivers, private financing for the project is not possible. On the other hand, I cannot tell you that approval of the waivers will assure private financing for the project. What the waivers will accomplish is to provide a framework within which negotiations can continue in an effort to structure a financing plan which will be acceptable to the various interested parties including the literally hundreds of the world's major lenders necessary to finance the project.

Thank you. I would be happy to respond to any questions you may have.

SUBMISSIONS ACCOMPANYING

PREPARED STATEMENTS

OF

H. ANTON TUCHER

ON BEHALF OF

BANK OF AMERICA, N.T. & S.A.

STANLEY J. LEWAND

ON BEHALF OF

THE CHASE MANHATTAN BANK, N.A.

ROBERT H. GRAHAM

ON BEHALF OF

CITIBANK, N.A.

STEPHEN W. JENKS

ON BEHALF OF

MORGAN GUARANTY TRUST COMPANY OF NEW YORK

1. Letter dated June 3, 1981 from the Banks to Northwest Alaskan Pipeline Company.
2. Memorandum dated July 13, 1981 entitled "Summary of Bank Views on the Early Billing Commencement Issue."
3. Letter dated August 28, 1981, from the Bank of America National Trust & Savings Association, the Chase Manhattan Bank (National Association), Citibank, N.A. and Morgan Guaranty Trust Company of New York (collectively, the "Banks") to Northwest Alaskan Pipeline Company.

June 3, 1981

Mr. John G. McMillian
Chairman and Chief Executive Officer
Northwest Alaskan Pipeline Company
1120 20th Street, N.W.
Suite S-700
Washington, D.C. 20036

Dear John:

During the past two days, representatives of Bank of America National Trust & Savings Association, The Chase Manhattan Bank (National Association), Citibank, N.A. and Morgan Guaranty Trust Company of New York (the "Banks") met to discuss the Alaskan Northwest Natural Gas Transportation Company ("Alaskan Northwest") legislative waiver proposal forwarded to the Banks last week by Rush Moody, Jr. We understand that Alaskan Northwest intends to request that the President submit a legislative waiver proposal to Congress under Section 8(g) of the Alaska Natural Gas Transportation Act of 1976, which authorizes the President to request the waivers of certain provisions of law "in order to permit expeditious construction and initial operation" of the Alaska Natural Gas Transportation System ("ANGTS").

You have asked us for our preliminary views on legislative waivers by the middle of this week. Because of the limited amount of time available to us, we have not had an opportunity to review your proposal with regulatory counsel. Moreover, any consideration in depth of the general question of whether waivers additional to those identified and discussed generally herein may be necessary or advisable in order to finance the Alaskan portion of ANGTS privately must await further development of the detailed structure of a financing plan through negotiations among the project's sponsors and the lenders. Rather we have sought at this early stage to give you our views on the waivers presently identified to us which are of particular concern to lenders.

1. Commencement of Billing Under the Tariff. We agree that it is necessary for billing to commence under the tariff for the Alaskan segments of ANGTS prior to the "completion and commissioning" of the entire ANGTS. Moreover, we feel that the waiver request should leave open for now the

question of whether the Alaskan segment should be treated as one or divided into segments for purposes of commencement of billing, or whether there is some other basis on which to establish earlier billing commencement as to some or all charges. This revision could provide flexibility in developing an acceptable financing plan for the Alaskan portion of ANGTS. Different approaches which might be used in the financing plan include designating individual segments of the Alaskan portion on the basis of area covered, difficulty of construction or cost of construction.

2. Producer Participation. We endorse the equity participation in the project by producers of Alaskan gas. We believe that producer participation in the project will be a significant, constructive step in enhancing the project's financeability.

3. Regulatory Consistency. In the view of the Banks, a necessary component in any successful financing plan for ANGTS is the proposition that, once made, regulatory decisions on which the project's lenders have relied will not subsequently be rescinded or modified to their detriment. Accordingly, the Banks support the requested waiver of Sections 4, 5 and 16 of the Natural Gas Act (the "NGA") as those sections and applicable rules, regulations and orders may affect regulatory decisions made in connection with ANGTS or the shipper tracking mechanism referred to below in 4. The Banks also support the proposed waiver of Sections 1(b) and 2(6) of the NGA in order to confirm that Alaskan Northwest will be a "natural gas company" for all purposes under the NGA when "completion and commissioning" occurs for a segment of the pipeline, whether or not gas is actually flowing.

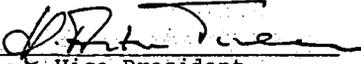
4. Shipper Tracking and Pricing. Since the debt financing for the construction of the various segments of ANGTS is expected to be amortized principally through transportation charges paid by shippers, it seems to us to be important that tracking provisions be in place at the outset of the financing which permit the shippers to recover these charges from their customers. In addition, to the extent that any statutory provision, rule, regulation or order could be construed to require incremental, rather than rolled-in, pricing in connection with gas delivered through a segment of ANGTS, such provision or regulation should be waived.

In the time frame and prior to the development of a detailed financing plan we cannot be more definitive in our comments. However, we hope that it is helpful to you to have our views at this time. As you know, key issues in the formulation of a financing plan still remain unresolved and may well require additional legislative waivers or other legislative or regulatory action. We look forward to working with you in resolving these issues.

Please let us know if you have any questions or comments on this letter.

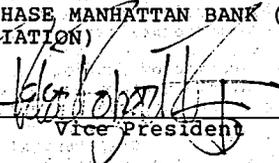
Very truly yours,

BANK OF AMERICA NATIONAL TRUST
& SAVINGS ASSOCIATION

By 

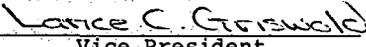
Vice President

THE CHASE MANHATTAN BANK (NATIONAL
ASSOCIATION)

By 

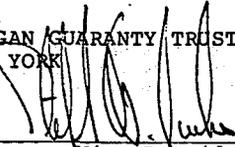
Vice President

CITIBANK, N.A.

By 

Vice President

MORGAN GUARANTY TRUST COMPANY OF
NEW YORK

By 

Vice President

SUMMARY OF BANK VIEWS ON THE EARLY BILLING COMMENCEMENT ISSUE

In a June 3, 1981 letter to John G. McMillian of Northwest Alaskan Pipeline Company commenting on a draft legislative waiver proposal, the Banks stated their view that it is necessary for billing to commence under the tariff for the Alaskan segments of ANGTS prior to the "completion and commissioning" of the entire ANGTS. The position of the Banks regarding the manner in which early commencement of billing should be treated in the legislative waiver proposal remains the same as stated in the June 3 letter.

"(T)he waiver request should leave open for now the question of whether the Alaskan segment should be treated as one or divided into segments for purposes of commencement of billing, or whether there is some other basis on which to establish earlier billing commencement as to some or all charges."

The June 3 letter went on to note that this suggested approach would provide flexibility in developing a plan for the private sector financing of the Alaskan portion of ANGTS. A copy of the June 3 letter is attached for convenient reference.

- I. Reasons why some form of early commencement of billing for debt service is important to the financeability, on a private sector basis, of the Alaskan portion of ANGTS:
 - (a) Positive impact on the economic feasibility of the project by reducing overall capital costs and therefore improving gas marketability.
 - (b) Reduction of funding requirements. For example, the payment of interest during construction could reduce aggregate funding requirements by a significant amount.
 - (c) Mitigation of potential cost overruns which are often largely represented by the capitalized interest costs of delay.
 - (d) Potential additional assurance of debt repayment to bank lenders and other creditors.
 - (e) Consistent with Canadian early billing requirements upon completion of the Canadian portion of ANGTS.

- II. Possible mechanisms for early billing commencement (which might be appropriate singly or in combination):
- (a) Provide for prompt commencement of billing for interest.
 - (b) Provide for commencement of billing for debt service charges in stages as the project achieves predetermined financial goals (possibly with an additional grace period before debt repayment is required).
 - (c) Provide for early commencement of billing based upon the completion of geographically defined segments.
- III. Reasons why it is premature to identify the precise form and terms of an appropriate mechanism:
- (a) The Banks must complete their review of the project engineering, as well as the studies which they are presently undertaking regarding the worldwide capacity of capital markets, gas marketability and the economic feasibility of the project.
 - (b) Congressional treatment of other issues raised in the waiver request must be taken into account.
 - (c) A specific financing plan must be formulated and negotiated with the project companies and agreed upon by the parties.

Although the foregoing outline deals only with the issue of early billing commencement, the June 3 letter on legislative waivers also expressed the view of the Banks on the issues of producer equity participation, regulatory consistency and shipper tracking and pricing. Moreover, the Banks are not in a position at this time to state whether other issues may not also be appropriate for legislative or regulatory consideration from the standpoint of lenders. As was stated in the June 3 letter:

"[A]ny consideration in depth of the general question of whether waivers additional to those identified and discussed generally herein may be necessary or advisable in order to finance the Alaskan portion of ANGTS privately must await further development of the detailed structure of a financing plan through negotiations among the project's sponsors and the lenders."

"As you know, key issues in the formulation of a financing plan still remain unresolved and may well require additional legislative waivers or other legislative or regulatory action."

July 13, 1981

June 3, 1981

Mr. John G. McMillian
Chairman and Chief Executive Officer
Northwest Alaskan Pipeline Company
1120 20th Street, N.W.
Suite S-700
Washington, D.C. 20036

Dear John:

During the past two days, representatives of Bank of America National Trust & Savings Association, The Chase Manhattan Bank (National Association), Citibank, N.A. and Morgan Guaranty Trust Company of New York (the "Banks") met to discuss the Alaskan Northwest Natural Gas Transportation Company ("Alaskan Northwest") legislative waiver proposal forwarded to the Banks last week by Rush Moody, Jr. We understand that Alaskan Northwest intends to request that the President submit a legislative waiver proposal to Congress under Section 8(g) of the Alaska Natural Gas Transportation Act of 1976, which authorizes the President to request the waivers of certain provisions of law "in order to permit expeditious construction and initial operation" of the Alaska Natural Gas Transportation System ("ANGTS").

You have asked us for our preliminary views on legislative waivers by the middle of this week. Because of the limited amount of time available to us, we have not had an opportunity to review your proposal with regulatory counsel. Moreover, any consideration in depth of the general question of whether waivers additional to those identified and discussed generally herein may be necessary or advisable in order to finance the Alaskan portion of ANGTS privately must await further development of the detailed structure of a financing plan through negotiations among the project's sponsors and the lenders. Rather we have sought at this early stage to give you our views on the waivers presently identified to us which are of particular concern to lenders.

1. Commencement of Billing Under the Tariff. We agree that it is necessary for billing to commence under the tariff for the Alaskan segments of ANGTS prior to the "completion and commissioning" of the entire ANGTS. Moreover, we feel that the waiver request should leave open for now the

question of whether the Alaskan segment should be treated as one or divided into segments for purposes of commencement of billing, or whether there is some other basis on which to establish earlier billing commencement as to some or all charges. This revision could provide flexibility in developing an acceptable financing plan for the Alaskan portion of ANGTS. Different approaches which might be used in the financing plan include designating individual segments of the Alaskan portion on the basis of area covered, difficulty of construction or cost of construction.

2. Producer Participation. We endorse the equity participation in the project by producers of Alaskan gas. We believe that producer participation in the project will be a significant, constructive step in enhancing the project's financeability.

3. Regulatory Consistency. In the view of the Banks, a necessary component in any successful financing plan for ANGTS is the proposition that, once made, regulatory decisions on which the project's lenders have relied will not subsequently be rescinded or modified to their detriment. Accordingly, the Banks support the requested waiver of Sections 4, 5 and 16 of the Natural Gas Act (the "NGA") as those sections and applicable rules, regulations and orders may affect regulatory decisions made in connection with ANGTS or the shipper tracking mechanism referred to below in 4. The Banks also support the proposed waiver of Sections 1(b) and 2(6) of the NGA in order to confirm that Alaskan Northwest will be a "natural gas company" for all purposes under the NGA when "completion and commissioning" occurs for a segment of the pipeline, whether or not gas is actually flowing.

4. Shipper Tracking and Pricing. Since the debt financing for the construction of the various segments of ANGTS is expected to be amortized principally through transportation charges paid by shippers, it seems to us to be important that tracking provisions be in place at the outset of the financing which permit the shippers to recover these charges from their customers. In addition, to the extent that any statutory provision, rule, regulation or order could be construed to require incremental, rather than rolled-in, pricing in connection with gas delivered through a segment of ANGTS, such provision or regulation should be waived.

In the time frame and prior to the development of a detailed financing plan we cannot be more definitive in our comments. However, we hope that it is helpful to you to have our views at this time. As you know, key issues in the formulation of a financing plan still remain unresolved and may well require additional legislative waivers or other legislative or regulatory action. We look forward to working with you in resolving these issues.

Please let us know if you have any questions or comments on this letter.

Very truly yours,

**BANK OF AMERICA NATIONAL TRUST
& SAVINGS ASSOCIATION**

By _____
Vice President

**THE CHASE MANHATTAN BANK (NATIONAL
ASSOCIATION)**

By _____
Vice President

CITIBANK, N.A.

By _____
Vice President

**MORGAN GUARANTY TRUST COMPANY OF
NEW YORK**

By _____
Vice President

August 28, 1981

Mr. John G. McMillian
Chairman & Chief Executive Officer
Northwest Alaskan Pipeline Company
P. O. Box 1526
Salt Lake City, UT 84111

Dear Mr. McMillian:

In our letter of June 18, 1981, submitting our proposal to assist you in structuring financing for the Alaska Segment of the Alaska Natural Gas Transportation System (ANGTS) (the "Project"), we (the "Banks") indicated that, in the first phase of our work, we would complete a preliminary review of capital markets and funding sources for the Project and present to you our initial assessment, not only of the amounts, but also of the basic terms on which we believe funds from these sources might be available. We also undertook to develop an approach to reviewing the technical and marketing aspects of the Project and to determine how we could obtain satisfactory access to a financial model to assist us in analyzing the financing plan.

On August 6, 1981 we wrote to you to report on the first phase of our work. In subsequent conversations you asked for certain clarifications and amplifications of statements in that letter. In response, we are submitting this letter which replaces and supercedes our earlier letter.

We have conducted our investigations and analysis on the basis of information furnished by you, contained in the presentations you gave to each of the Banks in late May, the Project Overview you supplied to each of the Banks at that time, your letter to Exxon, Sohio, and Arco (the "Producers") dated May 21, 1981 outlining the terms of the pipeline sponsors' (the "Sponsors") agreement with the Producers, a number of financial cases prepared by the Sponsors, and information you provided in connection with certain legislative waivers in order to facilitate financing and construction of the Project.

Concurrently with this phase of our work we have been considering the legislative waivers. We wrote to you on this subject on June 3, 1981, and on July 14, 1981 we made available to you a memorandum which was distributed to a number of Administration officials and Congressional staff. We continue to support the views expressed in those communications, and would emphasize the need for a flexible approach to "billing commencement" until a more definite financing plan is developed.

The principal focus of our efforts to date has been to address the funding availability and related credit aspects of the Project, and this letter deals almost entirely with these subjects. However, a few brief comments are also included on the work of our task forces which have been addressing the issues of Gas Marketability, Engineering, and Financial Modeling. These groups have been developing approaches to their respective aspects of the Project to be pursued in detail in subsequent phases of our work. While the scope of their work is more appropriately covered in a later proposal dealing with parameters and premises that should govern the next phase of our work, several of their conclusions are relevant to this report and form Appendix A.

Inter-Relationship of ANGTS Segments

We were asked to focus our analysis of the Project on the Sponsors' share of the financing for the Alaska Segment. However, upon reflection, it became apparent to us that it would be necessary to broaden our consideration to take into account the impact on the capital markets of the aggregate financing requirements of both the Sponsors and Producers in Alaska as well as the financing requirements for the overall ANGTS project, including Canada and the "lower 48".

- a) We understand that it is the intent of both the Sponsors and Producers that, after completion, all financing for the Alaska Segment is to rely on a common source of repayment, i.e. the tariff arrangements. Therefore, we could not ignore the Producers' share of the financing for the Alaska Segment and did not attempt to consider separate and discrete financings for the Sponsors and Producers.
- b) Since, to the best of our knowledge, the post-completion sources of repayment for the Alaska Segment, the financing of the expansion of the "lower 48" facilities and the refinancing of the prebuilt segments will rely on common payment arrangements through the tariffs, we expect that lenders would consider those financings one credit for risk and funding allocation purposes.
- c) While the Canadian segment will have available to it additional Canadian loan sources, there is a substantial overlap both in the available funding sources and in the risks, given that all segments rely on related tariffs.

Funding Availability Study

Appendix B contains our initial assessment of funds availability, together with preliminary indications of the basic terms on which funds might be made available for the Project. Although our

estimates are based on conversations with a relatively small number of potential lenders, the results conform with our own views and we believe are an accurate reflection of availability of funds in world capital markets under current market conditions.

For reasons described below, the review was undertaken on the basis that the loans would be the risk equivalent of debt with an A/Baa credit rating. Given the equivalent of an A/Baa credit, the maximum amount of Project credit available for the Alaska segment is estimated to be between \$12 billion and \$18 billion. For reasons described above, this amount will be affected by the funding strategy for the Canadian segment and for the expansion of the "lower 48" facilities. This total amount includes loans from domestic and foreign banks, foreign export credit agencies, and institutional lenders, all of whom are assumed to commit in early 1982. This assumes the satisfactory negotiation of acceptable terms with foreign export credit agencies, i.e. their willingness to accept the same credit support as the banks and longer than usual maturities; and the current reluctance of insurance companies to make forward commitments. We expect, however, that insurance companies might be willing to lend additional amounts beyond those contemplated in the funding study as the Project progresses.

We anticipate that the typical final maturity for the financing would be ten years with a grace period of five years and an average life of 7.5 years. There would, of course, be tranches with final maturities of 5-7 years from the smaller U.S. and European banks and of 12-15 years from certain larger banks and institutional lenders. The bulk of the bank financing would, however, have a ten year final maturity and a 7-8 year average life.

Without a dramatic improvement in credit quality, neither the availability of funds nor the average life of the financing would increase significantly. A reduction in credit quality below the equivalent of an A/Baa would, however, have a material adverse impact on both the amount and average life of the financing.

Basic Financing Conditions

The Banks have given considerable thought to the question of the basic financing conditions for the Project based on the assumptions you have provided:

1. Capital costs on an "as spent" basis of \$21 billion for the pipeline and \$6 billion for the conditioning plant, with a completion assurance pool of an additional \$3 billion.

2. A debt/equity ratio of 75%/25%, and an equity split of 70%/30% between Sponsors and Producers;
3. Your request that the Banks consider a completion pool of funds concept, i.e., irrevocable commitments from lenders and no formal undertakings from creditworthy parties to assure debt repayment in the event of non-completion by a date certain and/or pre-completion abandonment.

While we used these basic premises in our Phase I review and have drawn certain conclusions regarding their acceptability we suggest that any premises to be used in Phase II will need to be thoroughly tested as the Project's financial structure is developed.

Given the results of our funding study, and our review and consideration of the Project information forwarded to us, we have come to the following conclusions:

1. Our funding study clearly indicates that the overwhelming bulk of the financing will be available only if lenders perceive the credit structure to be the risk equivalent of debt of A/Baa quality.

We believe that for the Project to be considered of this credit quality and, therefore, for commitments in the necessary amounts to be arranged prior to commencement of construction, the following basic criteria would have to be met:

- a) The ANGTS project must be economically and technically feasible.
- b) The debt must be supported by repayment assurances involving
 - (i) during the pre-completion phase, a combination of
 - acceptable debt assumption arrangements by Sponsors, Producers and possibly other beneficiaries, and
 - acceptable commencement of billing provisions prior to the completion of the overall System;
 - (ii) acceptable post-completion, cost of service transportation tariffs providing for debt service in all events;
 - (iii) acceptable tracking provisions; and
 - (iv) all tariff arrangements relating to debt service to have assurance of regulatory certainty mandated by law.

- c) Sufficient funding must be considered by lenders to be available to meet potential overrun requirements.
- d) The cash flow from the Project for debt repayment must be sufficient so that a substantial refinancing risk would not be present, particularly if the economics of the Project are potentially marginal in early years (see later discussion on refinancing risk).

It is our judgment that loans based on the completion pool of funds concept as presented will not be perceived by lenders generally to be of A/Baa quality. Consequently the bulk of the funds needed for the construction of the Project cannot be raised on that basis. Only a relatively small number of banks are capable of assessing and prepared to assume engineering-based risks as required under a completion pool of funds concept. We cannot ascertain the exact amount, if any, which might be raised for this Project on a completion pool of funds basis without having further developed the credit structure for all the financing. However, we strongly believe that: (i) the small number of banks prepared to provide financing on this basis would commit only a small part of their lending limits to such a credit and in the aggregate that amount would be a relatively small part of the total debt required, and (ii) such banks would require substantial inducements and difficult-to-achieve conditions precedent to any drawings under their commitments.

2. Although we have focused our analysis principally on the problem of funding availability and on basic conditions of the initial debt financing, several points relating to post-completion financing problems should be noted:

- a) There could be substantial refinancing requirements in the early years of operation and perhaps in the later years of construction.
- b) Once completed, the Project, assuming a properly functioning FERC-approved tariff, regulatory certainty, and demonstrated gas marketability, may command an investment grade rating for private placements and public issues.
- c) On these assumptions, and with the understanding that not all refinancing requirements will have to be satisfied at one moment after completion, we believe that it should be possible to raise the amounts needed to refinance maturing loans.

3. We have not had an opportunity to review the bases on which the capital cost estimates are calculated, and therefore, are not in a position to comment on their appropriateness under modified debt financing concepts. Thus, we do not know the exact level of required funding for the Project and the overall ANGSTS. To the extent that the debt requirements at the outset exceed the amount considered available for one credit, funds will have to be raised as entirely separate and discrete credits, under the full financial responsibility of creditworthy parties. Such commitments would be additional to any credit responsibility assumed by such parties in connection with debt repayment assurances for financings in the pre-completion phase of the Project.

Based on our conclusions and rather than pursuing the "completion pool of funds" concept as the primary method of raising debt financing (and it is our judgment that it cannot be relied upon) we suggest consideration of the following:

- a) primary reliance on conventional project completion/debt assumption arrangements providing for an assured source of repayment by the equity owners in the event of non-completion and/or abandonment;
- b) to the extent available, debt, which while not supported by debt assumption arrangements from equity owners in the event of non-completion, would be subject to conditions precedent to usage; these conditions would provide assurance that completion will occur and that the Project remains economically feasible;
- c) debt support and/or debt from other beneficiaries of the Project; and
- d) to the extent required, commencement of billing prior to completion of the overall system.

Given the capital cost estimates we have reviewed and based on the relevant financing parameters you have provided us, it is our considered opinion that all the debt support mechanisms outlined above in a), b), c), and d) will have to be aggressively pursued. We would strongly suggest that at this time the Sponsors place primary emphasis on the project completion/debt assumption arrangements.

In view of the Banks' conclusion that "the bulk of the funds needed for the construction of the project cannot be raised on a completion pool of funds basis" it may be desirable for the Sponsors to review the contingency provision in the capital cost estimates premised on the "completion assurance pool of funds" concept. This would yield a

reduction of at least \$3 billion in the \$30 billion financing requirements as presented to us. Further reductions are, of course, dependent on the level of contingencies thought to be necessary including the rates of inflation and interest that are selected. We would encourage your review of the capital cost estimate to develop a base case for lender review of the total funding requirements under modified project financing concepts.

In summary, if the required credit support can be arranged, the Banks are of the opinion that a modified plan may well provide the basis for private sector financing of the Project. The nature of the modifications required are essentially, although not completely, covered in the suggestions we have recommended for your consideration. The way in which these suggestions are implemented will, of course, be instrumental, along with other conditions we have noted in this letter, in actually achieving the funding commitments that will be required.

We recognize that there are practical limits to the resources the Sponsors and Producers can and will commit to the Project, as well as limits to the extent of pre-completion consumer participation. We have not attempted to determine these limits, believing as we do, that these limits are best determined by negotiations within the partnership and by the regulatory and political process. The early determination of the relative interests of each equity participant will be a necessary precondition to the timely development of a financing plan.

While we have tried to provide you in this letter with our considered opinions on certain fundamental aspects important to the development of the financing, we feel that a forum for discussion of our views would be extremely helpful. We appreciate that the magnitude and complexity of the Project will necessitate a great deal of thought and discussion by all parties to arrive at a mutually agreeable financing plan. We would like to assure you of our enthusiastic support for and readiness to participate in such a discussion.

Sincerely,

BANK OF AMERICA NATIONAL TRUST
& SAVINGS ASSOCIATION

By *[Signature]*
Vice President

THE CHASE MANHATTAN BANK
(NATIONAL ASSOCIATION)

By *[Signature]*
Vice President

CITIBANK, N.A.

By *[Signature]*
Vice President

MORGAN GUARANTY TRUST COMPANY
OF NEW YORK

By *[Signature]*
Vice President

APPENDIX A

Gas Marketability Study

The question of marketability goes to the heart of the economic viability of the Project, affecting not only the ability of the shippers to collect their transportation charges through the tariff but also the incentive to various parties to commit funds and to assure completion. As such, we believe that it is important for the marketability of Alaskan gas under various market and regulatory scenarios to be reviewed with great care on our behalf by reputable independent consultants and that this study be completed at the earliest possible date. The gas marketability committee has defined the scope of required work and has identified acceptable consultants.

Engineering Review

As we see it the required reviews of engineering information by independent consultants on our behalf should fall within two distinct areas: (1) The availability and deliverability of gas reserves and (2) validation of the engineering work done in connection with planning the construction of the conditioning plant and pipeline, with particular emphasis on costs and the risks of non-completion.

The gas reserves portion of this work is not expected to pose any particular problem. While financing commitments would be subject to validation of the adequacy of reserves by independent consultants acceptable to the Banks, this study can, in our judgment, be postponed until shortly before loan syndication. In the interim, we are prepared to proceed on the basis of a review by bank engineers and assume that the study by independent consultants will confirm that there are adequate reserves to meet contracted deliveries.

Much more difficult and important at this time is the work of validating the engineering work done in connection with the construction of the conditioning plant and pipeline. The scope of the required work will, at a minimum, include a "due diligence" overall review of all major technical aspects of the Project. This study would include an assessment of technical feasibility, the basis and adequacy of cost estimates and schedules, and identification of critical risk areas that might require further analysis. The study of the plant and pipeline should be commenced as soon as possible.

Financial Modeling

Our Financial Modeling Committee has been working with your people to understand the model you have been using. They have concluded that the most effective approach would be to develop ways of utilizing your model as the principle source of computer simulation. We have begun that process. We would expect to augment this work with relatively modest amounts of computer analysis using the individual Banks' existing resources.

FUNDING STUDY

ANGTS PROJECTFUNDING SUMMARY

The Funding Committee has been requested to assess the availability of funds from all significant sources for the Alaskan portion of the Alaska Natural Gas Transportation System (ANGTS). Given the size of the capital requirements and the complexity of the project the study has been divided into the geographic areas of the United States, Canada, Middle East, Europe, Asia, and Latin America. Assessing the overall appetite of the worldwide capital markets involved an in-depth study of the legal and policy limits of the banking community in each geographic area, the potential interest of non-bank institutional lenders, and the historical lending policies of the suppliers and export credit agencies in each country based on the potential equipment sources submitted by the company.

In order to insure consistency in the findings of each of the studies and to maximize the amount of credit which could be raised from each market it was necessary to establish certain common assumptions. In assessing the available credit within each country several major financial institutions were contacted. They were informed that their names would not be revealed in order to avoid a feeling of moral commitment and thus an overly conservative response. The fundamental assumptions utilized in conducting the survey were as follows:

- (1) The borrower would be the risk equivalent of debt with a medium grade investment rating (A/Baa). If the project is not equivalent to this credit, the amount of funds available to the project will drop significantly.
- (2) The pricing would be fully commensurate with the risk involved.
- (3) It will be important to have a high level of participation by U.S. commercial banks in order to insure high commitment levels from other geographic sectors. This is especially crucial because of the lack of relationship benefits which will be derived from participating in this financing.

- (4) Careful consideration should be given to maximizing the amount of goods sourced abroad as there does exist a correlation between the exports from a country and the amount of credit indigenous banks are willing to extend. Therefore, maximizing foreign sourced goods may increase the total financing available for the project.
- (5) The degree of Canadian participation in Alaska is directly related to the level of U.S. and other non-Canadian participation in the Canadian segment and the coordination of these two financings will be of fundamental importance.
- (6) To the extent that prime bank guarantees are required for export facilities, this would reduce the amounts available from commercial banks.

Additionally, the assumptions of an environmental nature which underlie the numbers presented and which are necessary to insure the maximization of funds from each market are as follows:

- (1) The project needs to be perceived as possessing national interest status preferably through formal U.S. governmental pronouncements.
- (2) Even if this project is regarded as being of national interest by the U.S. government, there is a strong need to have an exceptionally well coordinated publicity effort in terms of the timing of the release of information, what data is made public, and in what manner.
- (3) Within each country it is important to coordinate and segregate the individual financings with each category of financial institution in order to provide high visibility and thus motivation for strong participation. The coordination must not only extend to each individual financing for the Alaskan segment of ANGTS, but to the financing plans for the other segments of the pipeline system.

- (4) Each financial institution must be approached correctly and at the appropriate level.
- (5) It is important to give the financial institutions adequate time to analyze the material submitted in order to conduct their own assessments of the viability of the project. In this regard, presentations should be organized for the various countries.
- (6) Specific presentations should be organized for the U.S. institutional market by the commercial bank advisory group due to their involvement in the project through an advisory role and as direct lenders. This would supply further credibility and maximize the funds available from this source.

Although the survey had been initially structured to segment the market in terms of the amounts available for 5 year commitments, 5-10 year commitments and 10-15 year commitments, the final conclusion reached was that 10 years (and in a few instances 12 years) would be the maximum overall term available except for the U.S. institutional market, but that within each individual financing one may need to offer a variety of commitment tenors and average lives in order to obtain the largest amounts. Therefore the amounts listed for each geographic area take this into consideration. Two columns have been included for conservative and relatively aggressive estimates. These numbers are based on the optimal blend between local currency and U.S. dollars for each geographic area although the local currency content would relate principally to export facilities. The incremental sums from institutional lenders which could be raised in later construction phases have not been assessed in detail. To the extent that the sponsors are successful in maintaining the construction program on a timely basis within cost parameters it is certainly probable that additional funds from these sources would be available. Also to the extent that an investment grade rating were obtained, the incremental sums which could be obtained from the public markets in the U.S. and abroad could be substantial. The preliminary estimates for the amounts which could be raised under the above assumptions are as follows:

FUNDING ESTIMATE SUMMARY
IN THOUSANDS OF U.S. DOLLARS

U.S.

Commercial banks \$3,000,000 **\$3,500,000**
Institutional lenders 1,500,000 **2,500,000**

Canada

Commercial banks 2,500,000 **3,000,000**

Europe

Commercial banks 3,500,000 **4,000,000**

Middle East

Commercial banks 500,000 **500,000**

Asia

Commercial banks 1,800,000 **2,400,000**

Latin America

Commercial banks 150,000 **250,000**

\$12,950,000 **\$16,150,000**

Export Credit Facilities

1,700,000 **1,700,000**

\$14,650,000* **\$17,850,000**

*** Could be reduced by \$2.5 billion if Canadian participation does not materialize - See Assumption #5.**

FUNDING ESTIMATESANGTS - ProjectUNITED STATESIntroduction

The United States commercial banking market comprises a broad spectrum of banks ranging from multinational institutions with deposits in the range of \$80 billion to small community banks with total deposits of around \$500 million. Approximately 300 banks constitute the above range. By comparison with the banking systems of other OECD countries from which funding for the ANGTS project is contemplated, the U.S. system represents a far wider distribution of the total national deposits amongst a greater number of institutions. Since only large financial institutions maintain the ability to analyze complex credits of the type contemplated, the fragmentation of the U.S. banking system represents a severe hindrance on the total amount of the funds available from this market.

While the U.S. banking system has experienced over the past few years a situation of low loan demand, recent evidence suggests that this trend is now reversing. The current spate of multi-billion dollar financings can be added to a firmer underlying trend of increases in corporate loan outstandings prompted in part by a high level of pent-up demand in the capital market sector. In addition, the capital spending programs of many major corporations are anticipated to be in excess of their ability to generate funds, thus leading to their increasing from present levels their utilization of long-term debt from the commercial banking system. The outcome of this banking environment is likely to place the ANGTS project in the position of competing for increasingly scarce long-term funds.

The aggregate capital of the largest 300 U.S. commercial banks, ranging in deposit bases from \$89 billion to \$487 million, totalled \$61.5 billion at year-end 1980. (See Table I) The theoretical maximum lending ability of these institutions is a function of this total capital. However, many institutions do not include supplemental capital, i.e., subordinated debt and preferred stock in computing their own lending limits. Available information suggests that such supplemental capital represents a figure of approximately \$4.7 billion. Thus the total capital of the top 300 U.S. commercial banks, as adjusted, adds up to \$56.8 billion which suggests an aggregate legal lending limit of \$5.7 billion. However, it is considered unlikely that banks ranking lower than no. 150 will participate as lenders to the project. Similarly, it is likely that the smaller the bank the lower will be the percentage of its legal lending limit committed to the project and the higher will be the likelihood of that bank declining to participate. Realistically, therefore, the project is looking to no more than the top 100 banks whose adjusted aggregate capital stands at \$43.7 billion leading to a theoretical maximum lending limit of \$4.4 billion.

Assumptions

1. Medium grade Baa equivalent project credit.
2. Pricing fully reflective of project risk.
3. Project clearly perceived by the market as being considered in the national interest by the U.S. Government.
4. Marketing of credit to be conducted at senior management level.

Estimated Potential Capacity

\$3,500,000: Represents 80% of the Adjusted Legal Lending Limit Capacity of the top 100 institutions. The maximum tenor of the loans would be 10-12 years. A substantial portion would be limited to a maximum tenor of 7 to 8 years.

Table I

COMPARISON OF LARGEST U.S. BANKS' CAPITAL TOTALS
(000,000s omitted)

	12/31/80	12/31/79
U.S. Commercial Banks		
Capital (1)		
100 Largest	\$12,512	\$11,685
Second 100 Largest	2,363	2,352
Third 100 Largest	1,297	1,324
Total - Top 300	16,173	15,361
Surplus and Undivided Profits (2)		
100 Largest	\$35,033	\$31,837
Second 100 Largest	6,569	6,057
Third 100 Largest	3,745	3,262
Total - Top 300	45,348	41,155
Total Capital (3)		
100 Largest	\$47,546	\$43,522
Second 100 Largest	8,932	8,408
Third 100 Largest	5,043	4,586
Total - Top 300	61,520	56,516

- (1) Includes common stock capital, preferred stock and subordinated debt.
 (2) Includes subordinated debt assumed by parent.
 (3) The sum of capital, surplus and undivided profits as defined in footnotes 1 and 2 above.

FUNDING ESTIMATESANGTS - ProjectUnited States Institutional MarketIntroduction

The corporate finance departments of Bank of America, Citibank, Chase Manhattan Bank and Morgan Guaranty Trust Company have been asked to comment on the availability of funds in the United States institutional market, for the Alaskan portion of the Alaska Natural Gas Transportation System (the Project).

In addressing this market we have considered the overall state of the market, large private placements previously placed in this market, particularly those of a project nature and the views of the sixteen largest insurance companies on the availability of funds for this project. Our conclusions have been built upon this background and have assumed a favorable economic and market environment.

Any assessment of this type is subject to many important assumptions. One of the most crucial assumptions in this regard is the credit structure of the issuing and/or guaranteeing entity. We have assumed that the Project attains the equivalent of a medium grade (Baa) investment rating. This would generally restrict the Project to the traditional private placement market where the investment risks can be more fully analyzed. This market primarily consists of insurance companies and some pension funds who have staffs trained in the analysis of this type of credit.

A number of factors will determine the amount of money that the Project will be able to borrow from this market. The first and most obvious factor is the size of the market itself. Table I presents the total dollar amount and number of issues done in the private placement market for the last ten years and for the interim period ending June 24, 1981. This table shows that the size of the market has been decreasing from a peak of \$25.7 Billion in 1977 to

a low of \$16.3 Billion in 1980. Further, the interim results for 1981 show that this trend is continuing this year. This decrease has resulted from a number of factors, the most important of which are the reduced demand for whole life insurance, which reduces the premiums flowing into the life insurance companies; the increase in policy loans resulting from the present high interest-rate environment and the growing caution of the market toward long term fixed rate obligations. Generally speaking, although many borrowers have avoided issuing long term fixed rate debt at these high interest rate levels, lack of demand from issuers has not been a significant factor causing the reduced activity in this market.

These factors have been offset to some extent by the increase in pension fund money management being done by the insurance companies and the reduced growth of policy loans over the past twelve months. While it is difficult to make predictions in such a volatile economic environment, we would be hopeful that the total market size would return to \$20 Billion in the near future and maintain at least that level thereafter.

We should now consider the relative amount of the total market that has been taken by any individual issuer in a given year. Table II lists the ten largest issues done in the private placement market and the percent of that year's total market represented by that transaction for the years 1971 through 1980. The following table lists the transactions that accounted for over three percent of the total market in the year of issuance.

ISSUES ACCOUNTING FOR OVER 3% OF TOTAL MARKET

<u>Issue</u>	<u>Year</u>	<u>Issue Size</u> <u>(\$000)</u>	<u>% of Total</u> <u>Market</u>
Sohio/BP Trans	1975	\$1,750,000	12.95%
Alaska Pipeline			
American Telephone & Telegraph Co.	1972	1,000,000	8.46%
Hydro-Quebec	1976	1,000,000	4.71%
Ontario Hydro	1976	650,000	3.06%

Although very few issues accounted for over three percent of the total market, there is precedent for issues taking up to 13% of the market, as was done by the Sohio/BP Trans Alaska Pipeline in 1975. In addition, the Sohio/BP Trans Alaska Pipeline returned to the market in 1976 to borrow \$500,000,000, equivalent to 2.35% of that year's market. On the basis of this data, we believe that a practical limit would be 10% of the market in any given year. Therefore, if the private placement market returned to a \$20 Billion level, this would translate into a yearly limit of \$2 Billion. If commitments could be obtained for eighteen months at this rate, \$3 Billion could be obtained. We believe that this is a very high target.

We next look to precedent in determining the amount of financing that can be obtained from the private placement market. Table III presents a list of recent borrowers with major projects in construction and the total amount of financing that they were able to obtain over the last ten years. The Sohio/BP Trans Alaska Pipeline was clearly the largest issuer at \$2.25 Billion in two issues done in 1975 and 1976. Although this is a record amount, we also note that the dollar amounts are in deflated dollars (the GNP deflator was 1.1959 as of January 1, 1975 and is 1.8814 as of March 31, 1981). The completion of the Sohio/BP Trans Alaska Pipeline also sets a good precedent for the Project. If we inflated the amount raised by the Sohio/BP Trans Alaska Pipeline by applying the GNP deflator, the equivalent amount in 1981 dollars would be \$3.54 Billion. However, we also note the decline in this market in absolute dollars since that time and believe that this amount is a very high target.

In order to increase the amount of financing available from institutional sources for the Project, methods of entering other markets, of spreading the credit risk to other credit worthy entities and of devising financial structures of greater interest to the institutions than long term fixed rate debt should be considered. We will address each of these areas by presenting ideas which may or may not prove to be feasible in the light of further research.

One market which we have not considered entering at this time is the tax-free market. Entry into this market would require a governmental issuer and

an investment grade rating. If these can be obtained, the size of the market has been demonstrated by the Washington Public Power Supply System issues listed in Table IV.

Insurance companies may be willing to guarantee additional debt while not affecting their appetite for direct loans to the Project and this concept should be further explored with them. Some of the insurance companies are presently investigating this area and this may enable them to increase their exposure without requiring actual funding for a transaction.

In recent years the insurance companies have become increasingly cautious of lending on a long term, fixed rate basis due to the effects of inflation. They have been experimenting with shorter maturities, variable rates, equity or income participation schemes and alternative investments such as outright ownership of real estate projects. We believe that maturities for a certain portion of the financing of less than 15 years would expand the market. Additionally, variable rates and income participation schemes should be considered. The determination of the actual package to be offered must be made at a time close to market entry since institutional preferences can change quickly in the present volatile economic environment.

In addressing the funding question, we have had direct conversations with the sixteen largest insurance company lenders. Although their responses reflect the present poor state of the fixed income markets, they generally received the idea of investing in the Project favorably. Their specific responses on the subject of their individual appetite for this project were a major input to the conclusions presented herein. We have considered these responses in the light of their participation in other large projects as detailed in Table V and discussed any major variances with them.

Assumptions

In arriving at our conclusion, we have made a number of assumptions. We have assumed that this credit is constructed in a way that will satisfy the standards of the traditional non-rated private placement buyers. Thus, the limit on the amount of participation for any institution is based upon portfolio diversification concerns rather than on concerns related to specific project risks. We have also assumed that the issues are attractively priced, that the project will receive top level involvement and review at the institutions as a result of the method of offering used by the agent banks and the high degree of national support for the project and that the publicity surrounding the project is carefully controlled and monitored. Our assessment of the market also assumes a relatively stable economic environment.

Estimated Potential Capacity

Based upon our study and survey of the market, we believe that the project might be able to raise between \$1.5 and \$2.5 Billion in pre-construction commitments. Additionally, we believe that the project could take up to \$1 Billion from this market during the later years of construction. In today's market, we believe that half of these funds could be raised with a longer maturity of 15 years with a 10.5 year average life and half with shorter maturities of 10 years with an 8 year average life.

Recommendation

We believe that the private placement groups of the lead banks are best positioned to approach this market for the Project. Not only are the banks fully knowledgeable of the Project, and thus able to effectively communicate its investment characteristics to prospective institutional purchasers, but their role as major providers of funds gives additional comfort and sponsorship to the issues.

TABLE I

Total Private Placement Market

Year	\$ Amount	# of Issues
1981 (thru 6/24)	\$ 5,616,269,719	301
1980 (thru 6/24)	7,319,458,971	382
1980	16,293,062,389	1,052
1979	22,544,632,949	1,342
1978	23,455,861,430	1,416
1977	25,748,601,184	1,460
1976	21,240,397,419	1,049
1975	13,514,759,461	938
1974	10,673,728,890	997
1973	12,183,370,946	1,290
1972	11,825,313,190	1,432
1971	9,066,981,208	1,457

TABLE II

Largest Private Issues 1971 thru 1980

Year 1980 Company	Amount (\$'000)	% of Total Market
McGraw Edison Company	\$200,000	1.23%
Arizona Public Service Co.	185,000	1.14
Int'l Minerals & Chem. Corp.	185,000	1.14
BankAmerica Corp.	165,500	1.02
Mesa Petroleum Company	150,000	.92
Wheeling Pittsburgh Steel	150,000	.92
Pan American World Airways	148,788	.91
Bear Creek Capital Corp.	135,000	.83
Congoleum Corporation	125,000	.77
SWF Gulf Coast, Inc.	125,000	.77

TABLE II Cont'd

Year 1979		% of Total Market
<u>Company</u>	<u>Amount (\$000)</u>	
Commonwealth Edison Co.	\$300,000	1.33%
International Paper Co.	300,000	1.33
Norton Simon Inc.	250,000	1.11
Tenneco Inc.	225,000	1.00
Allied Chemical Corp.	200,000	0.89
Texas Utilities Generating Co.	200,000	0.89
Transco Exploration	200,000	0.89
Pacific Gas & Electric Co.	175,000	0.78
Convent Chemical Corp.	160,000	0.71
Commonwealth Edison Co.	150,000	0.67
Detroit Edison Co.	150,000	0.67
Transcontinental Gas Pipeline Co.	150,000	0.67
Pacific Gas & Electric Co.	150,000	0.67

TABLE II Cont'd

Year 1978		% of Total Market
<u>Company</u>	<u>Amount (\$000)</u>	
Corpus Christi Capital Corp.	\$525,000	2.24%
Commonwealth Edison Co.	300,000	1.28
Indians & Michigan Electric Co.	300,000	1.28
IteI Corp. (Rail Div.)	300,000	1.28
Reserve Mining Co.	281,750	1.20
Wyodak Project	254,800	1.09
Continental Oil Co.	250,000	1.07
Montreal Urban Community	250,000	1.07
Chrysler Corp.	231,500	0.99
Pacific Telephone & Telegraph Co.	200,000	0.85
Tenneco Inc.	200,000	0.85
Texas Utilities Generating Co.	200,000	0.85
Western Electric Co.	200,000	0.85

TABLE II Cont'd

Year 1977		
<u>Company</u>	<u>Amount</u> <u>(\$000)</u>	<u>% of Total</u> <u>Market</u>
Peabody Holding Co.	\$500,000	1.94%
Middle South Energy Inc.	400,000	1.55
Alberta Gas Ethylene Ltd.	373,800	1.45
Massey-Ferguson Inc.	300,000*	1.16
Colonial Pipeline Co.	250,000	.97
Hydro-Quebec	225,000	.87
Ohio Electric Co.	200,000	.78
Pacific Telephone & Telegraph Co.	200,000	.78
Squibb Corp.	175,000	.68
Aluminum Co. of America	150,000	.58
Champion International Corp.	150,000	.58
Cities Service Co.	150,000	.58
Dome Petroleum Ltd.	150,000	.58
International Harvester Co.	150,000	.58
Mapco Inc.	150,000	.58

TABLE II Cont'd

Year 1976		
<u>Company</u>	<u>Amount</u> <u>(\$000)</u>	<u>% of Total</u> <u>Market</u>
Hydro-Quebec	\$1,000,000	4.71%
Ontario Hydro	650,000	3.06
British Columbia Hydro & Power	500,000	2.35
Sohio/BP Trans Alaska Pipeline	500,000	2.35
Transco Gas Supply Co.	350,000	1.65
Sidbec-Normines, Inc.	330,303	1.56
Empire Iron Mining Partnerships	302,500	1.42
Commonwealth Edison Co.	300,000	1.41
Citicorp.	250,000	1.18
Alabama River Pulp Co. Inc.	227,500	1.07

* Consists of 2 separate issues of \$150 million 9% senior notes due 1997 and \$150 million 9 3/4% conv. sub. notes due 1992.

TABLE II Cont'd

Year 1975		% of Total Market
<u>Company</u>	<u>Amount (\$000)</u>	
Sohio/BP Trans Alaska Pipeline	\$1,750,000	12.95
Alasca, Inc.	200,000	1.48
National Steel Pellet Co.	200,000	1.48
Channelview Leasing Co. Inc.	183,750	1.34
Virginia Electric & Power Co.	150,000	1.11
Ford Motor Credit Co.	125,000	.92
Steel Co. of Canada	125,000	.92
Alcoa Company	100,000	.74
Canadian National Railway Co.	88,000	.65
M.I.M. Holdings Ltd.	85,000	.63

TABLE II Cont'd

Year 1974		% of Total Market
<u>Company</u>	<u>Amount (\$000)</u>	
State of Israel	\$300,000	2.81
Eveleth Expansion Financing	195,000	1.83
Buckeye Power, Inc.	170,000	1.59
Bell Tele. Co. of Canada	130,000	1.22
Square Butte Electric Corp.	126,500	1.19
W.R. Grace & Company	101,750	.95
Consolidated Aluminum Corp.	100,000	.94
Cameron Iron Works Inc.	100,000	.94
RCA Corporation	100,000	.94
Tenneco Offshore II Co.	100,000	.94

TABLE II Cont'd

Year 1973		
<u>Company</u>	<u>Amount</u> <u>(\$000)</u>	<u>% of Total</u> <u>Market</u>
Great Lakes Gas Transmission Co.	\$200,000	1.64%
Exxon Pipeline Co.	175,000	1.44%
Tenneco, Inc.	150,000	1.23%
Western Electric Co.	125,000	1.03%
Hooker Chemical Corp.	105,000	.86%
Evans Products Co.	100,000	.82%
Natural Gas Pipeline Co. of America	100,000	.82%
Charleston Bottoms Rural Elec. Corp.	75,000	.62%
Continental Oil Co.	75,000	.62%
Gen'l Telephone & Electronics Corp.	75,000	.62%
Southern California Edison Co.	75,000	.62%

TABLE II. Cont'd

Year 1972		
<u>Company</u>	<u>Amount</u> <u>(\$000)</u>	<u>% of Total</u> <u>Market</u>
American Telephone & Telegraph Co.	\$1,000,000*	8.46%
Gen'l Motors Acceptance Corp.	265,000**	2.24%
Mobil Oil Corp.	200,000	1.69%
Iron Oil Co. of Canada	150,000	1.27%
Quebec (Province of)	150,000	1.27%
Associates Corp. of North America	140,000	1.18%
Gen'l Telephone & Electronics Corp.	110,000	.93%
El Paso Natural Gas Co.	95,000	.80%

* Consists of 2 separate issues of \$375 million 7 3/4% notes due 1997 and 625,000 shares of \$77.50 preferred stock (par value \$1,000).

** Consists of 2 separate issues of \$132.5 million 7 7/8% sub. notes due 1992 and \$132.5 million 8 3/8% junior sub. notes due 1992.

TABLE II Cont'd

Year 1971		
<u>Company</u>	<u>Amount</u> <u>(\$000)</u>	<u>% of Total</u> <u>Market</u>
General Motors Acceptance Corp.	\$150,000*	1.65%
Olin Corporation	150,000	1.65
El Paso Natural Gas	115,000	1.27
Explorer Pipeline Co.	100,000	1.10
International Minerals & Chemicals	100,000	1.10
Kaiser Aluminum & Chemicals	100,000	1.10
White Consolidated Industries	100,000	1.10
Chromalloy American Corp.	85,000	.94
Gulf Oil Corporation	80,000	.88
Kaiser Foundation Hospital	80,000	.88
Colonial Pipeline Co.	75,000	.83
ICI American Holdings	75,000	.83

* Consists of 2 separate issues of \$75 million 8 3/8% sub. notes due 1991 and \$75 million 8 7/8% junior sub. notes due 1991.

TABLE III

Large Issues Raised in the Private Placement Market
for Issuers with Large Construction Projects

<u>Issuer</u>	<u>Amount</u> <u>(\$000)</u>	<u># of Issues</u>
Sohio/BP Trans Alaska Pipeline	\$2,250,000	2
Hydro-Quebec	1,225,000	2
Ontario Hydro	650,000	1
British Columbia Hydro & Power	500,000	1
Trans Canada Pipeline	400,000	1
Alberta Gas Ethylene, Ltd.	373,800	1
Wyodak Project	254,800	1

TABLE IV

**Total Amount Raised by the
Washington Public Power Supply System
through the Tax Exempt Market.**

	<u>\$ Millions</u>	<u># of Issues</u>
1973	150	1
1974	205	2
1975	550	4
1976	780	5
1977	595	4
1978	1,210	7
1979	980	6
1980	1,100	7
1981 (first 6 mos)	625	4
TOTAL	\$6,195	40

TABLE V

Buyers of Large Project Issues

SOHIO/BP TRANS ALASKA PIPELINE:	Amount* (\$000)
Aetna Life	\$180,000
Aid Association for Lutherans	5,000
Alexander Hamilton Life	1,645
American Life & Casualty	100
Bankers Life of Nebraska	2,500
Capital Holding Corp.	2,500
Connecticut General Life	76,500
Connecticut Mutual Life	25,000
Equitable Life Assurance	95,000
Equitable Life of Iowa	3,200
Franklin Life Insurance	5,000
General American Life	3,500
Gulf United Corp.	2,500
Hartford Life	5,000
Jefferson Standard Life	2,500
John Hancock Mutual Life	102,000
Life Insurance of Georgia	2,500
Lincoln National	6,000
Massachusetts Mutual Life	44,000
Mutual Benefit Life	25,000
Mutual of New York	45,000
National Ben Franklin Life	2,000
National Life & Accident	10,000
Nationwide	5,000
New England Mutual Life	22,500
Northwestern Mutual Life	55,000
Old Republic Life of New York	1,000
Pacific Mutual Life	10,250
Penn Mutual Life	38,000
Phoenix Mutual Life	6,000
Provident Mutual Life	5,500
Prudential of America	355,000
Southland Life	1,000
Southwestern Life	3,000
State Farm Life	13,000
State Mutual Life	4,000
Sun Life Assurance	7,500
Teachers Insurance & Annuity	77,000
Transamerica Life & Annuity	4,500
Travelers Insurance	60,000
Union Mutual Life	5,000
United Benefit Life	14,500
Variable Annuity Life	1,750
Wausau Insurance	9,500
Total	<u>\$1,345,445</u>

*Holdings as of 12/31/79 as reported in Best's Market Guide.

TABLE V Cont'd.

Buyers of Large Project Issues

HYDRO-QUEBEC:	Amount*
	(\$000)
Aetna Life	\$95,838
American Life & Casualty	94
American National Financial	6,000
Connecticut General Life	9,445
Connecticut Mutual Life	9,445
Crown Life	5,000
Cudis Insurance Society	500
Cumis Insurance Society	500
Cuna Mutual	1,500
Equitable Life Assurance	94,450
General American Life	4,861
Great-West Life Assurance	5,000
Insurance Company of North America	19,833
John Hancock	50,000
Lincoln National Life	9,445
Massachusetts Mutual Life	14,168
Metropolitan	99,173
Mutual Benefit Life	14,168
Mutual of New York	9,445
National Life & Accident	4,000
New England Mutual Life	16,167
New York Life	61,392
Northwestern Mutual Life	28,890
Penn Mutual Life	9,445
Phoenix Mutual Life	9,445
Provident Life & Accident	5,000
Provident Mutual Life	3,000
Prudential of America	216,675
Teachers Insurance & Annuity	57,225
Transamerica Corp.	5,000
Travelers	28,338
Wausau Insurance	9,445
Total	\$902,887

*Holdings as of 12/31/79 as reported in Best's Market Guide.

TABLE V Cont'd.

Buyers of Large Project Issues

ONTARIO HYDRO:	Amount* (\$000)
Acacia Mutual Life	\$2,000
Aetna Life	10,000
Aid Association for Lutherans	5,000
American United Life	6,000
Bankers Life of Iowa	3,000
Canada Life Assurance	2,500
Capital Holding Corp.	6,750
Central Life Assurance	2,000
Confederation Life	750
Equitable Life of Iowa	2,000
Federated Life Insurance	200
Franklin Life Insurance	2,500
General American Life	2,500
Great-West Life Assurance	1,500
Gulf United Corp.	2,000
Independent Order of Foresters	4,255
John Hancock Mutual Life	20,000
Kansas City Life	2,000
Liberty National	4,500
Lincoln Liberty Life	200
Lincoln National Life	10,000
Lutheran Mutual Life	2,000
Manhattan Life	2,000
Massachusetts Mutual Life	25,000
Metropolitan Life	100,000
Minnesota Mutual Life	3,000
Monumental Life	1,750
Mutual Benefit Life	15,000
Mutual of New York	12,900
National Ben Franklin Life	500
North American Life & Casualty	500
Occidental Life	3,000
Provident Life & Accident	5,000
Provident Mutual Life	5,000
Prudential of America	175,000
Southwestern General Life	500
Southwestern Life	1,500
Standard Insurance	2,800
State Mutual Life	6,500
Sun Life Insurance	2,500
Sunset Life	400
Travelers	25,000
Union Mutual Life	3,200
Unionmutual Stock Life	500
Volunteer State Life	750
Washington National Insurance	2,500
Western & Southern Life	3,000
Total	\$489,455

*Holdings as of 12/31/79 as reported in Best's Market Guide.

TABLE V Cont'd.

Buyers of Large Project Issues

BRITISH COLUMBIA HYDRO & POWER:	Amount* (\$'000)
Aetna Life	\$10,000
Aid Association for Lutherans	5,000
America United Life	5,000
Bankers Life of Iowa	2,750
Bankers Life of Nebraska	2,000
Central Life Assurance	2,000
Connecticut General Life	17,000
Connecticut Mutual Life	5,000
Cudis Insurance Society	250
Cuna Mutual Insurance	2,200
Equitable Life of Iowa	3,350
Franklin Life Insurance	3,000
General American Life	3,000
Great Western Life Assurance	2,750
Home Beneficial Life	2,000
IDS Life	3,000
Independent Order of Foresters	2,250
Knights of Columbus	2,000
Life Investors Insurance	2,000
Lincoln National Life	10,000
Massachusetts Mutual Life	5,000
Minnesota Mutual Life	2,000
Monumental Life	1,300
Mutual Benefit Life	15,000
Mutual of New York	10,000
National Ben Franklin Life	1,000
Nationwide	5,500
New York Life	50,000
NLT Corporation	8,250
North American Co. for Life & Health	2,000
North American Life & Casualty	750
Pacific Mutual Life	10,000
Presbyterian Ministers' Fund	2,000
Provident Life & Accident	5,000
Provident Mutual Life	5,000
Prudential of America	110,000
Standard Insurance	2,000
Travelers	15,000
Union Cental Life	2,000
Union Mutual Life	4,000
Unionmutual Stock Life	500
Volunteer State Life	700
Western & Southern Life	2,500
Total	\$344,050

*Holdings as of 12/31/79 as reported in Best's Market Guide.

TABLE V Cont'd.

Buyers of Large Project Issues

ALBERTA GAS ETHYLENE, LTD.:

	Amount* (\$000)
Aetna Life	\$29,904
Connecticut General Life	22,428
Equitable Life Assurance	41,118
John Hancock Mutual Life	56,070
Metropolitan Life	156,996
New England Mutual Life	11,214
Travelers Indemnity	56,070
Total	<u>\$373,800</u>

TABLE V Cont'd.

Buyers of Large Project Issues

WYODAK PROJECT:

	Amount* (\$000)
Aetna Life	\$30,276
Bankers Life of Iowa	10,092
Connecticut General Life	15,138
Connecticut Mutual Life	5,046
Equitable Life Insurance	35,322
Franklin Life Insurance	13,027
John Hancock Mutual Life	25,230
Pacific Mutual Life	5,046
Teachers Insurance & Annuity	20,184
Transamerica Corp.	4,039
Union Mutual Life	3,532
Unionmutual Stock Life	505
Total	<u>\$157,437</u>

*Holdings as of 12/31/79 as reported in Best's Market Guide.

FUNDING ESTIMATESANGTS - ProjectCANADAIntroduction

Canada's commercial banking system consists of 11 privately-owned banks which at the end of 1980 operated 7,368 branches in Canada and 288 offices abroad. The total assets of the Canadian banking system at the end of March 1981 were Cdn. \$294 billion, 91% of which were held by the five largest banks. Of total assets at the end of March, 6.4% were invested in Canadian government securities and call and other short terms loans; 38.7% in provincial, municipal and corporate loans and securities; 5.9% in mortgages; 10.9% in other dollar denominated loans and securities and 38.1% in foreign currency loans and securities.

The Canadian banking system is regulated by the Bank of Canada which operates under the Bank of Canada Act of 1934 (the "Act"). Banks are not subject to stipulated legal lending limits although they report on a regular basis to the Bank of Canada and their exposures are thus informally monitored. Nonetheless, the house limit of the top five chartered banks for a particular name tends to be significantly higher than the legal limit for a comparably sized U.S. bank.

The participation of the Canadian banks in the Alaska segment of the ANGTS system will depend to a great extent on their required commitment to the Foothills project. This will, in turn, depend on the coordination of the two financings and the extent to which non-Canadian banks are able to differentiate the Foothills and Alaska risks for legal and house lending limit purposes.

The Canadian public bond market absorbed Cdn. \$17 billion in new issues in 1980, up an average 19.7% per annum over the 1976-1980 period. Of total volume in 1980, the Canadian government accounted for Cdn. \$6 billion (35.7%), provinces and municipalities for Cdn. \$9 billion (51.6%) and private corporations for Cdn. \$2 billion (11.3%).

The non-bank institutional market in Canada consists of life and casualty companies, pension funds, trust companies and mutual and closed-end funds. At the end of 1980, this sector as a whole had total assets of approximately Cdn. \$148 billion, which were invested principally in government, provincial and municipal securities, short-term corporate notes and preferred and common shares. Corporate bonds and debentures at that date represented approximately 24% of total portfolio.

The nature of the non-bank institutional and bond markets in Canada suggests that there would be little interest in either a public offering or private placement for the kind of complex pre-completion support arrangements that are contemplated in connection with the project. These markets might, however, provide viable refinancing alternatives after completion.

Export Development Corporation

The Export Development Corporation (the "EDC") is a Canadian Crown corporation which provides loans, loan guarantees and insurance to facilitate Canadian exports. In 1980, the EDC provided Cdn. \$3.5 billion in export support, of which Cdn. \$831.1 million represented loans and note purchases and Cdn. \$299.3 million represented medium term insurance and guarantees. Approximately 22.7% of EDC's export support in 1980 was on behalf of importers in the United States, Central America and the Caribbean.

The EDC has indicated that they would not be particularly interested in financing a pipeline into the United States, although they have done so on occasion in the past. On U.S. projects, they try to avoid competing with commercial banks and would only offer financing if a third country was providing export credit at concessionary rates.

Assumptions

- (1) Baa/A equivalent credit risk.
- (2) Pricing fully reflective of project risks.
- (3) Strong support from the U.S. banking community.
- (4) U.S. \$2 - 3 billion in availability from non-Canadian sources for the Foothills project.

Estimated Potential Capacity

\$3,000 Million available in ten and twelve year tranches (75/25) with amortization beginning at the end of year five in both cases.

CANADIAN CHARTERED BANKS

(In millions of Canadian dollars)

	<u>TOTAL</u> <u>ASSETS</u> (1)	<u>CAPITAL</u> <u>FUNDS</u> (1) (2)
Bank of British Columbia	2,338	85
Bank of Montreal	48,842	1,939
Bank of Nova Scotia	43,177	1,618
Canadian Commercial Bank	903	56
Canadian Imperial Bank of Commerce	55,428	1,935
Continental Bank of Canada	1,682	122
Mercantile Bank of Canada	4,115	177
National Bank of Canada	16,464	523
Northland Bank	253	22
The Royal Bank of Canada	62,834	2,650
The Toronto Dominion Bank	33,842	1,418

(1) As of October 31, 1980.

(2) Including shareholders' equity, debentures and accumulated appropriations for losses.

FUNDING ESTIMATESANGTS - ProjectMIDDLE EASTIntroduction

There are three principal sources of funds in the Middle East:

- (i) Government owned private placement lenders such as the Saudi Arabian Monetary Agency ("SAMA")
- (ii) Equity oriented individuals and government owned investment vehicles; and
- (iii) Commercial banks.

Lenders in the Middle East are not generally subject to legal constraints on their exposure to any one borrower. They do, however, monitor their exposures within specified in-house parameters and the private placement market particularly tends to be very conservative with respect to credit risk. Neither the private placement market nor the banks are experienced in project lending.

Tenors in the private placement market rarely exceed ten years and are more typically seven to eight years. Pricing reflects the all-in cost to the borrower of alternative sources of fixed rate term funds (typically the U.S. or eurobond market). U.S. dollar denominated placements account for most of the private placement activity in the area although financing in other currencies is available from time to time. The largest corporate private placement done by SAMA was the recently completed \$300 million for IBM. The private placement potential for a AAA corporate credit today is likely to be in the \$300 - 500 million range. The market would, however, have little appetite for a Baa/A project credit.

Equity oriented investors are typically looking for a pure equity return or a debt placement in conjunction with equity. This sector tends to be dominated by the Kuwaitis. These investors could be interested in some

form of equity cum debt placement in the project. This has political implications, however, which would make it untenable in the current environment.

The third source of funds in the Middle East are the commercial banks. At the end of 1980, the assets of banks active in eurocurrency lending (including Arab affiliated banks based outside of the region) were approximately \$79 billion. Arab led syndications as a percentage of publicized eurocurrency credits increased from 1.3% in the first four months of 1980 to 12.0% in 1981. The top five Arab lead managers in the first five months of 1981 were Arab Banking Corporation, Arab Bank, Gulf International Bank, KFTCIC and the National Bank of Kuwait. Also important were BAI and the UBAF Group.

The commercial banks in the region are sizable and have become increasingly active in international lending over the last two years. Key to their interest in any transaction is the presentation of the deal and the position of the major indigenous banks relative to managers outside the region.

Assumptions

- (1) Baa/A credit risk.
- (2) Seven and ten year tranches (50/50) with amortization beginning at the end of year five in both cases.
- (3) Pricing fully reflective of project risks including possibly some limitation and/or penalty on prepayments.
- (4) Widespread participation by banks outside the region with unquestioned support from the U.S. banking community.
- (5) Some form of management status or other special recognition for the key banks.

Estimated Potential Capacity

IN MILLIONS
OF U.S. DOLLARS

Bahrain	185
Egypt	40
Jordan	15
Kuwait	40
Qatar	5
Saudi Arabia	30
U.A.E.	25
Arab Banks Headquartered outside the Middle East	160
	\$ 500

SELECTED MIDDLE EAST BANKSTOTAL ASSETS, CAPITAL AND RESERVES AND ESTIMATED POTENTIAL LENDING CAPACITY

(In million of U.S. dollars, as of December 31, 1980, unless otherwise indicated)

	<u>Total Assets</u>	<u>Capital & Reserves</u>
<u>Bahrain</u>		
Arab Banking Corporation	2,611(a)	808(b)
Bank of Bahrain and Kuwait B.S.C.	843(c)	47(c)
Gulf International Bank B.S.C.	2,893	199(d)
National Bank of Bahrain	789	53
<u>Egypt</u>		
Arab African International Bank	2,783(e)	162(e)
Arab International Bank	1,353(f)	192(f)
<u>Jordan</u>		
Arab Bank Limited	6,640(c)	207(c)
<u>Kuwait</u>		
Al Ahli Bank of Kuwait K.S.C.	2,964(c)	167(c)
The Bank of Kuwait and the Middle East K.S.C.	2,414	113
Burgan Bank S.A.K.	1,506	99
The Commercial Bank of Kuwait S.A.K.	3,707	226
The Gulf Bank K.S.C.	4,306	257
The National Bank of Kuwait K.S.C.	5,064	297
<u>Qatar</u>		
Qatar National Bank	1,403(c)	77(c)
<u>Saudi Arabia</u>		
Al Bank Al Saudi Al Fransi	980(c)	78(c)
Al Bank Al Saudi Al Hollandi	842(c)	76(c)
The National Commercial Bank	9,403(g)	478(g)
Riyad Bank	4,212(h)	398(h)
Saudi American Bank	2,116	112
Saudi British Bank	862(c)	57(c)
<u>United Arab Emirates</u>		
Arab Bank for Investment and Foreign Trade	554	41
Khalij Commercial Bank Limited	364	33
National Bank of Abu Dhabi	5,006(e)	263(c)
<u>Banks Headquartered Outside the Middle East</u>		
Al Saudi Banque (Paris, France)	593(f)	32(f)
Arab Latin American Bank (Lima, Peru)	1,524	114
Compagnie Arabe et Internationale		
d'Investissement (BAI Group) (Paris, France)	2,749	115
European Arab Bank (Brussels, Belgium)	1,085(c)	33(c)
<u>UBAF Associated Companies:</u>		
UBAF France	5,008	140
UBAF Bank Limited	1,309	75
UBAE Arab Italian Bank	665	30
UBAE Arab German Bank	564	21
UBAN Arab Japanese Finance Ltd	402	19
UBAF Arab American Bank	1,029	72
<u>Other Banks</u>		
	N/A	N/A
TOTAL	N/A	N/A

(a) As of March 31, 1981.

(b) Paid-in Capital was increased from \$375MM to \$750MM effective April 1, 1981.

(c) As of December 31, 1979.

(d) Capital funds increased from \$125MM on December 31, 1981 to \$199MM on January 5, 1981.

(e) Figures are for the Group, including Al-Bahrain Arab African Bank EC (Bahrain), 82% owned, (assets \$796MM, capital and reserves \$35MM) and Oman Arab African Bank (Muscat, Sultanate of Oman), 55% owned, (assets \$155MM, capital and reserves \$7MM).

(f) Figures are as of June 30, 1980.

(g) As of November 8, 1980.

(h) As of May 14, 1980.

ARAB LEAD MANAGERS

EUROCURRENCY SYNDICATED LOANS

	1981 (1)			1980		
	RANK	NO. OF LOANS	AMOUNT \$MM	RANK	NO. OF LOANS	AMOUNT \$MM
Arab Banking Corporation	1	20	685.64	3	12	386.79
Arab Bank Limited	2	9	428.01	7	12	238.79
Gulf International Bank	3	17	390.03	1	34	742.30
Kuwait Foreign Trading Contracting and Investment Company	4	7	369.44	15	5	120.00
National Bank of Kuwait	5	10	200.86	5	24	310.83
Al Saudi Banque	6	8	178.68	28	5	23.14
Banque Arabe et Internationale d'Investissement	7	5	99.27	10	8	174.86
Arab Latin American Bank	8	5	93.25	6	11	241.00
UBAF Group	9	8	88.21	2	22	523.56
Saudi International Bank	10	9	83.83	4	15	363.03
National Bank of Bahrain	11	3	54.58	22	1	30.00
European Arab Bank	12	4	46.31	12	7	152.34
National Bank of Abu Dhabi	13	1	40.00	14	14	146.90
Industrial Bank of Kuwait	14	3	35.70	---	---	---
Libyan Arab Foreign Bank	15	2	29.72	16	3	100.96
FRAB Bank	16	1	25.00	---	---	---
Banco Arabe Espanol	17	3	19.72	11	8	161.83
Burgan Bank	25	1	4.72	31	2	13.00
Bank of Bahrain & Kuwait	26	1	4.72	34	1	5.00
Arab Bank for Investment & Foreign Trade	27	1	4.72	---	---	---
Allied Arab Bank	28	1	4.72	27	2	23.67
Bank of Kuwait & Middle East	29	1	4.72	---	---	---

(1) First five months only.

(2) Includes Al Saab.

Source: Euromoney, July 1981.

THE ARAB ROLE IN LENDINGPUBLICIZED EUROCURRENCY BANKS CREDITS (1)

(In billions of U.S. dollars)

	<u>Borrowers</u>		<u>All Borrowers 2)</u>
	<u>Industrial Countries</u>	<u>Non-Opec LDCs</u>	
1978	29.0	26.7	70.2
1979	27.2	35.2	82.8
1980	39.1	23.5	77.4
Jan - April			
1980	10.0	5.4	19.6
1981	12.6	10.5	27.0
Arab-led Syndications			
1978	1.4	2.4	6.9
1979	2.2	2.2	7.7
1980	3.3	3.2	8.0
Jan-April			
1980	0.6	0.2	1.3
1981	7.1	3.2	12.0
Arab-led Syndications as Percentage of All Lenders			
1978	5.1	9.0	9.9
1979	7.9	6.3	9.3
1980	8.4	13.5	10.3
Jan-April			
1980	6.0	3.4	6.5
1981	56.3	30.3	44.7

1) Loans in which one or more Arab banks, including consortium banks, acted as lead or co-lead managers.

2) Includes OPEC, Communist countries, and international organizations.

Source: World Financial Markets

MAJOR MONETARY AGGREGATES

Exhibit IV

GULF STATES

	<u>1976</u>			<u>1977</u>			<u>1978</u>			<u>1979</u>			<u>1980(2)</u>		
	Money Supply(1)	Private Sector	Foreign Assets	Money Supply(1)	Private Sector	Foreign Assets	Money Supply(1)	Private Sector	Foreign Assets	Money Supply(1)	Private Sector	Foreign Assets	Money Supply(1)	Private Sector	Foreign Assets
Saudi Arabia															
(Millions of Dinars)	303.8	267.9	162.0	361.8	310.8	166.2	432.2	325.4	209.6	443.3	375.8	232.6	515.6	417.1	323.0
(Billions of Dollars)	767.8	677.1	409.5	914.4	785.5	420.0	1126.0	847.7	546.0	1175.9	996.8	617.0	1367.6	1106.4	856.8
Qatar															
(Billions of Riyals)	2.702	1.559	1.708	3.567	2.464	1.973	4.116	2.889	2.429	4.511	3.278	2.637	4.986	3.398	3.160
(Billions of Dollars)	682.5	393.8	431.4	900.7	622.2	498.2	1072.2	752.6	632.7	1217.5	884.7	711.7	1369.6	933.4	868.1
Saudi Arabia															
(Billions of Riyals)	29.61	9.88	184.5	44.51	10.12	212.6	58.00	14.48	204.4	65.98	26.73	218.18	70.04	29.24	239.80
(Billions of Dollars)	8.39	2.80	52.3	12.70	2.89	60.6	17.50	4.37	61.7	19.61	7.94	65.02	21.76	9.08	74.51
U.A.E.															
(Billions of Dirhams)	16.75	10.47	14.87	15.53	15.83	2.08	17.58	19.36	2.24	18.22	21.22	3.36	19.81	23.27	4.48
(Billions of Dollars)	4.19	2.62	3.72	3.98	4.06	0.53	4.58	4.97	0.57	4.82	5.61	0.89	5.37	6.31	1.21
Kuwait															
(Billions of Dinars)	1.22	0.93	0.90	1.57	1.24	1.22	1.92	1.56	1.52	2.29	2.12	1.42	2.77	2.46	1.64
(Billions of Dollars)	4.25	3.24	3.14	5.60	4.43	4.36	7.06	5.74	4.86	8.38	7.76	5.20	10.33	9.18	6.12
Oman															
(Millions of Riyals)	164.6	120.2	30.4	206.6	167.1	105.8	230.6	198.4	67.1	246.2	222.6	188.0	318.0	262.4	311.7
(Millions of Dollars)	476.5	348.0	86.0	598.1	483.8	306.3	667.6	574.4	194.3	712.8	644.5	544.3	920.7	759.7	932.4
Exchange Rates	<u>1976</u>			<u>1977</u>			<u>1978</u>			<u>1979</u>			<u>1980</u>		
Bahrain															
(US\$/Dinar)	2.5275			2.5275			2.6052			2.6525			2.6525		
Qatar															
(US\$/Riyal)	0.2526			0.2525			0.2605			0.2699			0.2747		
Saudi Arabia															
(US\$/Riyal)	0.2833			0.2853			0.3017			0.2972			0.3107		
U.A.E.															
(U.S.\$/Riyal)	0.2504			0.2565			0.2606			0.2645			0.2711		
Kuwait															
(US\$/Dinar)	3.4849			3.5703			3.6792			3.6615			3.7310		
Oman															
(US\$/Riyal)	2.8952			2.8952			2.8952			2.8952			2.8952		

(1) Including Quasi-Money.
(2) Latest available figures.

Sources: IMF International Statistics and Central Bank of Kuwait, Quarterly Statistical Bulletin.

Funding EstimatesANGTS - ProjectEUROPEIntroduction

The European commercial banking environment is generally characterized by a lower degree of regulatory constraints than the one prevailing in the United States. Each of the major countries (U.K., France, Germany, Switzerland, Italy, Holland) have three to five major institutions dominating the banking scene, with some of the larger banks having recently outpaced the major U.S. banks in terms of size (Deutsche Bank, BNP, etc.) or earnings (the British Clearers).

No uniform lending practices prevail in Europe. International activities are for the most part of a more recent nature. The appetite for international business is influenced strongly by both international and domestic considerations - as they change over time.

European banks generally are not constrained by legal lending limits; however, the very powerful and, until recently, very aggressive German and Swiss banks have become substantially less active. Balance sheet ratio requirements recently made applicable to worldwide consolidated statements severely restrict the Swiss Banks. Ratio requirements, which are presently under consideration and maybe imposed over the next few years in Germany, have forced the German banks to be increasingly restrictive in their lending activities.

The larger European banks have not shied away from committing \$200MM to \$300MM to any one borrower for any particular transaction, although they have been somewhat less aggressive recently.

In addition, one must recognize that only a limited number of European banks feel they are in a position to either analyze pure project risk, or to live with it.

In order to assess their willingness to finance a project like ANGTS, the following approach was taken:

- Two to three major institutions per country were contacted to discuss not only what they individually would be prepared to provide, but also what could be generated from the banking community in their country.
- Pricing was not discussed, but it was almost uniformly pointed out by the banks contacted that pricing "would have to stand on its own" in the absence of commensurate relationship benefits.
- Banks generally felt that the more complicated the credit structure of the project, the more time was needed for a decision. Banks warned against "tight schedules" which could only result in the risk of them not being able to participate at all.

The attachment shows the estimated amount, by country, that could be raised in Europe.

The nature of the project and the depth of the European institutional and bond markets make it improbable that anything but minor amounts could be raised in these markets prior to completion of the project.

Export Finance

Export finance at attractive rates can be raised in the U.K., France and Italy. Generally the export finance agencies do not accept project risks. The credit structure would have to be fairly straight forward to obtain financing from any agency without commercial bank guaranties to cover the project risk. Predicting precisely how the agencies would react is impossible at this time as the agencies would need to see the formal credit structure before they would provide any indication of interest.

The U.K. export credit scheme is fairly formalized. In Italy and to a lesser extent in France, the details of export finance depend on actual negotiations on a case by case basis. Germany does not provide export finance to developed countries. Export guaranties could, however, be available. They are expensive and maturities of longer than 4 to 5 years for this project are most likely not available.

Assumptions:

- (1) The perceived participation by the American and Japanese banking communities is very strong.
- (2) Full pricing of the loan to reflect project risks.
- (3) No further deterioration in the capital ratios of the German or Swiss banks.

Estimated Potential Capacity

<u>Country</u>	<u>Amount</u>
	US \$Millions
Austria	150
Belgium	250
France	500
Germany	850
Holland	300
Italy	300
Scandinavia	300
UK	1,050
Rest of Europe	300
	<hr/>
TOTAL	4,000

TENOR: Ten year final maturity; seven and one-half year average life from date of commitment.

FUNDING ESTIMATESANGTS - ProjectASIAJAPANIntroduction

The participation of Japanese banks in financings of a pure project nature has been extremely limited, and those instances to date of their participation have been principally on a government-to-government basis. In Japan there are legal lending limits which vary depending upon the type of financial institution. For the major city banks it is 20% of capital plus reserves; for the long term banks and trust banks it is 30%, and for the Bank of Tokyo it is 40% (see Exhibit I). Although these legal lending limits technically only apply in the case of Japanese borrowers, this system extends on an informal basis to foreign borrowers in terms of setting country limits and foreign corporate borrowing ceilings. Because of the high legal lending limits it is unlikely that this would be the constraining factor but rather the complexity of the project, the lack of direct government participation and the informal guidance which may be imposed by the Ministry of Finance as to the extent of the participation by Japanese banks. The impact of a change in the Ministry of Finance guidelines is exemplified by the dramatic drop in the level of activity of Japanese banks in the syndicated loan market when comparing 1979 to 1980 (see Exhibit II). The Ministry of Finance guidelines have been relaxed recently, although until April Japanese banks had only been allowed to participate up to 25% in any Eurodollar loan with certain exceptions, they are now allowed to participate up to 50% if the Japanese lead manager(s) are underwriting 50% of the loan. In regard to this specific financing, the potential market will consist principally of the 26 Japanese banks listed in Exhibit I.

The life insurance and fire and marine insurance companies became active in participating in yen loans to non-Japanese borrowers in 1978. These institutions began looking outside of their normal parameters as a result of the lack of domestic investment alternatives coupled with their tremendous

growth and their desire to diversify. Their long-term source of funds gives them a natural base to extend fixed rate long-term commitments. The insurance companies, though, are still newcomers to international financings and presently are restricted from lead managing yen loans and limited by investment restrictions imposed by the Ministry of Finance. To date these institutions have not participated in any project financings. Additionally, under present Ministry of Finance guidelines yen loans cannot be arranged for non-residents unless the borrower is a supra natural organization, a Japan-related energy project, or an export related financing.

Although the Samurai bond market (yen bonds issued by non-residents) has been extremely active in 1981 with a greater volume of issues in the first half year (Y 277.5 bn) than all of 1980 (Y 261 bn), this is still a very restricted market in terms of the type of issuers allowed to use it. To date the list of issuers has been restricted to international organizations, governments and foreign government agencies with the exception of one corporate issue for Sears Roebuck (AAA) in March, 1979. At present and in the near future, therefore, this would not be a likely source of funds for such a project given: the present Ministry of Finance guidelines on eligible issuers, the present investment restrictions on pension funds, and the long queue of eligible candidates. These same problems basically apply as well to the domestic private placement market (Shibosai) which is utilized mainly by developing countries.

The project, though, should be favorably viewed by most of the Japanese banks for the following reasons:

- (1) the potential benefits this project offers to Japanese exporters of machinery and equipment;
- (2) the positive supply/price impact on Japan's energy situation;
- (3) the visibility of the financing; and
- (4) the assumed high level of participation by the international financial community.

Although Japanese commercial banks have, on occasion, extended loans with maturities as long as fifteen years, it is unlikely that they would go beyond 10 years for this project.

Export Import Bank of Japan

The traditional and most actively used method for financing Japanese exports by the Export-Import Bank of Japan and commercial banks under official Government sponsorship is "Suppliers Credit". Under this program loans are provided to Japanese exporters, in yen, at a fixed rate of interest, currently 8.5% for terms up to 5 years and 8.75% p.a. for terms up to 8 1/2 years. This source is available up to 85% of the export amount with Export Import Bank of Japan providing 70% of this amount directly and commercial banks providing 30%. The borrower (Japanese exporter) is required to provide security for the loan in the form of Export Proceeds Insurance issued by the Ministry of International Trade and Industry (MITI) and a letter of guarantee or letter of credit issued by a first class foreign banks or banks. MITI has a program to provide Foreign Exchange Risk Insurance which enables a Japanese exporter to provide financing to importers in U.S. dollars and other hard currencies.

"Buyer Credits" are provided by the Export-Import Bank of Japan but normally only to foreign governments, foreign government agencies and government owned financial institutions. Usually the amount involved exceeds the Japanese yen equivalent of \$100,000,000. The repayment term and interest rate are the same as for supplier credits; however, MITI insurance is not required.

It would be unusual for a "Buyer Credit" to be made available to an importer which is not owned or guaranteed by the government of the importer's country. However if a prime foreign bank will provide a guarantee, the Eximbank will seriously consider an application.

Under supplier and buyer credits capitalization of interest may be allowed; the amount eligible is 80% to 85% of the contract value and amortization will commence 6 months after completion of construction.

Although it is unlikely that the Export-Import Bank of Japan would accept project risk and waive its requirement for bank guarantees, efforts should be undertaken to determine its attitude on this project at an early stage. If the Eximbank insists on guarantees it should be determined whether alternative guarantees would be acceptable in order to reserve the banks for

direct loans that are not related to exports. Such alternatives could be insurance companies, trading companies, and other corporations. Clearly to the extent that a prime bank guarantee is required for this facility, it may not be cost effective and may reduce amounts available from banks in other geographic areas.

Assumptions

- (1) The borrower would be a Baa/A credit.
- (2) The pricing would be fully commensurate with the risk involved in terms of the spread, the benchmarks utilized for pricing, and the options available to the lenders on the pricing structures.
- (3) The total amount of exports sourced from Japan is assumed to be \$700-900 million consisting of pipe (\$400-500 million) and booster stations (\$300-400 million).
- (4) The project needs to be perceived as possessing national interest status preferably through formal U.S. governmental pronouncements.
- (5) It will be important to have a high level of participation by U.S. commercial banks in order to insure high commitment levels from other geographic sectors. This is especially crucial because of the lack of relationship benefits which will be derived from participating in this financing.
- (6) The various financing avenues of dollar syndicated loans, yen syndicated loans, public and private bond issues, and the export credit financings should be done in distinctly separate transactions to maximize the total take from this market.

Estimated Potential Capacity

(In Thousands of U.S. Dollars)

Commercial banks	\$1,700,000	\$2,250,000
Export Credit	<u>700,000</u>	<u>900,000</u>
TOTAL	\$2,400,000	\$3,150,000

AUSTRALIA/NEW ZEALAND

Depending on the strength of the underlying corporate relationships it is possible that a maximum of \$100 million could be raised from the Australia/New Zealand area but with \$50 million being the more likely amount. The banks from this region have tended to be conservative, extending maturities only beyond 10 years for Australia/New Zealand domestic development projects.

In all likelihood there will not be any institutional or export money available from this area.

SOUTH EAST ASIA

Due to the strong exchange control restrictions prohibiting lending by indigenous banks in order to conserve their foreign exchange, involvement of regional banks in Euro-syndications has been mostly to the extent that these relate to borrowings by their own governments, with the exception of Singapore, Hong Kong and India.

In all likelihood there will not be any institutional or export money available from this area.

LATIN AMERICA

It is felt that a total of \$250 million could be raised from the area, however, an amount of \$150 million is thought to be more realistic. Within the area the greatest interest is anticipated from Mexico. Limited sums could be sourced from Venezuela and Argentina, with little interest from the Brazilian market due to their cost of funds and need to finance domestic development and Brazilian trade.

In all likelihood there will not be any institutional or export money available from this area.

JAPANESE BANKSCITY BANKS

	Assets less contra accounts	Total deposits	Capital and reserves	Legal lending limit	World Ranking	
					'80	'79
Dai-Ichi Kangyo Bank	79,451	61,971	2,783	557	10	10
Fuji Bank	70,265	56,495	2,689	538	12	14
Sumitomo Bank	68,749	55,654	2,450	490	13	16
Sanwa Bank	64,239	51,870	2,283	457	14	18
Mitsubishi Bank	62,665	54,446	2,534	507	16	17
Mitsui Bank	48,545	37,681	1,560	312	29	36
Tokai Bank	47,176	37,315	1,700	340	31	35
Taiyo Kobe Bank	43,309	35,054	991	198	39	42
Bank of Tokyo	42,371	31,892	1,428	571	41	43
Daiwa Bank	37,298	30,933	667	133	51	49
Kyowa Bank	29,756	22,906	669	134	62	66
Saitama Bank	23,641	19,444	568	114	77	84
Hokkaido Takushoku Bank	19,952	15,545	433	87	87	95

LONG TERM BANKS

Industrial Bank of Japan	49,946	48,315	1,348	404	26	22
Long-Term Credit Bank of Japan	43,539	39,644	847	254	38	39
Nippon Credit Bank	27,829	25,168	815	245	68	72

TRUST BANKS

Mitsubishi Trust and Banking Corporation	37,896	35,473	1,169	351	48	52
Sumitomo Trust and Banking Company	35,492	33,198	1,162	349	54	57
Mitsui Trust and Banking Company	34,095	31,140	978	293	56	63
Yasuda Trust and Banking Company	26,486	24,663	709	213	70	79
Toyo Trust and Banking Company	22,000	20,759	599	180	82	85
Chuo Trust and Banking Company	11,798	10,908	250	75	128	141
Nippon Trust and Banking Company	6,609	6,051	230	69	197	212

LOCAL BANKS

Bank of Yokohama	18,276	15,800	818	164	95	96
Shizuoka Bank	11,979	10,507	748	150	126	134
Chiba Bank	11,608	10,527	524	105	129	137

Source: THE BANKER, June 1981

SYNDICATED LOAN RANKINGS*For
Japanese Banks

	<u>Market Ranking</u>		<u>Volume</u> (millions)		<u>No. of Loans</u>	
	<u>'80</u>	<u>'79</u>	<u>'80</u>	<u>'79</u>	<u>'80</u>	<u>'79</u>
Bank of Tokyo	10	3	18,421.74	26,240.03	84	128
Dai-Ichi Kangyo Bank	29	27	12,742.62	11,142.50	45	53
Industrial Bank of Japan	31	22	10,238.18	11,633.18	29	58
Fuji Bank	37	10	8,910.11	15,096.07	31	68
Mitsubishi Bank	38	11	9,117.64	14,953.01	28	76
Long-Term Credit Bank of Japan	40	15	9,495.98	15,179.16	34	108
Sanwa Bank	44	33	9,976.29	10,112.31	33	57
Sumitomo Bank	45	12	7,431.65	15,381.63	24	95
Mitsui Bank	50	41	8,401.24	7,054.54	25	45
Tokai Bank	56	37	5,659.79	8,931.50	19	55

*Full credit to each manager.

Source: CAPLOAN International Finance Data, Inc.

FUNDING ESTIMATES
IN THOUSANDS OF U.S. DOLLARS

ASIA

<u>Japan</u>		
Commercial banks	\$1,700,000	\$2,250,000
Export Credits*	700,000	900,000
<u>Australia/ New Zealand</u>	50,000	100,000
<u>Hong Kong</u>	10,000	10,000
<u>India</u>	20,000	20,000
<u>Singapore</u>	20,000	20,000
Subtotal	\$2,500,000	\$3,300,000

LATIN AMERICA

<u>Mexico</u>	\$ 70,000	\$ 100,000
<u>Venezuela</u>	20,000	40,000
<u>Argentina</u>	20,000	50,000
<u>Brazil</u>	20,000	30,000
<u>Chile</u>	20,000	30,000
Subtotal	\$ 150,000	\$ 250,000
TOTAL	\$2,650,000	\$3,550,000

* To the extent that a prime bank guarantee is required this may reduce the amounts available from the other geographic regions.

Senator MURKOWSKI. Thank you very much. You indicated this project was 21 billion dollars' worth of debt. Is that correct?

Mr. TUCHER. On the basis of a cost estimate of \$27 billion and a debt equity ratio of 75 to 25, we are talking about a debt requirement of just under \$21 billion.

Senator MURKOWSKI. You indicated that up to now the most significant single project debt was \$6 billion.

Mr. TUCHER. The largest single syndicated loan to a corporate borrower was \$6 billion. I am not aware of any project financing exceeding \$2 billion.

Senator MURKOWSKI. Since we are dealing with risk, the logical question that comes to mind is is there a relationship in your minds recognizing the significant debt involved that there is also a significant equity contribution and if we talk about a \$6 billion individual placement, we assume there was a corresponding equity contribution.

I am asking in your professional opinion, putting aside the fact that we are dealing with the largest amount of debt ever conceived in a single project, is it out of line in relationship to the equity contribution?

Mr. TUCHER. I would say the \$6 billion loan I referred to which I mentioned only in terms of trying to put the funding requirements in some context, was a completely different loan. It was a loan to a corporate borrower, a company with an established credit rating in business for many years.

I am not totally prepared to testify on all of the details of that loan.

Senator MURKOWSKI. You would concur that there is a relationship obviously regardless of the significance of the debt on the offsetting side, the significance of the equity contribution so that the measure of the risk while you have at risk more dollars but you also have more contribution.

My point in pursuing this discussion is to determine if in your best estimates the equity contribution is in line with the debt request.

Mr. TUCHER. In this project with a 75 to 25 debt equity ratio, we are looking at a project with a relatively high debt to equity ratio, higher I would assume than the case of the corporate borrowing I was referring to. Perhaps my colleagues could help me out.

Mr. GRAHAM. Senator, it might be helpful if the rest of the banks made their comments. I am sure there will be comments made.

Senator MURKOWSKI. I will withhold that question. I would appreciate anyone who would care to direct a response to that specifically.

You indicated on page 3, "Without going into detail, let me say that we found that debt requirement of this project would likely test the limits of the world's capital markets."

In view of the Russian proposed pipeline construction project which I assume would tap the world's capital markets as well, do you see this pipeline is in competition in the world's capital markets with the Russian pipeline?

Mr. TUCHER. In my view, every dollar of credit requests wherever it comes from, whether it be for a credit card or a large project, is in competition with every other.

Senator MURKOWSKI. Your answer is yes?

Mr. TUCHER. Yes, but only to that extent.

Senator MURKOWSKI. Mr. Graham, you are next.

**STATEMENT OF ROBERT H. GRAHAM, VICE PRESIDENT,
CITIBANK, N.A.**

Mr. GRAHAM. My name is Bob Graham. I am a vice president of Citibank and have the responsibility for the bank's lending activities with the regulated energy businesses located in the western two-thirds of the United States.

In my remarks I would like to briefly summarize the activities of the banking group in connection with the financing of the Alaskan gas pipeline project.

Since we were presented with a financing plan by the Alaskan Northwest partner in May of this year, the financing plan presented to us which is detailed in many of the statements given has essentially the following elements of significance in the prospect of lenders.

Necessary financial commitments of the project are calculated on the basis of capital costs on an as-spent basis and it would be \$27 billion.

Second, 70 percent of the equity would be contributed by the Alaskan Northwest partners and 30 percent would be contributed by the producers. Each group would be responsible for arranging an equivalent percentage of the project's debt.

Third, the debt to equity composition would be 75 to 25. Over and above the \$27 billion there would be a completion assurance pool of \$3 billion to be funded by the sponsors and producers on a 70 to 30 basis.

There is no provision in the financial plan presented to us for any further completion support such as traditional completion guarantees by credit worthy parties to insure debt repayment in the event of noncompletion.

We have not yet been formally advised of the individual percentages of ownership to be held by each sponsor and producer.

During the first 2 weeks of June of this year, the bank group held its first meeting and decided to divide its preliminary work in two phases. During phase one we would conduct a preliminary review of the world capital markets and present our initial assessments of the amounts and of the basic terms on which we believed funds from these sources might be available.

In phase two we would carefully assess the project engineering gas marketability, gas supply, financial modeling and the funding with a view to developing a summary of terms and conditions to be negotiated with the sponsors.

If this summary of terms and conditions is mutually agreeable to the parties, it would then be presented to potential lenders.

Phase one of our work was completed in August and it was reported in a letter dated August 28. In September we met with the sponsors to discuss the results of our work including the conclusions reached in our preliminary study of the world capital markets and of applicable funding conditions.

The testimony which we have submitted today details the methodology used and the assumptions on which our study was based.

Our basic conclusions were ANGTS is the total system and will be viewed by lenders as essentially comparable to a single borrower since it is our understanding that the financing for each segment will basically rely on a common source of repayment after completion, tariff arrangements with the Alaskan gas shippers.

Two; there is approximately \$12 to \$18 billion of funding available for any one borrower that is considered by prospective lenders as the risk equivalent of A/Baa credit.

Three; the bulk of the funds necessary for construction of the project cannot be raised on the completion pool of funds basis as presented to the banks for their consideration. This concept results in the banks and other lenders essentially taking an equity risk and does not meet the credit criteria required.

We therefore advised that private sector financing would require debt repayment assurances during the precompletion phase from creditworthy parties. In our view these could be provided by a combination of the beneficiaries to the project, the sponsors, producers, royalty owners, and consumers.

After completion, the financing plan would require acceptable tariff arrangements including tracking provisions approved by the Federal Energy Regulatory Commission and technical and economic feasibility.

In summary and I quote from our August 28 letter:

If the required credit support can be arranged, the banks are of the opinion that a modified plan may well provide the basis for private sector financing of the project.

In this regard we understand intensive negotiations have and are continuing to take place among the project principals. We are not in a position to advise you with respect to the details of the negotiations. We are not a party to them. We are no more current on these negotiations than you are.

The banks expect to be meeting shortly with the Alaskan Northwest to learn the status of these negotiations and to arrange phase two of our work.

Obviously the results of your determinations will have a significant impact on future activities.

In my prepared remarks we support the waivers requested as being necessary and extremely beneficial in the development of a financing plan for the project consistent with the approach presented to us by the sponsors.

Thank you.

[The prepared statement of Mr. Graham follows:]

STATEMENT OF

ROBERT H. GRAHAM
Vice President of Citibank, N.A.

BEFORE THE FOSSIL AND SYNTHETIC
FUEL SUBCOMMITTEE OF THE HOUSE ENERGY AND
COMMERCE COMMITTEE AND THE ENERGY AND
ENVIRONMENT SUBCOMMITTEE OF THE HOUSE INTERIOR
COMMITTEE OF THE UNITED STATES HOUSE OF REPRESENTATIVES

OCTOBER 22, 1981

AND

BEFORE THE COMMITTEE ON ENERGY AND
NATURAL RESOURCES OF THE UNITED STATES SENATE

OCTOBER 23, 1981

WASHINGTON, D.C.

CONGRESSIONAL TESTIMONY REGARDINGTHE FINANCING OF THE ALASKANCOMPONENT OF THE ALASKAN NATURALGAS TRANSPORTATION SYSTEM

Mr. Chairman and Members of the Committee:

My name is Robert H. Graham. I am a Vice President of Citibank, N.A. and have responsibility for the Bank's lending activities to the regulated energy businesses located in the western two-thirds of the United States.

The prepared remarks in this statement are intended to briefly summarize the activities Citibank has participated in, with the other three Banks represented here, regarding the financing of the Alaskan Gas Pipeline Project since we were presented with a "financing plan" by the Alaskan Northwest partners in May of this year. This includes comments on the group of waivers submitted by the President. Together with Bank of America, we previously served as a commercial bank advisor on limited aspects of the Project. This advisory relationship was terminated by mutual agreement in January 1980.

My remarks represent solely the views of Citibank, as each of the other three participating banks will be providing its own prepared comments.

- I. Role of the Banks
- II. Financing Plan Review
- III. Waiver Proposals
- IV. Specific Waivers
- V. Funding Availability

I. Role of the Banks

Alaskan Northwest has asked the four Banks represented here today to play two separate but related roles in the development of the financing of the Alaskan Natural Gas Transportation System (ANGTS):

First, each of the Banks has been asked to consider the concepts underlying the "financing plan" presented to it by the Alaskan Northwest partnership for the financing of the Alaskan component (the Project) of the ANGTS and whether, based on these concepts, it could participate in a significant way as a lender to the Project, and

Second, each Bank has been asked to consider and to advise Alaskan Northwest as to whether, in the Banks' view, the "financing plan" would serve as an adequate basis upon which to raise the amount of debt required by the partnership to finance the Project.

Implicit in our consideration of these issues was the understanding that the Banks would respond to Alaskan Northwest outlining fundamental conditions needed to finance the Project whether or not the "financing plan's" concepts were acceptable in their entirety; this response would be consistent to the extent possible with the private sector financing approach.

The Banks were not engaged as "financial advisors" to Alaskan Northwest as one may broadly define that role. Our "advisory" function has essentially covered the roles outlined above, although we have also suggested modifications to the "financing plan" related to the obtaining of bank debt financing for the Project.

Citibank views its role primarily as a prospective lender, and a significant one, to the Project; secondarily, and as a consequence of its possible willingness to be a significant lender to the Project, as a lead manager in the arrangement of financing for the Project from the domestic and international capital markets. We should not be viewed as an investor in the Project who would be expected to assume equity-type risks.

The concepts underlying the "financing plan" presented to us by Alaskan Northwest are embodied in a letter dated May 19, 1981 addressed by Northwest to Alaskan to the three producers (Arco, Exxon, Sohio); it has essentially the following elements of significance to prospective lenders:

- (1) The necessary financial commitments to the Project are calculated on the basis that capital costs, on an "as spent" basis, would be \$27 billion.
- (2) 70% of the equity would be contributed by the Alaskan Northwest partners (the "sponsors") and 30% would be contributed by the producers, with each group responsible for arranging an equivalent percentage of the Project's debt.

- (3) The debt to equity composition would be 75% debt, 25% equity.
- (4) Over and above the \$27 billion there would be a "completion assurance pool" of \$3 billion to be funded by the sponsors/producers on the 70%/30% basis. We were further advised that there was to be no completion support beyond the foregoing, such as traditional completion guarantees by creditworthy parties to assure debt repayment in the event of non-completion.

We have not yet been advised of the individual percentages of ownership to be held by each sponsor and producer.

We undertook the assignment asked of us knowing full well that the magnitude and apparent complexity of the financing is unprecedented. We also knew that the "financing plan" presented to us represented only a set of concepts outlining a financing approach to the Project agreed to by its principals. Our willingness to take on the assignment was conditioned to a large degree by the reputation of the companies supporting the Project and by the significance of the Project's natural gas supplies to the country's domestic energy resources.

We have been and we continue to be impressed with the significance of this Project in adding the North Slope natural gas reserves to the energy supplies of the United States. While we have not made a value judgment as to whether the Project is in the "national interest," others who are more competent to do so than I have made that judgment and have provided substantial encouragement to its development.

In addition, the sponsoring companies to this Project, and here I include the producers, are highly reputable concerns which have extensive experience in the development of major energy supply projects; they have made, and are prepared to make, a substantial financial commitment to the Project; while I will as a potential lender evaluate their respective financial capabilities to undertake their commitments to the Project, and test the premises on which the feasibility of the Project is based, I would only do this as part of a thorough and substantive review of their creditworthiness and of the Project's fundamentals. I view this as standard operating procedure for a prospective lender.

In summary, being asked by this group of companies to work on the financing of this Project is an opportunity and challenge which has been, and will be, responded to by Citibank's best endeavors.

II. Financing Plan Review

We understand that sometime in May, the sponsors and the producers concluded their discussions regarding the concepts underlying the "financing plan" which I have just described and agreed that it should be presented to the financial community.

Then, during the last week in May, Alaskan Northwest had separate meetings with each of the Banks to present a "project overview." The "project overview" included presentations by company people, as well as presentations by their financial advisors, engineering, marketing and other consultants.

It was at this meeting that each Bank was given the May 19th letter which set out the financing concepts agreed to by the sponsors and the producers, and was asked to consider a possible role as a lead lender to the Project. Shortly thereafter, each Bank was also given a draft of a proposed waiver package which the sponsors and the producers were in the process of considering, and was asked if it would review the waiver package and give Alaskan Northwest any comments that it might have on the proposal.

During the first two weeks in June, the Bank group held its first meetings, discussed how to proceed, and drafted a joint engagement letter which was sent to Northwest Alaskan on June 18th.

The engagement letter outlined the Banks' understanding of the Project, the purpose and scope of our proposed involvement, and the approach which we expected to follow in analyzing the material made available to us by the Project companies.

We proposed to divide our preliminary work into two phases:

During Phase I, we would conduct a preliminary review of world capital markets and present our initial assessment of the amounts and of the basic terms on which we believe funds from these sources might be available. We would begin to develop an approach to enable us to assess the project engineering, gas supply and gas marketability information developed by the Project companies, as well as the financial modeling work done by them. We would also identify

consultants to assist us in a detailed review of this information in Phase II of our work, briefly described below.

Phase I of our work was completed in August, and a letter summarizing our conclusions, which we are submitting to you today with the request that it be incorporated in the record of these proceedings, was sent to Northwest Alaskan on August 28, 1981. In September, we met with the companies to discuss the results of our Phase I work, including the conclusions reached in our preliminary study of world capital markets and of applicable funding conditions; these conclusions are:

- (1) The financing of all segments of the Alaskan Natural Gas Transportation System must be viewed for credit purposes as an interrelated program and must be carefully coordinated. The System will be viewed by lenders as essentially comparable to a single borrower since it is our understanding that the financing for each segment will basically rely on a common source of repayment -- the tariff arrangements with the Alaskan gas shippers.
- (2) There is approximately \$12-18 billion of funding available for any one borrower that is considered by prospective lenders as the risk equivalent of A/Baa credit. This estimate contemplates an amount of \$4.5 billion to \$6 billion from the private U.S. capital markets.

- (3) The bulk of the funds necessary for construction of the Project cannot be raised on the "completion pool of funds" basis as presented to the Banks for their consideration; this concept results in the Banks and other lenders essentially taking an "equity" risk and does not meet the credit criteria required.
- (4) The Project, to be financeable in the private sector, will require:
- debt repayment assurances during the pre-completion phase from creditworthy parties; in our view these could be provided by a combination of the beneficiaries to the Project, e.g., sponsors, producers, royalty owners, consumers,
 - after completion, acceptable tariff arrangements including tracking provisions approved by the Federal Energy Regulatory Commission, and
 - technical and economic feasibility.

In summary, and I quote from the August 28th letter, "if the required credit support can be arranged, the Banks are of the opinion that a modified plan may well provide the basis for private sector financing of the Project."

The Banks are now meeting with Alaskan Northwest to review consultants and to commence Phase II of our work. Phase II would involve an in-depth study

by the Banks of gas supply, project engineering, gas marketability, financial modeling and funding with a view to developing a summary of terms and conditions which would be mutually agreeable and could be presented to potential lenders.

In addition, the Banks understand that intensive negotiations have taken place among the Project principals, dictated in large part by the expression of our views that modifications to the sponsors' financing concepts would be necessary. We are not in a position to advise you with respect to the details of the negotiations which have been, and we understand are presently being, conducted since we are not a party to those negotiations.

III. Waiver Proposals

I would like to refer to the sponsoring companies' request that, as a part of our consideration of the proposed "financing plan," the Banks review and comment on the waivers.

At the end of May, Alaskan Northwest gave the Banks a draft of waivers to review with the request that we give them any comments that we might have. We forwarded our comments on those waivers which we believed would be of particular concern to lenders to the Project to Alaskan Northwest in a letter dated June 3rd which we are submitting to you today with the request that it be included in the record of these proceedings.

During the months of June and July, at Alaskan Northwest's request, the Banks had several informal discussions with staff of the executive branch

and both houses of Congress to explain our views on the waivers. In that connection, we circulated a memorandum dated July 13th outlining our views on the billing commencement date issue because we felt that there was confusion regarding the Banks' position on this issue. Our July 13th memorandum is being submitted to you today with the request that it be included in the record of these proceedings.

In keeping with our role, we have analyzed the proposed waivers from the standpoint of their impact on the financing approach contained in the "financing plan" proposed by the sponsors and the producers. And, because of the preliminary nature of the concepts of the "financing plan" presented to us, and our initial response to it, our view of the waivers necessary to implement aspects of that plan must, as a practical matter, be a broad view which would permit maximum financing flexibility.

IV. Specific Waivers

There are four waivers in the group under consideration on which I would like to comment. These are the waivers which deal with:

- (1) Producer ownership participation;
- (2) Inclusion of the conditioning plant in the overall system;
- (3) Regulatory certainty; and
- (4) The billing commencement date.

The need for the balance of the waivers appears to be sufficiently self-evident so as not to require our comment.

(1) Producer Ownership Participation

The Bank is of the view that the credit of the sponsors is insufficient to raise the amounts needed to fund the dollar magnitude of the Project, and therefore substantial producer participation will be required if the financing is to be arranged in the private sector. The proposal which the sponsors and producers have asked us to consider provides for an equity interest by the producers; we understand that producer participation is conditioned on their having an equity interest in the Project.

(2) The Conditioning Plant

The sponsoring companies have presented to us a financing requirement that is predicated on the conditioning plant being an integral part of the Alaskan segment of the Alaskan Natural Gas Transportation System and subject to the same financing conditions. As such, our view is that it should be covered by the certificate and tariff and tracking provisions ultimately determined to be appropriate by the Federal Energy Regulatory Commission (FERC) for the Alaskan facilities. Further, it is impractical to consider financing of the Alaskan pipeline if the conditioning plant is subject to uncertainties of ownership, financing and integration of construction and operation in the System.

(3) Regulatory Certainty

Regulatory certainty -- at two levels -- is necessary to the financeability of the Project;

First, to ensure that the Alaskan Northwest tariff which is put in place at the outset, and on which lenders and others will rely in making their commitments, will not be changed; and Second, to ensure that tracking provisions are in place from the outset which permit the shippers of Alaskan gas to recover their cost of gas and transportation charges from their customers on as current a basis as possible and that, once these provisions are in place, they will not be changed.

The opinion of the General Counsel to the FERC confirms the advice which we have received from our own counsel on the subject of the FERC's ability to alter regulatory decisions on which lenders and others may have relied. We would not accept the tariff arrangements proposed to us as the security for repayment of our loans to this Project without this waiver.

(4) The Billing Commencement Date

We have previously expressed our views on the desirability of providing for billing to commence under the tariff for the Alaskan segment of the Project prior to the "completion and commissioning" of the entire Alaskan Natural Gas Transportation System in a memorandum dated July 13th, entitled "Summary of Bank Views on Early Billing Commencement Issue."

As I understand the billing commencement waiver, it would permit the FERC to approve a tariff which would permit the commencement of billing for each of three segments — the Canadian facilities, the Alaskan pipeline facilities, and the conditioning plant — upon each segment's completion but not before a date established by the FERC as a reasonable date for completion of the

entire ANGTIS system. Billing could commence for any one segment even if either or both of the other segments were not yet complete.

From our prior discussions with some of you and with your staff, and as you will note from our memorandum, we, as prospective lenders, would have preferred a billing commencement waiver with terms which would permit maximum flexibility and maximum discretion within the FERC to approve, or disapprove, tariff provisions which would accommodate the details of a private sector financing.

The proposed waiver will restrict our ability to finance the Project, but we understand the degree of flexibility which we have sought, and continue to feel is desirable, is not attainable.

While it is my considered opinion that the proposed billing commencement waiver will be of significant help in the continued development of the financing program for the Project, whether it will be sufficient remains to be judged from the outcome of the negotiations among the sponsors and the producers, and between the sponsors and prospective lenders.

Based on my current knowledge of the financing plan for the Project, and applying some realistic expectations, I can only say that having this billing commencement waiver is significantly better than not having it.

The added uncertainties - that is to say greater risks - which would be the result of not having this waiver are not likely to be readily or easily

borne by any of the private sector parties to the transaction.

V. Funding Availability

As part of Phase I of our work, we were asked to determine the amount of funds that might be available in world capital markets for any one project. Although we were asked to look at the financial requirements for the Alaskan segment of the Project, it became apparent to us during the course of our study that it would be necessary to consider the financing requirements of the Canadian segment and the "lower 48" segments as well.

The financing for each segment of the ANGTS, as well as the financing for the expansion of the "lower 48" segments and the refinancing of the prebuilt segments, will rely on a common source of repayment, i.e., the tariff arrangements. Lenders can therefore be expected to consider these financings as one credit for risk and funding allocation purposes.

The funding study was done by geographic region, namely the United States, Canada, Europe, Middle East, Asia and Latin America. It was based on an in-depth review of the legal and policy limits of the banking community in each geographic region, the potential interest of non-bank institutional lenders and the historical lending policies of the suppliers and export credit agencies in each country based on the potential equipment sourcing submitted to us by Northwest Alaskan.

The study was, of necessity, based on certain assumptions:

- (1) The project/borrower was not identified, but was stated to be the risk equivalent of debt with a medium grade investment rating (A/Baa). A medium grade investment rating assumes adequate credit support, including completion guarantees from creditworthy parties.
- (2) The pricing (i.e., interest rate) would be fully commensurate with the risk involved.
- (3) There would be a high level of participation by U.S. commercial banks (in order to insure high commitment levels from other geographic sectors).
- (4) Use of foreign sourced goods would be maximized to increase the total financing available from suppliers and export credit agencies. A correlation exists between the exports from a country and the amount of credit indigenous banks are willing to extend.
- (5) The financing of the Alaskan and Canadian segments would be efficiently coordinated. Our findings indicate that the degree of Canadian participation in the financing of the Alaskan segment is directly related to the degree of U.S. and other non-Canadian participation in the financing of the Canadian segment.

- (6) There would be some reduction in the amounts available from commercial banks to the extent that prime bank guarantees are required to obtain export credit facilities.

The study concluded that \$12-18 billion may be available in world capital markets to fund any one project. These amounts are broken down by geographic area in Exhibit I, which is attached. The estimated amounts in the first column are based on a relatively conservative application of the assumptions described above, while the estimated amounts in the second column are based on a much more optimistic view of our assumptions.

The survey was initially structured to segment the market in terms of the amounts available for 5 year commitments, 5 to 10 year commitments and 10 to 15 year commitments. The study concluded, however, (1) that 10 years (and, in a few instances, 12 years) would be the maximum overall term available from the commercial banking market, and (2) that, within each market, it might be necessary to offer a variety of terms and average lives in order to obtain the maximum amount of funds. In addition, the study concluded that, in order to insure the maximization of funds from each market, the project must be perceived as possessing national interest status, preferably through formal U.S. governmental pronouncements. The significance of this is best appreciated when the \$4.5 billion to \$6 billion of funding estimated to be available from the private U.S. capital markets is set against the total capital requirements of the Project.

We found that improving the credit quality of the project/borrower would neither greatly increase the amount of available bank financing nor lengthen maturities significantly, whereas reducing the credit quality below an equivalent of A/Baa would substantially reduce both the amount of available funds and the average life of the financing.

This concludes my statement. I would be prepared to respond to any questions that you may have.

EXHIBIT I

FUNDING ESTIMATE SUMMARY
IN THOUSANDS OF U.S. DOLLARS

U.S.

Commercial banks	\$3,000,000	\$3,500,000
Institutional lenders	1,500,000	2,500,000

Canada

Commercial banks	2,500,000	3,000,000
------------------	-----------	-----------

Europe

Commercial banks	3,500,000	4,000,000
------------------	-----------	-----------

Middle East

Commercial banks	500,000	500,000
------------------	---------	---------

Asia

Commercial banks	1,800,000	2,400,000
------------------	-----------	-----------

Latin America

Commercial banks	<u>150,000</u>	<u>250,000</u>
------------------	----------------	----------------

	\$12,950,000	\$16,150,000
--	--------------	--------------

Export Credit Facilities

	<u>1,700,000</u>	<u>1,700,000</u>
--	------------------	------------------

	\$14,650,000*	\$17,850,000
--	---------------	--------------

* Could be reduced by \$2.5 billion if Canadian participation does not materialize - See Assumption #5.

Senator MURKOWSKI. Thank you. I appreciate your testimony. It has covered a good deal of the concern on just what the position of the banks is currently.

May I ask you, in the letter you referred to of August 28 which certainly is not a letter of commitment by any means and I think the record will reflect that and I understand your uncomfotableness even to mention anything more than a draft letter proposal.

It did address itself to the suggested waivers that are a consequence of those earlier discussions and those waivers have been proposed to the Congress by the President.

You have reiterated your support of those waivers. Is that correct?

Mr. GRAHAM. Yes, sir. Mr. Jenks' statement does cover the waivers and presents the concensus of the banks.

Senator MURKOWSKI. With enthusiasm, we will proceed with Mr. Jenks.

**STATEMENT OF STEPHEN W. JENKS, VICE PRESIDENT,
MORGAN GUARANTY TRUST CO. OF NEW YORK**

Mr. JENKS. Thank you, Mr. Chairman.

My name is Stephen Jenks and I am a vice president of Morgan Guaranty Trust Co. of New York.

In June of this year we were asked to review and comment on certain waivers of law designed to facilitate private financing of the project which had been prepared by Northwest Alaskan for consideration by the administration.

Based on this review, meetings with the sponsors and producers, our initial evaluation of the international financial markets, financial arrangements currently being discussed between the sponsors and producers and our professional judgments as bankers, we support the package of waivers which the President has submitted to you as a necessary element of raising private financing for the project.

That is financing without U.S. Government funds or guarantees. We cannot say at this time whether the waiver package is sufficient to assure private financing for the project but we believe that it is a precondition to any successful private financing plan.

I wish to highlight three elements which we consider to be of particular importance to lenders.

First, producer ownership participation. In our judgment, the credit capacity of the existing sponsor group is insufficient to attract the necessary funds to complete the project. We feel that an ownership interest in the project by the producers would constitute an important additional element of credit support for the project. Accordingly we support the waiver necessary to permit such ownership.

Second, regulatory certainty. Any private financing plan for this project will require lenders to rely upon the tariffs and other orders issued by the Federal Energy Regulatory Commission.

In our judgment lenders will be unwilling to advance substantial funds if there is a risk of a regulatory agency changing the tariff provisions and other crucial regulatory aspects of the project after funds have been committed.

After completion of the Alaskan Natural Gas Transportation System, cash flow generated through the tariffs will be the only source of funds for debt repayment. It is important that regulatory certainty be provided and regulatory certainty is needed both with respect to the tariffs charged by the pipeline companies to shippers of gas and with respect to the tariffs charged by those shippers to their customers.

This will not only remove a major risk but will also provide lenders with the additional comfort of knowing that the United States considers the project to be of sufficient national importance to remove administrative and regulatory impediments.

Third, billing commencement. We support the provision in the waiver package that would permit the commencement of billing for the Alaska pipeline segment and the conditioning plant segment before the completion of the entire Alaska Natural Gas Transportation System including the Canadian segment. We cannot now say that this provision is adequate to attract private financing.

Our concern stems from the unprecedented size of the project, the limits on the financial resources that can be committed by sponsors and producers and the capacity of the world capital markets.

We have advised the sponsors that in order to raise from \$12 to \$18 billion for the project from private institutions the loans must be supported by creditworthy parties at all times. Such creditworthy parties include sponsors, producers, consumers through a tariff mechanism and other beneficiaries of the project.

Until we have seen how much each producer and sponsor proposes to commit in equity and debt support and have determined whether or not those amounts are within each sponsor's and producer's financial capacity, we cannot say to what extent and for what periods support must be available from other creditworthy parties including consumers.

Therefore, until a definitive financing plan has been developed, we cannot be sure if the billing commencement provision in the waiver package will be adequate.

In conclusion, we support the waiver package as a necessary step in the process of raising financing for the project without U.S. Government funds or guarantees. Whether or not this package will be sufficient to ensure such financing, we are unable to say at this time.

This concludes my statement.

[The prepared statement of Mr. Jenks follows:]

Statement of
Stephen W. Jenks
Vice President of
Morgan Guaranty Trust Company of New York

Mr. Chairman and members of the Committee.

My name is Stephen W. Jenks and I am a Vice President of Morgan Guaranty Trust Company of New York. Morgan Guaranty is one of four banks retained by Northwest Alaskan Pipeline Company on behalf of the pipeline sponsors (hereinafter referred to as Sponsors) to review the Sponsors' financial plans and the capacity of the world capital markets and, ultimately, to consider being a lender and a lead manager for the financing of the Alaska segment of the Alaska Natural Gas Transportation System (hereinafter referred to as the Project). We were also asked to comment upon certain waivers of law designed to facilitate private financing of the Project which had been prepared by Northwest Alaskan for consideration by the Administration. During the course of our engagement, which began in June of this year, we have had discussions with the Sponsors and with the three oil companies who have been proposed as equity participants in the Project (hereinafter referred to as Producers). We have also had numerous meetings with Northwest Alaskan.

Based upon these meetings, our initial evaluation of the international financial markets, the financial arrangements currently being discussed between the Sponsors and the Producers and our professional judgment as bankers, we support the package of waivers which the President has submitted to you as a necessary element for raising private financing for the Project -- that is financing without

U.S. Government funds or guarantees. We cannot say at this time whether the waiver package is sufficient to assure private financing for the Project, but we believe that it is a pre-condition to any successful private financing plan.

We support the entire waiver package, but we wish to highlight three of its elements which we consider to be of particular importance to lenders:

1. Producer Ownership Participation. In our judgment, the credit capacity of the existing Sponsor group is insufficient to attract the necessary funds to complete the Project. We feel that an ownership interest in the Project by the Producers would constitute an important additional element of credit support for the Project. Accordingly, we support the waiver necessary to permit such ownership.

2. Regulatory Certainty. Any private financing plan for this Project will require lenders to rely upon the tariffs and other orders issued by the Federal Energy Regulatory Commission. Borrowings required for this Project will be several times greater than the private sector has provided for any single project in the past, and the involvement of both U.S. and foreign lenders will be essential. In our judgment, lenders will be unwilling to advance substantial funds if there is a risk of a regulatory agency changing the tariff provisions and other crucial regulatory aspects of the Project after funds have been committed. After completion of the Alaska Natural Gas Transportation System, cash flow generated through tariffs will be the only source of funds for debt repayment. It is therefore important that regulatory certainty be provided. Regulatory certainty is needed both with respect

to the tariffs charged by the pipeline companies to shippers of gas and with respect to the tariffs charged by those shippers to their customers. This will not only remove a major risk but will also provide lenders with the additional comfort of knowing that the United States considers the Project to be of sufficient national importance to remove administrative and regulatory impediments.

3. Billing Commencement. We support the provision in the waiver package that would permit the commencement of billing for the Alaska pipeline segment and the conditioning plant segment before the completion of the entire Alaska Natural Gas Transportation System, including the Canadian segment. However, we cannot now say that this provision is adequate to attract private financing.

Our concern stems from the unprecedented size of the Project, the limits on the financial resources that can be committed by Sponsors and Producers and the capacity of the world capital markets. As we advised the Sponsors in our letter of August 28, a copy of which is furnished herewith, in order to raise from \$12 to \$18 billion for the Project from private institutions, the loans must be supported by creditworthy parties at all times. Such creditworthy parties include Sponsors, Producers, consumers through a tariff mechanism, and other beneficiaries of the Project. Until we have seen how much each Producer and Sponsor proposes to commit in equity and debt support and have determined whether or not those amounts are within each Sponsor's and Producer's financial capacity, we cannot say to what extent and for what periods support must be available from other creditworthy parties.

including consumers. For example, it could be necessary to have other billing provisions which would reduce the overall financing needs of the Project. Therefore, until a definitive financing plan has been developed, we cannot be sure if the billing commencement provision in the waiver package will be adequate.

In conclusion, we support the waiver package as a necessary step in the process of raising financing for the Project without U.S. Government funds or guarantees. Whether or not this package will be sufficient to ensure such financing we are unable to say at this time.

This concludes my statement and I would be happy to answer any questions that you may have.

Senator MURKOWSKI. Mr. Jenks, I would like to refer to your testimony where you indicated that you were also asked to comment on certain waivers of law designed to facilitate private financing prepared by Northwest for consideration by the administration.

I assume you are referring to the waiver package.

Mr. JENKS. We are referring to waivers that Northwest prepared and asked us to look at before they requested the administration consider them.

Senator MURKOWSKI. In your letter of August 28 signed by the banks collectively, it generally outlines the waivers as suggested by the group. Is that not a fair statement?

Mr. JENKS. Yes, sir. That was based on our understanding of the waivers package.

Mr. GRAHAM. The August 28 letter did not discuss the waiver package.

Senator MURKOWSKI. It did not discuss the waiver package but does it not explain in conventional paragraphs the specifics of the waivers?

Mr. GRAHAM. No, it did not, not in the August 28 letter.

Mr. TUCHER. It referred to an earlier letter we wrote and incorporated those views by reference.

Senator MURKOWSKI. I am looking at that letter. Debt must be supported by repayment assurances. I would think that would be applicable to the third waiver which indicates FERC must allow a reasonable rate of return on the investment. It is academic and I am not going to pursue it.

Mr. GRAHAM. I think you will find our June 3 letter.

Senator MURKOWSKI. In the general context of the waivers before the Congress today, it has had the general input of you gentlemen in the overall suggested areas of concern.

Mr. TUCHER. Senator, we responded to a set of waivers prepared by the sponsors. It is true in the period before that the Bank of

America and Citibank worked with the sponsors as financial advisers on limited aspects, specifically the tariffs.

The waiver package that was prepared by the sponsors for consideration by these four banks does reflect the results of some of those earlier conversations.

Senator MURKOWSKI. Surely it would follow that if the sponsors or the producers come to you as the banking community and you expressed your concern over the areas you feel are going to have to be related to, whether it be the antitrust exposure or the prebilling or what not, you are going to more or less design some type of general ball park area of waivers that are going to have to be related to because you are the lenders.

Mr. JENKS. No, sir.

Senator MURKOWSKI. Let's clarify that.

Mr. JENKS. We were asked specifically to comment on what Northwest had prepared for presentation to the administration. We did that in our June 3 letter. I believe a copy has been submitted for the record. We limited our comments to what they presented to us.

Prior to that time we had no input at all on the waivers, at least Morgan Guaranty did not.

Mr. TUCHER. I think one would have to differentiate between the banks at the table. The Bank of America and Citibank did have an involvement earlier as a financial adviser on the tariff aspects. It is true certain of the waivers were specifically designed to deal with concerns discussed at that time.

Senator MURKOWSKI. I had an opportunity to meet with the bankers and so did the staff. I do not think there is any question that we would construe from that meeting that you were certainly addressing, if you will, the general area of what the considerations would be and what would have to be resolved and discussed which out of a process we will say came the waivers.

Mr. TUCHER. We support the waivers.

Mr. GRAHAM. Senator, we first were presented with a waiver package no more than 1 week or 10 days after we had the initial presentation by the Alaska Northwest partners. They came to us and said here is a waiver package, will you review it and we did.

We carefully drafted a response which is included in the record which is our June 3 letter. We supported some and we suggested flexibility in others. To that extent we made a contribution you might say to restructuring of the waivers.

As you may recall from our conversations, if anything we tried to emphasize the need for flexibility on the commencement of billing provisions.

We did not try to design a specific waiver, we just said keep it flexible.

Senator MURKOWSKI. In discussions that I was a party to at one time, we began to belabor that point because obviously when you are trying to develop some parameters to interest a party or group to become involved—you gentlemen have the capabilities and availability of knowing what you can theoretically sell to those who might participate. Obviously we cannot have every lender in the country in this project.

The point we are trying to determine is it cannot be a total open ended proposal forever. At some point in time you have to relate to specifics. I understand and appreciate the position you are in and I am not trying to make that position unknown.

This is before Congress and the waivers are here and we are addressing those and the testimony so far has been supportive of those waivers.

I commend you for that. I look forward to the balance of the testimony. I am interested in knowing the procedure you will pursue assuming we favorably complete the congressional action on the waivers.

Mr. GRAHAM. We will do our best to provide you with that information.

Senator MURKOWSKI. Thank you.

Mr. Lewand?

**STATEMENT OF STANLEY J. LEWAND, VICE PRESIDENT, CHASE
MANHATTAN BANK, N.A.**

Mr. LEWAND. Mr. Chairman, my name is Stanley Lewand. I am a vice president of the Chase Manhattan Bank. I head up the public utility division of Chase which is responsible for Chase's major involvement in the financing of gas and electrical projects in the United States.

We are hopeful that if Congress permits the proposed waivers to become effective, the private party participants in the project may be able to reach agreement upon the level and degree of equity and credit support which each can contribute.

In our opinion this package will be the straw that stirs the drink and will permit uninhibited negotiations among the sponsors and producers and will allow them to reach agreement on an allocation of equity and credit responsibility which would further the process of trying to arrange the financing of this project.

We have listened with great interest to the testimony of the producers and their statements that they are prepared to provide their share of the equity and debt support to a maximum of 30 percent of the project.

Until the sponsors submit a definitive financing plan to the banks providing the credit support necessary for the total financing of the project, we do not know whether the total level of support proposed would be sufficient to assure the successful financing of the project.

I would emphasize that the views of lenders must be understood in the context of the economic size and complexity of this proposed financing. It is awesome in scope.

A credit of this size, the borrowing of \$3 of debt for each \$1 of equity becomes an even more formidable proposal.

It causes us to be even more mindful of the need for the backing of this project by significant credit substance. Strong credit support is needed to permit us to make loans which would be deemed prudent and would be consistent with our legal responsibilities as banking institutions.

I feel very strongly that this project is in the national interest as a means of reducing our reliance on imported oil. In my opinion

this project becomes increasingly important to the security interests of this Nation as each day passes.

I hope we all, Congress, pipelines, producers, and lenders can find a way to finance it.

The national interest fuels our banks' interest in the success of the project but cannot substitute for the need of strong credit support to permit the banks to make prudent loans.

Our assessment of the national interest also cannot override the obstacles which exist to the banks taking equity positions and equity risks in this project.

The legal lending and policy limits of U.S. banks will require that a major part of the financing of this project be derived from foreign banks. These banks will make their own assessments of the credit worthiness of supporters of the project, the economic feasibility of the project and the national commitment to this project.

While we have been characterized as "beady eyed," be assured that foreign lenders will be "steely eyed." They are likely to be unimpressed by our personal judgments as to the national interest.

All lenders must be assured of the constancy of this Nation's regulatory and legislative bodies.

We hope the results of these hearings will provide a loud and clear signal to the financial communities of the world expressing the determination of our Nation with regard not only to this project but also to at least a partial solution of our energy problems from domestic energy sources.

The Chase Manhattan Bank supports the waiver package. Thank you.

[The prepared statement of Mr. Lewand follows:]

STATEMENT OF

STANLEY J. LEWAND

Vice President

The Chase Manhattan Bank, N.A.

Mr. Chairman and members of the Committee. My name is Stanley J. Lewand and I am a Vice President of The Chase Manhattan Bank. I head up the Public Utility Division of Chase, which is responsible for Chase's major involvement in the financing of gas and electric projects in the United States. I have been responsible for the Chase public utility area for 13 of my 44 years with Chase.

While Chase has followed the progress of this project from its inception, we were formally retained by the gas pipeline sponsors in May of 1981 to review the plan for the financing of the Alaskan segments of the Alaska Natural Gas Transportation System (ANGTS), to provide advice on funding the Alaskan segments in the world capital markets, and to comment on certain requests for waivers of law which were being submitted by the sponsoring group to the Administration. Our advice to the sponsors and our testimony today reflect not only our position as a prospective lead manager of the financing, but also as a prospective lender of very large amounts to the ANGTS project. Please keep in mind that we are being asked to consider lending \$3 to the project for each \$1 of equity provided by the owners. We are keenly aware of our responsibilities to our depositors, our stockholders and the public, including our responsibilities under law, to engage only in prudent lending practices. Therefore, as in the case of any loan made by Chase, our loans to the ANGTS project can only be made if the loans satisfy fundamental credit criteria. Our initial responses were contained in several letters and a memorandum (June 3, 1981 and July 13, 1981 regarding waivers; and August 28, 1981 regarding funding and the sponsoring group's financial plan), copies of which are being submitted with this testimony.

Chase is, as you know, one of a coordinating group of four banks, each of which has been given similar roles and charged to work as a group in examining all aspects of this unprecedented financing request. Since May 1981 the banks have had numerous meetings among themselves as well as with the sponsors and the gas producers. Based upon our work to date, The Chase Manhattan Bank is prepared to support the entire request for waivers. We share the views expressed by President Reagan in his message to the Congress that approval of this waiver package will enhance the likelihood of successful private financing. We also share with the President his conclusion that this project will contribute to the energy security of North America.

The Chase Manhattan Bank for many years has expressed publicly its concern about the inordinate dependence of the United States upon imported hydrocarbons to meet its energy needs. We feel as strongly today as we have in years past that this potential substitution of natural gas for imported oil, which may have the effect of reducing imports by approximately 350,000 barrels per day (the oil equivalent of 2 billion cubic feet of gas per day), will contribute very significantly to this country's national security.

We view the request for these waivers not only as necessary conditions precedent to the structuring of a workable financial plan but also as clear signals to the international community of lenders that this project is of great significance to the United States. As we attack the syndication of this \$27 billion project among the lenders of the world we would hope that strong signals will continue to emanate from our government which will

reflect no diminution of interest among the many beneficiaries of a secure delivery system for these quantities of gas from United States sources in Alaska.

In project financing, risks and rewards must be equitably shared among the various beneficiaries of the project. This sharing is accomplished through active participation by all beneficiaries in the negotiating process, including the participation of Congress through the waiver process we are engaged in today. Certain legal impediments have existed prior to the submission of this waiver package that have inhibited a free and constructive dialogue among some of the beneficiaries of the project. It is most important therefore that the way be cleared for the type of give and take negotiating process that addresses each of the financing elements of this total endeavor.

We must review in greater detail the capacity and willingness of the pipeline companies to contribute equity and to undertake contingent obligations; similarly we must review and assess the same attitudes on the part of the owners of the gas, the producers; we must reexamine the capacity of the global credit markets to ascertain in a more specific sense their capacities and appetites for the credit structure that will evolve from the negotiating process. We must also independently assess both the marketability of the gas to be delivered and the engineering and cost estimates of the Alaskan segments. And we must try to assess in our own minds as lenders the attitude of a future Congress with regard to the demands that possibly may be placed upon the consumer to begin paying for

these Alaskan segments before the total delivery system is complete and gas is flowing.

In our opinion, and based upon the knowledge we have of many of the pipeline sponsors, we do not feel that these companies in the aggregate have sufficient credit strengths to support the debt necessary to finance the \$27 billion Alaskan segments. That which cannot be supported by the pipelines must obviously obtain its support from other creditworthy sources. This will be the subject undoubtedly of future negotiations among all participants and will be fundamental to the credit structure of the financing plans. How equity will be shared among the parties and how contingent obligations will be allocated will be the basis for the ongoing work in the financing of this project.

The size and complexity of this financing are viewed with a good degree of awe by the lenders. Lenders have indicated in our preliminary conversations both here and abroad that they are not willing to accept the risks that the delivery system might not be completed nor are they willing to accept the risk of a future regulatory body changing the conditions under which the tariff and tracking mechanisms have been allowed to be implemented. These lenders have also indicated to us, and we concur in their attitudes, that they must be assured of the timely repayment of their debt and the interest thereupon. The word timely here is important because we will be obtaining funding from various groups of lenders with terms that might range from three to twelve years. A revenue stream must be

defined and considered dependable for the lender to put his money at risk. Thus it must follow that when completion of the segment occurs, but not later than a date certain, the so-called early commencement of billing must be allowed at a minimum in order to ensure that a revenue stream is available for debt servicing.

We cannot say at this juncture, absent a more definitive financing plan, that approval of the waiver requests will ensure that the financing will be accomplished. We do believe, however, that if the Congress permits the proposed waivers to become effective, the private party participants in the project may be able to reach agreement upon the level and degree of equity and credit support which each can contribute. Such agreement, together with properly constructed tariff and tracking mechanisms, will provide the necessary underpinnings to permit us to continue our determined efforts to try to structure the financing of this project. Reggie Jackson, of the New York Yankees, put it aptly not too long ago when he said of himself modestly, that he was the straw that stirred the drink. This waiver request, if approved, will similarly be "the straw that stirs the drink."

Thus, with regard to the purpose of our appearing here today, i.e., to discuss the proposed waiver package, let me make the following comments:

With regard to producer participation, it is our understanding that the producers would not be willing to accept the risks associated with the construction of this project absent ownership roles. The waiver package

addresses these ownership roles and we concur in the need for waiver in order to successfully enlist their financial support.

With regard to regulatory certainty, we have long been concerned with the very specific provisions of the Natural Gas Act that may not allow one regulatory body to bind the actions of a future regulatory body. This particular concern of ours was admirably described in the memorandum of August 18, 1981 by Charles A. Moore, General Counsel, Federal Energy Regulatory Commission to the Hon. Phillip R. Sharp and Hon. Clarence J. Brown, which addressed the question of the need for regulatory consistency. Our concerns are no less than those of the author of that particular piece. Our concerns apply to future Congresses as well, but it is our hope that given loud, clear and unmistakable signals with regard to the national need for the gas from Alaska, these concerns will be ameliorated. United States lenders may make a judgment in this regard, and this judgment will be significantly affected by the undertakings of all creditworthy parties. However, regardless of any such undertakings, if foreign lenders are given reason to be concerned about the constancy and commitment of Congress with regard to debt service, they may have second thoughts about lending to the project.

With regard to early commencement of billing, it is inconceivable that lenders will put their money at risk without some assurance of a revenue stream being available to repay their debts in a timely fashion. Again the word is timely and since various amounts will be loaned to this project having widely differing maturities, the date certain of commencement of the

revenue stream is important. The waiver package calls for such a revenue stream after the completion of each of the Alaskan segments (the pipeline and the conditioning plant) without regard to the status of the other segment and we find that a most important and laudatory concept. Whether or not a lender will be willing to wait until the completion of each segment and a period thereafter for the beginning of the repayment of his debt is conjectural and for that reason we would hope that this Congress will accept the concept of the dynamic nature of this financing and be willing to hear and react to future needs should the global financial community find the early commencement of billing on these two segments, as presently defined, not sufficient.

With regard to evidentiary hearing requirements, I think that the history of regulation and the potential for further delay in the process of reaching a decision make it desirable for FERC to be granted discretion to hold hearings only when it deems such hearings appropriate. Time is important in the construction of this project and in the delivery of our own gas from Alaska. The more expeditious we can make the hearings before the regulatory commissions, the less will be the cost of the delivery system and the greater will be the benefits to the eventual consumer.

This will conclude my remarks before this committee. I would, of course, welcome any questions that you may wish to address to me. Thank you for your consideration.

Senator MURKOWSKI. Thank you very much.

We have had a good deal of testimony before the committee. It has generally been established what this energy is ultimately going to do when it comes into the domestic marketplace, replace OPEC oil.

There is obviously growth in the economy and other factors to consider. In your economic evaluation, do you subscribe to the fact it is generally conceived that it will substantially replace OPEC oil? The specifics in the record indicate it will initially replace 400,000 barrels per day of OPEC oil. That is easily expandable to offset as much as 600,000 barrels per day of OPEC oil.

Obviously it will assist in the balance of payments by saving some \$7 billion in foreign payments at a rather conservative value of \$50 per barrel.

As you evaluate the waiver package do you include in your deliberations the various macroeconomic factors associated with reduced dependence on foreign petroleum?

It is our understanding that in Btu's the gas is actually slightly cheaper than oil at this time.

Mr. LEWAND. The impressions or conclusions we have drawn that the ability to substitute 400,000 barrels or thereabouts equivalent in gas for oil tends to back out oil to some extent, to probably a very large extent although not necessarily on a one-to-one basis. This has tremendous economic value but in addition I think value to the priceless asset of national security could not be understated.

Senator MURKOWSKI. The balance of payments is obviously in our national interest.

Mr. LEWAND. Absolutely.

Senator MURKOWSKI. I am sure your various departments, whether they be planning or economic analysis, have looked at the impact of the project on our economy.

I think John McMillian indicated it would create some 13,000 jobs in Alaska alone for a short period of time.

What would this do as far as its significance in spurring our economy? Throwing that much money into the private sector; you are taking it out and throwing it back in.

Mr. GRAHAM. I do not think we can answer that, at least I cannot. The economy is at a \$3 trillion level. The project is estimated to spend on the average \$5 billion a year. I cannot work out the math quickly enough but in the context of the overall economy, it is not very large.

In the context of your State, it could have a very significant impact.

Mr. LEWAND. We have seen evidence of what an absence of a secure or dependable energy source could do in regions that are particularly affected by it as we went through a cold spell when you could virtually walk from here to the Chesapeake Bay and energy resources were at a minimum.

If you see the dislocation that exists in that rather limited sense and wish to expand it as a result of a declining energy base, I think the damage to the economy could be very significant.

Our project by itself is not that large. Nonetheless I think it has to be viewed in the context of an overall effort to manage our energy supplies.

Mr. GRAHAM. If I could go back to the question before. As you heard from the Canadians, they might have referred that one of the intents of the gas flow from Alaska is to back out Canadian gas. Those current gas imports from Canada under the certificated arrangements are intended to stop about the same time as Alaskan gas comes into the lower 48.

If one wanted to try to match Btu's, I think that is about where you would start first.

Senator MURKOWSKI. If you are going to relieve a dependence on oil how does that relate as you have to pick it up someplace else.

Mr. GRAHAM. I think you have to look at this as an additional source of energy and put it in the context of all sources of energy available to the United States, domestic and imported. You can translate it into a barrel of oil equivalent but of course a barrel of oil has a different destination an Mcf of gas has in terms of who the ultimate user is.

I am just pointing out if you wanted to try to establish some precision on it you would have to look first at the Canadian gas.

Senator MURKOWSKI. I do not think that is totally germane.

As was indicated by Mr. Tucher in his comments I do not know of any other project which is as large as this one. The last major one was \$6 billion and we have one substantially higher. It has a substantial impact on the economy.

Mr. GRAHAM. What Mr. Tucher was talking about with the \$6 million figure was a loan to Mobil Corp. It was not a project.

Senator MURKOWSKI. It did not involve anything new; no new production or new jobs.

Mr. GRAHAM. I have no idea what Mobil has or will do with the credit.

Senator MURKOWSKI. As we try to achieve our objective of achieving energy independence within this country, obviously capital resources as well as technical advancements will be required, particularly as we begin to tap the resources of our offshore potential.

We have already seen in the North Sea a significant development of energy resources at a tremendous capital investment. I think it is true to relate that the return to the northern European countries and their governments has been a godsend to those economies. Without that oil many of those nations would be in very severe economic straits.

My concern is not relative to the financing of this project, but it is relative to the achievement of energy independence in this country, that if we cannot through the private sector develop significant energy resources such as this, what might we expect as we go further out with more complex or more technologically demanding projects?

Are we conceding the private sector is probably not going to be able to finance these just because of the magnitude and the associated risks?

Mr. LEWAND. Senator, that is a concession I would be very reluctant to make.

Senator MURKOWSKI. I am pleased to hear that.

Mr. LEWAND. You do have the prospect if we do not build this of the loss of a very precious commodity and that is time; in the

production of gas in this lower 48 and more accessible areas it probably takes about 6 years to bring gas up and get it into a commercial form.

I do not think you have the luxury to begin when the crisis occurs. If we have to wait 6 years before we bring this on or before we bring any other source of energy on be it gas, coal, nuclear energy or what have you, I think we are treading on very dangerous ground.

Senator MURKOWSKI. You indicated that the waivers are before us and it is generally conceded that has to happen for you to move on. Is that correct?

Mr. JENKS. Yes, sir.

Mr. TUCHER. Yes, sir.

Senator MURKOWSKI. Assuming we achieve the waivers, then the financial community will begin its next phase and I assume that will be to examine the marketplace, meet with the participants and generally expand the lenders group and analyze the international markets.

Could you walk us generally through the next process?

Mr. TUCHER. I would say the approval of the waivers clears the way for a whole series of negotiations to take place. My own view is we would have to start with the ownership group coming to a decision as to what it is they are able to contribute to this by way of equity and debt support and then coming to the banks and saying, this is what we can do, can it be financed on this basis.

Senator MURKOWSKI. Generally I assume they are saying they are prepared to come up with 25 percent.

Mr. TUCHER. They came to us originally and said they were prepared to come up with 25 percent equity. We responded and said that was not enough, you have to come up with debt support to assure repayment of the debt in some fashion in the event of noncompletion of the project. They have considered that and have indicated in general they understand and are prepared to do that.

The details of the negotiations and the form of that support and the amount, I do not believe that has taken place and will not until the waiver package situation is clarified and then they will come back to us.

Senator MURKOWSKI. Debt support is clearly addressed in the waiver package.

Mr. TUCHER. The need for that is addressed in our letter. As I understand it the waiver package addresses it only in the most minimal fashion in regard to the billing commencement date on segments completed.

That is not what we consider to be debt support except in a very minimal fashion in regard to the risk of noncompletion of other segments than that being financed.

Senator MURKOWSKI. What happens next, assuming we get through the waivers, you meet with your consortium. What kind of a rate structure might this bear in your opinion roughly, not fixed but tied to?

Mr. LEWAND. I do not think we are prepared to discuss it. I would leave you the fact that money today is costing x percent and it will have to be some increment over that cost.

Mr. GRAHAM. A good banker always tries to leave the rate discussion for last.

Senator MURKOWSKI. That is very true, it just depends on which end of the response you are on.

Mr. TUCHER. I think one could say the preponderant amount of money that is being raised today in international syndicated loan markets is on the basis of floating rates, a margin over the cost and it would be quite impossible at this point to talk about what that margin is.

Senator MURKOWSKI. What did the \$6 billion proposal go for?

Mr. GRAHAM. I do not think that was public information. At least I do not have it available. I think Mobil is a AAA rated corporate credit and it would bear obviously some relationship but not much.

Senator MURKOWSKI. When we use 25 percent equity, you have not established any parameters, you just indicated that perhaps that is enough or is not enough?

Mr. JENKS. I think that is right. The final positions of both the sponsors and the producers on what they are going to contribute has not been determined.

Senator MURKOWSKI. I would like to refer to Mr. Lewand's statement, page seven. I will read it because I want to make sure I understand it.

Whether or not a lender will be willing to wait until the completion of each segment and a period thereafter for the beginning of the repayment of his debt is conjectural and for that reason we would hope this Congress would accept the concept of the dynamic nature of this financing and be willing to hear and react to future needs about the global financial community, find the early commencement of billing on these two segments as precisely defined not sufficient.

Mr. LEWAND. What I am driving at there, Senator, is the fact that the commencement of billing issue suggests a commencement of billing at a time certain after the completion of a segment.

We will have lenders hopefully who might lend long term. For some of the offshore lenders I would say if we could get an excess of 5 to 7 years, we would be very lucky. We are going to have debt maturing in varying degrees from time to time, 3 to 7 years down the pike.

It is not necessarily likely that a man who lends or an entity that lends into the project is going to wait or wants to wait until that time certain after completion of a segment for repayment of his debt. They may want to be paid before that. If he does so, we do not have a revenue stream that is defined at all for repayment of his debt. We assume in raising the \$18 billion which is the uppermost limit of this estimate of funding, that we will have exhausted the supply of loanable funds on a global basis.

In structuring the facility, the credit arrangements, there is no way of ascertaining now and we will not know until we sit down with negotiations just how long this lender of funds is going to wait for the repayment of his debt.

I am hoping as we try to structure the final financing package, that we may be able to address this issue if it is a make or break issue.

Senator MURKOWSKI. Do I understand your statement may infer a change in the billing commencement schedule as before us in the waiver today, if it turns out the proposal is not sufficient?

Mr. LEWAND. I am not suggesting change. I am really trying to ask the Congress to share with me the problem we have because of the impreciseness of the financing package we are dealing with.

Senator MURKOWSKI. I can appreciate that. I can appreciate your position in wanting to keep this flexible. The U.S. Congress is addressing today waivers because that is all we have to address.

To ask the Congress to open end the waivers, and I know you are not asking that, but for the record I want to reflect the attitude as expressed by Chairman McClure that the likelihood of the Congress successfully going back to the well and addressing future waiver proposals is, in my opinion, and again I express the sentiments I think fairly of the chairman, rather doubtful.

I believe you can understand this because of the lobbying and commitment of time and effort and we understand your position because you are being called upon to finance it and you can only finance it under the terms it is saleable and is in the best interest of the financial community.

I would urge as strongly as possible and certainly make every effort to suggest to you the difficulties associated with expecting the Congress to make such change. In the way the President structured his letter to the Congress it was very straightforward that we were looking to the private sector for this project.

To anticipate an open ended action by the Congress on future considerations that might be necessary could be extremely difficult. I do not think it is necessary I expand further.

Mr. GRAHAM. We have expressed to the committee and the sponsors that we will use our best endeavors to work with the waiver package that is approved. We sure cannot assure that is going to be adequate to arrange the financing for the project.

Senator MURKOWSKI. I think some would be willing to go forward, but in my judgment it is going to take a tremendous commitment to get this proposal through the Congress and I do not think you would disagree. Whether the President is likely to send up any revised waiver package after this, I do not know. I think it is through a bipartisan coalition of support that we have gotten where we have gotten today and I have no doubt the coalition could very possibly fall apart if we should have to go to further extremes in the broadening of the waiver proposals.

Mr. TUCHER. I think each of the banks has gone on record supporting this waiver package. We are asked to work with this package. All we want to leave with you is the fact that we will do our very best to work on it but it is possible that we will not succeed.

Senator MURKOWSKI. I appreciate that attitude.

Mr. GRAHAM. It will not be the banks that come back to the Congress seeking a waiver package just as we are not here today seeking a waiver package.

Senator MURKOWSKI. We have kind of walked through that too. When you are going for money, you go to the money lender and the money lender tells you whether you can have it or not and if you can have it, on what terms. We all understand that.

That is kind of where we are at; you have not expressed your terms and I am not attempting to hold you to your terms. At some point in time the terms have to be related to and the Congress is

relating to all it has today which is a waiver package that came down from the President which you support.

Mr. LEWAND. Senator, we feel that what we see is what we got. We are going to work with it.

Senator MURKOWSKI. I would respectfully suggest that we not have to have another waiver package.

Mr. TUCHER. I accept your suggestion but I must say we will work with this but we cannot commit as to what we can do with it.

Senator MURKOWSKI. I certainly understand. I think you have made that position very clear.

I would like to walk through the risks associated with this particular project as it reflects the safeguards if you will concede they are safeguards of the waiver package.

The first major waiver allows the owners of the gas participation in the project. Because of the strength of those three major producers, obviously it adds to the financial viability of the project.

Is there a further risk associated with that particular waiver? Assuming the laws are changed which allow no antitrust exposure for their participation as equity participants, how do you analyze that?

Mr. JENKS. I think we feel the credit capacity of the existing sponsor group is insufficient and we need the additional financial strength of the producers.

Senator MURKOWSKI. Let's assume that waiver as part of the proposal passes and we have that assurance. Is there an additional risk associated with that after that waiver is achieved so they come in as a participant with an equity position which is 30 percent of the total pipeline?

Mr. GRAHAM. Risk to whom?

Senator MURKOWSKI. Risk to the lenders.

Mr. TUCHER. We are not aware of any risk either to the lenders or anyone else by this waiver.

Senator MURKOWSKI. Obviously we concede it makes the package financially attractive to have them in so we do not need to discuss that further.

We are rolling in the pipeline conditioning plant which is the second major waiver. That is to the tune of something in the neighborhood of \$6 billion depending on whether you are using 1980 or current dollars.

All that does is increase the debt and, I assume, increase the collateral if you consider the conditioning plant in Prudhoe Bay.

Mr. JENKS. I think in addition the conditioning plant is an integral part of the whole system. Whether it is in the package or not, the people lending to the pipeline would have to be assured the conditioning plant would be built and financed properly. We would not take the risk of the pipeline without knowing the conditioning plant was going to be built.

Senator MURKOWSKI. Since it is all in one package you make your commitment on the pipeline if there is one and the conditioning plant so we have the satisfaction they are an integral part of one another while they are separate.

Mr. GRAHAM. That is how they were presented to us.

Mr. TUCHER. I think the discussion of including the conditioning plant really cannot be separated from the discussion of the billing

commencement waiver in regard to having two segments in Alaska.

Senator MURKOWSKI. That would be my last question.

Mr. TUCHER. I do not think you can really separate the two. If you have that waiver then I would say there is no additional risk to the lenders.

Senator MURKOWSKI. The third major waiver is the assurance that the Federal Energy Regulatory Commission will allow the financing community a guaranteed, if you will, amortization schedule that is agreed upon beforehand so there will not be suddenly a rate adjustment which could substantially overturn the amortization schedule. That is related to in the waiver, is it not?

Mr. LEWAND. Yes.

Senator MURKOWSKI. If in reality the acceptance is conditioned on the part of FERC to specifically address this area of concern, allowing certain amortization, then that risk is substantially reduced. Is that correct?

Mr. LEWAND. Yes, I think it is ameliorated very significantly and depending upon how the FERC comes out in addressing the commencement billing. If the FERC tariff comes out in a manner that demonstrates we can have fundamentally debt service within a reasonable period of time, then that risk is significantly ameliorated which has been a concern of ours.

Senator MURKOWSKI. Thank you. The last major concern is the application of prebilling. There has been a lot of discussion about it. I think there is still some misunderstanding about it.

As I understand it and you can correct me at any point, we have a project that is going to be constructed in three segments. Those segments specifically are the conditioning plant at Prudhoe Bay and the Alaska combined U.S. portion and the Canadian portion. Is that generally correct?

Mr. LEWAND. Yes.

Senator MURKOWSKI. The prebilling application applies first of all to the Canadian sector for all costs, equity, debt, interest, the whole ball of wax. The other two apply to debt for the most part only and some other incidentals but not equity. Is that generally correct?

Mr. LEWAND. Yes.

Mr. TUCHER. Prebilling may be ambiguous. A tariff goes into effect after those respective segments are completed and until that time there is no money at any time and there is no guarantee by the consumer that they will be completed. It is simply an obligation that the tariff will be paid by the consumer if the segments are completed.

Senator MURKOWSKI. The risk to the consumer on prebilling might occur in the case where let's say the Canadian portion was completed and the Alaska-U.S. portion was completed and the gas conditioning plant was not completed, so as a consequence, the gas could not flow.

At that time the prebilling would commence on the Canadian segment and the U.S.-Alaska segment so that the debt associated with those two segments would be passed on to the consumer and ultimately there would be some type of an amortization that would come back to the lenders.

Is that generally correct?

Mr. LEWAND. Yes.

Senator MURKOWSKI. What is your risk at that point in time on the gas conditioning plant where you would not receive prebilling?

Mr. TUCHER. We would be relying on the debt support arrangements of the equity owners or other creditworthy parties that we found acceptable.

Mr. LEWAND. They will have guaranteed completion and obviously this plant has not been completed.

Senator MURKOWSKI. Their guarantees consist specifically of what?

Mr. LEWAND. We do not know, sir.

Senator MURKOWSKI. Is it a guarantee up to and inclusive of their equity or does it go into the corporate net worth?

Mr. LEWAND. It is not related in that sense. The guarantee is a guarantee of repayment of debt and however that affects their equity or whatever else—

Senator MURKOWSKI. If they form a subsidiary for their equity participation and they guarantee that—

Mr. GRAHAM. It goes to their corporate net worth.

Mr. JENKS. The credit support would have to be from the parties.

Senator MURKOWSKI. It goes to the corporate net worth so the debt is totally guaranteed as far as that one segment.

Mr. GRAHAM. I think we are getting into definitions of terms and I would not want to prejudge the outcome of negotiations between the owners and the lenders. It will be an effective assurance to the lenders that in the event the project is not completed by a date certain they will get their money back.

Senator MURKOWSKI. All right.

Mr. LEWAND. Yesterday's effort to describe this was not particularly successful. I think for purpose of this hearing we will call it a guarantee because that is what we are looking for fundamentally. Whether it in effect becomes a guarantee depends on how smart our lawyers are in writing the document.

Senator MURKOWSKI. I did not take part in that discussion yesterday. We have walked through the major phases of the waivers.

I would like to have you elaborate if you will on the substantial risks associated with this project outside the significant dollars involved. What are the significant risks if you concede the prebilling has an application to retire debt should a set of circumstances occur which would trigger prebilling, namely one segment or another not being completed by a date certain?

Mr. GRAHAM. The risks prior to or after that occurs?

Senator MURKOWSKI. Obviously you do not have all your money out when you start the project. You do not have three-quarters of the construction out. You have whatever you have out. At some point in time you either have it all out and it is finished and ready to go or you have the coverage of prebilling.

I am trying to ascertain what the unusual mechanics are about this project that it makes it so extremely risky in relationship to other projects other than the amount of money involved.

Mr. TUCHER. I think there is still a confusion about the prebilling. In lending to the particular project as Bob Graham said, there are risks in the precompletion and postcompletion operating phase.

The risk in the precompletion phase is that the project segment which the lenders are lending for, one particular segment, the risk is that project not get completed because if it does not get completed, there is only one source of repayment, namely the guarantee or debt assumption agreement or debt support of a group of equity owners or other creditworthy parties.

The risk is it does not get completed or it is getting completed but the people who have undertaken to pay the debt in that event cannot do so. The precompletion billing does not help the lenders to that segment at all except in one very limited fashion, in appraising the creditworthiness of those who have undertaken to repay the debt in the event of noncompletion of that segment, one of the things the lenders can look at is what other risks are those same people taking and they are taking risks presumably on the other segment in Alaska.

To the extent that segment got completed, they are not as able to generate cash, those equity owners are relieved of that responsibility in the first instance, and to that effect they are more creditworthy and therefore the risk to the lenders of the segment that has not been completed is somewhat alleviated.

It certainly is not a principal support of debt support in the event of noncompletion.

Senator MURKOWSKI. I understand and I agree you would be in a much better position to be sitting with a segment financed that was completed so you could prebill.

You have the guarantees of the corporations on the debt.

I would like to have you elaborate on the other risks you see that are substantially associated with this project.

Mr. TUCHER. The other risks following, operating risks after completion, and those are presumably that the project whose basic source of funds is contracts from shippers to pay for the service, that they will not be able to pay for that service. That goes back to the question of the marketability of the gas and we are not taking that risk directly, we are taking it indirectly in that we are lending to a project that is depending on a group of shippers being able to pay those charges and they can only pay those presumably if they can in fact sell the gas.

Senator MURKOWSKI. How do you make that evaluation? I assume you rely on what they say they can do and your own analysis of the marketability of that gas?

Mr. TUCHER. We will rely on what they say and we will rely on the studies and consulting reports they have to show us and we will have our own consultants do some marketability studies and we will evaluate those and eventually make a credit judgment as to whether those companies are creditworthy to bear those obligations.

Mr. LEWAND. When we look at the guarantees of the sponsors, these are not where one is going to pick up the marbles for another.

Mr. GRAHAM. Banks are not in the business of taking completion risks on major projects even if it is substantially smaller than the Alaska project.

Mr. TUCHER. It is really an equity type risk which we do not take. Someone who promises to pay or guarantees a debt and

cannot do so, that is a risk we can evaluate. We do not fundamentally take completion risks. We simply evaluate whether those that say they will pay will be able to do so in our estimation.

Senator MURKOWSKI. If you take the experience of the pipeline industry as it is applicable across North America and certainly through Canada and western Canada, I would assume a pipeline is pretty much the same all over. You finance those all the time.

This one is much more complex but the technology is not new. As you move north you associate with higher costs and theoretically I assume although I am not totally satisfied that it should cost us much more to dig a mile of pipe in Alaska as it does in Tennessee but we all agree it seems to, but the technology there is not new either.

We seem to have a fear, an uneasiness of going outside our every day area of exposure and comfort. I wonder if the experience of the investment community bears that uneasiness out or if it is just something we have.

Mr. GRAHAM. I think you are making one presumption that I might try to correct. The pipelines we have financed recently in the lower 48 have had completion agreements associated with them. The equity sponsors of those projects have fundamentally agreed to complete those pipelines and failing completion assume repayment of the debt.

What we are talking about here is not different from the financing structures that have been employed in the lower 48 pipeline financing.

Senator MURKOWSKI. The sponsors are using \$30 billion as the cost of the project and you are using \$27 billion. Is the \$3 billion the cushion?

Mr. TUCHER. The completion assurance pool that was contemplated in their original financing plan.

Senator MURKOWSKI. All right.

Mr. JENKS. That \$27 billion assumes 11-percent inflation during construction and an average interest rate of 14 percent.

Senator MURKOWSKI. My understanding of the oil pipeline built across Alaska cost some \$7 to \$8 billion as it was finished on time despite problems associated with the environmental controls which I think is significant to the commitment of not only the engineering and construction techniques but the project leaders involved in that project as well. That does not necessarily have anything to do with this but it certainly cites a parallel relationship to the ability to complete complex projects in the north.

Mr. TUCHER. We have not done the indepth technical evaluations. I do not think we would be here if we did not have confidence that, in fact, the sponsors would succeed.

Senator MURKOWSKI. I think that is a fair statement.

Assuming the waivers are passed, then do you begin to direct your attention to the realities of whether or not this is financeable in the private sector and roughly we know what our timeframe is because it is established by statute. We have 60 days to do something with this. At the end of 60 days you may have something to do if we are fortunate in getting this through.

Roughly how long do you anticipate before you will be in a position to make a determination as to whether or not this project can be financed by the private sector?

Mr. GRAHAM. I think we have been dealing with realities over the past 3 or 4 months. We are not really the masters of the length of time it will take to develop and negotiate the financing of the project. It is the sponsors in our case who really will be establishing the pace. I am sure we can keep up with them.

Senator MURKOWSKI. That is the best guess you can give the committee?

Mr. GRAHAM. One has to make a number of assumptions about how long it takes to do integral parts of the arranging of a financing plan.

This is of unprecedented magnitude. It has to be carefully crafted. A lot of marketing probably has to be employed to bring a great deal of lenders up to speed on it to get some enthusiasm.

I think we can reasonably match the process that I anticipate with the Federal Energy Regulatory Commission and with the sponsors and the producers.

Senator MURKOWSKI. I would hope recognizing the timeframe we are responding on that consideration on this project will be such that you will be able to go ahead and make some decisions in a timely manner and I am sure you will.

I very much appreciate your testimony. I think we have substantiated the commitment of your interest in the statement that the waivers are necessary and your support of the waivers.

I do assure you that the committee appreciates very much the extensive commitment from the financial community. I think your advice and counsel has been substantial and I think it particularly noteworthy of the time you gentlemen and your organizations have spent with the committee on this matter not necessarily in the development of the waivers but in the general discussion of the interpretation of the things involved in a commitment of this magnitude or the contemplation of the commitment of this magnitude. I think it speaks well of our Nation's leading banks and their commitment to not only the likelihood of a sound investment but on the other hand the realities of assisting the government process.

As some have pointed out in this hearing, the greatest problem they saw associated with the project was mainly government and the role government plays in inhibiting the growth of the private sector.

As the President has indicated, this is a challenge before the private sector. I am sure you gentlemen recognize and appreciate it as certainly the major challenge in dollars you have ever participated in. I wish you well and urge you address the challenge in the manner in which your organizations have helped develop and made the private sector what it is today. I commend you and thank you again for your participation.

Mr. GRAHAM. Senator, I would like to thank you for those remarks. It is not often banks are encouraged to that extent.

Senator MURKOWSKI. I understand.

The next witness is Mr. Peter M. Sacerdote, Goldman, Sachs and Co. and Mr. Andrew C. Sage, Lehman Brothers Kuhn Loeb.

You may proceed with your presentations. We will insert your prepared statements into the record.

STATEMENT OF PETER M. SACERDOTE, PARTNER, GOLDMAN, SACHS & CO., ACCOMPANIED BY ANDREW SAGE II, MANAGING DIRECTOR, LEHMAN BROTHERS KUHN LOEB, INC.

Mr. SACERDOTE. Thank you. We are delighted to be here.

I am Peter Sacerdote, a partner of Goldman, Sachs and Co. and on my left is Andrew Sage, managing director of Lehman Brothers and not present but concurring in our remarks is Mark Millard, senior managing director of Shearson/American Express Inc. who unfortunately is out of the country and unable to attend.

Our three firms are the investment banking financial advisers to Alaskan Northwest Natural Gas Transportation Co.

We have advised Alaskan Northwest on many issues relating to the development of a financing plan including the identification of requirements for and sources of financing.

We have assisted and advised our client to date in the role of financial adviser. Investment bankers also can assist in arranging financing typically as agents in private placement of securities with institutional lenders and as organizers of syndicates for the underwriting of publically offered securities.

Unlike commercial bankers, investment banking firms do not lend or otherwise provide capital directly to projects.

We are here today to present our views on the waiver proposals which President Reagan has recommended to the Congress in support of the Alaskan Natural Gas Transportation System.

Four have particular significance for financing. These are waivers which would permit North Slope gas producers an equity position in the Alaskan segment of the project, provide for the inclusion of the gas conditioning plant in the project, to modify the conditions under which billing commencement of Alaskan gas consumers can begin and reduce the potential of certain regulatory initiatives which could undercut the security position of project lenders.

In our judgment, these four waivers are absolutely necessary to achieving the private sector financing required by the President's decision. Without their approval the project's future as a private venture is in grave doubt and the ultimate recovery of approximately 13 percent of our country's proven gas reserves and the substantial national and consumer benefits to be realized therefrom will be seriously jeopardized.

CHANGES IN THE CIRCUMSTANCES SINCE THE PRESIDENT'S DECISION

A number of significant developments have occurred since the President's decision which have had the cumulative effect of increasing the financing which project sponsors must arrange.

These factors have increased the financing requirements in when spent dollars from the 1977 estimate for the entire system comprised only of the four pipeline segments and not the conditioning plant of approximately \$13 billion to the 1981 estimate which is approximately twice that amount.

These developments include escalation in project cost due to 4 years of higher than expected inflation; escalation in project costs

due to the need to increase interest rate assumptions during the construction periods; inclusion of the \$6 billion conditioning plant in the project and refinements in the pipeline system and sizable increases in required reserves and contingencies.

We would like to turn our attention to reviewing in detail the justification and our reasons for supporting and recommending enactment of the waivers relating to the financing of the project.

PRODUCER EQUITY PARTICIPATION WAIVER

Despite recognition in the President's decision that the producers should participate in financing the project, the equity restrictions imposed on them by the decision are incompatible with a meaningful producer contribution to financing.

The producers expect a meaningful say in how their money will be spent. Without equity participation and its resulting voice in project management, the producers will not provide direct funding or credit backing for the project.

There is no doubt that private financing will not be possible except by virtue of significant producer support. The combined financial capability of the transmission company sponsors is not adequate to support a project of this magnitude.

PRUDHOE BAY GAS CONDITIONING PLANT

Potential lenders have indicated their insistence on viewing conditioning plant timing and completion risks as an integral part of project evaluation.

Once this reality is accepted the concept expressed in the financing concept agreement must follow, that is that all components of the project group have an investment in the conditioning plant similar to their investment in the Alaskan pipeline segment.

These considerations dictate that the conceptual agreement on financing provide that the producers and the gas transmission companies share the equity and the responsibility for arranging or supporting the best funds for the gas conditioning plant in the same proportion they agree to contribute to the Alaskan pipeline segment.

BILLING COMMENCEMENT DATE

To attract such extensive participation mandates that the total system be segmented for purposes of billing commencement. Such treatment would permit certain lending institutions to increase their participation in the project and remain within their lending limits. Segmentation of the project reduces the risk faced by lenders that their entire investment could be jeopardized in the very unlikely event that one segment is not completed.

It permits a lender to lend to the Alaskan segment without having to worry about completion of the Canadian segment, a segment over which the Alaskan borrower would have no control.

REGULATORY CERTAINTY

The cost recovery mechanisms for Alaskan Northwest and the shippers of Alaskan gas are the tariffs approved by the FERC and

the Canadian National Energy Board pursuant to which Alaskan Northwest charges the shippers for transportation services and the shippers in turn charge their customers.

As the Commission found in its Orders 31 and 31B, these tariffs are the "economic lifeline of the project." Because of the extraordinary risks attendant to the project and the enormous amount of financing needed, lenders will require assurance that once approved by the FERC, the tariffs will not be subject to future regulatory action which would impair the recovery of debt interest and principal.

In conclusion, we believe that further progress on the financing of the project is tied to favorable congressional action on the proposed waivers of law.

Based on the banks' August 28 response and our knowledge of the position of other potential supporters of the project, we believe the project can be privately financed but support by the sponsors and producers above the levels they have preliminarily indicated will be required.

If this additional support is forthcoming, we believe there will be funds available on a worldwide basis sufficient to provide the debt financing for the project.

We cannot assure the Congress that approval of the waivers guarantees the financing of the project. The difficulties which still lie before us are great and many issues remain to be resolved.

We would choose to close our remarks with an affirmation of our strong belief in the merits of this project and of our unshakeable conviction that the project is necessary for the energy future of this country.

Thank you very much.

[The prepared statement of Mr. Sacerdote follows:]

TESTIMONY OF
PETER M. SACERDOTE, PARTNER,
GOLDMAN, SACHS & CO. AND
ANDREW G.C. SAGE, II, MANAGING DIRECTOR,
LEHMAN BROTHERS KUHN LOEB INCORPORATED
BEFORE THE
SENATE COMMITTEE ON
ENERGY AND NATURAL RESOURCES
OCTOBER 23, 1981

We are Peter M. Sacerdote, Partner of Goldman, Sachs & Co. and Andrew G.C. Sage, II, Managing Director of Lehman Brothers Kuhn Loeb Incorporated. Mark J. Millard, Senior Managing Director of Shearson/American Express Inc. is out of the country and unable to attend. Our firms are investment banking financial advisors to Alaskan Northwest Natural Gas Transportation Company, the company designated by the President to design, construct and operate the Alaska pipeline segment of the Alaska Natural Gas Transportation System.

We have advised Alaskan Northwest on many issues relating to the development of a financing plan, including the identification of requirements for and sources of financing. We have assisted and advised our client on a wide range of subjects such as the incentive rate of return mechanism, the cost of service tariff, and the cost estimate structure. While our role to date on behalf of Alaskan Northwest has been limited to that of financial advisor, investment bankers also can assist in arranging financing, typically as agent in the direct placement of securities

with institutional lenders and as organizers of syndicates for the underwriting of publicly offered securities. Unlike commercial banks, investment banking firms do not lend or otherwise provide capital directly to projects.

As financial advisors to Alaskan Northwest, Shearson/American Express Inc. (since 1976), Lehman Brothers Kuhn Loeb Incorporated (since 1978), and Goldman, Sachs & Co. (since 1979) have been directly involved with many of the participants and prospective supporters of the project. These include the transmission company sponsors, the North Slope producers, the State of Alaska, potential major foreign and domestic lenders and suppliers, and governmental export agencies supporting the supplier companies.

The three investment banking firms advising Alaskan Northwest have acquired substantial familiarity with many of the aspects of the project. This relates to our work with Alaskan Northwest and Fluor Corporation, the prime management contractor, on the cost estimate, the incentive rate of return mechanism, and certain project design issues. We have also worked with expert consultants with whom Alaskan Northwest has contracted for studies relating to the marketability and net national economic benefits of Alaskan gas.

We are here today to present our views on the waiver proposals which President Reagan has recommended to the

Congress in support of the Alaskan Natural Gas Transportation System. Four have particular significance for financing. These are waivers which would permit North Slope gas producers an equity position in the Alaskan segment of the project, provide for the inclusion of the gas conditioning plant in the ANGTS, modify the conditions under which billing commencement of Alaskan gas consumers can begin and reduce the potential of certain regulatory initiatives which could undercut the security position of potential project lenders.

In our judgment, these four waivers are absolutely necessary to achieving the private sector financing required by the President's Decision. Without their approval, the project's future as a private venture is in grave doubt and the ultimate recovery of approximately 13% of our country's proven gas reserves and the substantial national and consumer benefits to be realized therefrom will be seriously jeopardized for the foreseeable future.

In arriving at these conclusions we considered the basis and rationale for the waivers in the context of the project's current cost estimate, which has more than doubled since the original 1977 estimate, and the current financial environment, which is markedly less favorable from that which existed when the project was originally approved. We also took into account the relationship that has necessarily evolved between the transmission company sponsors, producers, and potential lenders as a result of the greater financing requirements, and the less favorable financial environment.

Historical Background

The President's Decision presented an analysis of the project's anticipated capital requirements, which in 1977 were estimated at \$13 billion in when spent dollars and set forth certain ground rules under which a private financing was to occur. These parameters included: (a) a prohibition against producer equity ownership in the Alaska pipeline segment; (b) the exclusion of the conditioning plant from the ANGTS; (c) a prohibition against governmental financial support of the project; and (d) a prohibition against the use of consumer charges prior to the completion and commissioning for operation of the four pipeline segments of the ANGTS. Once commissioned for operation, the President required that consumers of Alaskan gas commence paying the irrevocable financial obligation provided for under the FERC gas tariff which at all times provides for the full payment of debt service costs. The President's Decision also envisioned that 75 percent of the financing would be debt which would be project financed, that is, the assets and cash flow of the project would provide the principal source of credit support to lenders.

A financing plan incorporating these parameters was developed shortly thereafter, incorporating the following features: During the construction phase, debt capital for the Alaskan pipeline segment would be raised on a project financing basis with no corporate or government completion guarantees. The 25 percent equity component would be provided

by the transmission company sponsors. Additionally, as mandated in the President's Decision, the conditioning plant would not be the responsibility of Alaskan Northwest.

In the absence of conventional corporate or government completion guarantees, the plan provided that lender concerns with completion risk were to be met through a detailed risk analysis coupled with a prearranged completion assurance pool to function as follows: The project's final cost estimate would be subject to an independent risk analysis and overrun probability assessment which would determine the amount required for an initial pool of capital. Commitments would also be obtained for a second capital pool, a completion assurance pool, which would be available in the improbable event that project costs exceeded the initial pool. Both capital pools would be irrevocably precommitted prior to the commencement of construction.

Once the four pipeline segments were certified as completed and commissioned for service, credit support for the project's debt would be provided through the FERC-approved gas tariff which would assure the payment of the project's debt service under all circumstances. Based on the tariff and regulatory provisions providing for the full and timely flow through of project costs to gas consumers, financing commitments would be secured from institutional lenders to refinance a portion of the commercial bank financing. In

addition the financing plan envisioned the possibility that public debt markets could also be used to refinance construction loans.

Changes in Circumstances Since the President's Decision

A number of significant developments have occurred since the President's Decision which have had the cumulative effect of increasing the financing which project sponsors must arrange. These factors have increased the financing requirements in when spent dollars from the 1977 estimate for the entire system (comprised only of the four pipeline segments and not the conditioning plant) of approximately \$13 billion to the 1981 estimate of \$27 billion for all Alaskan facilities. These developments include:

- (a) escalation in project costs due to four years of higher than expected inflation;
- (b) escalation in project costs due to the need to increase interest rate assumptions during the construction periods;
- (c) inclusion of the \$6 billion conditioning plant in the project;
- (d) refinements in the pipeline design; and
- (e) sizable increases in required reserves and contingencies.

In addition, the financial markets in the U.S. and abroad have been characterized since 1977 by increasing volatility, high interest rates and major structural changes.

The availability of long-term debt has been adversely affected by a decline in the appetite of long-term lenders for such debt because of the impact of inflation on their investment portfolios. On the other hand, the demand for fixed rate long-term funds has been strong and competition for the available capital has been great.

A final category of developments requiring the re-thinking and revision of the financing plan envisioned in the President's Decision were the changes mandated by the conditions for producer and lender participation, to which we now turn.

Before meaningful discussions could begin to arrange for the producer financial support envisioned by the President's Decision, much had to be accomplished, including resolution of (1) the wellhead pricing of Alaskan natural gas, as part of the Natural Gas Policy Act of 1978, (2) the incentive rate of return mechanism, and (3) key design specifications upon which the estimates and financing requirements could be determined. In May 1981, soon after resolution of these milestones, but much later than had been anticipated in 1977, Alaskan Northwest and the producers entered into an agreement on financing plan concepts. This agreement incorporated the producers' requirements that, as condition for their financial support, the conditioning plant be included in the ANGTS, and the producers be permitted to own

equity in the project with the rights and privileges normally attendant to such ownership. Current law prohibits satisfaction of these conditions.

Agreement on producer/sponsor financing plan concepts permitted presentation of a Project Overview incorporating the financing plan to major U.S. lenders for their review and reaction. We participated in all of these presentations, which were made in May 1981. In a letter dated August 28, 1981, the four-bank group advised Alaskan Northwest of the results of their preliminary assessment of the financing concepts and the general availability of debt support for the project. They also suggested certain modifications to the financing approach to financing for Alaskan Northwest and the producing companies to consider.

In their letter the banks advised Alaskan Northwest that a modification of the financing proposal should be considered which would permit some degree of debt repayment assurance during the precompletion phase, involving a combination of (a) acceptable debt assumption arrangements by the sponsors and producers, and (b) acceptable commencement of billing provisions prior to completion of the ANGTS. They also emphasized the importance of (c) post-completion tracking mechanisms and (d) regulatory certainty throughout the life of the project.

Essential Steps Which Must be Taken in Response to
New Circumstances

It is our judgment that the changes in circumstances just described now mandate suitable responses to realize the desired private financing of the ANGTS. Guidelines and terms of financing conceived of more than four years ago as embodied in the President's Decision must be modified to reflect and respond to new and unforeseeable developments. All project participants and beneficiaries will have to provide more support for the project. Most significantly, we have recognized the need for expanded sources of credit backing in order to raise the enormous sums of capital which must be raised. This must be provided in several forms, including conventional direct corporate assurances for large portions of project debt. The sponsors and producers have already agreed in principle to provide such assurances of project debt, notwithstanding that the President's Decision generally did not envision such support, particularly not from the transmission company sponsors. A positive aspect of the reliance on sponsor and producer corporate credit support is the reduction in external financing requirements which results. Since there would be an assured source of repayment of the bulk of project debt by the equity owners, the need to provide precommitted contingency financing is substantially reduced.

Obtaining the benefits of other financing plan modifications which are needed to achieve private financing of

the ANGTs will depend upon the enactment of waivers of law, the subject of today's hearings. One of these waivers will provide the added support now called for from Alaska gas consumers to coincide with the additional support which sponsors and producers will provide in the form of project debt assurances.

We would now like to turn our attention to reviewing, in detail, the justification and our reasons for supporting and recommending enactment of the waivers relating to the financing of the project.

Comments on the Proposed Waivers

It is our considered judgment, based largely on the changes described earlier, that the approval of waivers permitting producer equity participation, incorporating the conditioning plant into the project, permitting billing commencement to begin upon completion of the Alaskan/Canadian segments and the conditioning plant, and providing regulatory certainty are critical to facilitating private financing.

Producer Equity Participation

Despite recognition in the President's Decision that the producers should participate in financing the project, the equity restrictions imposed on them by the Decision are incompatible with a meaningful producer contribution to financing. The producers expect a meaningful say in how

their money will be spent. Without equity participation and its resulting voice in project management, the producers will not provide direct funding or credit backing for the project. There is no doubt that private financing will be possible except by virtue of significant producer support. The combined financial capability of the ten transmission company sponsors is no longer adequate to support a project of this magnitude.

Prudhoe Bay Gas Conditioning Plant

The agreement on financing concepts arrived at between producers and transmission company sponsors recognized financing realities that had been increasingly apparent as design and cost estimate work proceeded, as discussions between sponsors developed, and as preliminary opinions from the financial community were received. As the four-bank letter of August 28, 1981 confirmed, one financing absolute is that, in terms of financial risk assessment, the natural gas transportation-related functions of the gas conditioning plant constitute an indispensable part of the ANGTS. It performs certain functions which should be compensated for as part of the System. The gas conditioning plant function that is dedicated to readying gas for transmission is credit-worthy only to the extent that the credit support for the ANGTS affords it security. By the same token, the other components of the System cannot obtain private financing unless the gas conditioning plant can be financed and constructed, and the debt and equity investment therein pro-

tected through the tariff mechanism underlying ANGTS. For financing purposes, this link in the chain forged by the ANGTS requires the same quality support afforded other components.

Potential lenders have indicated their insistence on viewing conditioning plant timing and completion risks as an integral part of project evaluation. Once this reality is accepted, the concept expressed in the financing concept agreement must follow, that is, that all components of the project group have an investment in the conditioning plant similar to their investment in the Alaska pipeline segment. These considerations dictate that the conceptual agreement on financing provide that the producers and the gas transmission companies share the equity and the responsibility for arranging or supporting the debt funds for the gas conditioning plant in the same proportion they agree to contribute to the Alaska pipeline segment.

Private financing without some such sharing would not be possible, for no lender could assess the risks of the project absent an evaluation of the gas conditioning plant risk, and could not provide funds to the truncated project without the same assurances being provided to the plant that the pipeline segments of the project is afforded. The financial community will not accept a situation where one integral part of the project is subject to regulatory treatment creating credit support materially weaker than another

integral part. Decoupling the project for billing-on-completion purposes is financially desirable because it reduces a real or imaginary completion timing risk, but the advantage is lost when the underlying credit support, the regulatory and tariff structure, is not available to each segment.

Impediments to fully incorporating the gas conditioning plant in the project are removed by the waiver. We believe that to achieve private financing, the plant must be in every sense a part of the project.

Billing Commencement Date

While the proposed billing commencement waiver will not necessarily ensure private sector financing, we believe that without such a waiver private sector financing is impossible.

A workable financing plan will require reducing the potential risks borne by the lenders to the maximum extent possible, given the magnitude of the capital required. This in turn, requires the highest attainable level of lender participation both in terms of the number of lenders participating and the amount of debt provided by each lender.

To attract such extensive participation mandates that the total system be segmented for purposes of billing commencement. Such treatment would permit certain lending institutions to increase their participation in the project and remain within their lending limits. Segmentation of the

project reduces the risk faced by lenders that their entire investment could be jeopardized in the very unlikely event that one segment is not completed. It permits a lender to lend to the Alaskan segment without having to worry about completion of the Canadian segment, a segment over which the Alaskan borrower would have no control.

Lastly the U.S. government assured the Canadian government that the U.S. would permit the Canadian segment sponsors to recover tariffs attributable to their segment when it had been completed. If this treatment were given to the Canadian segment and not the Alaskan segment, the former would be a more attractive credit in the eyes of lenders. This perception, in our view, would seriously impair the availability of funds for the Alaskan segment.

Regulatory Certainty

The cost recovery mechanisms for Alaskan Northwest and the shippers of Alaskan gas are the tariffs approved by the FERC and the Canadian National Energy Board pursuant to which Alaskan Northwest charges the shippers for transportation service and the shippers, in turn, charge their customers. As the Commission found in its Orders 31 and 31B, these tariffs are the "economic lifeline of the project." Because of the extraordinary risks attendant to the project and the enormous amount of financing needed, lenders will require

assurance that, once approved by the FERC, the tariffs will not be subject to future regulatory action which would impair the recovery of debt interest and principal.

Conclusion

In conclusion, we believe that further progress on the financing of the project is tied to favorable Congressional action on the proposed waivers of law. Assuming the four essential producer and financing waivers are approved, the obvious question is: Does this now make the project privately financeable? Based on the banks' August 28 response and our knowledge of the position of other potential supporters of the project, we believe the project can be privately financed, but support by the sponsors and producers above the levels they have preliminarily indicated will be required. If this additional support is forthcoming, we believe there will be funds available on a worldwide basis sufficient to provide the debt financing for the project. After completion, when ANGTS is operational pursuant to satisfactory tariff and tracking arrangements, the credit of the project itself should, in our view, provide adequate assurance of debt service and the continuing pledge of corporate credit by the sponsoring companies and the producers should not be required.

We understand that the companies which have supported this project for the past years and have collectively invested about \$550 million to date are prepared to continue their strong support of the project. We remain optimistic

that the aggregate credit so committed, together with the tariff and tracking mechanisms necessary to provide a basis for project credit after the line is operational, will permit us to continue in our determined efforts to meet the challenge of financing this project.

Before responding to such questions as the Members might pose, we would choose to close our prepared remarks with an affirmation of our strong belief in the merits of this project, and of our unshakable conviction that the project is necessary for the energy future of this country. Only if we can develop domestic resources, and provide the transportation systems to bring those resources to market, can we lessen our dependence on foreign oil. The benefits of this project, in terms of the balance of payments, lessening our dependence on insecure and uncertain supplies of energy, providing the necessary incentive for exploration and development of frontier resources, and in providing jobs and a major stimulus to the U.S. economy, all of these argue most compellingly that the Congress should remove all barriers to private financing.

We cannot, of course, assure the Congress that approval of the waivers guarantees the financing of the project. The difficulties which still lie before us are great, and many issues remain to be resolved. We know that without the waivers we cannot proceed; with them, we will do our best to achieve a successful private financing for this vital energy project.

We thank you for the opportunity of appearing, and will be pleased to respond to such questions as you might have.

Senator MURKOWSKI. Thank you for that very fine presentation.

May I refer to your page 15 in your conclusions. You say you believe the project can be privately financed but support by the sponsors and producers above the level they have preliminarily indicated will be required.

Would you be kind enough to elaborate? I assume that is in the capacity as financial advisor to Alaskan Northwest.

Mr. SAGE. In order to meet the terms outlined by the banks—

Senator MURKOWSKI. The banks indicated in their testimony that they had not outlined any terms.

Mr. SAGE. They outlined a philosophy of lending which contemplates certain guarantees which came out in earlier testimony related to going past the equity invested to the balance sheets of the companies involved in the venture, both sponsors and producers.

On the assumption that to achieve private financing for the project it will be necessary to meet or nearly meet these suggested parameters, it will be necessary that both of those groups provide more credit support to the project than has been suggested thus far.

Senator MURKOWSKI. As financial adviser to the project do you know what the response of the participants is to that?

Mr. SAGE. The sponsors have on the whole reacted hardly with joy that the project has tended to move from one which stood on its own two feet as project financing to one which requires access to some extent to their underlying balance sheet.

They have also reacted realistically and have accepted the fact that it may well come to pass that this has to happen. This is the stage where we now find ourselves. There is every reason for us to be extremely hopeful that both the sponsors and the producers will come to the point where we can find a level at which we can complete arrangements with the banks.

These negotiations are yet to come as testified to earlier.

Senator MURKOWSKI. Assuming that the waiver package becomes a reality do you see as the major constraint, the next area to be resolved that is, them coming up with a little piece of their balance sheet as the main problem to be addressed from here on out?

Mr. SAGE. We think it can be resolved. We hope it will be.

Senator MURKOWSKI. Is that the main area you see?

Mr. SAGE. The main area we think can be done. It is not that clear cut at all.

Senator MURKOWSKI. What other areas are there that you as a financial adviser would concern yourself with as significant other than this?

Mr. SAGE. This credit support feature and how successful or unsuccessful our subsequent negotiations with lenders are is what we are concerned with. It is very hard to speculate on. A negotiation is rather difficult when you have a project so large that there is only one lender on the other side of the table collectively.

Senator MURKOWSKI. I would assume by the process of elimination that in your opinion it is not likely that there would be any necessity of coming back to the Congress for any further activity on this proposal?

Mr. SAGE. In my opinion the odds would favor we would not be coming back. I would not want to speculate on the degree of likelihood.

Senator MURKOWSKI. That is reassuring. I certainly want to thank you, Mr. Sacerdote and Mr. Sage, for your comments and I think your testimony has been very helpful. We very much appreciate the commitment your firms represent in the support of this project. I thank you.

Last but not least Michael Baly III, vice president of the American Gas Association.

We will insert your prepared statement into the record.

**STATEMENT OF MICHAEL BALY III, VICE PRESIDENT,
GOVERNMENT OPERATIONS, AMERICAN GAS ASSOCIATION**

Mr. BALY. Thank you, Mr. Chairman. We find with projects like the Alaskan pipeline that when it takes as many years as they are talking about, we can certainly spare one afternoon and morning. I think the time you have spent today certainly indicates the dedication you have in this project.

Senator MURKOWSKI. I can assure you that my colleagues and I including Senator Stevens, Senator McClure, and Senator Jackson are very committed to responding within this timeframe to the President's order. It has certainly been a worthwhile hearing and the input has gone a long way to clarify some of the misconceptions associated with this project.

We welcome your testimony as well.

Mr. BALY. Thank you. I am Michael Baly III, vice president of Government relations for the American Gas Association. On my left is Michelle Bemis, the manager of regulatory affairs at AGA. She is on loan to AGA from United Gas Pipeline and on my right is Michael German, the director of policy analysis coordination from AGA.

The American Gas Association represents nearly 300 natural gas transmission and distribution companies serving over 160 million consumers in all 50 States.

On behalf of these companies, we are pleased to appear before you today to reaffirm our support for the Alaskan Natural Gas Transportation System and to express our support for the proposed waiver package.

The project sponsors and the financial community have stated at these hearings that the pipeline cannot be built unless the package is approved.

We commend you, Senator McClure, Senator Jackson, and others on your leadership for this important project.

There are three keys from the national industry perspective. First, supply. The gas potential of Alaska is enormous. Second, the United States needs that supply. Alaskan gas could replace 400,000 barrels of OPEC oil a day and the system could offset 600,000 barrels of oil.

Third, demand. There will be a strong market for Alaskan gas. Gas is a premium fuel and the future demand for gas is high especially when unrestrained by the imposed roadblocks such as the Fuel Use Act and incremental pricing.

On supply, proven reserves at Prudhoe Bay on the Alaskan North Slope are 26 trillion cubic feet or about 13 percent of all proven U.S. reserves and the potential is 177 trillion cubic feet.

The American Gas Association's Gas Supply Committee comprised of a broad representation of gas industry executives undertook a comprehensive 2-year study to reassess the outlook for conventional, supplemental, and unconventional sources of gas energy to the year 2000. We hope to complete a similar demand analysis by the year's end.

The supply committee developed four scenarios for the year 2000. Each scenario shows that gas supplies would be adequate for U.S. needs and includes estimates for conventional gas production in the lower 48 states, Alaska, imports from Canada and Mexico, LNG, coal gas, SNG, and gas from nonconventional sources.

To assure adequate supplies, each scenario assumed that the United States would be able to tap the important Alaskan gas resource.

In our statement on page 3 you will notice four different scenarios; self sufficiency which emphasizes U.S. sources only; North American focus which deals with only North American sources of gas; the moderate world imports which mildly restricts overseas gas supplies and the world conventional gas emphasis which assumes gas is available from anywhere in the world.

The first, second, and fourth have a vigorous development of the Alaskan resources, building the Alaskan pipeline and delivering the southern Alaskan gas by LNG tankers.

Under self sufficiency, out of the 3 trillion cubic feet, our country right now uses roughly 20 trillion a year; 2.4 of that would be the pipeline when it is added onto and adding the second line and 0.6 of that would be the southern LNG.

The third scenario of 1.5, that would include just the first line at 1.2 and 0.3 of that would be the southern LNG delivered to California.

We believe that the United States cannot afford to ignore this energy resource when we continue to import between 6 and 7 million barrels of oil every day at great cost to our balance of payments and our security.

Although projected volumes of gas supply in the year 2000 vary with one's assumptions about future conditions, it is reasonable to expect that natural gas would provide at least its present 26 percent of total energy consumed in the United States and as much as possibly 33 percent which was the gas contribution in the mid-1960's.

The analyses which are attached to our written statement show that natural gas can replace foreign oil quickly in the event of another supply disruption. The Alaskan pipeline could offset nearly 400,000 barrels of oil per day for the next 25 to 30 years. Additional planned compressor capacity could enable the pipeline to deliver enough gas to replace about 600,000 barrels per day.

Alaskan gas could make a dramatic difference in our balance of payments. Domestic gas could keep as much as \$7 billion from flowing out of the country the very first year of the pipeline's operation. Over the life of the pipeline, in excess of \$100 billion in foreign oil payments can be saved.

There will be a strong demand for Alaskan gas. Demand in traditional and nontraditional markets will continue to grow. We see this growth in demand in conjunction with price induced conservation and new high efficiency appliance technologies, for example, residential space heating consumption per customer per degree day has been declining since the winter of 1972 and this will continue into the future but most likely at a slower rate as consumers reach maximum attainable levels of energy savings.

We see several factors balancing the effects of conservation and new more efficient end use equipment. The key demand determinant in the commercial sector will be gas ability to capture new customers in the growing building sector as supply confidence continues to increase among builders and developers.

New and improved technologies such as the pulse combustion furnace which operates at 95 percent efficiency and gas heat pumps also will stimulate gas use to potential levels well above current gas consumption in traditional applications.

One factor which has contributed significantly to gas growth in both the residential and commercial space heating markets is fuel switching; 1.1 million households installed gas last year. Over one-half of these households were residential heating conversions from alternate fuels to gas. There were 500,000 conversions from oil, the highest in our industry's history and at least 13,000 commercial conversions to gas.

These conversions should continue to represent a significant growth segment for the gas industry in the future.

A key feature of our Nation's energy independence is growth in the industrial gas market. The industrial and powerplant gas sales are up over 8 percent from last year.

If gas were to compete purely on price and technology in the marketplace as in the recent Melon Institute's cost energy forecasts, gas demand by industrial users could nearly double to 15 quads Btu's by the year 2000.

Clearly industrial gas demand has significant high side potential especially in its ability to back out oil from a number of industrial applications given the proper regulatory and competitive environment.

A recently published National Energy Policy Plan III forecast that industrial gas use will increase nearly 1 trillion cubic feet to 9.2 quads of industrial gas use by the year 2000. This increase in industrial gas usage alone could absorb all of the Alaskan gas.

Increased gas use in the industrial markets will also directly contribute to reduced oil imports. In 1980 the gas industry was backing out some 456,000 barrels per day of oil from industrial facilities and powerplants over 1978 consumption levels.

AGA estimates the potential displacement of oil with gas and coal in the short term in nontransportation uses could be as much as 5.5 million barrels per day.

In addition to traditional gas uses, as most of us know it today, it is clear gas will be available for other demands that can emerge where high economic value can be shown. For example, gas air conditioning can both improve gas utility load factors and alleviate the need for new electric generating capacity created by summer peak electricity demand for cooling.

Gas fired cogeneration equipment which uses on-site steam to generate electricity in addition to transitional uses has been shown to be economically and environmentally beneficial for many types of commercial and industrial buildings.

Nationwide some 30,000 vehicles presently are using natural gas as a motor fuel. An act which came through this committee and written into law last November has certainly helped increase that in that another 10,000 vehicles have come on the market since that time.

The use of compressed natural gas in automobiles seems well justified on both the costs and environmental bases. The principal market for compressed natural gas vehicles would be urban truck and automobile fleets. Methane gas either natural or synthetic has three major advantages over gasoline and diesel fuel as an alternative fuel. It is more economical. It is cleaner burning and its source is principally domestic.

The concept of environmental use of gas is showing increased potential. Gas is a premium fuel with respect to air quality and gas combustion may be used as an alternative to expensive pollution control devices.

There was a bill introduced by Senators Lugar and Ford and in the House by Congressmen Graham, Corcoran, and Broyhill which would allow for the select use of gas with coal to meet environmental needs.

The combined effect of these nontraditional uses of gas that I mentioned could actually increase gas demand by the year 2000 between 2 and 6 trillion cubic feet and presently today our Nation uses about 20 trillion cubic feet.

When total demand is considered, we believe there is a strong need for Alaskan gas. The national security and balance of payments benefits of the domestic energy resource that can replace 400,000 barrels of oil a day are very important.

Completion of this project is important thereby honoring our commitments to a strong energy relationship with our Canadian neighbor.

The supply of Alaskan gas both proven and potential is an important link in the total U.S. energy supply picture. The North Slope's 13 percent of total proven U.S. reserves should be available to America's consumers.

AGA believes very strongly that the Alaskan gas pipeline must be built. We support the waiver proposals and we respectfully urge this committee to approve the package.

Thank you for the opportunity to appear before you. We would be pleased to answer any questions.

[The prepared statement of Mr. Baly follows:]

TESTIMONY OF MICHAEL BALY III
VICE PRESIDENT OF GOVERNMENT RELATIONS
OF THE AMERICAN GAS ASSOCIATION
BEFORE THE SENATE ENERGY AND NATURAL RESOURCES COMMITTEE
ON PROPOSED WAIVERS FOR
THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM
OCTOBER 23, 1981

Introduction

Mr. Chairman and members of the Committee:

I am Michael Baly III, Vice President of Government Relations for the American Gas Association (A.G.A.). We represent nearly 300 natural gas transmission and distribution companies, serving over 160 million consumers in all 50 states. On behalf of these companies, I am pleased to appear before you today to reaffirm A.G.A.'s strong support for the Alaska Natural Gas Transportation System. This project is as important today as it was when Congress approved it in 1976. We urge expeditious approval of the proposed waiver package. The project sponsors and the financial community have stated at these hearings that unless the waivers are approved this pipeline cannot be built. As you review this waiver package, which will determine whether private financing will occur for this project, three important points need to be considered:

- The energy potential of Alaska is enormous. A.G.A.'s Gas Supply Committee estimates that proven Alaskan natural gas reserves on the North Slope are 26 trillion cubic feet (Tcf), while total potential gas resources for all of Alaska are 177 Tcf.

2.

- Domestic gas energy supplies are essential for our national security. If there is another oil supply cut-off, Alaskan gas could replace 400,000 barrels/day of OPEC oil. The system could easily be expanded to replace 600,000 barrels/day of foreign oil, if necessary.
- Even if there are no oil supply disruptions, there is a large market for Alaskan gas because gas is a premium fuel. The demand for gas, particularly when unrestrained by the Fuel Use Act and incremental pricing, is high. Natural gas is the cleanest of all fossil fuels and its use has considerable environmental advantages.

TAPPING ALASKA'S RESOURCES IS A STEP
TOWARD ENERGY SECURITY

The largest oil and gas field on the North American continent was discovered in 1968 at Prudhoe Bay on the Alaskan North Slope. This gas resource has an important part to play in total U.S. energy supplies. Contracts to deliver over 22 Tcf of gas through the Alaskan pipeline have already been negotiated. This represents over 11% of all proven U.S. reserves.

The A.G.A. Gas Supply Committee, which is made up of senior gas industry executives, considered all the gas supply options through the year 2000. After two years of analysis, the Committee developed four scenarios or supply pictures for the year 2000. Each scenario projected that gas supplies would be adequate for U.S. needs and each scenario included estimates for conventional gas production in the lower 48 states, for gas imports from Canada and Mexico, for LNG,^{1/} coal gas, SNG,^{2/} tight sands gas,^{3/} and nonconventional sources.^{4/}

^{1/} LNG is an acronym for liquefied natural gas.

^{2/} SNG is synthetic natural gas made from natural gas liquids or oil products.

^{3/} The Committee's estimate for tight formations included gas from western tight sands and eastern Devonian shale.

^{4/} Nonconventionals include gas from occluded coal seams, peat, biomass, urban waste, geopressurized brine and other sources.

In order to assure adequate supplies, each of the Committee's supply pictures assumed that the U.S. will tap that important Alaskan gas resource. Although Alaska's contribution to total supplies varied, every scenario includes Alaskan gas. Each of our four supply pictures is set out below:

GAS SUPPLY SCENARIOS IN YEAR 2000 (TCF)

	<u>SELF SUFFICIENCY</u>	<u>NORTH AMERICAN FOCUS</u>	<u>MODERATE WORLD IMPORTS</u>	<u>WORLD CONVENTIONAL GAS EMPHASIS</u>
LOWER-48	12-14	12-14	12-14	12-14
SNG FROM LIQUID HYDROCARBONS	0.3	0.3	0.3	0.3
ALASKAN	3.0	3.0	1.5	3.0
CANADIAN	1.0	2.0	2.0	2.0
MEXICAN	0.1	2.0	2.0	2.0
LNG IMPORTS	0.7	0.7	2.5	4.0
COAL GAS	3.5	3.5	1.5-2.5	1.5-2.5
TIGHT FORMATIONS	1.5-5.0	1.5-4.0	1.5-3.0	1.5-3.0
MISC. NEW TECHNOLOGIES	<u>1.0-2.5</u>	<u>1.0-2.5</u>	<u>1.0-2.5</u>	<u>1.0-2.5</u>
TOTAL	23.1-30.1	26.0-32.0	24.3-30.3	27.1-33.1

I mentioned, just a few moments ago, that Alaska's total potential gas resources are 177 Tcf. Of this, at least 26 Tcf are proven North Slope reserves. The total Alaskan resource base breaks down as follows:

4.

ALASKAN GAS RESOURCES¹
(in Tcf)

Potential	Onshore ²	Offshore ³	Total
Probable	6	2	8
Possible	16	13	29
Speculative	28	80	108
Proved			
Reserves	-	-	32
Total Resource			
Potential	-	-	177

The United States cannot afford to ignore this energy resource when we continue to import between 5 and 6 million barrels of oil every day at great cost to our balance of payments and our security.

ALASKAN GAS IS IMPORTANT TO
NATIONAL SECURITY

Our analyses (which are attached) show that natural gas can replace foreign oil quickly in the event of another supply disruption. The Alaskan pipeline could offset nearly 400,000 barrels of oil per day for the next 25 to 30 years. Additional planned compressor capacity could enable the pipeline to deliver enough gas to replace about 600,000 bbl/day.

The difference that Alaskan gas could make in our balance of payments is dramatic. Domestic gas could keep as much as \$7 billion from flowing out of the country the very first year of the

1/ Sources: Potential Gas Committee, Potential Supply of Natural Gas in the United States as of December 31, 1980, Golden, Colorado, Potential Gas Agency, Colorado School of Mines, 1981; and the 1979 statistics from A.G.A.'s Committee on Natural Gas Reserves.

2/ Onshore drilling depth to 30,000 feet.

3/ Offshore water depth to 1,000 meters.

pipeline's operation. Over the life of the system, well in excess of \$100 billion in foreign oil payments (constant 1981 dollars) can be saved.

THERE WILL BE A STRONG DEMAND
FOR ALASKAN GAS

Gas demand, in both traditional and nontraditional markets, will continue to grow. Gas will continue to compete with oil in the residential market. In 1980, we added 1.1 million households to the residential gas market. Nearly half of these households were converted from oil to gas heat. However, conservation, high efficiency appliances, gas heat pumps and pulse combustion furnances may offset residential growth. Our industrial demand, however, continues to grow although we face many legal marketing restrictions (such as the Fuel Use Act and incremental pricing). Industrial gas demand to date is already up 8.2% over last year. For example, last year gas displaced 456,000 bbl/day of oil, principally in electric power plants that got exemptions from the Fuel Use Act. But because of legal and other restrictions, 286,000 barrels of foreign oil were used last year in place of gas. If gas demand restrictions were lifted, initial deliveries of Alaskan gas could recapture this market. Furthermore, forecasts of unrestricted gas demand, from independent sources, range from 7-15 quads of total gas usage in the year 2000. For example, the National Energy Policy Plan III predicts that industrial gas use will grow about 1 trillion cubic feet - to 9.2 Tcf. This growth in industrial demand alone would absorb all the pipeline's Alaskan gas.

Furthermore, nontraditional gas demand will increase. In considering the need for the pipeline, we should keep the true value of Alaskan gas in mind. Gas is a premium fuel with many uses.

Because it is the cleanest fossil fuel, gas can offset air pollution from coal or oil facilities. In fact, in areas where air pollution is a problem, select use of a small proportion of gas with coal can actually increase coal use. Gas is also a clean and inexpensive transportation fuel. Many fleet owners around the country have converted their vehicles to use both natural gas and gasoline with substantial financial and air quality benefits. In addition, new markets are developing in the areas of gas-fired cogeneration and gas air conditioning. As supplies increase, more gas can be used for environmental purposes wherever a clean burning fossil fuel is needed.

SUMMARY

A.G.A. believes that Alaskan gas is a vital domestic resource. In the past, we strongly supported Alaskan gas production. We continue to support Alaskan production by respectfully urging this Committee to approve the proposed waivers.

Thank you for the opportunity to appear before you today. If you have any questions, I would be pleased to answer them.

ENERGY ANALYSIS



Policy Evaluation & Analysis Group
 American Gas Association
 1515 Wilson Boulevard
 Arlington, VA 22209
 703-841-8400

1981-1

February 20, 1981

ECONOMIC BENEFITS OF REPLACING OPEC OIL IMPORTS WITH NORTH AMERICAN PIPELINE GAS IMPORTS

A. Introduction

The record levels of inflation, high interest rates and weakness of the dollar in international currency markets experienced by the United States in recent years have been caused in part by our dependence on foreign oil. This dependence has not only become an important foreign policy and military consideration, but also poses a simply physical risk of supply interruption due to the large proportion of U.S. energy imports which must move through a few ports and sea lanes. While there has been much appropriate recognition of the benefits of substituting domestic energy supplies (including gas, coal, nuclear, solar and conservation) for oil imports, inadequate public consideration has been given to the economic and supply point diversification benefits which can accrue from replacing OPEC oil with increased imports of gas energy by pipeline from North America, and via liquefied natural gas (LNG) imports by tanker from throughout the world.

Imports of Canadian and Mexican gas could physically be increased in the near term (in the next several years) by a total of at least 1.0 Tcf/year, which would back out 500,000 barrels per day (B/D) of OPEC oil in stationary applications. The U.S. gas demand picture, however, is currently clouded by a number of regulatory impediments, including prohibitive portions of the Fuel Use Act (FUA), Title II incremental pricing of the Natural Gas Policy Act (NGPA), and the Public Utility Regulatory Policies Act (PURPA) rate design study. If these and other gas demand restrictions are lifted as part of an overall turn in U.S. policy toward encouraging gas substitution for oil, then substantial increases in importation of North American pipeline gas would accompany increased domestic gas production. Thus, while previous A.G.A. energy analyses have quantified the economic benefits of substituting LNG imports for oil imports, the purpose of this analysis is to examine the benefit to the U.S. economy of substituting North American pipeline gas imports for OPEC oil imports, specifically in the short-term.

B. Executive Summary of Major Conclusions

Substitution of 1 Tcf of natural gas imported from Canada or Mexico for an equivalent amount of OPEC oil would produce a benefit to the U.S. as high as \$1.3 to \$3.5 billion annually in terms of an improved U.S. balance of trade and stabilizing impact on world oil prices. The assessment of benefit is derived in the following manner.

- Direct Effect on the U.S. Balance of Trade. \$0.6 to \$1.7 billion annually could be directly saved because a greater portion of a dollar spent on energy imports from Canada and Mexico is likely to be returned to the U.S., in the form of increased U.S. exports to these countries, than of a dollar spent on imported OPEC oil. This estimate assumes that (a) Canada and Mexico on one hand, and OPEC on the other hand, each spend an equal portion -- 20% -- of an additional dollar of income on imports; and (b) both approximately maintain their historical proportion of imports from the U.S. vis-a-vis the rest of the world -- 70% for Canada and Mexico, and 18% for OPEC.
- Effect on World Oil Prices. \$0.7 to \$1.8 billion could be saved as a result of the reduction in the demand for OPEC oil which, if accomplished as part of a larger overall program to lessen demand for OPEC oil, could help moderate OPEC oil price increases. For a reduction of 500,000 B/D from a six million B/D level in 1981, the oil price could be \$0.34 to \$0.90 per barrel lower, assuming that the price elasticity of demand ranged from -0.61 to -0.07, and that the price elasticity of supply was 0.25. In other words, the cost of all U.S. energy imports would decrease relative to the cost which would prevail without the reduction in oil demand, resulting in direct savings in foreign energy payments of \$124 to \$328 million annually for each remaining million B/D of oil imported by the U.S. This benefit would also accrue if imports of LNG -- even from OPEC countries -- were substituted for OPEC oil.
- Effect on the Value of the Dollar. An additional benefit which would accrue from substituting Canadian or Mexican gas for OPEC oil is an increase in the stability of the U.S. dollar. Over the 1973-1979 period, OPEC accumulated a current account surplus of \$255 billion (cumulative), nearly all earned in U.S. dollars. With its dollar holdings already sizable, OPEC is much more likely to want to convert a surplus dollar into another currency than are Canada and Mexico with their more limited dollar holdings, thus increasing the supply of dollars in the foreign exchange market, and possibly depressing the price (exchange rate). Moreover, as

implied above, a greater proportion of an additional dollar of OPEC income is likely to become surplus than is an additional dollar of Canadian and Mexican income.

This analysis excludes any second-order domestic or international economic effects, as well as any impact on domestic energy prices, that could arise as a result of the U.S. increasing its North American gas imports.

C. Background

In the fourth quarter of 1977 the value of the U.S. dollar declined more than 6% on international markets.^{1/} A further decline of more than 10% was experienced before President Carter's November 1978 announcement of monetary policy and currency intervention measures to support the dollar.

The cause of this dramatic slide in the value of the dollar has been much debated. Among the culprits cited have been inflation, the differential in economic growth rates between the U.S. and its trading partners, increasing U.S. oil imports, and excessive speculation in the foreign exchange market. However, the blame is most often placed simply on the deterioration in the U.S. current account balance (i.e., balance on merchandise trade plus services and transfer payments). Exhibit 1 illustrates the close correlation between the value of the dollar and the U.S. balance on current account.^{2/}

A major contributor to the deterioration in the current account balance was an increasing oil import bill. Therefore, reducing dependence on OPEC oil is frequently advanced as a means of protecting the foreign exchange value of the dollar. Since the price of natural gas imports is now more closely tied to the OPEC oil price, it is sometimes said to be of no benefit as regards foreign exchange to substitute natural gas imports for OPEC oil imports. This conclusion is erroneous because it ignores three important facts:

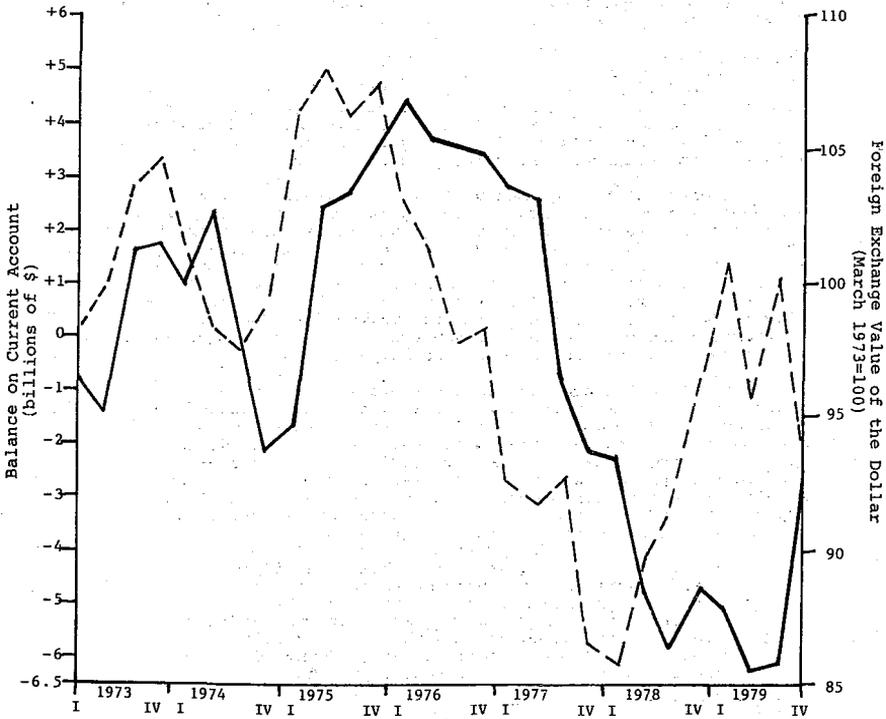
- (1) The dollar decline was not caused by a simple relationship between current account balances and foreign exchange rates, rather by the interaction of factors such as an upward shift in expectations concerning the U.S. inflation rate and U.S. oil imports needs, a downward shift in expectations of future growth rates of

^{1/} The value of the dollar was measured as an index of the trade-weighted average exchange rate against the currencies of ten countries - Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, and the United Kingdom.

^{2/} During 1979, the foreign exchange market was sufficiently skeptical of the long-term ability of the U.S. to reduce its deficit - and its inflation rate - that the dollar remained depressed even though the current account was in surplus for two quarters.

Exhibit 1

COMPARISON OF MOVEMENTS IN THE FOREIGN EXCHANGE VALUE
OF THE DOLLAR AND THE U.S. BALANCE ON CURRENT ACCOUNT



Legend: ----- Balance on Current Account
 ——— Foreign Exchange Value of the Dollar

Note: The foreign exchange value of the dollar is graphed with a one period lead to allow for reporting delays in balance of payments data, as well as the fact that the foreign exchange market looks for a consistent pattern, and not a one-month aberration before reacting.

Source: U.S. Department of Commerce, Survey of Current Business, various issues.

U.S. trading partners (i.e., the U.S. ability to export), as well as the increased supply of dollars which resulted from U.S. current account deficits.

- (2) There are intrinsic differences between imports from OPEC and non-OPEC countries which impact some of the factors mentioned above. These differences include the marginal propensity to import - both in total and from the U.S. in particular, and existing dollar holdings.
- (3) Changes in the U.S. demand for oil imports impact the world price of oil.

D. Methodology and Assumptions

This analysis is largely qualitative, relying on historical relationships and quantitative examples to illustrate the relative economic advantages to the U.S. of importing natural gas from Canada and Mexico rather than oil from OPEC. No definitive numerical forecast is made of these advantages for two reasons: (1) estimates of some of the relationships do not exist; and (2) even if they did, the interactions are sufficiently complex as to require simultaneous solution via a computer model, but a world model that successfully integrates these factors is not currently available.

The hypothetical examples which are used in the analysis are premised on the following assumptions:

- U.S. imports from Canada and Mexico could be increased significantly in the near term -- by at least one annual Tcf (see Appendices A and B).
- An additional Tcf of natural gas would displace a Btu equivalent increase in crude oil imports from OPEC -- 0.5 million barrels per day (MMB/D).
- In the parity case, gas would be priced at the border at \$6.03/MMBtu; the oil at \$35.00/barrel. Note that these are exactly equivalent on a Btu basis. For parity to the final consumer the gas price at the border would be lower since transportation costs are higher for gas than oil.
- In the current pricing example, Canadian gas is assumed to be priced at \$4.94/MMBtu at the border, Mexican gas at \$4.82/MMBtu, along lines of recent announcements by both governments.
- If the U.S. did not import the additional 1 Tcf of North American gas imports or the 0.5 MMB/D of OPEC oil, it would not be produced within the short-term time frame of this analysis. Further, the price of the remaining

supplies would be unchanged or would fall. Therefore, the national income of the producing country would decrease if the U.S. did not import the additional supply of energy.

E. The Marginal Propensity to Import - from the U.S.

Canada and Mexico have historically obtained a very high proportion of their total imports of goods and services from the U.S. - 70%, on average, over the 1973-1979 period. In contrast, the OPEC countries imported only 24% from the U.S. in 1973 and 1974. By 1979, U.S. imports accounted for only 15% of total goods and services imported by OPEC (see Exhibit 2).

If the U.S. were to purchase an additional Tcf of gas from Canada and Mexico, at a parity price, the combined national incomes (Gross National Product) of those countries would increase by \$6 billion.^{3/} Alternatively, the U.S. could purchase 0.5 MMB/D of oil from OPEC, increasing their national income by the identical sum of \$6 billion.^{4/} Assuming for the moment that for each additional dollar of income, Canada, Mexico and OPEC would import an additional \$0.20 of goods and services from the rest of the world (i.e., have a marginal propensity to import of 0.2), total imports of Canada and Mexico or of OPEC would increase \$1.2 billion ($0.2 \times \6 billion).

If the historical proportions hold true on the margin, however, then Canada and Mexico would have a marginal propensity to import from the U.S. of 0.14 ($0.2 \times 70\%$), but OPEC of only 0.036 ($0.2 \times 18\%$).^{5/} Therefore, although the U.S. energy import bill would remain unchanged, U.S. export revenues would increase \$0.8 billion if gas were imported from Canada and Mexico compared to only \$0.2 billion if oil were imported from OPEC. In other words, the projected 1981 current account deficit of \$4.9 billion would be reduced at least \$0.6 billion by substituting gas imports for oil imports.^{6/}

^{3/} \$6 billion represents only the direct income effect. In fact, income would increase by considerably more due to additional employment created by investment in and operation of the export projects.

^{4/} As is the case with Canada and Mexico, \$6 billion represents only the direct income effect. Indirect effects are likely to be smaller than for Canada and Mexico since the oil would already be flowing, but at a slower rate.

^{5/} As Canada and Mexico expand their imports, it is certainly possible that a greater than historical proportion will be purchased outside the U.S. However, the proportion is unlikely to approach OPEC levels in the foreseeable future.

^{6/} Projection of current account deficit from Wharton Econometric Forecasting Associates, Inc. Annual and Industry Forecasting Model, Post-Meeting Control Solution, November 1980.

Exhibit 2

COMPARISON OF RELATIVE TENDENCIES TO IMPORT FROM THE U.S.
CANADA AND MEXICO VERSUS OPEC

	Canadian Imports of Goods and Services			Mexican Imports of Goods and Services			OPEC Imports of Goods and Services		
	Total (\$ billion)	From U.S. (\$ billion)	U.S. as a Percent of Total (%)	Total (\$ billion)	From U.S. (\$ billion)	U.S. as a Percent of Total (%)	Total (\$ billion)	From U.S. (\$ billion)	U.S. as a Percent of Total (%)
1971	\$70,947	\$21,127	682	\$6,329	\$4,369	692	\$35,078	\$8,557	242
1974	41,937	27,174	65	9,365	6,793	72	59,464	14,473	24
1975	44,819	31,850	71	10,541	7,818	74	85,249	16,472	19
1976	50,685	35,968	71	10,767	7,373	68	104,865	19,425	18
1977	53,837	36,181	71	10,235	7,438	72	128,463	21,975	17
1978	59,400	41,930	71	14,510	9,921	68	149,855	24,383	16
1979	70,343	59,091	71	20,928	14,405	69	165,330	24,921	15
1973-1979	\$351,968	\$245,321	702	\$82,675	\$58,117	702	\$729,204	\$130,206	182

Sources: Total Imports - International Monetary Fund, International Financial Statistics as reported in the Wharton Economic Forecasting Associates, Inc. International databases. Data were missing for Iran, Iraq and Kuwait for some years, and were estimated by applying a ratio of value of merchandise imports to imports of goods and services on a balance of payments basis derived for years for which all data were available. A judgmentally-derived, representative OPEC ratio was used for Qatar for which no balance-of-payments data were available.

Imports from U.S. - U.S. Department of Commerce, Survey of Current Business. Canadian and Mexican data from June issues, U.S. International Transactions, Tables 10 and 10A. OPEC data from March 1980 issue, p.53.

The improvement in the current account would, in fact, be even greater than described above because Canadian and Mexican gas is priced below parity. One Tcf of Canadian gas at the current \$4.94/MMBtu would cost the U.S. \$4.9 billion in import expenditures and return \$0.7 billion (\$4.9 billion x 0.2 x 70%) in export revenues. Similarly, Mexican gas would cost \$4.8 billion and return \$0.7 billion. Thus, the U.S. would gain an additional \$0.5 billion in export earnings while saving \$1.1-\$1.2 billion by importing Canadian and Mexican gas rather than OPEC oil in the current pricing scenario (see Exhibit 3). Total savings are thus \$1.6-\$1.7 billion at current prices, given the assumed marginal propensities to import.

F. The Marginal Propensity to Import - in Total

In the preceding hypothetical example, Canada, Mexico and OPEC were assumed to have a marginal propensity to import (MPI) of 0.2. Despite great fluctuation of these ratios in recent years -- particularly for OPEC -- it is not unreasonable to expect the MPI's for OPEC and Mexico to be in the 0.2 range in the short term (zero to five years), and perhaps slightly higher for Canada.

The quadrupling of oil prices in the wake of the 1973-1974 OPEC embargo resulted in a large and unexpected OPEC current account surplus - \$68 billion in 1974. During the next four years, many OPEC countries instituted grandiose projects for rapid industrialization which, when combined with only small increases in real oil prices and slow growth of oil demand, reduced the surplus to \$5 billion in 1978. The marginal propensity to import during the 1974-1978 period compared to 1973 was .73 (see Exhibit 4).

This trend changed abruptly in 1979. The warning of the Iranian revolution against too rapid social change combined with the number of project failures during the preceding four years resulted in sharply limited import growth. These factors should continue to prevent further rapid growth of imports in the future, resulting in OPEC's MPI remaining near its 1979 level of .18.

^{7/} The MPI's reported in this section are only very rough approximations due to difficulties in data availability. The income measures are not completely comparable -- Gross National Product was used for Canada, Gross Domestic Product for Mexico, and export revenues plus a crude measure of return on investment for OPEC. Further, the MPI's were estimated on the basis of total annual changes in imports and income when they should be measured as the response of imports to a very small change in income. Finally, the MPI's should be measured in real terms due to the differential in inflation rates between the income of the importing country and the value of its imports.

EXHIBIT 3

ILLUSTRATION OF BALANCE OF TRADE BENEFIT TO THE U.S.
OF SUBSTITUTING IMPORTS OF CANADIAN AND MEXICAN GAS
- AT CURRENT PRICES AND AT PARITY PRICES - FOR OPEC OIL

	Assumptions			Impact on U.S. -- Billion \$ Per Quadrillion Btu		
	(1) Energy Cost (\$/MMBtu)	(2) Percent of Additional Income Spent on Imports (%)	(3) Percent of Additional Imports Purchased from U.S. (%)	(4) Additional U.S. Expenditures on Imported Energy (1)x10 ¹⁵ MMBtu	(5) Additional U.S. Export Revenues (4)x(2)x(3)	(6) Change in U.S. Balance of Trade (5)-(4)
<u>At Current Prices</u>						
Canada	\$4.94	20%	70%	\$4.9	\$0.7	\$-4.2
Mexico	4.82	20	70	4.8	0.7	-4.1
OPEC	6.03	20	18	6.0	0.2	-5.8
Difference:						
Canada vs. OPEC	\$1.09	0 percentage points	52 percentage points	\$1.1	\$0.5	\$+1.6
Mexico vs. OPEC	\$1.21	0 percentage points	52 percentage points	\$1.2	\$0.5	\$+1.7
<u>At Parity Prices</u>						
Canada/Mexico	\$6.03	20%	70%	\$6.0	\$0.3	\$-5.2
OPEC	5.03	20	18	6.0	0.2	-5.8
Difference	\$0	0 percentage points	52 percentage points	\$0	\$0.5	\$+0.6

EXHIBIT 4

ESTIMATED MARGINAL PROPENSITIES TO IMPORT OF CANADA, MEXICO AND OPEC

	Canada			Mexico			OPEC		
	Income ^{1/} (billion \$)	Imports of Goods and Services (billion \$)	Estimated Marginal Propensity to Import ^{2/} (%)	Income ^{3/} (billion \$)	Imports of Goods and Services (billion \$)	Estimated Marginal Propensity to Import ^{2/} (%)	Income ^{4/} (billion \$)	Imports of Goods and Services (billion \$)	Estimated Marginal Propensity to Import ^{2/} (%)
1973	\$124.1	\$30.9	-	\$49.6	\$4.4	-	\$39.5	\$36.0	-
Average: 1974-1978	177.1	50.1	-	74.4	7.9	-	134.7	105.6	-
1974-1978 Average vs. 1973	\$53.0	\$19.2	36.2%	\$24.8	\$3.5	14.1%	\$95.2	\$69.6	73.1%
1978	\$193.7	\$59.4	-	\$92.6	\$14.5	-	\$151.9	\$149.8	-
1979	222.8	70.3	-	119.9	20.9	-	239.3	165.3	-
1979 vs. 1978	\$29.1	\$10.9	37.4%	\$27.3	\$6.4	23.4%	\$87.4	\$15.5	17.7%

Note: All data from International Monetary Fund, International Financial Statistics as reported in the Wharton Econometric Forecasting Associates, Inc. international databases unless otherwise noted.

1/ Gross National Product. Reported in Canadian dollars and converted by application of exchange rates.

2/ The estimated marginal propensities to import represent only very rough approximations. MPI's were calculated for 1974-1978 as an average because of great annual variations during this period - primarily as a result of the large 1974 OPEC oil price increase and subsequent adjustment, as well as the 1976 devaluation of the Mexican peso. This introduces considerable error since the MPI should properly be measured as the response of imports to small changes in income. Further, the MPI should be calculated in real terms due to the differential in inflation rates between the income of the importing country and the value of its imports, but reliable price deflators were not available for many OPEC countries.

3/ Gross Domestic Product. Reported in Mexican pesos and converted by application of exchange rates.

4/ Estimated by summing exports and approximated return on investment. The latter was calculated by applying the three-month Eurodollar interest rate for a given year to the outstanding current account surplus, i.e., the current year's surplus plus the accumulated surplus of prior years.

5/ Data on imports were missing for Iran, Iraq and Kuwait for some years, and were estimated by applying a ratio of value of merchandise imports to imports of goods and services on a balance of payments basis derived for years for which all data were available. A judgmentally-derived, representative OPEC ratio was used for Qatar for which no balance of payments data were available.

On the other hand, both Canada and Mexico require imported capital goods and technology in order to develop their industrial base. Canada, although a developed country, "is still heavily dependent on raw and semi-finished export earnings to finance its growing need for imported high technology and manufactured end products."^{8/} Mexico's National Industrial Development Plan "calls for a fast and massive development of Mexican industry, largely by private enterprise, and the transformation of Mexico from a net importer of industrial goods into a net exporter."^{9/} This development program has been largely responsible for the increase in Mexico's MPI from its 1974-1978 average of 0.14 to its 1979 level of 0.23, and may result in further increases over the next few years. Although in the long run -- as the industrial development programs of Canada and Mexico succeed -- their MPI's will decline, import growth should remain strong for at least the next five years.

Not only do Canada and Mexico plan more rapid import growth than OPEC, but they are more in need of income to finance those imports. As Exhibit 5 illustrates, the foreign exchange earnings of these two countries have not kept pace with their import expenditures, resulting in consistent deficits in their balance on current account since 1974. The deficits have been financed by borrowing abroad and by drawing on reserve assets (basically comparable to a savings account with overdraft privileges used to meet foreign exchange obligations). Thus, lack of income could be a constraint to increasing imports.

This is clearly not the case with OPEC countries. At year-end 1979, they had an accumulated current account surplus of \$255 billion. An additional \$115 billion is estimated to have been added to this total during 1980. Moreover, they have been unable to find sufficient investment opportunities to absorb all their surplus capital, so they have accumulated over \$80 billion in reserve assets since 1973 (see Exhibit 6). If OPEC was in need of additional imports it would not be necessary to increase their income in order to finance them.

In light of the foregoing discussion, it is likely that the estimated 1979 level of MPI's will approximately prevail, at least in the short-term. Therefore, for purposes of this analysis, inspection of Exhibit 4 indicates that an MPI of 0.2 for Canada, Mexico and OPEC represents a conservative assumption.

^{8/} Daryll G. Waddingham, The Canadian Balance of Payments to the Year 2000, Royal Bank of Canada, November 1979, p. 65.

^{9/} James Flanigan, "Mexico's Drive to Industrialize," Forbes, October 19, 1979, p.42.

Exhibit 5

COMPARISON OF BALANCE ON CURRENT ACCOUNT
CANADA AND MEXICO VERSUS OPEC
 (billions of U.S. dollars)

	<u>Canada</u>	<u>Mexico</u>	<u>OPEC</u>
1973	\$0.1	\$-1.4	\$7
1974	-1.5	-2.9	68
1975	-4.7	-4.0	35
1976	-3.9	-3.4	40
1977	-4.1	-1.8	32
1978	-4.4	-2.6	5
1979	-4.4	-4.5	68
1973-1979	\$-22.9	\$-20.6	\$255

Sources: Canada and Mexico - International Monetary Fund, Balance of Payments Yearbook, various issues.

OPEC - International Monetary Fund, Annual Report 1980.

Exhibit 6

COMPARISON OF CHANGES IN RESERVE ASSETS
CANADA AND MEXICO VERSUS OPEC
 (billions of U.S. dollars)

	<u>Canada</u>	<u>Mexico</u>	<u>OPEC</u>
1973	\$-0.9	\$0.06	\$3.7
1974	-0.03	0.02	31.6
1975	-0.2	0.2	11.8
1976	0.6	-0.7	8.8
1977	-1.4	0.4	10.3
1978	-0.4	0.4	-6.6
1979	-0.8	0.4	21.5
1973-1979	\$-3.13	\$0.78	\$81.1

Sources: Canada and Mexico, and OPEC (1973-1975) - International Monetary Fund, Balance of Payments Yearbook, various issues.

OPEC (1976-1979) - International Monetary Fund, Annual Report, various issues.

G. The Monopsony Effect

The preceding sections have demonstrated that the U.S. balance of trade would improve due to increased export earnings if the U.S. replaced OPEC oil with imports of natural gas from Canada and Mexico, even at a Btu parity price. In fact, the balance of trade should be further improved by a reduction in expenditures for energy imports.

It is widely agreed that changes in the U.S. demand for oil imports have some impact on the world oil price. This is known as the monopsony effect.^{10/} However, the magnitude of the price impact for a given change in demand is subject to considerable uncertainty. The impact is determined by the price elasticities of demand and supply - for which there are wide ranges of estimates.

Hypothetical price impacts for reducing oil import demand 0.5 MMB/D in 1981 were calculated assuming a short-term price elasticity of demand of -0.07 and -0.61, and a short-term price elasticity of supply of 0.25.^{11/} World oil consumption was assumed to be 60.5 MMB/D (equivalent to the estimated 1980 consumption level) at a price of \$35.00/barrel. The estimated reduction in price ranged from \$0.34/barrel for a demand elasticity of -0.61 to \$0.90/barrel for a demand elasticity of -0.07 (see Appendix C for derivation).

The price reduction would reduce U.S. import expenditures by \$0.34-\$0.90 times the total volume of imported oil and gas. Further, it would reduce the cost of all domestic energy supplies which are tied to the price of world oil. This reduction in U.S. energy costs would not only improve the balance of trade, but also directly reduce inflation through lower industrial production costs and lower consumer fuel costs.^{12/}

^{10/} This is not to say that prices will decline in the face of demand reduction (although discounts might be offered were the reduction sufficiently large and sudden), but rather that prices will rise somewhat more slowly. The effect is particularly pronounced in the event of a supply disruption occurring in only a few specific countries, since the lower base demand would probably result in some excess capacity among the remaining suppliers.

^{11/} Elasticity assumptions taken from Rodney Lemon, "The Direct and External Benefits of Reducing Oil Imports," Energy Topics (Chicago, Illinois, Institute of Gas Technology, October 1, 1979).

^{12/} These benefits would also accrue if imports of LNG - even from OPEC countries - were substituted for OPEC oil.

Clearly, the reduction in demand for OPEC oil resulting from increased North American pipeline gas imports would not, by itself, be likely to have a measurable impact on OPEC oil prices. Producers could, in fact, choose to simply reduce production while keeping prices constant or while raising prices to keep revenue constant. In order for the monopsony effect to have a good probability of effectiveness, increased North American gas imports must be undertaken as part of a larger overall program of reducing demand for OPEC oil.

H. Eurodollar Supply and Demand

Of an identified financial surplus of \$236 billion invested by the oil exporters over the 1974-1979 period, only \$55 billion was invested in the U.S. - in bank accounts, government and corporate securities, and direct investments such as real estate.^{13/} Thus, during this period, OPEC held 181 billion more U.S. dollars than they wanted to invest in the U.S.

\$11 billion was converted to sterling and deposited in banks in the United Kingdom or otherwise invested there. \$90 billion was deposited in banks in the Eurocurrency market.^{14/}

The Eurocurrency market is estimated to have a gross size of \$900 billion, but when interbank deposits are netted out, to be only \$400 billion.^{15/} U.S. dollars comprise approximately 80% (\$320 billion) of the market.

The deposit of \$90 billion was thus a sizable infusion into the Eurodollar market. Unfortunately for the dollar, OPEC did not want to hold the entire amount in dollars, but diversified among deutschemarks, yen, Swiss francs and other currencies. By late 1977, U.S. current account deficits and OPEC diversification had resulted in a large supply of dollars for which there was no demand. The U.S. inflation rate was worsening, current account deficits seemed very likely to continue growing, and most major countries already held large stocks of dollars. Since supply exceeded demand, the price of the dollar -- its exchange rate -- fell.

^{13/} Data on disposition of the surplus are from: John Hein, "Recycling Oil Surpluses: A Look at 'OPEC II'" (The Conference Board, August 1980). The data include investments by Bahrain, Brunei, Oman, and Trinidad and Tobago, as well as the 13 OPEC members.

^{14/} Eurocurrency is a bank deposit in a currency other than that in which the bank is located. Thus, any dollar deposited in a bank outside the U.S. is a Eurodollar.

^{15/} Statement of Henry C. Wallich reported in Federal Reserve Bulletin, August 1979, p. 612.

In the future, as the price of oil continues to increase, OPEC's dollar surpluses will continue to mount. With its dollar holdings already sizable, OPEC is much more likely to want to convert a surplus dollar into another currency than are Canada and Mexico with their more limited dollar holdings. Moreover, as implied in Section F, a greater proportion of an additional dollar of OPEC income is likely to become surplus than is an additional dollar of Canadian and Mexican income. Therefore, substitution away from OPEC imports will reduce the supply of Eurodollars, contributing to exchange rate stability.^{16/}

^{16/} Substitution of LNG imports from non-OPEC countries for OPEC oil would provide similar benefits.

APPENDIX A

CANADIAN GAS IMPORTSCanadian Resource

Natural gas resources in Canada are as varied as those in the U.S., and include conventional natural gas formations, both non-associated and associated-dissolved, and unconventional resources, such as tight sands. Drilling activity, as in the U.S., continues to emphasize the less expensive traditional resources, but more recently there has been an increased interest in the more costly frontier areas of deep offshore in the Atlantic and in the northern regions of the Mackenzie Delta, Beaufort Sea and Arctic Islands. Gas resources in these regions differ only in the cost of development, in that the areas are inhospitable; otherwise these are conventional gas reservoirs.

Established reserves for year-end 1979 as estimated by the Canadian Petroleum Association are about 89 Tcf.^{1/} The Canadian National Energy Board (NEB) has recently raised its estimates of marketable gas reserves from 66.1 Tcf at year-end 1978 to 71.8 Tcf as of year-end 1979.^{2/} NEB estimates of ultimate potential marketable gas resources in conventional producing areas, at year-end 1978, range from 127 Tcf to 157 Tcf.^{3/} This potential could be substantially increased if the "Deep Basin" area of Alberta and British Columbia proves to be as large as some industry experts estimate. In fact, geological studies of the Deep Basin by Canadian Hunter Exploration, Ltd. indicate a potentially recoverable resource of 440 Tcf.^{4/} Currently, NEB includes only 1 Tcf of established reserves in the Deep Basin. Since the Deep Basin is a tight formation, new technology and improved economics will be necessary to increase reserve estimates in the Basin.

1/ American Gas Association, et al., Reserves of Crude Oil, Natural Gas Liquids, and Natural Gas in the United States and Canada as of December 31, 1979; Vol. 34, June 1980.

2/ Oil and Gas Journal, December 17, 1979.

3/ National Energy Board, Canadian Natural Gas: Supply and Requirements, February 1979, Table 2-3.

4/ J.K. Gray, Natural Gas: Canada's Economic Ace in the Hole, October 23, 1979.

Estimates of marketable gas reserves are summarized in Table A-1. In addition, industry estimates for cumulative reserve additions by the year 2000 range from 30 to 50 Tcf from the Arctic regions and 18-150 Tcf from Atlantic regions. Estimates by the Canadian Geological Survey of the ultimate potential from these frontier areas range up to 300 Tcf.^{5/}

However the resource potential is viewed, the above estimates indicate Canada has adequate resources to meet its own domestic requirements for at least the next decade or more, and will therefore be able to continue or increase gas exports to the U.S. without compromising its own energy availability.

Canadian Production

The availability of Canadian gas for export to the U.S. depends on both the development of new supplies and Canadian gas export policy. The production problems of Canada in developing these new resources are similar to those of the U.S. in that much of the potential lies in remote areas and offshore.

Development of the Arctic regions will require the construction of technically advanced and costly gas transportation systems to meet the harsh conditions of the Arctic environment. At present, established reserves in these areas are not sufficient to meet the threshold economic volumes necessary to justify the high costs.

Although Canada's gas resources are adequate to continue or expand exports to the U.S., the actual volumes exported will rely on the policies adopted by Canadian and U.S. regulatory agencies toward increasing exports. Canadian policy may reflect policy concerns based on the rate of resource development, the expansion of the Canadian domestic market, the costs of frontier gas development and the price of alternate energy supplies. Current Canadian policy favors increasing exports, although on a lesser scale than that urged by the Canadian gas industry.

Drilling and exploration activities in Canada are continuing at a rapid pace. In 1979, 7,599 wells were drilled. That was 621 wells more than in 1978.^{6/} Current exploration activities are concentrated in the western provinces, including the Elmworth Deep Basin with some activity off the east coast.

^{5/} Canadian Natural Gas: Supply and Requirements, supra, at Table 2-12, 2-13.

^{6/} The Oil Daily, February 15, 1980, p. 3.

The NEB has estimated that production capability from marketable gas reserves at year-end 1978 is adequate to supply up to 3.8 Tcf in 1981, declining to 1.9 Tcf in the year 2000.^{7/} These estimates exclude such resources as:

- established reserves not considered marketable due to the lack of transportation systems
- resources in such frontier areas as the Mackenzie Delta, Beaufort Sea, Arctic Island, and east coast offshore areas, and
- new resources which remain to be discovered.

These categories could include major gas volumes in future years. For example, estimates of the gas production potential from the Mackenzie Delta range from .6 Tcf/yr. to 3.2 Tcf/yr. by the year 2000.^{8/}

Given the above potential supply and resource estimates, and the currently proposed export expansion applications by producers and U.S. purchasing pipeline companies, Canada could continue to export gas to the U.S. at the current level of 1 Tcf/yr. and probably increase this level to 2 Tcf in the 1990's under a national policy of developing frontier areas.

The NEB, in December 1979, authorized gas exportation of 3.75 Tcf over an eight-year period (1980-1987) in addition to the 9.4 Tcf remaining under existing licenses.

High-side estimates for 1990 and subsequent years are based on anticipated increases in reserve estimates for frontier areas.

Major policy related assumptions for the low and high cases in Table A-2 are:

- The low case assumes that Canadian regulatory authorities adopt a policy to maintain gas exports at current levels. Current contracts would either be renewed or new contracts and licenses of equivalent volumes approved.
- The high case assumes a Canadian policy to develop fully the frontier areas and expand exports to the U.S. It also assumes that U.S. regulatory agencies authorize new import applications.

^{7/} The Oil Daily, February 21, 1980, p. 1.

^{8/} Canadian Natural Gas: Supply and Requirements, supra, at Table 2-9, 2-14.

Table A-1

MARKETABLE NATURAL GAS
REMAINING ESTABLISHED RESERVES IN CANADA^{1/}

<u>Provinces</u>	<u>1979 Net Production (Bcf)</u>	<u>Remaining Reserves (Bcf)</u>
Alberta	1,901	58,995
British Columbia	305	7,430
Saskatchewan	46	1,270
Mainland Territories	19	581
Ontario	14	308
Mackenzie Delta- Beaufort Sea	-	6,598
Arctic Islands	-	14,248
Other Eastern Canada	0.1	12
TOTAL	2,285	89,442

1/ Canadian Petroleum Association estimates from Reserves of Crude Oil, Natural Gas Liquids, and Natural Gas in the United States and Canada as of December 31, 1979, Vol. 34, June 1980.

2/ Totals may not add due to rounding.

Table A-2

NATURAL GAS IMPORTS FROM CANADA

<u>Year</u>	<u>Volumes in Tcf</u>	
	<u>Low</u>	<u>High</u>
1980	1.0	1.0
1990	1.0	1.7
2000	1.0	2.0

APPENDIX B

MEXICAN GAS IMPORTSMexican Resource

Natural gas in Mexico is from conventional gas resources, both associated with oil and non-associated. Oil and gas fields have been discovered along most of the Gulf of Mexico coastal plain region. A significant non-associated gas province, the Gulf of Sabinas Basin, is located in Northern Mexico.

For the foreseeable future, most of the gas produced will be in association with oil. Mexico's oil export policy implies significant gas production.

Mexico has tremendous reserves of crude oil and natural gas. As of March 1980, proven reserves were estimated to be over 50 billion barrels of oil and gas in oil equivalents. Probable and potential reserves are estimated to be at least 240 billion barrels. The Mexican government estimates that 29 percent of proven reserves are gas reserves. This means that 84 Tcf of gas is proven and, if the 29 percent can be applied to the probable and potential reserve estimates, an additional 400 Tcf is potentially available.^{1/} These estimates compare to U.S. proved reserves estimates of 195 Tcf^{2/} and additional potential resources of 1,019 Tcf.

Mexican Production

The primary limiting factors to the development of the vast Mexican potential are the limited capital and technical manpower available for such work. As the oil and gas production increases, both manpower and capital limitations should be eased. The quantity of gas produced for export will be determined by three factors:

- results of Mexico's domestic program to increase natural gas consumption,
- policy considerations relating to the inflationary effects of large amounts of dollars entering the economy, and
- Mexican and U.S. agreements setting the allowable price and volume of U.S. imports.

1/ Minister Florencio Acosta, The Role of Oil in the Mexican Development Plans, Embajada de Mexico, June 12, 1979.

2/ American Gas Association, et al., Reserves of Crude Oil, Natural Gas Liquids, and Natural Gas in the United States and Canada as of December 31, 1979; Vol. 34, June 1980.

Mexico has implemented an aggressive campaign to attract new industrial users of natural gas. Although this campaign may increase domestic demand substantially, it is doubtful that the Mexican domestic demand can increase as rapidly as gas production.

The optimum price and volume of the Mexican imports are difficult to negotiate. As a result, political pressures in both countries are major impediments to increasing the flow of imported gas.

The major current program relating to the importation of Mexican gas is the October 19, 1979 gas-purchase-and-sale agreement between PEMEX and Border Gas (a joint venture corporation of six pipeline companies). This agreement became effective January 1, 1980 and gas began flowing into the United States on January 15, 1980. The agreement called for 300 MMcf per day to be delivered to Border Gas at a price of \$3.625 per Mcf. Under the contract, this price would be adjusted quarterly in accordance with a composite index of world crude oil prices based on oil from the Middle East, the North Sea, and Venezuela. However, PEMEX asked for a price of \$4.47 per MMBtu so as to achieve parity with gas imports from Canada. On March 27, ERA and FERC granted authority to Border Gas to pay that price.

The gas being imported from Mexico comes from the northern fields, which formerly provided gas to Monterrey. Now, the Monterrey markets are served by the Reforma fields in southern Mexico via a new 48-inch "National Trunk" pipeline system. A throughput to Monterrey of .8 Bcf/d is currently possible with an expansion to 2.0 Bcf/d if additional compressor stations are built.

Other new pipeline investment includes an extension of the 48-inch line to the U.S. border, a looping of the line from the Reforma fields to Mexico City and an extensive pipeline grid connecting onshore fields in the Reforma and Campeche Bay areas.

The major areas of drilling activity are:

- the Reforma area in the states of Tabasco and Chiapas in southern Mexico,
- the Bay of Campeche, an oil province offshore adjacent to the Reforma area,
- the Chicontepec area located in east central Mexico near Tampico on the coastal plain of the Gulf of Mexico, and

- the Sabinas Basin in northern Mexico. Sabinas wells are the major producing non-associated gas wells in Mexico today. However, new drilling activity in this area is at a low ebb.

Gas production has been increasing rapidly. In the 1960's production was about 1,350 MMcf/d. By the 1970's production was over 2,100 MMcf/d. Current production is estimated to be over 3.5 Bcf/d.^{3/} Gas flaring has been steadily decreasing as a result of increased domestic use and the export of gas to the U.S.

With proven reserves estimated at 84 Tcf and additional gas resources that may be as high as 400 Tcf, it is clear that Mexico could produce greater quantities of gas.

The gas-to-oil ratio has been steadily increasing. Older fields average about 1,200 cf of gas per barrel of oil. Newer onshore fields are closer to 2,000 to 1.^{4/} This increase in gas-oil ratio implies that as Mexican oil production increases, production of gas will increase even faster.

In view of the production capability and the economic benefits of exporting gas to the United States, A.G.A. has estimated the range of production available for export as shown in Table B-1. As shown, it is possible that political considerations and domestic Mexican demand for gas could cause exports to remain at the 0.1 Tcf level through the year 2000.

Table B-1

NATURAL GAS IMPORTS FROM MEXICO

<u>Year</u>	<u>Tcf/yr.</u>
1980	0.1
1990	0.1-1.0
2000	0.1-2.0

^{3/} Ing. Jorge Diaz Serrano, Forty-second Anniversary Speech, Guadalajara, Jal, Mexico, March 13, 1980.

^{4/} Elizabeth Anne Moler and James Thomas Bruce III, Mexico: The Promise and Problems of Petroleum, February 1979. (Printed at the Request of Henry M. Jackson, Chairman -- Committee on Energy and Natural Resources, U.S. Senate.)

APPENDIX C

DERIVATION OF REDUCTION IN WORLD OIL PRICE
RESULTING FROM 0.5 MMB/D REDUCTION
IN U.S. OIL IMPORTS

1. Assuming equilibrium world oil demand of 60.5 MMB/D at a price of \$35.00/barrel, a decrease in demand of 0.5 MMB/D, and an elasticity [i.e., $(\Delta Q/Q)/(\Delta P/P)$] of -0.07, a linear demand equation can be calculated as follows:

$$\begin{aligned}(\Delta Q/Q)/(\Delta P/P) &= -.07 \\ \Delta P &= (-.5/60.5)/(-.07/35.00) \\ &= 4.13\end{aligned}$$

$$\begin{aligned}\text{Equation slope} &= \Delta Q/\Delta P = -.121 \\ \text{Equation intercept} &= Q - (\Delta Q/\Delta P)P = 64.74 \\ Q_D &= 64.74 - .121P\end{aligned}$$

2. Assuming a supply elasticity of +0.25, a linear supply equation can be similarly calculated:

$$\begin{aligned}(\Delta Q/Q)/(\Delta P/P) &= .25 \\ \Delta P &= (-.5/60.5)/(.25/35.00) \\ &= 1.157\end{aligned}$$

$$\begin{aligned}\text{Equation slope} &= \Delta Q/\Delta P = .432 \\ \text{Equation intercept} &= Q - (\Delta Q/\Delta P)P = 45.38 \\ Q_S &= 45.38 + .432P\end{aligned}$$

3. If demand is lowered by 0.5 MMB/D, then:

$$Q_D = 64.24 - .121P$$

4. A new equilibrium price can be solved for as follows:

$$\begin{aligned}Q_D &= Q_S \\ 64.24 - .121P &= 45.38 + .432P \\ P &= 34.10\end{aligned}$$

5. The equilibrium price is \$35.00 - \$34.10 = \$0.90 lower when demand is reduced 0.5 MMB/D for an assumed demand elasticity of -0.07 and supply elasticity of +0.25.

6. For a demand elasticity of -0.61, the original demand equation is:

$$Q_D = 97.39 - 1.054P$$

and the new equilibrium price demand as follows:

$$\begin{aligned}96.89 - 1.054P &= 45.38 + .432P \\ P &= 34.66\end{aligned}$$

Thus, the demand induced equilibrium price decrease is \$0.34 for an assumed demand elasticity of -0.61 and supply elasticity of +0.25.

ENERGY ANALYSIS



Policy Evaluation & Analysis Group
 American Gas Association
 1515 Wilson Boulevard
 Arlington, VA 22209
 703-841-8400

1981-6

April 24, 1981

SURVEY OF ACTUAL AND POTENTIAL OIL OFFSETS ENABLED BY INCREASED GAS USE IN 1980

A. Introduction

Late 1979, A.G.A. conducted a survey of gas companies with major industrial gas sales requesting information on (1) the amount of oil actually displaced by increased use of gas in industrial markets, and on (2) governmental and other supply constraints that limit further industrial oil displacement. The results of that survey indicated that the gas utility industry offset the use of imported oil in industrial and power plant boilers at an average rate of 435,000 barrels per day in 1979. Additional potential industrial oil offsets of 116,000 barrels per day in the first half of 1980 were found to be possible, although blocked by a variety of non-supply constraints.

The purposes of this updated survey and analysis are (1) to update the actual oil displacement findings to 1980, (2) to identify the extent to which actual gas loads were lost to oil in 1980 as a direct result of the Fuel Use Act, NGPA incremental pricing, and other constraints (i.e., gas-to-oil switching) and (3) to expand the survey coverage to include residential and commercial gas markets. Also, the questionnaire asked gas companies to specify the additional amount of potential oil displacements beyond the fuel switching identified in item (2) above that are blocked by regulatory impediments, both state and federal as well as impediments arising from negative customer perceptions about the role of gas.

B. Executive Summary of Results

- In 1980, an average of 286,000 barrels per day of actual and potential gas use was displaced by oil. Of this oil use, 169,000 barrels per day was direct fuel switching; that is, industrial and power plant gas customers switching to oil. The remaining 117,000 barrels per day was "blocked oil displacement"; that is, identified current oil consumption in these sectors that would have switched to gas but for gas demand constraints.

© 1981 by the American Gas Association.

- 67,000 barrels per day of this total 286,000 barrels per day loss of actual and potential gas consumption to oil was directly attributable to the FUA and NGPA incremental pricing.
- The remaining 219,000 barrels per day were lost to a number of factors, such as state restrictions on gas use. While FUA and incremental pricing were not the primary factors causing this 219,000 barrels/day of increased oil use, they evidently contributed to the end-users' decision to burn oil. Other factors included take-or-pay contracts for fuel oil and state volumetric limits on gas.
- Following adjustment for the 286,000 barrels per day of actual load loss in 1980, this analysis concludes that the total amount of oil actually displaced by increased industrial gas use over 1979 levels rose only marginally in 1980 from 435,000 barrels per day up to 456,000 barrels per day. That is, net oil displacement increased by only 21,000 barrels per day in 1980 -- about a 5% increase. However, much of this oil offset is taking place under temporary "public interest exemptions" to the Fuel Use Act, and much of this gas use will revert to oil before 1985 unless FUA is amended.
- In addition to the actual displacements of oil by gas there is another 588,000 barrels per day of potential oil displacements in industrial and power plant boilers that are gas capable. It is concluded, however, that this additional oil displacement with gas is unlikely to take place in the near-term because of continued uncertainties caused by both FUA and NGPA incremental pricing.
- Since 1978 the maximum short-term oil displacement potential of 1.55 million barrels per day has actually declined to 1.33 million barrels per day in 1980 because of 223,000 barrels per day in oil-to-coal conversions in the power plant market. Subtracting the 456,000 barrels per day actual displacements and the 286,000 barrels per day actual and potential losses from this total short-term potential of 1.33 million barrels per day results in the additional potential of 588,000 barrels per day.

- With the addition of residential and commercial oil displacements of 40,000 barrels per day, the total displacements of oil by the gas industry averaged 496,000 barrels per day in 1980.

C. Background and Methodology

Questionnaires were sent to A.G.A. member companies on the Industrial Marketing Committee and the Incremental Pricing Task Force as well as other gas utility companies with large industrial and power plant sales. Survey responses were received from 36 gas utility companies from all regions of the country with combined 1979 gas sales accounting for 43% of total gas utility industrial sales. Data from the 36 respondents were divided by .43 to expand the actual results to reflect the entire gas utility industry.

The survey questionnaire (see Appendix A) expanded the coverage in previous oil displacement surveys to include all major gas markets. Information was requested in three areas: actual oil displacements by gas in 1980, actual losses of gas sales to oil in 1980 and potential short-term oil displacements blocked by various regulatory and market constraints. Oil displacements were defined through November 1980 as existing oil use that actually has been or potentially could be displaced by additional gas sendout with available supplies as compared to 1979. For the industrial, power plant and commercial markets, the breakout between distillate and residual fuel oil displacements (or losses) was requested.

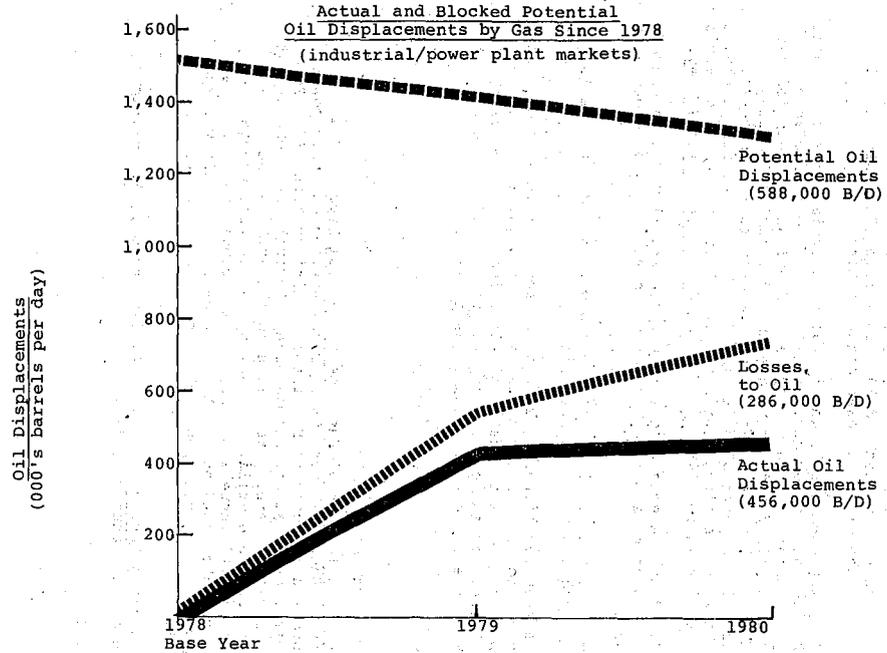
Both the section on actual losses to oil and the section on potential short-term oil displacements asked respondents to breakout the relevant volumes according to the specific regulatory, statutory or market factor involved. For the section on actual losses to oil, the questionnaire asked respondents to assign volumes for losses due to Phase I incremental pricing, the Fuel Use Act and/or market forces (price and supply). Several possible factors were listed as causes for the blocked potential short-term oil displacements, as indicated in the survey form in Appendix A. It is important to note that for purposes of the survey a constraint can be direct or indirect, i.e., customer confusion over a regulation such as the Fuel Use Act can be as great a constraint as the regulation itself. Moreover, a market constraint on gas caused by lower fuel oil prices or the perception of security of supply for oil, may in fact be considered an indirect regulatory constraint in that a customer chooses a low-price, long-term oil contract rather than a fixed-rate, low-priority interruptible gas contract. In effect, gas companies are constrained in their freedom to competitively price gas to meet actual market conditions.

D. Discussion of Results

As seen in figure 1, oil displacements by gas are actually leveling-off due to regulatory and market constraints at a rate well below gas' potential.

- Despite gas losses to oil of 286,000 barrels per day, the gas industry was still able to displace oil in power plant and industrial applications at the net rate of 456,000 barrels per day in 1980, principally as a result of exemptions to the FUA and consistent with the 511,742 barrels per day in exemptions reported in DOE's Power Plant and Industrial Fuel Use Act Annual Report published in 1980. However, these exemptions are temporary and could result in up to 512,000 barrels per day of oil displacements by gas returning to oil use in the near-term if FUA is not amended.
- In addition to the actual displacements of oil by gas there is another 588,000 barrels per day of potential oil displacements which are gas capable but are not attainable in the near-term due to the continued uncertainty regarding FUA and NGPA incremental pricing.
 - Since 1978 the maximum short-term oil displacement potential of 1.55 million barrels per day has actually declined to 1.33 million barrels per day in 1980 because of 223,000 barrels per day in oil-to-coal conversions in the power plant market. Subtracting the 456,000 barrels per day actual displacements and the 286,000 barrels per day actual and potential losses from this total short-term potential of 1.33 million barrels per day results in the additional potential of 588,000 barrels per day.
- The industrial market (including electric power plants) accounted for the displacement of 190,000 barrels per day, or 83% of total oil displacements due to gas utility sales. However, nearly all the actual losses, or about 169,000 barrels per day, occurred in the industrial market. This net oil displacement in the industrial market of 21,000 barrels per day in 1980 would be in addition to the 435,000 barrels per day of oil displaced in industrial markets in 1979.

Figure 1



Note: Potential oil displacements reflect the industrial/power plant market only from a previous survey, A Survey of Potential Industrial Oil Offsets in the Near-term, A.G.A., Arlington, VA., January 12, 1979.

- Within the industrial market, electric power plants accounted for 70,000 barrels per day, or 37% of industrial oil displacements by gas utility sales.¹ The breakout between distillate/residual oil displacements was 37% distillate/63% residual oil in the direct industrial market and 33% distillate/67% residual oil in the electric power plant markets.
- Oil displacements by gas in the residential market averaged 25,000 barrels per day, or 11% of total oil displacements by gas. Based on weighted average annual gas consumption per unit of 122.7 mcf for single and multifamily dwellings,² the 25,000 barrels per day corresponds to approximately 435,000 residential units in 1980. This estimate of 435,000 units tracks closely with the 383,000 residential conversions anticipated for 1980 in A.G.A.'s Gas Househeating Survey.³
- Oil displacements by gas in the commercial market averaged 15,000 barrels per day, or 6% of total oil displacements by gas.
 - Commercial oil displacements were 58% distillate fuel oil and 42% residual fuel oil.

The survey questionnaire section on actual losses to oil, as opposed to oil-to-gas displacements, showed a significant volume in 1980, helping to negate the nations' effectiveness in reducing oil imports. Actual losses to oil accounted for 169,000 barrels per day of oil use at the expense of natural gas in 1980.

¹ Power Plant and Industrial Fuel Use Act Annual Report, U.S. Department of Energy, March 1980. Data based on electric power plant responses to Economic Regulatory Administration (ERA) Form 316 suggest that total oil displacements through the mechanism of Temporary Public Interest Exemptions to the Fuel Use Act in 1980 (largely through non-utility gas sales) by electric generating plants was 511,742 barrels per day. This volume would include oil displacements based on A.G.A.'s survey of gas utility company sales as well as some direct power plant sales not reported in A.G.A.'s survey.

² Gas Househeating Survey: 1979, p.14. (Arlington, VA: American Gas Association, January 1, 1981.

³ Ibid., p. 10

- Nearly 92% of the losses to oil, or 155,000 barrels per day, were the result of fuel switching from natural gas to residual oil. This was primarily the result of the residual oil glut experienced in 1980 when average U.S. residual fuel oil retail prices actually declined 14% between February and April and did not return to February price levels through most of the year.
- Market forces accounted for 122,000 barrels per day of gas-to-oil switching. According to the options offered in the survey questionnaire, market forces were described as either a price or supply response, but, typically, respondents interpreted the question in terms of changes in oil price or supply. For example, the case of power plants switching to oil for supply reasons was primarily a reflection of their efforts to secure long-term fuel supplies through take-or-pay contracts for residual oil at advantageous prices, while avoiding the uncertainty of being classified a low priority gas customer under the curtailments system.
- In addition to the effects of negative market forces, direct regulatory problems contributed significantly to the resurgence of oil use in place of natural gas. The Fuel Use Act accounted for 44,000 barrels per day of gas-to-oil switching, 96% of which (42,000 b/d) went to increased residual oil use in the power plant sector.
 - Phase I incremental pricing was found accountable for only 3,000 barrels per day of displacements, but this occurred during a few months in early 1980. It is conceivable that a large volume of industrial load never went to gas because of customer uncertainty over the incremental pricing provisions.

The third section of the survey questionnaire requested respondents to specify the impact of several regulatory and market constraints on the potential for further short-term oil displacements.

- The results indicate that an additional 136,000 barrels per day beyond the 230,000 barrels per day of oil actually displaced in 1980 could be achieved, but are blocked.

⁴ Monthly Energy Review, U.S. Department of Energy, January 1980, p. 83.

- The 136,000 barrels per day of blocked potential oil displacements are broken down by market sector as follows:

Power Plant - 75,000 b/d; Industrial --41,700 b/d
Residential - 13,200 b/d; and Commercial -- 6,100 b/d.

- A significant proportion of the blocked potential displacement would be for residual oil: 100,000 barrels per day, or 74% of the total blocked potential.
- In the "other" category, which was the dominant category, the major obstacle to increased short-term oil displacements was the existence of take-or-pay oil contracts. Altogether, the "other" category accounted for 68,000 barrels per day of oil displacements, or one half of the blocked potential.
 - The electric power plant sector accounted for 85% of this blocked potential, due to take-or-pay fuel oil contracts, or 58,000 barrels per day (comprised entirely of residual oil).
 - The next largest factor cited in the "other" category was the backlog of residential baseload customers not yet converted to gas for spaceheating use due to technical delays and various other reasons. This constraint has blocked the displacement of 8,000 barrels per day of distillate oil use.
- The Fuel Use Act was the second most significant constraint on the potential for additional oil displacements accounting for 17,000 barrels per day, or 25% of the blocked potential. Some 3,000 barrels per day of potential offsets were forgone due to incremental pricing.
 - Overall, actual and potential losses due to direct regulatory constraints such as FUA and incremental pricing totalled 67,000 barrels per day in 1980.

E. Conclusions

Despite adverse economic conditions and the impact of several regulatory and statutory constraints, the gas utility industry was able to displace an additional 230,000 barrels per day of imported oil use in all markets in 1980 beyond the 435,000 rate experienced in 1979. On the negative side, a combination of both a significant

drop in residual oil prices and the effects of such regulatory constraints on gas marketing as the Fuel Use Act led to the actual loss to oil of 169,000 barrels per day equivalent of gas use, resulting in a net displacement rate of 496,000 barrels per day since 1978 for the gas industry as a whole.

In the industrial sector (including power plants) these factors have resulted in a net increase of only 21,000 barrels per day over the 1979 level of 435,000 barrels per day of oil displacements through gas utility sales. However, in addition to displacements through gas utility sales, data from the Department of Energy suggest that perhaps an additional volume of oil displacements are occurring through direct producer sales to power plants under special temporary public interest exemptions to the Fuel Use Act. These volumes of direct sales could decrease dramatically in a relatively short period of time if the exemptions are not renewed.

In addition to the actual oil displacements now occurring, additional potential short-term oil displacements by gas of 136,000 barrels per day are now being blocked by a variety of constraints. Market forces that led electric power plant customers to enter into long-term take-or-pay fuel contracts account for 50% of this blocked potential. However, a variety of other constraints, among them such regulatory obstacles as Fuel Use Act concerns, state restrictions and incremental pricing accounted for the rest of the blocked potential. Clearly, these end-use restrictions on natural gas are having a negative influence on the national goal to further reduce our dependence on oil imports.

State _____
 Company _____
 Respondent _____
 Phone No. _____

Appendix A
Survey of Actual/Potential
Oil Displacements in 1980

Please note that oil displacements are measured in Mcf/yr. and that you are asked to specify amounts of potential oil displacements that are blocked for each constraint that is relevant to a given market. A constraint can be direct or indirect, such as when a displacement is blocked due to customer confusion over a particular regulation. Oil displacements are defined through November 1980 as existing oil use that actually has been or potentially could be displaced by additional gas sendout with available supplies as compared to a 1979 base year.

Market Fuel Oil (Mcf/yr.)	Industrial		Power Plant		Commercial		Residential
	dist.	resid.	dist.	resid.	dist.	resid.	dist.
Actual Oil Displacements by gas							
Actual Losses to Oil							
-Due to Phase I Incremental Pricing							
-Due to FUA, etc.							
-Due to market forces:							
1. Price							
2. Supply							
Total losses							
Potential short-term oil displacements now being blocked by:							
-Incremental pricing							
-Fuel Use Act							
-Certification delays							
-State restrictions							
-Reluctance to hook-up due to curtailment priorities							
-Fear of reprisals from oil suppliers							
-Supply availability							
-Relative price of fuels							
-Other (specify)							
Total Potential							

Comments: _____

State _____
 Company _____
 Respondent _____
 Phone No. _____

Attachment

11/5/80

Survey of Actual/Potential
 Offsets in 1980

Please note that oil offsets are measured in gallons per day and that you are asked to specify amounts of potential oil offsets that are blocked for each constraint that is relevant to a given market. A constraint can be direct or indirect, such as when an offset is blocked due to customer confusion over a particular regulation. Oil offsets are defined through November 1980 as existing oil use that actually has been or potentially could be offset by additional gas sendout with available supplies as compared to a 1979 base year.

Market
Fuel Oil (gal/day)

Industrial Power Plant Commercial Residential
dist. resid. dist. resid. dist. resid. dist.

<u>Market</u> <u>Fuel Oil</u> (gal/day)	<u>Industrial</u> <u>dist.</u>	<u>resid.</u>	<u>Power Plant</u> <u>dist.</u>	<u>resid.</u>	<u>Commercial</u> <u>dist.</u>	<u>resid.</u>	<u>Residential</u> <u>dist.</u>	<u>resid.</u>
Actual Offsets to gas								
Actual Losses to oil								
-Due to Phase 1 Incremental Pricing								
- Due to FUA, etc.								
-Due to market forces (price and supply)								
Total losses								
<u>Potential short-term offsets to gas now being blocked by:</u>								
-Incremental pricing								
-Fuel Use Act								
-Certification delays								
-State restrictions								
-Reluctance to hook-up due to curtailment								
-Fear of reprisals from oil suppliers								
-Other, e.g., supply availability								
Total Potential								

ENERGY ANALYSIS



Policy Evaluation & Analysis Group
 American Gas Association
 1515 Wilson Boulevard
 Arlington, VA 22209
 703-841-8400

1981-10

September 4, 1981

THE RELATIONSHIP BETWEEN STATE REGULATORY POLICY AND GAS UTILITIES' FINANCIAL STANDING

A. Introduction

Over the past decade, many investor-owned energy utilities have lost their relative attractiveness in the financial marketplace. One of the principal factors impacting energy utilities financial standings has been inadequate rate relief and rates of return on equity. This can cause the financial rating agencies to downgrade the ratings of certain utilities' debt issues, which in turn, results in these energy utilities both being charged higher interest rates when issuing debt capital and receiving lower prices for equity capital. While the cost of capital to all American industry -- including gas utilities -- has significantly increased as a result of inflation and other factors, utilities experiencing inconsistent PUC rate regulation have had capital charges rise more rapidly than the national average.

In many instances, utilities issuing equity capital for new construction have sold stock below book value (i.e., below the original cost of net assets owned by existing stockholders). A principal reason a company cannot receive book value for its stock in the market is inadequate public utility commission (PUC) rate relief. In addition to equity losses incurred by stockholders, the higher interest charges required by the financial community for lower rated utility debt issues has increased the cost of providing service to consumers.

The purpose of this analysis is to examine the impact of state regulatory decisions on the cost of raising capital for gas distribution companies.

B. Executive Summary

- The composite gas distribution company industry average market/book ratio has declined from 2.30 in 1965 to 0.87 in 1979 (see Table 1). Over the same period, the weighted average interest on newly

Table 1

FINANCIAL PROFILE OF THE GAS DISTRIBUTION INDUSTRY
(current dollars)

<u>Year</u>	<u>Stock Price/ Share</u>	<u>Book Value/ Share</u>	<u>Stock Price/ Book Value Ratio</u>	<u>Interest on New Utility Debt^{1/}</u>	<u>Interest on New Industrial Debt</u>	<u>Utility Interest Industrial Interest Ratio</u>
1955	27.98	17.30	1.62	n/a	n/a	n/a
1960	42.89	22.00	1.95	4.84	4.67	1.04
1965	67.77	29.47	2.30	4.68	4.80	0.98
1970	46.48	34.33	1.35	8.85	8.86	1.00
1975	38.93	42.97	0.91	9.76	9.12	1.07
1979	52.15	60.18	0.87	10.64	9.49	1.12

Source: Moody's Public Utility Manual, (Moody's Investor Service, New York, NY, 1980), uses sample of nine distribution companies.

^{1/} Includes all public utility debt -- not just natural gas distribution companies.

issued utility debt rose from 4.68% to 10.74%.

- In 1965 the interest on newly issued utility debt was 98% of the interest on newly issued domestic industrial debt. By 1979, the interest on newly issued utility debt was 112% of the interest on newly issued industrial debt. It had, therefore, become more expensive for utilities to issue debt relative to other corporate borrowers.
- The stock ratings, bond ratings and common stock price/book value ratios of the nation's gas utilities correlate closely with the attitude of their state public utility commission (see Table 2).
 - As of March 1981, for a sample of 19¹/₂ gas distribution companies, a positive statistical correlation of .73 was found to exist between the market/book ratio and a numeric rating of PUC attitude toward utilities (see Figure 1). This correlation corresponds to a 95% level of confidence that PUC attitudes are important factors in determining market/book ratios.
 - Stock and bond ratings for gas distribution companies also correspond with the attitudinal rating of their respective state public utility commissions. Companies with very favorable rated commissions had an average stock rating of between A/A- and bond rating of Aa/A, companies with favorable commissions had an average stock rating of A- and bond rating of A; and companies with unfavorable commissions had an average stock rating of A-/B+ and bond rating of A/Baa.
- Inadequate rate treatment by state commissions has contributed to the sale of gas distribution company common stock at below book value -- resulting in a loss in equity value to existing stockholders.
 - From 1975-1980 gas distribution companies issued common stock to the public -- excludes stock option plans to employees and dividend reinvestment plans -- at \$58 million below its book value, cumulatively. Over that period companies with very favorable rated PUC's issued stock at 117% of book value, while companies with favorable PUC's issued common stock at 90.4% of book value and companies with unfavorable PUC's issued stock at 79.4% of book value (see Table 3).

Table 2

THE IMPACT OF PUBLIC UTILITY COMMISSIONS ON
GAS DISTRIBUTION COMPANIES FINANCIAL CONDITION
 (For the year ending 1979)

	<u>Public Utility Commission Rating</u>		
	<u>Very Favorable</u>	<u>Favorable</u>	<u>Unfavorable</u>
Total outstanding common stock stock price/book value (percentage)	1.48	.94	.70
Immediate equity dilution from new stock issuance (\$000)	(3,765)	24,672	36,958
Continuing equity dilution from stock issuance (\$000)	(7,193)	39,496	64,985
Average stock rating	A/A-	A-	A-/B+
Average bond rating	Aa/A	A	A/Baa

Sources: Rating the Regulators (Stephen Archer, Willamette University, Salem, Oregon, February 1979); Standard and Poor's Stock Guide (New York, NY, 1981); Moodys Public Utility Manual; and "Summary of Electric and Gas Common Stock Offerings" (Morgan Stanley & Company, May 14, 1981, New York, NY).

FIGURE I

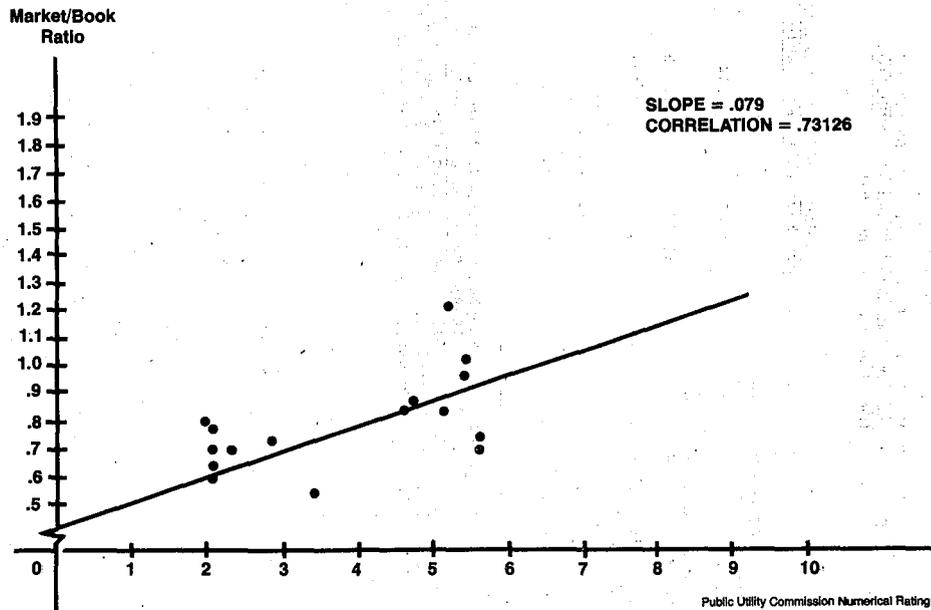


Table 3

GAS DISTRIBUTION COMPANY EQUITY DILUTION
FROM 1975 THROUGH 1980 1/

<u>Company</u> <u>Categorized by</u> <u>PUC Rating 2/</u>	<u>Value of</u> <u>Stock Issued</u> <u>(\$000)</u>	<u>Offering Price</u> <u>as Percentage of</u> <u>Book Value</u>	<u>Loss of</u> <u>Equity Value</u> <u>(\$000)</u>
Unfavorable PUC	115769	79.4%	36958
Favorable PUC	231743	90.4%	24672
Very Favorable PUC	<u>25738</u>	<u>117.1%</u>	<u>(3765)</u>
TOTALS	373250	88.0%	57865

1. Combination gas and electric utilities and gas utilities with substantial gas production activities excluded. Source: "Summary of Electric and Gas Utility Common Stock Offerings" (Morgan Stanley & Company, May 14, 1981, New York, NY).
2. Based on how financial community has rated PUC. Ratings and Regulators (Stephen Archer, Willamette University, Salem, Oregon, February 1979).

NOTE: The labelling of a PUC as "favorable" does not indicate that companies regulated by commissions in this category are presently receiving adequate rate treatment. Rather the "favorable" label was applied to PUC's regarded as average by the financial community.

- The \$58 million equity loss, if compounded at the average return on equity for gas distribution companies from the time the stock was issued through 1980, would result in a total equity loss of \$97 million. This figure neglects loss from stock option and dividend reinvestment plans and costs of stock issuances.
- Combination gas and electric utilities issued common stock at \$750 million below book value during the same period (89% of book value). This figure excludes: (1) continuing losses that occurred after the initial stock issuances; (2) transaction costs of stock issuances; and (3) losses incurred as a result of stock option plans and dividend reinvestment plans.

C. Discussion of Results

Over the last fifteen years, the market price of gas distribution company stock -- represented by a Moody's sample -- has fallen as a percentage of book value (referred to as market-book ratio). In 1965, the average market to book ratio for these gas distribution companies was 2.30 (i.e., common stock held by the public sold at 2.30 times the original value of company equity). By 1979, the market to book ratio had fallen to 0.86 (see Table 1). In addition, the attractiveness of all utility debt has fallen relative to general industrial debt. In 1965, new utility debt issues sold with interest charges below industrial debt (4.68% for utilities, 4.80 for industry). In 1979, new utility debt was generally considered less desirable by investors, requiring higher interest rates (10.64% for utilities, 9.49% for industry).

As shown in Table 2, there is a strong relationship between the financial stature of a gas distribution company and the way the financial community rates its PUC. Gas distribution companies with more favorably rated PUC's are characterized by higher stock and bond ratings, and higher stock price to book value ratios.

It is only over the last ten years that PUC ratings have become a significant factor to the financial community in evaluating the financial status of gas utilities. From 1950 to 1973, the average residential gas heating bill fell from 1.5% of disposable family income to 1.1%. Since 1973 this trend has been reversed, with residential gas heating bills consuming 1.4% of disposable family income.^{2/} While the primary causes of this increase are entirely out of the control of gas utilities (i.e. higher gas purchase costs and taxes)^{3/}, some state public utility commissions have attempted to arrest this trend of increasing gas bills by delaying, substantially reducing, or refusing altogether rate increases requested by gas

utilities. These inadequate rate decisions have put considerable financial pressure on gas distribution companies. The impact of this pressure is that utilities are selling equity at below book value and paying higher interest rates on newly issued debt. In addition, the financial difficulty created by unfavorable PUC rate decisions will significantly raise the cost of capital to gas distribution companies.

A sample of 19 gas distribution companies was examined to ascertain the statistical correlation between a gas distribution company's market/book ratio and the financial community's evaluation of the company's state PUC. Figure 1 shows that a 0.73 correlation exists between PUC rating and market/book ratio. This statistical correlation, for a sample of 19, is considered significant at greater than the five percent level.^{4/}

The principal immediate impact of unfavorable PUC rate decisions on gas distribution companies is the loss of per share equity value of these firms when they issue new common stock. The decline in investor favor toward gas distribution company equity has been directed primarily at companies with unfavorable rated PUC's. As Table 3 shows, companies with unfavorable rated PUC's issued stock from 1975-1980 at an average of 79.4% of book value. Companies with favorable and very favorable rated PUC's issued common stock at 90.4% and 117.1% of book value, respectively. For the gas distribution industry as a whole, common stock was issued at 88.0% of company book value during the 1975-1980 period. This resulted in a loss to the stockholders of over \$58 million of equity value -- \$95 million if continuing losses of return on equity resulting from the original loss is included. Over 60% of this equity loss was from companies with unfavorable rated PUC's, despite the fact that these companies issued only 30% of the common stock.

The loss of stockholder equity through new stock issuances below book value is not confined to gas distribution utilities. Combination gas and electric utilities experienced a \$750 million loss during the 1976-1980 period. The methodology used to calculate this loss also understates the total dollar amount by not including the cost of issuing common stock, lost earnings on funds not received, and losses from the issuance of shares through stock option and dividend reinvestment plans. If these factors were taken into consideration, the total value of losses would be considerably higher. For example, two single state analyses for all energy utilities (including pure electric companies), each estimate losses of approximately \$500 million for the period 1976-1980.

D. Methodology

This analysis examined two independent sources which compiled financial community assessments of state public utility commissions.^{2/} Assessments were based on whether investment

banking houses and financial rating services viewed a particular public utility commission as "pro-business" or "pro-consumer". Criteria for evaluating commissions included: rate base evaluation; interim rate relief; regulatory lag, ROE allowance and revenue allowed for tax deferral. Public utility commissions were divided into three categories: (1) very favorable; (2) favorable; and (3) unfavorable. The two sources used to rank regulatory commissions surveyed a significant number of financial institutions to derive their respective PUC rankings. While some variation in rankings of PUC's occurs over time, both sources evaluated PUC ratings for 1978.

The bond rating, stock rating and new common stock issuances (1975-1980) for major gas distribution companies were identified.

These financial criteria were then averaged for companies on the basis of their PUC's rating. This enabled identification of differences in stock ratings, bond ratings, and common stock equity losses for gas distribution companies based primarily upon the financial community's perception of their state PUC. Assuming all other factors are equal (e.g., utility management capability and nature of service area), this categorization isolated PUC activities. Combination gas and electric companies and distribution companies with significant gas production were not considered because the investment attractiveness of these types of companies are significantly impacted by non-gas distribution activities.

In order to calculate equity losses resulting from new common stock issuances, the offering price of gas distribution company stock (combination gas/electric companies and major gas producers excluded) was subtracted from the book value of those utilities and the difference was multiplied by a number of shares issued. Offering prices, volumes and book value of gas distribution companies were taken from "Summary of Electric and Gas Common Stock Offerings" (Morgan Stanley & Co., May 14, 1981, New York, NY). The same methodology was applied to combination gas/electric utilities to derive their stockholders equity losses for 1976-1980 period.

The losses experienced by shareholders of pure gas distribution companies stock was relatively low compared to combination gas and electric utilities because of the limited amount of stock issued by gas distribution companies between 1976-1980. The methodology used to calculate equity losses understates the total losses experienced by gas utilities because it does not include issuance of common stock through dividend reinvestment plans and common stock purchase plans. Losses resulting from such stock option and dividend reinvestment plans could be very significant. The calculation for all combination gas and electric utilities also did not include the lost return on equity over time that results from the original loss of equity funds at the time of sale (i.e., if book value had been received for stock at the time of

issuance, then the additional funds received would have earned a return in subsequent years). This continuing loss was calculated for gas distribution companies only. Given a 15% return on equity, this calculation would roughly double the impacts every seven years.

The nineteen companies in this analysis were selected based on the following criteria: (1) these companies are relatively pure distribution companies; (2) they are publicly traded; and (3) they operate principally in one state. Eight of the companies included would have to be excluded from the sample if the above criteria were very strictly enforced. They were included because the activities that would disqualify them were not considered sufficient to significantly impact their financial status.

The nineteen companies in the sample had an aggregate sales volume of 2451 million Btu's in 1979 -- representing 59% of total sales of pure distribution companies. The total common stock equity of these companies in 1979 was \$593 million, representing 54% of pure gas utility common stock.

E. Summary

This analysis did not attempt to calculate whether the short-term benefits provided current rate-payers by not permitting justified rate increases are outweighed by the longer-term costs to these same gas consumers. This analysis did show such rate treatment impairs the ability of gas distribution companies to acquire financing by increasing the cost of new financing. The analysis also calculated the equity losses that were experienced by both gas and combination gas/electric utilities between 1976-1980. Edward Larkin, a member of the New York Public Service Utility Commissioners characterized the financial status of public utilities.

"If the investor-owned utility complex is to survive in the 1980s, regulators will have to come to grips with the realities of the marketplace ... All of the fat has been taken out of the industry and it is down to the bone and gristle. If the bones are disturbed the structure will be destroyed; and, if the gristle is removed, the structure will collapse."⁶

As Mr. Larkin correctly points out, harsh regulatory rate decisions by state PUC's cannot continue without causing irreparable financial damage to our nation's utilities. This analysis quantifies the impacts of unfavorable PUC decisions on local utilities by contrasting the financing status of gas utilities with the attitude of their state PUC's. Future analyses of this issue could include: (1) the impact of higher debt charges caused by inadequate rates on the cost of providing gas service; (2) the percentage of a consumer's gas dollar -- current and future -- attributable to activities controllable by gas distribution companies; and (3) how specific regulatory policies and practices (e.g., reasonable opportunity to earn an adequate competitive rate of return, flow through practices and others) impact utility operations.

END NOTES

1. This sample represents nearly all relatively pure gas distribution companies (i.e. not part of a conglomerate or having significant pipeline or production segments), publicly traded on major stock exchanges, and operating primarily in one state.
2. Consumer Cost of Natural Gas and Alternative Househeating Fuels: 1980 Update (November 21, 1980, American Gas Association, Arlington, VA).
3. Impact of Rising Taxes on Natural Gas Prices Since 1973 (December 31, 1980, American Gas Association, Arlington, VA).
4. Daniel, Wayne W., Introductory Statistics with Application (Georgia State University, Boston, MA, 1977).
5. Archer, Stephen H., "Rating the Regulators", (Salem, Oregon, Willamette University, February 1979); and Navarro, Peter, "Electric Utility Regulation and National Energy Policy", AEI Journal on Government and Society (American Enterprise Institute, Washington, DC, February 14, 1981), p. 22.
6. Larkin, Edward "A Debt to Tomorrow" Public Utilities Fortnightly, (January 29, 1981), p. 15.

Senator MURKOWSKI. Thank you for that excellent testimony, Mr. Baly.

Is it not true that the Nation's proven natural gas reserves have continued to decline over the past decade? Do you know what the proven reserves are with and without the proposed Alaskan system?

Mr. BALY. Certainly I think price controls did have an effect in terms of additions to reserves. There has been a turnaround now starting with 1979 with a record level, the highest level since 1967, when there was—

Senator MURKOWSKI. I was referring to the years we have proven gas without the pipeline bringing the gas from Alaskan and the years of proven reserves we would have with it. Is that figure available?

Mr. GERMAN. As of the end of 1979, we had 195 trillion cubic feet of proven gas reserves and that includes Alaskan; 26 of that was North Slope Alaska.

Senator MURKOWSKI. You take 164 trillion remaining if you back off Alaska.

Mr. BALY. Only 22 of the 26 would be delivered.

Senator MURKOWSKI. How many years supply is that?

Mr. GERMAN. Roughly 8 years. Again you will be adding proven reserves.

Senator MURKOWSKI. You will be depleting proven reserves.

Mr. GERMAN. That is correct.

Senator MURKOWSKI. We have an 8-year supply without it and how many with it?

Mr. GERMAN. Ten years.

Senator MURKOWSKI. In your opinion, do the U.S. electric utility companies have the capability to rather easily switch over from imported oil to natural gas supplies if they were made available at a competitive price?

Mr. Baly. Yes, sir. I think the alternative if you do not have the Alaskan gas would probably be either imported oil or additional Canadian imports.

Senator MURKOWSKI. It is your contention that Alaskan gas is marketable in the marketplace today at the price structure that we have discussed for the last 2 days?

Mr. Baly. Yes, sir, we agree with the testimony of the sponsor companies.

Senator MURKOWSKI. I assume you would have no hesitancy to pass onto the financial community your contention to ease their minds as to the marketability of this gas.

Mr. Baly. Yes, sir. Our President is in Denver speaking to the bankers in that State and whenever he can, he does try to make that pitch.

Senator MURKOWSKI. I thought all the bankers were here today.

That is indeed comforting. In the event of gas deregulation, would you be prepared to make that same observation?

Mr. Baly. Yes, sir, we would. We would agree with the sponsor companies, I think even in the scenario that the Cabinet Council has outlined, the price will still be roughly where the NGPA would be if we can take care of certain problems dealing with escalator clauses.

Even with that, we would certainly see this gas marketable. The Department of Energy has indicated it may even help in terms of marketing Alaskan gas.

Senator MURKOWSKI. Mr. Baly, I thank you and your associates. We thank you for your testimony. I think it has been very helpful. You substantiated some positions that I think needed clarifying. We appreciate your bearing with us.

My only suggestion would be that when you next agree to testify that you not be one of the last but one of the first.

I think it appropriate to thank those of you who have borne with us throughout the day. I would like to advise you that pursuant to Senator Metzenbaum's request and recognizing there is still an outside chance that Frank Mosier may make a call, in view of the realities that occur around here occasionally, Mr. Metzenbaum has requested that the committee hold a third day of hearing on Monday, October 26 beginning at 11 a.m. in room 3110 of the Dirksen Senate Office Building.

The purpose of the hearing is to take further testimony on the President's waiver proposal. We will keep you guessing and hope you will come and attend.

I would like to recognize our court reporter, Lynn Nations, who has done I think yeoman's work in putting in a long day.

I thank all the witnesses and participants who have sat on the hard chairs. I think we have attempted to compile a record worthy of scrutiny. We thank you again.

The hearing is adjourned until Monday at 11 a.m., October 26, 1981.

[Whereupon, at 5:20 p.m. the hearing recessed to reconvene at 11 a.m., Monday, October 26, 1981.]

THE PRESIDENT'S ALASKA NATURAL GAS TRANSPORTATION ACT WAIVER RECOMMEN- DATION

MONDAY, OCTOBER 26, 1981

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, D.C.

The committee met, pursuant to notice, at 11:15 a.m., in room 3110, Dirksen Office Building, Hon. Frank H. Murkowski presiding.

Present: Senator Murkowski.

Also present: Howard Useem, professional staff member, and Elizabeth Moler, counsel for the minority.

OPENING STATEMENT OF HON. FRANK H. MURKOWSKI, A U.S. SENATOR FROM THE STATE OF ALASKA

Senator MURKOWSKI. Good morning.

We will reconvene the Senate Committee on Energy and Natural Resources. This morning marks the third and final day of our hearings on Senate Joint Resolution 115, the approval for the President's proposed Alaska natural gas pipeline waiver package.

We originally planned to cancel this hearing today because of lack of witness requests but Senator Metzenbaum has requested we proceed to hear today's witness. We were pleased to accommodate Senator Metzenbaum's request to complete the record.

I would like to briefly review some of the testimony the committee heard on Friday.

The committee received a good deal of testimony from the natural gas transmission companies participating in the Alaska pipeline project. This testimony outlined the financial participation of each consortium member and the affected service areas of the 48 States receiving and benefiting from proposed Alaskan gas.

I was most interested in the single theme common to all the testimony given by the gas transmission companies; namely, the simple fact that they will be unable to meet the expected natural gas demand throughout the United States without the Alaskan gas brought to the Lower 48 States through this pipeline.

Both the gas transmission companies and the representatives from the gas producers indicated that the risk of prebilling to American consumers is so remote that it is unmeasurable. They emphasized that prebilling is authorized by the waiver package only to a limited extent and under narrow circumstances governed by a completion date to be established by FERC.

It was equally important that banker witnesses made it clear that without this limited prebilling authority financing would not be forthcoming for this important project.

Later on Friday we heard from the Canadian project sponsors. During the course of their testimony it became clear, given their level of investment responsibilities and commitment to the project, that the completion of the pipeline is crucial to our continued cooperation with Canada on energy and other commercial matters.

A representative of the American Gas Association testified that there will be a continuing strong demand for Alaskan gas. The AGA indicated that the growth of industrial gas demand alone should absorb all the Alaskan gas coming through the pipeline. He also emphasized the continuing decline over the last 10 years in proven natural gas reserves in the United States.

We heard from representatives of the financial community. I found this portion of the hearings most informative. During this testimony it became clear that the financial community regarded the proposed billing commencement waiver as the absolute minimum that might result in a financing plan.

Clearly the bankers would have preferred that more flexibility be built into the waiver provision.

Needless to say, the bankers on Friday's panel could not guarantee that project financing would result from congressional approval of these waivers. A representative from Citibank said, "Having this billing commencement waiver is significantly better than not having it."

I look forward to today's testimony, and I believe we can count on some interesting testimony from this morning's witness.

Our witness this morning is Mr. Edwin Rothschild, director of the Energy Action Educational Foundation.

Good morning, Mr. Rothschild. We look forward to receiving your testimony. You may proceed. We will insert your statement into the record.

STATEMENT OF EDWIN ROTHSCHILD, DIRECTOR, ENERGY ACTION EDUCATIONAL FOUNDATION

Mr. ROTHSCHILD. Thank you, Mr. Chairman. I appreciate the opportunity to testify this morning on the proposed waivers of law regarding the construction of the Alaskan natural gas transportation system.

There is no question that the gas in Prudhoe Bay ought to be produced for the benefit of the country. The question is not whether the gas should be produced but how it is to be delivered to consumers and at what cost and in what fashion.

The waiver package from our point of view is not in the public interest. It clearly demonstrates that the free market is not willing to put up the capital because the project is viewed by the financial community as far too risky to undertake.

If that is true, why should ratepayers, even in a limited extent that may be in the proposed waiver package—and I think that limitation is very weak—assume any of the financial risk when they receive none of the financial benefit.

This waiver package simply transfers a significant portion of the risks from the pipeline sponsors and leading financial institutions to consumers:

The waiver package would deny consumers the basic protections inherent under the Natural Gas Act because it would waive sections 4, 5, 7, and 16 of the act. These sections are the heart of the law which protects consumers from the monopoly power of pipelines.

In the name of what the sponsors call "regulatory certainty" the waivers would eliminate the sections of the Natural Gas Act which would insure all rates are just and reasonable and that the pipeline be constructed under an approved certificate of public convenience and necessity and that the pipeline could not abandon its facilities.

Under this waiver proposal the pipeline sponsors would deny consumers due process especially if the requirement for an evidentiary on the record hearing is only permitted at the discretion of the Federal Power Commission.

In other cases regarding the construction of natural gas pipelines, consumers and other interested parties have an opportunity to present evidence, cross-examine witnesses, and challenge the facts presented by the pipeline companies.

If these waivers are adopted, consumers will be effectively denied due process rights.

The proposed waivers would make consumers pay for part of the pipeline even if the entire pipeline is uncompleted and making consumers pay for segments of the pipeline before the pipeline is complete and operational shifts the financial risks from the sponsors and banks to the ratepayers. The risks to the sponsors will be substantially reduced.

Instead consumers in California, Ohio, Wisconsin, Michigan, and other States will bear the risk. They will be putting up their capital, which is far more scarce and far more limited than the capital available to the sponsors and banks, for a project that they will receive no equity or interest for but only a promise in the future of some gas and an extraordinarily high price.

I do not know what you call that arrangement but it certainly is not free enterprise and it is not private financing.

The pipeline sponsors are also trying to shift the financial burden of constructing the conditioning plant that prepares the gas from the gas producers to the pipeline's ratepayers. If consumers are going to be forced to pay for something producers should rightfully be paying for, then consumers should at least receive some compensation in return.

As far as allowing oil companies that produce the Prudhoe Bay gas to become owners in the pipeline, it would be allowing the largest and only gas transportation system from Alaska to be acquired in part by the producers of the largest U.S. gasfield. That is dangerous, especially in view of the administration's likely effort to accelerate decontrol of natural gas prices.

It was just such an eventuality that prompted the Justice Department's opposition. In its August 9, 1977, letter to the White House, the Justice Department's recommendation concerning gas producer ownership and participation was based on the premise that such ownership or participation under a regime of deregulated

or relaxed wellhead price regulation could lead to the evasion of effective pipeline regulation and create the opportunity for the earning of monopoly profits through anticompetitive activity.

This waiver does not provide the public with sufficient assurance that anticompetitive activity will not occur. The waiver permits the Federal Energy Regulatory Commission, whose Chairman has already stated he is in favor of moving the project forward, to reject the Justice Department's recommendations concerning antitrust problems raised by producer ownership in the pipeline.

It would seem to be more logical out of nothing else that the Justice Department be required to approve producer participation rather than just act as a consultant to the FERC. Such antitrust reviews are within the demand of the Justice Department's Antitrust Division and not within the FERC. To provide the FERC with decisionmaking authority over antitrust matters is tantamount to giving the Department of Energy authority over defense matters.

What is most surprising is, even if Congress passes these waivers, the banks and financial community are uncertain about the pipeline's financial health. No one who has testified from the financial community was willing to say they would not be back seeking more consumer or Federal support. I would say this uncertainty is not surprising particularly in view of the history of this pipeline. I want to summarize that because I think it is instructive.

Mr. McMillian of the Northwest Energy Co. wanted to get his pipeline approved in competition with El Paso and Arctic at a very late date before the President's decision in September of 1977. Mr. McMillian submitted a memo from his chief financial adviser, Mark Millard, vice president of Loeb Rhoades, stating:

There is sufficient credit support capacity among the primary beneficiaries of gas pipelines excluding the consumer to assure completion of the pipeline. This is the single most important risk to be addressed in arranging private financing. Such beneficiaries are the gas transmission companies, gas producers and the State of Alaska.

That went by the boards. I think Mr. McMillian said that to get the nod for the project, and once having gotten his foot in the door, he is coming back to get more money. There is no guarantee that if these waivers are passed that they will not be back again asking for either more consumer dollars or more dollars from the Federal Government.

A recent story in the Christian Science Monitor states that the pipeline officials have already had conversations with administration staff and have received optimistic signs that the administration might consider such Federal guarantees.

I can play out a possible scenario. Congress passes the waiver package. President Reagan proposes to accelerate decontrol. The bankers are convinced that unless the Government helps, the pipeline decontrol will make the natural gas unmarketable from Alaska. There have been no studies looking at decontrol and the pipeline to see if the gas in the pipeline would be marketable under a decontrolled environment.

The administration reluctantly agrees to propose a financial loan guarantee program to Congress in order to keep the Nation's promise to the Canadian Government.

This pipeline, even unbuilt, has failed to live up to its growing expectations. These waivers should be rejected. We should start the

process of finding the most effective and economic method of producing Prudhoe Bay gas again.

Perhaps the proposal to convert the gas to methanol and ship it down the oil pipeline would make more sense. The time has come to stop trying to rescue John McMillian's \$40 billion boondoggle and start finding a better alternative.

Thank you, Mr. Chairman. That completes my statement.
[The prepared statement of Mr. Rothschild follows:]

ENERGY ACTION

STATEMENT OF
 EDWIN ROTHSCHILD
 Director
 Energy Action Educational Foundation
 BEFORE THE COMMITTEE ON ENERGY AND
 NATURAL RESOURCES OF THE UNITED STATES SENATE

October 26, 1981

AND

BEFORE THE FOSSIL AND SYNTHETIC
 FUEL SUBCOMMITTEE OF THE HOUSE ENERGY AND
 COMMERCE COMMITTEE AND THE ENERGY AND
 ENVIRONMENT SUBCOMMITTEE OF THE HOUSE INTERIOR
 COMMITTEE OF THE UNITED STATES HOUSE OF REPRESENTATIVES

October 27, 1981

Mr. Chairman and members of the Committee. I appreciate very much the opportunity to testify today on the proposed waivers of law regarding the construction of the Alaska Natural Gas Transportation System (ANGTS).

The proposed waivers submitted to the Congress by the President on October 15, 1981 are designed to make the ANGTS a project that transfers a substantial portion of the risk from sponsors and lenders to consumers. In addition, the waivers would permit equity ownership in the pipeline by the gas producers of the Prudhoe Bay field, a situation the Justice Department in 1977 said should not be permitted. These waivers would curtail the rights of consumers to review financial and managerial decisions and determinations through an evidentiary hearing by leaving such a hearing up to the discretion of the Federal Energy Regulatory Commission. Finally, these waivers would provide that the Commission could not change any final rules or orders under Sections 4, 5, 7, and 16 of the Natural Gas Act, despite changed financial, physical or technical circumstances. Consumers are being asked to shoulder the extraordinary financial risks, while the sponsors and their banks seek insulation from such risks as well as the substantial rewards. Based on these conclusions, we do not believe Congress should adopt the waiver proposal.

SOME HISTORICAL NOTES

Before examining in detail our objections to the proposed waivers of law, I think it would be useful to review how John McMillian's Northwest Energy Company's project, Alcan was selected as well as the representations made by Mr. McMillian and his company which were instrumental in persuading the Government to choose his proposal over the others. Three projects—Alcan, El Paso and Arctic—were before the Federal Power Commission in 1976 and 1977 proposing to construct a transportation system to deliver Alaskan gas to the lower 48 states. While there were criticisms of all the systems from varying points of view, one of the key elements for obtaining government approval was whether or not the transportation system could be privately financed.

In this regard all three of the original competing projects -- Alcan, El Paso and Arctic -- insisted that they needed an "all-events tariff." This tariff provided for consumer payment of the pipeline even if the pipeline never delivered a single cubic foot of natural gas. There was great opposition to this type of tariff both in Congress and among many of the potential consumers of this gas. Recognizing that an alternative to the "all-events tariff" would have a significant influence on the decision-making process, Alcan's chief financial advisor Mr. Mark J. Millard, a vice president of Loeb Rhoades, sent a memorandum to McMillian stating,

There is sufficient credit support capacity among the primary beneficiaries of gas pipelines, excluding the consumer, to assure completion of the pipeline. This is the single, most important risk to be addressed in arranging a private financing. Such beneficiaries are the gas transmission companies, gas producers, and the State of Alaska. (Emphasis mine)

and

The obligations of consumers to pay certified costs of the project can be limited to a minimum bill tariff commencing when initial gas deliveries are made. I do not believe legislation obligating gas consumers to an "all-events" tariff, which provides for payment of cost prior to the completion of construction, is a necessary condition of successful private financing if sufficient overrun funds are provided.

¹Memorandum to John G. McMillian from Mark J. Millard, August 10, 1977, pp. 2-3.

- 3 -

With El Paso and Arctic still insisting that such an "all-events tariff" was necessary and with Northwest Energy pledging its support for President Carter's National Energy Plan, the White House, after reaching agreement with the Canadian Government, submitted its Decision and Report on the Alaskan Natural Gas Transportation System to Congress.² On the same day Mr. McMillian told House members,

The President's decision requires the Alcan project to be privately financed in its entirety. The United States and Canadian governments will not be called upon for financial guarantees. Nor will the consumer have to bear the hypothetical burden of the non-completion of the project. Instead, other primary beneficiaries of the project will be called upon to provide the necessary financial backing. We believe that Alcan can obtain the necessary project financing from Canadian and United States sources.³ (Emphasis added)

These assurances were repeated by Mr. McMillian to the Senate Energy and Natural Resources Committee on October 11.⁴ Mr. McMillian and his financial advisors also stated that they would not need the financial support of the Prudhoe Bay producers in the effort to obtain private financing.

But as we all know Mr. McMillian was wrong, so wrong that he and his cohorts are running around the halls of Congress trying to obtain support for the very things he said he would not need and the very things the sponsors of the other projects said were necessary. Clearly, Mr. McMillian changed his position on the financing of this pipeline in August 1977 to obtain the Government's approval, while knowing full well that private financing under those conditions would be improbable, if not impossible. But he must also have recognized that once he had received the Administration's approval, he would have his foot in the door. Now, four years later, Mr. McMillian is trying to force his way further in by using all of the work that has been done, the expectations that have been raised and the money already spent as justification for these extraordinary and unprecedented waivers.

²Decision and Report to Congress on the Alaska Natural Gas Transportation System, Executive Office of the President, September 22, 1977.

³Joint hearings before the Subcommittee on Energy and Power of the Committee on Interstate and Foreign Commerce and the Subcommittee on Indian Affairs and Public Lands of the Committee on Interior and Insular Affairs, House of Representatives, 95th Cong., 1st Sess., on The President's Decision on an Alaskan Natural Gas Transportation System, p. 87.

ALLOWING PRODUCERS EQUITY PARTICIPATION

The first of the proposed waivers would waive Section 1, Paragraph 3, and Section 5, Conditions IV-4 and V-1, of the President's Decision to allow the gas producers --Exxon, BP/Sohio and Arco -- an ownership interest in the pipeline. The proviso to this waiver is that the Federal Energy Regulatory Commission approve any participation agreement only after considering "advice from the Attorney General" and making a finding that the agreement will not violate the antitrust laws, nor restrict access for nonowner shippers and capacity expansion.

While the current arrangement between the pipeline-owners and the producers limits the producers to 30 percent of the equity, there is nothing preventing the pipelines or Mr. McMillian from handing over 49.9% of the pipeline's ownership to the producers, if the financial backers insist that this is a necessary condition for the credit worthiness of the project. Once the Congress allows producers to become owners of the pipelines, then it is not unreasonable to assume that their ownership interest could expand.

This is a serious problem. It is one that has concerned the Justice Department for many years, particularly in reference to oil pipelines and oil ports. To allow the largest and only gas transportation system from Alaska to be acquired in whole or in part by the producers of the largest U.S. gas field is dangerous, especially in view of the Administration's likely effort to accelerate decontrol of natural gas prices. It was just such an eventuality that prompted the Justice Department's opposition. Thus, according to an August 9, 1977 letter to the White House, the Justice Department's

recommendation concerning gas producer ownership and participation was based on the premise that such ownership or participation under a regime of deregulated or relaxed wellhead price regulation could lead to the evasion of effective pipeline regulation and create the opportunity for the earnings of monopoly profits through anticompetitive activity.⁵

⁴Hearings before the Committee on Energy and Natural Resources, United States Senate, 95th. Cong., 1st Sess. on S.J. Res. 82, Joint Resolution to Approve the Presidential Decision on an Alaska Natural Gas Transportation System, p. 102.

⁵Decision, Exhibit following p. 212.

- 5 -

This waiver does not provide the public with sufficient assurance that anticompetitive activity will not occur. In fact, the waiver permits the Federal Energy Regulatory Commission, whose chairman has already stated he is in favor of moving the project forward, to reject the Justice Department's recommendations concerning antitrust problems raised by producer ownership in the pipeline. It would seem to be more logical that, if nothing else, the Justice Department be required to approve producer participation, rather than just act as a consultant to the FERC. Such antitrust reviews are within the domain of the Justice Department's Antitrust Division, not within the FERC. To provide the FERC with decision making authority over antitrust matters is tantamount to giving the Department of Energy authority over Defense matters.

INCLUDING THE CONDITIONING PLANT AS PART OF THE TRANSPORTATION SYSTEM

It is the usual practice in the natural gas industry that a pipeline company is responsible for constructing a pipeline up to a producer's gas conditioning plant. The gas emanating from that plant receives a price from the pipeline company that contains in it a provision for the cost of the conditioning plant. Of course, the producer retains the ownership of the valuable products produced from that plant -- propane, ethane and butane, to name the most well known. In today's marketplace, these products command high prices for use as petrochemical feedstocks. Under regulation, the sale by producers of natural gas liquids often resulted in a "net liquid credit" against the costs incurred in the production of the gas. In other words, the wellhead price under regulation also reflected the revenue produced by the sale of these liquids. This benefited consumers by reducing the price of natural gas they received but at the same time benefited producers by giving them another secure source of revenue.

If consumers are going to be forced to pay for something producers should rightfully be paying for, then consumers should at least receive some compensation in return. After all, the price allowed at the wellhead for Prudhoe Bay gas incorporates the cost of conditioning the gas. In addition, the cost of Prudhoe Bay gas is, in reality, next to nothing, since it was found and developed in connection with crude oil. Clearly, the conditioning plant should not be part of the rate base of the pipeline project. It should be a cost borne by the producer. If, however, the Congress decides to allow such a dramatic shift in regulatory policy, then consumers must receive credit for the value of the gas liquids which the plant produces. In other words, the value of the plant liquids should be used to offset the rates charged to consumers for the conditioning plant.

BILLING COMMENCEMENT DATE

The waiver of Section 5, Condition IV-3 which would prevent consumers from being charged until the pipeline is completed and in operation represents nothing less than a variation of the "all-events tariff." Yet, Secretary Edwards interprets this waiver to mean that "the FERC could allow billing for transportation through the ANGTS prior to the time the whole system is completed and gas begins to flow, under certain specified, limited circumstances." Mr. Edwards' comment notwithstanding, it is obvious that what is being proposed is comparable to what is called under electric utility regulation, "construction work in progress" (CWIP). As Edward Petrini of the National Consumer Law Center has observed,

...the issue is the timing of ratepayer payment of capital costs on such plant--i.e., whether such payments should be made by ratepayers when the plant is actually serving customers or whether such payments should begin before that time, while the plant is still under construction.⁶

Mr. Petrini points out that CWIP "violates what accountants call the 'matching principle' (the principle which attempts to associate financing costs with earnings)" and also "discriminates against present ratepayers in favor of future ratepayers."

⁶Letter to Rep. Philip R. Sharp, July 24, 1981.

- 7 -

Finally, argues Petrini, "Utilities have stronger incentives to complete capital construction projects quickly if they do not begin recovering the costs on their investment until the project is completed. By permitting early recovery of the costs of the project, this incentive is diluted. On a project as ambitious as ANGTS, such a change in the typical risk allocation could result in high escalations indeed."

By making consumers pay for segments of the pipeline before the pipeline is complete and operational shifts the financial risks from the sponsors and banks to the ratepayers. Such a tariff, if allowed, would effectively undermine what Secretary Edwards claims should occur -- "the private financing of ANGTS." Of course, it will be easier for the pipeline sponsors, the major oil companies and the banks to finance this project. Their exposure, their risks will be substantially reduced. Instead, consumers in California, Ohio, Michigan, Wisconsin, etc. will bear the risk. They will be putting up their capital, which is much more limited than the capital available to the aforementioned, for a project in which they will receive no equity, no interest, but only a promise in the future of some gas at an extraordinarily high price. I do not know what you call that arrangement, but it certainly is not free enterprise and it is not private financing.

A recent report, "Financing of the Alaskan Natural Gas Transportation System" by Hilary Sills, director of Energy and Environment Policy of the Government Research Corporation noted that

The Administration views advance billing as imposing two obligations on consumers. First, consumers are forced to make a loan during construction. Second, there is a contingent liability in which the group who bears the risk of delay, in this case consumers, cannot influence the extent of the delay. While the waiver is not unique, it is unusual and confirms the fact that the economics of the project are so close that the sponsors have to resort to these unusual measures in order to obtain financing.

Again, the comparison to CWIP is noteworthy. It is precisely at times when electric utilities claim they are in financial straits "usually brought about by a combination of ongoing, large construction programs which have increased dramatically in cost, soaring fuel costs, and lagging demand,"⁷ that they must resort to such risk-shifting proposals.

EVIDENTIARY HEARING

The proposed waivers would not require the use of a formal evidentiary hearing in proceedings related to applications for certificates of public convenience and necessity authorizing the construction or operation of any segment of the approved transportation system and would allow the FERC discretion in determining when such evidentiary proceedings will be held. It is clear that whoever drafted this waiver is quite familiar with the recent history of the FERC, because he knows that wherever the FERC has had discretion, it has, in most cases, eliminated the use of evidentiary proceedings. Without evidentiary hearings consumers will effectively be prevented from cross-examining testimony, submissions, economic analyses and witnesses. Fact finding will be restricted. By waiving this requirement, the sponsors are seeking not swift regulatory approval, but blind and unaccountable regulatory approval. There is no guarantee that the bureaucracy will protect the rights of individual citizens as they try to understand and assess the judgments and decisions of the pipeline sponsors. Without an evidentiary hearing on this most expensive, complex and unprecedented project, there is a great probability, if not a certainty, that cost and technical data will be applied so as to favor the pipeline sponsors and to harm the ratepayer. What banker, what businessman would be willing to commit his scarce capital resources to a risky venture without access to full documentation and the right to an independent and thorough review of the cost accounting and technical designs? There is no such prudent businessman. So then, why should the ratepayer, who is putting up capital, be denied the same opportunity?

⁷See Petrini letter to Rep. Sharp.

SECTIONS 4, 5, 7, and 16 OF THE NATURAL GAS ACT

The objective of this proposed waiver is to provide what the sponsors like to call "regulatory certainty." Specifically, they would like to have set in concrete the FERC's final rules and orders approving the pipeline tariff and the recovery of all costs related to the transportation of the gas under that tariff. Such a waiver is unprecedented. It is like saying Congress can not adopt these waivers because the pipeline sponsors have suddenly realized they cannot finance the pipeline under the Decision made by the President and affirmed by the Congress.

Suppose, for example, the sponsors for the purpose of the tariff have assumed that the depreciation life of the gas reserves is 20 years, but it turns out to be 40 years. The depreciation rate would be cut in half. Why shouldn't the ratepayer get the advantage of this? Why should the pipeline owners recover their depreciation expenses too quickly? Or, suppose there is a technological innovation that improves the efficiency of the gas compressors, thus reducing operation and maintenance costs? There are many more reasons why the FERC should reconsider a tariff under changed circumstances. What the sponsors and their banks are asking for is a condition which upsets the entire regulatory framework, but more importantly, further prevents the consumer from obtaining benefits of this project.

Sections 4 and 5 are the heart of the Natural Gas Act. These two sections empower the Commission to guarantee that rates charged by natural gas pipelines are just and reasonable. Without the operation of these two sections, ratepayers would have no protection against paying unjust and unreasonable rates. Section 5(b) affords ratepayers the added protection of permitting investigations by the Commission on its own motion or upon the request of any State commission to "determine the cost of production or transportation" where it cannot establish the rate. In fact, we would like to know from the project sponsors

the specific reasons for waiving each of these sections. These are answers Congress should demand and should examine thoroughly. We suspect that much more is at stake than simple "regulatory certainty."

And where is the "regulatory certainty" in allowing the waiver of Section 7, which authorizes the Commission to direct the extension and improvement of transportation facilities and the establishment of physical connections; to prohibit the abandonment of facilities or service without permission? This section provides "regulatory certainty" to consumers, who need such certainty in view of the monopoly nature of the enterprise they confront, an enterprise that could choose to avoid the requirements of Sections 4, 5, 7, and 16 and thereby adversely affect the lives of millions of ratepayers.

WHO IS WILLING TO BEAR THE RISKS AND WHO IS SHARING THE REWARDS

We think it is fascinating to observe the comments of the key financial advisors to the ANCTS project. H. Anton Tucher, vice president of the Bank of America, testified last week (as did three other bankers) that even with the adoption of the waiver package, the pipeline might still not be economically or financially feasible. Said Mr. Tucher, "We will not go forward until we have done a 'due diligence' investigation to satisfy ourselves on the technical, economic, financial and regulatory feasibility of completing the whole system." Yet, neither the Administration nor Congress have such an investigation to help determine if this waiver package is sensible and cost-effective. Secretary Edwards has admitted "that the Administration has not performed a cost estimate of its own nor has it conducted a final evaluation of the sponsors' estimated costs." This has not been done, and yet the Administration is willing to risk consumer capital. If the banks are unwilling to make loans before they do a thorough study, why should the U.S. Government be so willing to allow consumer financing without a thorough investigation?

On top of all of this, on top of the waiver package, on top of all the support this Government has provided to the sponsors of the pipeline, they are still unwilling to commit themselves to the completion of the project if the waiver package is passed. Each of the sponsors was asked if the waiver package was sufficient to insure construction and completion, and none of them would state that it was. The bankers stated their doubts quite openly. Mr. Tucher wants "the waiver package [to] preserve flexibility to permit some form of pre-completion billing commencement in Alaska beyond that contemplated in the present waiver request that would provide some form of consumer risk-taking or actual tariff changes to commence prior to completion of the Alaskan segment." Robert H. Graham of Citibank isn't sure whether the waiver package "will be sufficient," while Stephen W. Jenks of Morgan Guaranty Trust states, "Whether or not this package will be sufficient to ensure such financing we are unable to say at this time."

This uncertainty is not surprising. I suspect that now that Mr. McMillian is close to getting his upper torso in the door, he's going to try to get all the way through and seek federal guarantees. In fact, a recent story in the Christian Science Monitor states that pipeline officials have already had conversations with administration staffers and have received optimistic signs that the Administration might consider such federal guarantees. I can even play out the scenario. Congress passes the waiver package. President Reagan proposes to accelerate decontrol. The bankers are now convinced that unless the Government helps the pipeline, decontrol will make Alaskan gas unmarketable. The Administration reluctantly agrees to propose a financial loan guarantee program to Congress.

Mr. Stanley J. Lewand, vice-president of the Chase Manhattan Bank told you last week that "Lenders have indicated...that they are not willing to accept the risks that the delivery system might not be completed nor are they willing to accept the risk of a future regulatory body changing the conditions under which the tariff and tracking mechanisms have been allowed to be implemented...and that they must be assured of the timely repayment of their debt and the interest thereupon." If such prudent businessmen are unwilling to risk their money on this project, why should individual citizens be placed in even more jeopardy. I see no reason why Chase Manhattan Bank should be treated with more care and concern than an elderly couple on a fixed income living in a drafty apartment and wondering where their next gas bill payment is going to come from.

All of us would like to see the gas from Alaska produced and used for the benefit of the country. This pipeline may or may not be the project that does the job. The world has changed a great deal in four years. In September 1977, President Carter told us that the proposed Alcan system "will deliver Alaska gas at the lowest cost-of-service to U.S. consumers--probably below the cost of imported oil and substantially below the cost of other fuel alternatives." That is no longer true, if it ever was. The Department of Energy estimates that the 1987 imported Canadian natural gas price will be \$13.10 per MMBtu. This compares with an estimate of between \$15 and \$20 for the delivered price of Alaskan gas. Undoubtedly, with or without decontrol, natural gas delivered by the ANGTS will be the most expensive fuel Americans can buy.

This pipeline, even unbuilt, has failed to live up to its glowing expectations. These waivers should be rejected. We should start the process of finding the most efficient and economic method of producing Prudhoe Bay gas again. Perhaps, the proposal to convert the gas to methanol and ship it down TAPS would make more sense. The time has come to stop trying to rescue John McMillian's \$40 billion boondoggle and to start finding a better alternative.

BUSINESS

US may help build Alaska gas pipeline through Canada

By Tom Kennedy
Special to The Christian Science Monitor

Los Angeles

Once it seemed unthinkable, but senior American natural-gas industry executives privately admit US government participation in the Canada-Alaska gas pipeline is a distinct possibility. The executives recently met here to mark the receipt of Canadian natural gas through a transmission network that will eventually be part of the Alaska pipeline.

The subject has already been broached with Reagan administration personnel, who are said to have been sympathetic to the idea of extending US assistance to the troubled multibillion dollar project.

US help could either be temporary or permanent, in government guarantees or actual cash, to secure completion no later than 1987. The original schedule called for construction to start next year and operation by 1985-86.

But most industry executives acknowledge that enabling legislation will not be passed by the House of Representatives before year's end.

Also, construction materials, including prefabricated modules required at Alaska's North Slope, the starting point of the 3,500-mile system, have to be readied this coming winter to be delivered in the short navigation season next summer.

According to leading utility and pipeline executives, some sort of a US government guarantee is needed now that the project has passed the point of "prudent and conventional banking support."

At first estimated to cost around \$8 billion, the latest price tag is said to range between \$30 billion and \$40 billion. According to the same sources, another year's delay — whether on the legislation or the construction schedule — would add another \$4 billion to \$5 billion to completion costs. Canadians responsible for the sections of the Alaska pipeline through the Yukon, northeastern British Columbia, Alberta, and Saskatchewan still say no government support of any kind will be necessary on their side of the international border. But they also are anxious that the American dilemma over the financing of the pipeline be resolved soon.

On Oct. 1 West Coast utilities began receiving Alberta fuel — about 240 million cubic feet a day — through the western leg of the Prebuild pipeline system whose twin facility is now under construction to reach the Midwest late next year. The gas deliveries come from a domestic surplus estimated at up to 14 trillion cubic feet.

That surplus weighs heavily on producers' minds. Many of them are in financial straits because of continuing soft markets and Ottawa's reluctance to authorize more exports. Canadian gas executives at the same time are alarmed by what they consider increasingly hostile political attitudes in Washington compounded by the apparent domestic gas "bubble" preempting export prospects.

Producers in Canada also face stiff new taxes at the wellheads under the Sept. 1 intergovernmental energy agreement. Canadian gas now comes across the border at nearly \$5 per thousand cubic feet and this price, set by Ottawa, is blamed for the dramatic slump in Canadian exports this year. Some contracts are said to be off by as much as 60 percent while, on average, Canadian shippers reduced volumes by about 30 percent. Canada has authorized a total of 1 trillion cubic feet of gas exports to the US annually.

According to US executives, who asked not to be identified, the Reagan administration "is warming" toward the arguments put forward by pipeline interests that the delivery of Alaska gas supplies is a "matter of national security." Therefore if the private sector is either unable or unwilling to do the job, Washington might come to the rescue, they reasoned.

Canadians worked for almost seven years just to get the 1 trillion cubic feet of additional gas into the US distribution network. And even this Prebuild volume will be declining toward 70 percent of the volumes that began flowing at the start-up. At the same time, the Canadian government remains open to political attacks. Should the rest of the Alaska pipeline be ditched, critics may argue the Prebuild merely served as a pretext to syphon off surplus gas that eventually could have found applications at home.

Sponsors of the Prebuild and the Alaska Gas Transportation System, as the project now is known officially, urged their US counterparts here to push for faster congressional deliberations to "save face as well as money," as one Canadian executive put it.

The legislation is supposed to allow Prudhoe Bay producers to hold equity in the pipeline, to ensure a minimum rate of return on the pipeline's operations, and to begin billing customers (wholesalers) of gas prior to the completion of the entire system to ease financing woes.

Senator MURKOWSKI. Thank you, Mr. Rothschild.

In your analysis of the pros and cons of the project, you have highlighted pretty much the position of Energy Action, and I think on a more positive note you indicated that we should search for another alternative. Being reasonable people and committed to the realities that any time we develop any resource there is some give and take involved in that process.

I would like to explore with you what some of these other alternatives might be. I think if we reflect on the selection of the route originally under President Carter, we found there were three routes. One was the El Paso route which was a liquefaction from Point Gravina near Cordova which would take the gas into southern California. The route proposed by Mr. McMillian was one that came in rather late and appeared to be an alternative to some of the concerns raised by the environmental community about the other two routes.

It seemed to be in some sense that this was an alternative to the other two. You have indicated we should search for yet an additional alternative. I would like to have you elaborate for the record.

You indicated perhaps we should convert it to methanol and move it down to a point which you did not identify and yet we have already seen the efforts of Pacific Gas and Electric to take gas from the Kenai and move it down to southern California and the difficulties associated with that.

Mr. ROTHSCHILD. I might clarify first that what I meant to say about alternatives was not necessarily limited to a physical pipeline alternative. An alternative can also include how this project is going to be financed if this project is the one chosen.

If the consumers are going to be asked to put up risk capital, then the consumer ought to get some equity or other financial benefits in the pipeline. That is an alternative to the way this pipeline is being financed.

If the consumers are going to put up dollars, that is capital that is going into the construction of the pipeline. I think the consumer should derive some benefit as would any other investor in the pipeline.

The Atlantic Richfield Co. has a study, I am told, which they have not released that discusses methanol as an alternative. The Rand Corp. has an alternative discussing methanol. It is a possibility.

I think before we jump in to provide these kind of waivers which are unprecedented because of the waivers to the Natural Gas Act, the waivers of evidentiary hearings and due process rights, I think the Senate and the Congress should satisfy themselves that the other alternatives and in this case the methanol alternative and even looking at the El Paso alternative again, is a reasonable request.

If we go ahead with these waivers, I think there will be little we can do in the future.

I also want to note that I find it very interesting that we have a company coming in and asking for these waivers and at the same time saying consumers should not have an input into the decision-making of the FERC. That is like saying the pipeline should not be

coming back for a waiver; we should have closed them out when we passed the law.

I think that is an alternative. I think you do not get rid of the Natural Gas Act, sections 4, 5, 7, and 16.

If this pipeline is going to be built and by these sponsors, the alternative is not to get rid of the consumer input into the decision-making process and let it go forward with that input intact and let the chips fall where they may.

If the financial community wants to back this, if the President wants free enterprise, then it should be going in a free enterprise manner, either one way or another.

I am not saying we should not be going forward on this alternative or that it is a bad alternative, I am saying the way to go about it this way is a bad alternative.

Senator MURKOWSKI. In your opening remarks you indicated you favored the gas from Alaska reaching market but you were opposed to the method which is before this committee. We can assume you are opposed to the northwest proposal and the fact that these waivers are before us today.

In reality we have pursued the idea of alternatives. We find no other company actively pursuing any other method of transporting this gas at this time. I think the record brings that out.

We have asked Arco for their methanol study and we have also asked Exxon and Sohio if they have any proposed studies.¹ In all this period of time since the selection, it is quite evident the El Paso group has seen fit for their own reasons not to pursue their proposal even as a result of the 5 years that we have seen go by since 1977, nor has Canadian Arctic Gas has not officially resurrected itself as an alternative either.

From the observation of the chair, I would have to feel at least that we have searched for alternatives and this seems to be the only game in town.

Since you are in concurrence that we should develop the gas for the benefit of the other 48 States that really the question is on the waivers and whether or not as you have indicated numerous times in your testimony the risk on the consumer in this project.

I would like to discuss just what that risk is from the standpoint of the likelihood that it would be applicable to the consumer. You have indicated if the consumer is charged at some point in time, the implication seems to be the consumer is somehow subsidizing this project or is very likely to subsidize it.

I would like to get your specifics on how you see the likelihood of the consumer having to come up with some type of prebilling liability.

It is my understanding that the way the pipeline is set up in the three segments; we have the conditioning plant, the Alaskan section and the United States section and the Canadian section. The understanding within these various segments is a little different in that the Canadians will recover all costs but the pipeline conditioning plant and the Alaska-U.S. section will cover only debt. It will not cover equity.

It would seem there would be a substantial inducement for those participants that are providing the equity of somewhere in the area

¹ The material referred to appears in the appendix of this document.

of 25 percent of the project costs to want to get the project done on time and have the three segments come together simultaneously so the gas could flow and so they could generate a return, not only on their equity but that would certainly be the main enhancement.

As to how we would see a set of circumstances triggered so that the consumer would get billed might be in the event the Canadian section were done and the Alaska-U.S. section were done but for some reason, the conditioning plant was not done.

If that were to occur, then there would be prebilling on two segments, the Canadian and Alaska segment.

I think we have a tendency to perhaps generalize and mostly on what the risk of the consumer is. I am suggesting we have already built a pipeline across 800 miles of Alaska, hot pipeline through permafrost. We have done it quite successfully and it has been an outstanding success not only technically but environmentally. It is providing about one-sixth of the total crude oil that is produced in the United States today. It has been a major factor in offsetting some of the energy independence efforts that we have become committed to.

My question is specifically as we relate to the actual identity of the risk to the consumer, how can we just generalize by saying the consumers' best interests are not considered here?

We have to recognize when anything of this magnitude is built, the consumer is going to pay for it over sufficient amortization through the use of whatever it carries and in this case it is gas.

As the testimony brought out in the hearings when you begin to identify what the chances are that the consumer will ever be billed for any portion of this, the risk was found to be zero to nonmeasurable in the minds of the people that have the most to lose if it is not done and that is those people involved in the transmission companies and the producers of the gas.

Mr. ROTHSCHILD. Why waive it in the first place?

Senator MURKOWSKI. The waivers are nothing more than terms and conditions imposed by the financial community in general as the bottom line to proceed with financing. They are not a financial commitment. That is all they really are.

The Federal Government has indicated and the President that he expected this to be financed by the private sector. The Federal Government is not contemplating a guarantee on it and there has been no request for a guarantee.

Because of the magnitude which I do not think you recognized in your comments that this is a \$40 billion project, the second largest project that has ever been committed on by the financial community in this country. There has been a \$6 billion project.

It does require a little extraordinary attention. That is certainly what it is getting.

Mr. ROTHSCHILD. If the consumer is not being asked to take any risks then why this particular provision? If you are insisting the risk is zero, why does the financial community need it and why should the consumer in the possibility that he may have to pay something if it is not completed? This is a very risky project. Even the financial community sees it as a very risky project because they are not willing to say once the waivers have been passed that they can financially support the pipeline.

Senator MURKOWSKI. I do not think the record will indicate that it is a risky project. I think without exception the witnesses asked to comment specifically on this area indicated there was very little likelihood that the prebilling would ever be applicable.

I think we have to be realistic in recognizing the procedures involved in any financial arrangement. When you go to borrow money, you just do not borrow an amount that has anything to do with the collateral you put up. You basically guarantee the entire amount.

What we are doing in this case because of the extraordinary amount is going one step further and saying if in the event there is not completion, then the consumer has exposure. When you realistically analyze the equity participation which goes first if there is any significant delay or any delay of any kind once that date certain is established by FERC, the first loser is the equity contributor, the companies involved in putting up 25 percent of the project costs.

I think we would both agree with American technology and ingenuity and the fact that we have already put a hot pipeline across a vast majority of the more difficult area and we have pipelines uniformly across the United States so the technology is not new, there is every reason to believe we can build a safe pipeline within the dictates of the American ingenuity and capability because we did it 7 years ago.

Mr. ROTHSCHILD. That pipeline went from \$900 million to \$9 billion. There were serious cost overruns. There were serious management improprieties. There were a lot of problems with that pipeline.

Senator MURKOWSKI. There were a lot of problems with that pipeline but if you reflect again and I think the danger we have in testimony of this type is the generalization. If you examine why that pipeline escalated, you would find a couple of interesting things.

It was completed when they said it would be completed in spite of the increased costs and in spite of the significant additional problems which we both know were associated with that pipeline.

Those problems for the most part were in meeting the demands of government, both Federal and State, particularly in the environmental area. Those demands were met and they were met satisfactorily at great cost. The lessons learned are applicable in regard to the environmental backlog of information that has been obtained for this project as well.

Technically that pipeline has had very few problems with the exception of a bomb and one problem early in the activity of the initial flow where they had a very significant problem with one of the pipelines, they have had no problems since.

Mr. ROTHSCHILD. Let's agree they have had a good record. Let's agree we have learned a great deal from the construction of the pipeline and let's agree we can construct a pipeline through Alaska for natural gas that is technologically sound and feasible.

Why not let those that want to construct the pipeline take the risk and if they successfully complete it on time technologically complete and environmentally safe, then they will be allowed to

pass the cost onto the consumers as is done with other pipeline projects.

If they are so certain they can come in financially under a certain budget on time, that risk is clearly one that should be taken by the private sector. It is not a Federal pipeline. It is not a consumer-owned pipeline. It is a pipeline that is going to be privately financed. If it is going to be privately financed, it should be. They should not need a waiver that in the event it is not completed then the consumers will start paying for it.

I do not think that is fair.

Senator MURKOWSKI. We have no assurance that the consumer is ever going to pay for it. That only happens if certain things are triggered. I think we have to be specific in recognizing that. All the waiver does is provide a modest security of investment to obtain debt. That debt comes from the world financial market and what the world financial market is simply saying is this is not a small project, this project is going to tap the financial resources of the financial world as we know it today and these are the terms and conditions which with we are willing to pursue this.

The other alternative is to go to the Federal Government and I think you would agree it is the only other logical course of action to take when the financial community gives this kind of message for a Federal guarantee. They are not asking for a Federal guarantee.

I think you have to recognize that the consumer pays for the pipeline through the use of the pipeline ultimately. Your concern is he is going to pay up front and I think you have to measure factually just what is the risk to the consumer.

Mr. ROTHSCHILD. We have already admitted there is a risk to the consumer. If this pipeline is such a financial good thing that the proponents say it is and they are going to get their pipeline paid for which is the practice in constructing a pipeline through the regulatory process, then that is what they should do.

They should not come and say in the event we cannot finish it on time, then consumers should start paying. Consumers should pay when the pipeline is finished and when that gas is coming through and then they will decide whether or not that gas is marketable. That gas may not be marketable. The FERC staff has said that gas may come in at \$20 an Mcf in 1987. That is about \$3 to \$4 an Mcf higher than even the highest Canadian gas coming in that the Department of Energy projects will be coming in that year.

Senator MURKOWSKI. I think if you will review the record without exception those who were asked if the gas would be marketable, they acknowledged that absolutely in their best opinion and those are the people that obviously are committed to market the gas because those are the transmission companies who are selling the gas to the public utilities.

It stands reasonable to me that if those companies would come up with an equity contribution, they are pretty convinced they are going to sell that product.

I think your generalization again is one that needs some examination. In electric utility construction we have construction work in progress, the CWIP, but it has not been applied to this pipeline.

It certainly is utilized in other types of energy transmission construction work in progress programs.

I think we have to relate to the significant size of the project. Just to say we are going to drop that requirement, it would mean the financial community is going to drop the project and as a consequence we will not have a project. Then the alternative, as you suggested, is to go back and examine what you have identified as gas liquids methanol which is little more than a pie in the sky, frankly. It does not even reflect the three original proposals offered as alternatives.

I think it is a key point that CWIP is something that is applicable in the industry today. It just has not shifted over to the gas transmission business.

What we are doing and I think you have to recognize this is dealing with so much money that we have to respond to the dictates of the terms of the financial community and that is what Congress is doing. These waivers were presented as so to speak the bottom line, take it or leave it. We have 60 days to respond to this and we cannot change it.

You are saying to kill it. I do not feel that is a responsible approach when we are dependent on the Middle East and have been for a number of years and are gradually through a sound effort to conserve getting less dependent but here is a project that offers a significant contribution to our energy independence.

Your testimony does not reflect a constructive viable and achievable alternative and frankly I am somewhat disappointed.

Mr. ROTHSCHILD. Senator, I do not accept your stating my testimony is not responsible nor constructive. I think Mr. McMillian and his company and the joint ventures in this project are the ones that are not being responsible and fully accountable.

They came before President Carter and said we can build this pipeline without coming to the consumer and without doing anything else, we can privately finance it. They never said anything about waivers. Once they got their foot in the door and they recognized they could not finance it, which was clear to everybody else at the time, they are coming in and saying, wait a minute, let's change the rules of the game, we need the money, we cannot do it without these waivers, we want to get rid of the Natural Gas Act that protects the consumers, we cannot do it without getting rid of that and we want to get rid of an evidentiary hearing and we want to bring the producers in, we cannot do it without them, where they said before they could do it without them.

If it is anybody who is being irresponsible and betraying the trust and commitment, it is the pipeline sponsors in this case.

I think that raising some relevant questions about consumer protection is not an irresponsible act. I think it is one of the heights of responsibility.

Senator MURKOWSKI. I think you will recall my entire statement so I am not going to repeat it.

What you have to reflect on here is whether or not this project is in the best interest of those 48 to 50 States that are going to receive this gas.

You suggest that we should kill the waivers which would kill the project which ultimately would mean that 48 States would not

receive this gas. And would have come up with another alternative which has yet been identified.

In the existing dependence on the Middle East for substantial portions of our energy needs, we have to reflect on whether or not the best interest of the public and the consumer is that this project should be authorized and go forward.

Obviously the action the Congress will take if they do approve the project has no guarantee that the financial community at this time is going to be able to raise the sufficient capital to bring this project into reality. I do not think that is the area of concern of Congress. Our concern is simply to pass or reject the waivers as proposed by the President.

I appreciate, Mr. Rothschild, your submission of your statement for the record and your response to my inquiries. I hope the give and take we have had will be enlightening to those who review the record in its entirety.

With that, I would advise you that the record will remain open until a week from last Friday. The Committee on Energy and Natural Resources is adjourned. I thank you.

[Whereupon, at 11:55 a.m. the hearing adjourned.]

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data. The second part of the document outlines the procedures for handling discrepancies. It states that any differences between the recorded amounts and the actual amounts should be investigated immediately. The third part of the document provides a detailed breakdown of the financial data for the period. It includes a table showing the total revenue, expenses, and net profit. The final part of the document concludes with a summary of the findings and a recommendation for future actions.

The following table provides a detailed breakdown of the financial data for the period. It includes a table showing the total revenue, expenses, and net profit.

The data shows a significant increase in revenue compared to the previous period, which is primarily due to the launch of new products. However, there has also been a corresponding increase in expenses, particularly in the area of marketing and distribution. The net profit remains positive, indicating that the company is still profitable despite the increased costs.

Overall, the financial performance for the period is strong. The company has successfully managed to increase its revenue while maintaining a healthy profit margin. This is a testament to the hard work and dedication of the entire team.

In conclusion, the financial data for the period is very positive. The company has achieved its goals and is well-positioned for continued growth in the future. We look forward to the next period and the continued success of the company.

APPENDIX

RESPONSES TO ADDITIONAL COMMITTEE QUESTIONS AND THE
PREPARED STATEMENT OF JOHN G. McMILLIAN



Department of Energy
Washington, D.C. 20585

October 30, 1981

Senator James A. McClure
Chairman, Senate Energy and Natural
Resources Committee
Room 3104, Dirksen Senate Office Building
Washington, D.C. 20510

Dear Chairman McClure:

Enclosed are the answers to the questions submitted to
Secretary James B. Edwards subsequent to the October 22,
1981, hearing before the Senate Energy and Natural Resources
Committee. The subject of the hearing was the Alaska Natural
Gas Transportation Act.

If you have any questions, please call Diana Diamond or Tom
Pretorius of my staff on 252-4277. They will be happy to
assist you.

Sincerely,

for Thomas H. Pretorius

Robert G. Rabben
Assistant General Counsel
for Legislation

Enclosures

Q.1 - Would you please provide the Committee with any studies done by the Department of Energy, including the Energy Information Administration, pertaining to the price that will be paid for the Alaska natural gas once the ANGTS is completed.

A. - The Department has not done any studies on the subject. Studies have, however, been done by the Office of the Federal Inspector using the FERC cost of service model for ANGTS. A summary study has been provided to the staff of your Committee by the Federal Inspector entitled Cost of Service for the Alaska Natural Gas Transportation System and dated October 19, 1981, a copy of which is attached.

COST OF SERVICE

FOR THE

ALASKA NATURAL GAS TRANSPORTATION SYSTEM

October 19, 1981

(This package is an updated version of a study dated October 18, 1981
and contains new capital cost estimates provided by Northwest Alaskan)

Alaska Natural Gas Transportation System

Cost of Service Analysis

BRIEFING BOOK

Table of Contents

	Page
I. Management Summary	1
II. Calibration of Model	6
III. Narrative Description of Cost of Service Model	8
IV. Input Assumptions	14
V. Capital Cost Estimates	16
VI. Delivered Unit Costs	32
VII. Profitability Analysis	47
VIII. Consumer Indifference	53
IX. Billing Commencement	62
X. Interest Rate and Inflation Rate Sensitivity	64
XI. Comparison of Effect of New Tax Law	66

COST OF SERVICE ANALYSIS

ALASKA NATURAL GAS TRANSPORTATION SYSTEM

I. Management Summary

This briefing book contains several types of analyses related to the cost of service, or cost to consumers, of the Alaska Natural Gas Transportation System (ANGTS) as calculated in a computerized model called MARKV developed at the Federal Energy Regulatory Commission (FERC) in 1978. They include capital costs, unit delivered costs to consumers, rates of return for project owners, consumer indifference between gas and oil, billing commencement, and sensitivity to interest rates. Also included are a narrative of how cost of service is determined and the meaning and impact of various input assumptions to the models used to perform the calculations.

Specifically, two basic capital cost scenarios are used in the analysis. One is referred to as the "base" case which is the estimate filed by the project sponsor, Northwest Alaskan Pipeline Company (NWA) as their base estimate in 1980. The second is referred to as the "overrun" case, which is the base estimate with an allowance for additional costs expected by the project sponsor (commonly termed "Center Point").

Several key input assumptions and results from the analyses performed are summarized in the following tables. The first table shows the analysis based on inputs assumed by NWA which were used for calibrating the model used in this analysis, with key comparisons with the NWA results. The second table shows similar results, as well as other additional results, for an alternative set of input assumptions which are the basis for the majority of the analyses included in this briefing book.

Some key items shown include:

- 1) 1980 dollar direct capital cost estimates
- 2) Assumed interest rate for debt
- 3) Assumed construction escalation factor
- 4) Assumed general inflation factor
- 5) Total project rate base, with dollars escalated to year of construction and including finance charges called AFUDC
- 6) Total unit delivered cost of gas, including wellhead price, conditioning plant and pipeline system unit cost of service, in nominal and 1980 dollars
- 7) Twenty year average unit delivered cost of gas in 1980 dollars
- 8) Profitability analysis for sponsors and gas producers
- 9) Real oil escalation rates equivalent to gas, projected over twenty years
- 10) Monthly average increase to residential customers from pre-billing charges from the conditioning plant, Alaska pipeline, or Canadian segment

Following these summary tables, two graphs are shown. One is the unit cost of gas delivered to consumers over time compared to increasing oil prices in 1980 dollars. The second is a graph of consumer indifference between oil and gas. Both graphs assume project financing as proposed by the sponsors.

Detail descriptions, inputs, results, and graphs of each of the areas listed above are also included in the various sections of this briefing book.

TABLE I

Calibration with Northwest Alaskan

1980 \$ Direct Capital Costs (US\$ billion)		
Alaska Plant	\$ 3.3	
Alaska Pipeline	10.6	
Canada	5.8	
US Eastern Leg	1.9	
US Western Leg	0.9	
Total	\$22.5	
Interest Rate on Debt	14% U.S., 15% Canada	
Construction Escalation Rate	11% U.S., 12% Canada	
General Inflation Rate	11%	
Results:	Northwest Alaskan	MARKV model
Total Rate Base (US\$ million)		
Alaska Plant	\$ 7373	\$ 7436
Alaska Pipeline	25277	24886
Canada	15975	16187
US Eastern Leg	3514	3599
US Western Leg	1805	1821
Total	\$ 53934 (0.01%)	\$ 53929
Unit Delivered Cost of Gas Twenty year average 1980 \$	\$ 4.390 (0.04%)	\$ 4.388

TABLE II
Basic Cases For Analysis

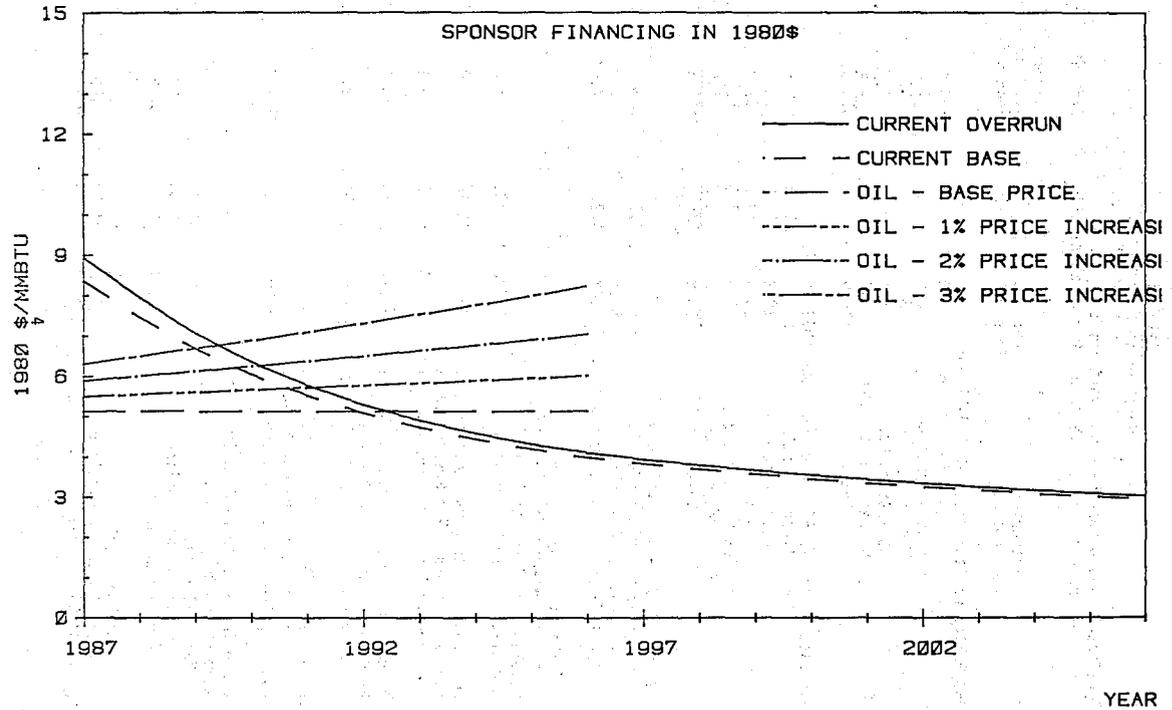
Significant assumptions held constant include:

Interest Rate on Debt - 11%, Construction Escalation - 8%, General Inflation - 8%

Scenario: Financing:	Current Filing Sponsor's 75/25		Current Filing with Center Point Sponsor's 75/25	
1980 Dollar Capital Costs (US\$ Billion)				
Alaska Plant	\$ 3.3		\$ 3.6	
Alaska Pipeline	8.5		10.8	
Canada	5.2		5.8	
US Eastern Leg	1.7		1.9	
US Western Leg	0.9		0.9	
Total	\$19.6		\$23.0	
Rate Base as of 1/1/87 including AFUDC (US\$ Billion)				
Alaska Plant	\$ 6.3	\$ 6.3	\$ 6.8	\$ 6.7
Alaska Pipeline	18.2	17.0	21.7	20.9
Canada	10.0	10.0	11.2	11.2
US Eastern Leg	2.8	2.8	3.1	3.1
US Western Leg	1.5	1.5	1.5	1.5
Total	\$38.8	\$38.0	\$44.3	\$43.4
Delivered Costs - NGPA wellhead				
First year nominal \$/mmbtu	\$14.87	\$13.70	\$15.90	\$15.04
First year 1980 \$/mmbtu	8.35	7.69	8.93	8.44
Twenty year average 1980 \$/mmbtu	4.49	4.23	4.67	4.48
Profitability Analysis				
Equity Investment for Plant and Pipeline in Alaska at Initial Operations - (1980 \$ million)	\$7020	\$3483	\$7540	\$5883
AK Sponsors - Internal Rate of Return	25.1%	36.9%	25.0%	35.9%
Alaska Sponsors - Net Present Value of Profit Above 19% (nom \$ million)	\$2485	\$1710	\$2331	\$1801
Producers - Internal Rate of Return	48.2%	75.1%	48.0%	72.5%
Producers - Net Present Value of Profit Above 19% (nom \$ million)	\$11283	\$10951	\$11217	\$10989
Consumer Indifference - real oil price escalation rate equivalent to ANGTS gas at 70% of world oil price				
	1.99%	1.58%	2.27%	1.98%
Average increase to residential customer's monthly bill:				
Min Bill Plant	\$0.29	\$0.29	\$0.31	\$0.31
Min Bill Alaska Pipeline	0.63	0.68	0.83	0.85
Min Bill Canada	0.41	0.41	0.45	0.45
Total COS Plant	\$0.43	\$0.42	\$0.46	0.45
Total COS Alaska Pipeline	1.40	1.14	1.55	1.37
Total COS Canada	0.68	0.68	0.75	0.75

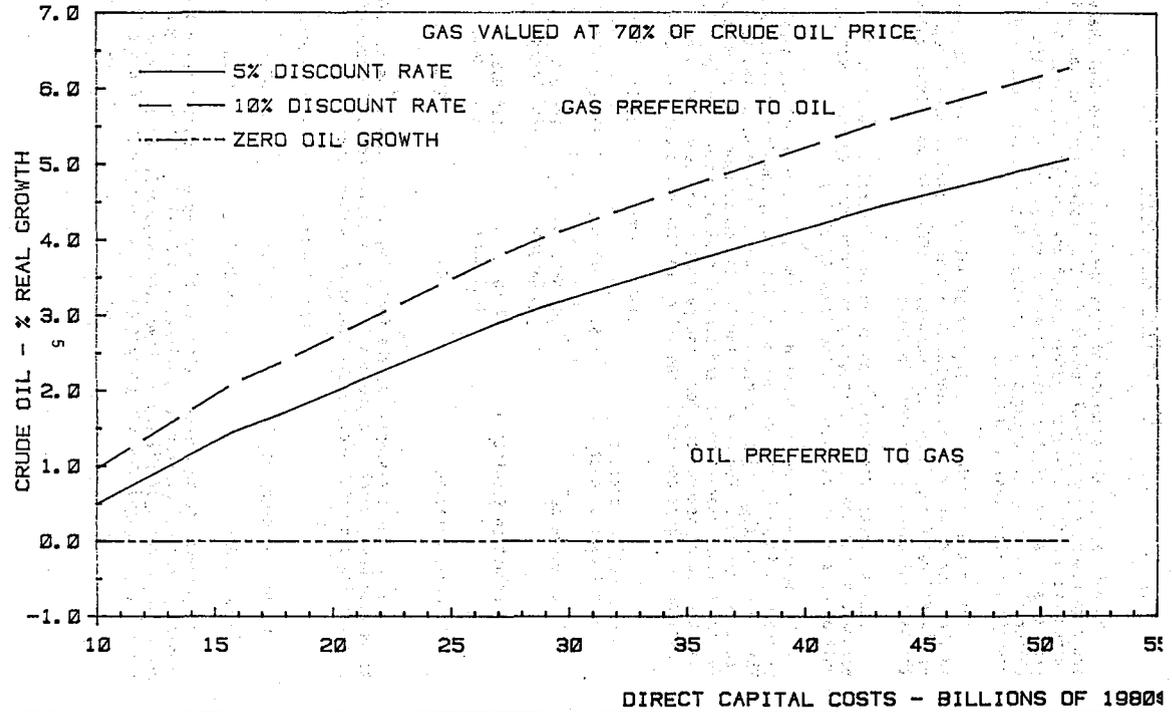
DELIVERED UNIT COST

COMPARISON OF OIL & GAS



CONSUMER INDIFFERENCE

SPONSOR FINANCING



II. Calibration of Model

To help assure the accuracy of this analysis, an independent analysis and comparison of the cost of service for the project has been made using a computerized model developed independent of the project sponsors. The preliminary results of this analysis are presented below. A further calibration with a refinement of input assumptions was also done, and the results are also summarized below.

The cost of service, or unit cost of natural gas delivered to customers in the lower 48 states from Alaska, is primarily based on tariff regulations of the Federal Energy Regulatory Commission (FERC) in the United States, and the National Energy Board (NEB) in Canada.

Capital costs, assumptions about various financial and economic parameters, and the volume throughput determine what consumers must pay for a unit of natural gas delivered in the lower 48 states.

The model which was calibrated with the sponsor's model was developed at the FERC in 1978, has been enhanced since then, and is now called MARKV. This model and the project sponsors' model are compared using two sets of input assumptions. For Case I of the initial comparison, low assumptions for inflation, interest rates, and capital cost are used. For Case II, slightly higher assumptions for these parameters are used. All other parameters are kept constant. The values for these two cases are as follows:

	Case I - Low	Case II - High
1980 dollar constant direct capital costs	\$19.1 billion	\$22.5 billion
Interest Rates	8% U.S. 9% Canada	14% U.S. 15% Canada
Construction Escalation	7% U.S. 8% Canada	11% U.S. 12% Canada
General Inflation	5%	11%

Based on these assumptions, the following total project costs, referred to as rate base, which is expressed in dollars escalated to the year of construction and which include the financing charges, are:

	Case I - Low	Case II - High
Project Sponsors Model	\$ 35.4	\$ 50.5
MARKV Model	\$ 35.3	\$ 51.0

The amounts to be pre-committed for financing are substantially less than these figures. First, approximately \$3.0 billion dollars for the pre-build segments of the project have already been financed. Second, these figures include the equity portion of the construction finance charges,

which are not dollars which must be financed. (These finance charges, called an Allowance for Funds Used During Construction (AFUDC), are included in the rate base because they determine the total cost of service.) And third, these figures also include a one-time accounting adjustment to the equity invested in the project as specified by the Incentive Rate of Return mechanism.

The resultant unit costs for delivered gas to U.S. consumers for the two cases examined in the initial calibration are summarized below:

	<u>First year delivered cost</u> (in escalated \$/mmbtu)			
	Case I - Low		Case II - High	
	Sponsors	MARKV	Sponsors	MARKV
Wellhead	\$ 2.83	\$ 2.83	\$ 4.30	\$ 4.30
Conditioning Plant	1.08	1.12	1.65	1.71
Transportation	8.00	8.34	12.56	13.30
TOTAL	\$11.91	\$12.29	\$18.51	\$19.31
		(3.2% difference)		(4.3% difference)
Twenty year average ^{1/} (1980 \$/mmbtu)	\$ 5.36	\$ 5.07	\$ 4.47	\$ 4.37
		(5.7% difference)		(2.2% difference)

An additional calibration effort was also performed to try and match input assumptions more closely. Significant changes occurred in the timing of debt and equity usage during construction and in the treatment of commitment fees and underwriting fees for debt. This calibration was only performed for the high case of assumptions described above.

The results of this second calibration effort are shown below:

	Northwest Alaskan		FERC model
Total Rate Base (US\$ million)			
Alaska Plant	\$ 7373		\$ 7436
Alaska Pipeline	25277		24886
Canada	15975		16187
US Eastern Leg	3514		3599
US Western Leg	1805		1821
Total	\$53934	(0.01%)	\$53929
Unit Delivered Cost of Gas			
Twenty year average 1980 dollars	\$ 4.390	(0.04%)	\$4.388

^{1/}The twenty year constant dollar average for the low assumptions case is actually higher than the high assumption case because a lower inflation rate is used to convert escalated dollars to constant dollars. The sponsors have shown an upper range figure of \$5.67/mmbtu which is based on lower inflation rates than the cases shown here.

III. Narrative Description of Cost of Service Model

1. Introduction

The term "cost of service" applies to the type of transportation tariff that will be utilized on the Alaska Natural Gas Transportation System. This type of tariff is regulated by the Federal government, and the rates charged to the transporters of gas through the pipeline are calculated based on the investment cost of the project and the rate of return granted to the pipeline owners by the Federal Energy Regulatory Commission (FERC) in the United States and the National Energy Board (NEB) in Canada.

A computerized model of this tariff was developed in 1978 to approximate and project various financial statistics associated with the project through its operational life. The key number is called "total cost of service" or "revenue requirement" for each project segment. All of the revenue requirements for each project segment are then added together, along with a cost allowance for fuel consumed in the system's compressor stations, and then divided by the amount of natural gas delivered to the lower 48 states to determine the unit cost of transportation through the system.

This unit cost, usually expressed as dollars per million btu (\$/mmbtu), is added to the wellhead price as set by the Natural Gas Policy Act of 1978 to determine the total cost of gas to consumers. This total consumer unit cost can then be compared to equivalent btu costs for alternative energy sources, such as Canadian gas or world oil, on a nominal or constant dollar basis.

This narrative of the MARKV cost of service model briefly describes the cost estimate inputs, the financial input assumptions, the components of cost of service, calculations of unit delivered costs, the comparison of Alaskan gas to alternative energy sources, and the results from the project sponsor's model and MARKV.

2. Cost Estimates

Generally, there are three types of cost estimates for regulated pipeline projects. The first is the base, constant dollar direct capital costs for the installation of the pipeline and related facilities. These estimates typically include direct labor costs, material costs, indirect costs, and a contingency allowance.

The second type of cost estimate is referred to as escalated dollars. This estimate is developed by applying an escalation, or inflation, factor to the constant dollar estimate described above. The factors are compounded from the base year and applied to the direct costs expected to be spent in that year.

The third type of estimate is referred to as the "rate base" or total project cost. This cost estimate uses the escalated costs developed by applying the escalation factors to the base estimate, and calculates the "allowance for funds used during construction" (AFUDC) determined by the financing plan used in the computer model of the tariff. This AFUDC amount is based on the amount of debt and equity used to finance the project, the interest rate on the debt, and the rate of return on equity allowed during construction. Once gas flows, the Incentive Rate of Return mechanism sets the rate of return for the remainder of the project life.

The following table compares the cost estimates used by the project sponsors with the resultant total costs from the MARKV cost of service model. The two rate base estimates are the basis for the unit cost summary shown in Section 6 of this paper. The two cases show the different results which are based on low and high assumptions for abnormal events (with or without the IROR center point), inflation (7-11%), and interest rates for debt (8-14%).

ANGTS Cost Estimate Summary
(In billions of U.S. dollars)

Project Segment	Project Sponsors				MARKV	
	1980 US Dollars		Total Rate Base		Total Rate Base	
	Low	High	Low	High	Low	High
Conditioning Plant	\$ 3.0	3.3	\$ 5.4	7.3	\$ 5.4	7.4
Alaska	8.3	10.6	16.7	25.0	16.5	25.0
Canada	5.2	5.8	9.2	13.0	9.3	13.2
Lower 48 Legs	2.6	2.8	4.1	5.2	4.1	5.4
Subtotal	\$19.1	22.5	\$35.4	50.5	\$35.3	51.0
Less Prebuild	(1.8)	(1.9)	(2.5)	(2.9)	(2.5)	(3.0)
TOTAL	\$17.3	20.6	\$32.9	47.6	\$32.8	48.0

The slight differences in calculating total rate base between the sponsor's and MARKV models in this set of calibration runs can be attributed to slightly different approaches to debt and equity investment during construction.

3. Financial Input Assumptions

Each segment of the project is considered a separate entity within the model, and each sponsor consortium has its own set of financial input assumptions. These assumptions specify various parameters of the transportation tariff which will be used to determine the rates which consumers must pay. Also, various other inputs are required in the model. Some of these are the timing of expenditures, the duration of construction, the operation and maintenance cost, tax rates, and escalation rates during construction. These are listed as the first output report from the cost of service model for each project segment (See Section XII). A description of each of these inputs follows:

- 1) YRS OF CONSTRUCTION - the number of years of construction counting from year one of the model.
- 2) CONSTRUCT COST ESCALATION - the escalation factor to be used during construction; this parameter can vary year by year during construction.
- 3) DEBT CAPITAL RATIO - the percentage ratio of new money financing which is to be financed from debt; this ratio is specified year by year throughout construction.
- 4) INTEREST RATE ON DEBT - the interest rate to be paid on debt invested.
- 5) RETURN ON EQUITY - CONST - the rate of return on equity during the construction period.
- 6) RETURN ON EQUITY - OPERT - the rate of return on equity during the operation phase of the project.
- 7) BOOK LIFE OF PLANT - the depreciable life of the project to be used for determining depreciation; specified as number of years.
- 8) TAX LIFE OF PLANT - the tax life of the project as set under guidelines of the Internal Revenue Service; specified as number of years; or the tax depreciation schedule year by year.
- 9) STATE INC TAX RATE - the state income tax rate to be combined with the federal rate of 46%.
- 10) LEVELIZATION FACTOR - an adjustment factor greater than zero which changes the straight-line depreciation for rate purposes to an inverse accelerated depreciation schedule.
- 11) CAPITALIZATION RATIO - optional method of computing ad valorem, or property taxes, based partially on the capitalized value of income, and partially on the net value of the plant in service.
- 12) SH TERM DEBT RATIO - the percentage ratio of short term debt to the total debt invested.

- 13) SH TERM DEBT RETIRE YRS - the number of years during which the short term debt is repaid.
- 14) SH TERM DEBT START - the number of years after construction is completed in which short term debt repayments begin.
- 15) LN TERM DEBT RETIRE YRS - the number of years during which the long term debt is repaid.
- 16) LN TERM DEBT START - the number of years after construction is completed in which long term debt repayments begin.
- 17) AD VALOREM TAX RATE - the percentage rate of gross plant in service to be paid as ad valorem or property taxes.
- 18) ESC FOR AD VALOREM TAXES - escalation rate for ad valorem taxes.
- 19) OPER & MAIN COST - the constant dollar input value for operation and maintenance labor costs excluding fuel in the compressor stations.
- 20) OPER & MAIN ESCALATION - the percentage escalation factor to be applied on a compounded basis to the constant dollar O&M input.
- 21) COST OVERRUN FACTOR - a percentage factor which is applied to direct constant dollar construction costs for a given segment.

4. Components of Cost of Service

The basic cost of service model develops four financial reports based on the input assumptions provided. They are: 1) Pro Forma Balance Sheet, 2) Pro Forma Income Statement, 3) Pro Forma Cash Flow Statement, and 4) Pro Forma Tax Reconciliation. See Section XII for a sample of these reports.

The balance sheet shows the capital costs and associated results during construction when capital is invested, and during operations as the plant in service is depreciated.

The income statement shows all the components that make up the revenue requirements during operations for each year. Operation and maintenance expense is based on the constant dollar input value escalated each year. The annual depreciation expense is the initial rate base divided by the number of years for book depreciation. Other taxes are calculated by taking the tax rate times gross plant in service, unless an optional capitalization method is employed. Current and deferred income taxes are the total taxes based on the equity income for that year. Equity income is based on net plant, and provides for repayment of debt, interest due on outstanding debt, and a return on and of equity.

In summary:

Cost of service = Operation and Maintenance Expense
 + Depreciation Expense
 + Other taxes (ad valorem)
 + Deferred Income Taxes
 + Current Income Taxes
 + Equity Income

The cash flow statement shows the balances of debt and equity as they build up during construction, and as they are paid back during operations.

The tax reconciliation statement shows income taxes as calculated for the IRS, which should match the current income taxes shown on the income statement.

All values in the output reports are in nominal or escalated dollars except the constant dollar direct construction costs, line 9 on the balance sheet. Because depreciation decreases the total assets, or net plant, each year, the total revenue requirements decrease each year. This phenomenon is referred to as a "declining rate base" and is standard in project oriented cost of service tariffs.

5. Unit Cost Determination

The total revenue requirements for all segments of the ANGTS project are added together to determine the total project cost of service. Also, natural gas consumed in the compressor stations is considered as a separate fuel expense and is costed at the wellhead price according to the Natural Gas Policy Act of 1978 (NGPA). The total cost of service plus fuel costs is the total cost of transportation on an annual basis.

This total cost is then divided by the amount of natural gas delivered in the lower 48 states to provide the unit cost of transportation. The assumed or computed wellhead price according to NGPA is added to the unit cost of transportation to get the total unit cost of gas delivered to consumers. This unit cost is in nominal or escalated dollars, and is deflated to constant dollars by compounded escalation factors to calculate the twenty year average in constant dollars.

6. Unit Cost Summary

Based on the high and low assumptions used in the first calibration effort, the following table compares the unit costs from the MARKV model with the unit costs produced by the project sponsors' model:

	First year delivered cost (in escalated \$/mmbtu)		First year delivered cost (in escalated \$/mmbtu)	
	Case I - Low Sponsors	MARKV	Case II - High Sponsors	MARKV
Wellhead	\$ 2.83	\$ 2.83	\$ 4.30	\$ 4.30
Conditioning Plant	1.08	1.12	1.65	1.71
Transportation	8.00	8.34	12.56	13.30
TOTAL	\$11.91	\$12.29	\$18.51	\$19.31
	(3.2% difference)		(4.3% difference)	
Twenty year average^{1/} (1980 \$/mmbtu)	\$ 5.36	\$5.07	\$ 4.47	\$ 4.37
	(5.7% difference)		(2.2% difference)	

^{1/}The twenty year constant dollar average for the low assumptions case is actually higher than the high assumption case because a lower inflation rate is used to convert escalated dollars to constant dollars. The project sponsors have shown an upper range figure of \$5.67/mmbtu which is based on lower inflation rates than the cases shown here.

IV. Input Assumptions

Several input assumptions were held constant through all the analyses performed. Most of these assumptions came from Northwest Alaskan Pipeline Company through the calibration efforts shown in Section II. Other assumptions utilized were provided by other individuals making the request for the various analysis presented in this briefing book.

The key assumptions for each segment of the project are shown in the following table:

Input Assumption	Plant	Alaska	Eastern Leg	Western Leg	Canada
First year of operations	1987	1987	1987	1987	1987
Construction escalator	8%	8%	8%	8%	9%
General Inflation rate	8%	8%	8%	8%	9%
Interest Rate on Debt	11%	11%	11%	11%	12%
AFUDC Return on Equity	14%	14%	13%	13.5%	17.7%
Book Life of Project	25yrs	25yrs	25yrs	25yrs	25yrs
State/Prov Inc Tax Rate	9.5%	9.5%	5.2%	9.5%	13.3%
Federal Income Tax Rate	46%	46%	46%	46%	30%
Debt Life	20yrs	20yrs	20yrs	20yrs	20yrs
Ad Valorem Tax Rate	2%	2%	2%	2%	1%
Total COS Allocation	100%	100%	63.7%	70.6%	94.3%

Other overall input assumptions include:

- 75/25 debt-equity ratio is always the target, but achieved in two ways; the first is according to the yearly ratio proposed by project sponsors, and the second assumes a constant 75/25 ratio in each year for incremental direct costs.
- The NCPA wellhead price, including 10% severance tax, on 1/1/80 is \$1.965-\$/mmbtu.
- The volume delivered to the lower 48 states is 787 trillion btu's per year.
- The fuel usage in the conditioning plant is 22.1 trillion btu's per year, and for the entire pipeline system is 35.5 trillion btu's, and is priced at the wellhead priced assumed for that case.

- The exchange rate for Canadian to US dollars varies each year according to the difference in assumed inflation rates.
- All 1980 dollars are expressed as of January 1, 1980.
- The Incentive Rate of Return mechanism applies to the Alaska Pipeline, the Canadian, and the US Eastern Leg segments, and the parameters are according to FERC Order 31.
- The ten-year tax depreciation schedule from the Economic Recovery Tax Act of 1981 is used for all analyses.
- Normalized tax treatment is used for all US segments.
- Operation and maintenance costs are expressed in 1980 dollars, and escalated according to the general inflation rate.
- The general inflation rate is used for all determinations of 1980 dollars.
- Direct Capital Costs are based on the filing of project sponsors in 1980, as adjusted and refined in subsequent filings or information exchanges during the calibration of MARKV with the project sponsor's model.

V. Capital Cost Estimates

This section details the various capital cost estimates used in the various analyses contained in the remainder of this briefing book.

Two basic cost estimate scenarios were used to examine the impact of cost increases on various project parameters. These scenarios are:

- 1) Currently filed estimates of July 1, 1980 (Current Filed)
- 2) Currently filed estimates of July 1, 1980 including the sponsors' request for IROR Center Point (Current Filed with CP)

Two additional scenarios were analyzed which reflect the recommended adjustment to the Alaska pipeline direct capital costs and center point allowance contained in the draft Adger/Berman report for the FERC, and which reflect an additional 10% overrun for the entire project over and above the requested center point.

Two additional scenarios are also presented for completeness, but are not based on the same scope of project as is currently being considered. These relate to the ANGTS project as envisioned in 1977 in the President's Decision. At that time, the conditioning plant and pre-build segments of the current project were not included in the analysis, and are not included in the analysis of those scenarios shown herein. The two scenarios are:

- 1) The base filed estimate from March 1977 in 1980 dollars (Decision Filing)
- 2) The base filed estimate from March 1977 including the White House staff' expected overrun, equivalent to the requested center point of project sponsors (Decision with CP)

The sponsors' published estimate of \$27 billion for the Alaska pipeline and conditioning plant in as spent dollars is comparable to the "Current Filed with CP" scenario evaluated in this study. The sponsors' estimate does not include the finance charges for equity investment. Also, their estimate is based on an assumption of 14% inflation per year during construction, whereas the analysis in this study assumes 8%.

Two financing assumptions were also analyzed. In one case, equity money for the Alaska pipeline and conditioning plant is spent first, and then debt is spent, and the debt capital ratio for the lower 48 segments is 70/30 instead of 75/25. This case is referred to as the sponsor's financing assumptions. The other case assumes an equal and constant expenditure of debt and equity funds in the ratio of 75/25 through all construction years.

In addition, eight cost estimate sensitivity studies were run for both financing plans. These sensitivity scenarios depict an actual cost performance of from a 50% underrun of filed costs to a 160% overrun of filed costs.

The following tables include the 1980 dollar base estimates, segment by segment, for the four cost estimate scenarios; those estimates in escalated dollars assuming an 8% inflation rate in the U.S. and 9% in Canada; and the total rate base resulting from adding the finance charges (AFUDC) assuming an 11% interest rate in the U.S. and 12% in Canada.

After the tables, several graphs present the capital cost estimates and total costs as they develop during the construction period.

These graphs include:

- Total Direct Capital Costs, in 1980 dollars for

- V-1 Total ANGTS
- V-2 Conditioning Plant
- V-3 Alaska Pipeline
- V-4 Canada
- V-5 US Eastern Leg
- V-6 US Western Leg

- Total Capital Costs showing 1980 dollars, escalated to year of construction and including AFUDC, for the entire project assuming:

- V-7 Sponsor financing including center point
- V-8 Sponsor financing using filed costs
- V-9 75/25 financing including center point
- V-10 75/25 financing using filed costs

Capital Costs - Escalated and including AFUDC

Segment	Scenario	Escalated Costs	AFUDC	Total Capital Costs
V-1	V-7	1000	100	1100
V-2	V-7	2000	200	2200
V-3	V-7	3000	300	3300
V-4	V-7	4000	400	4400
V-5	V-7	5000	500	5500
V-6	V-7	6000	600	6600
V-7	V-7	7000	700	7700
V-8	V-8	8000	800	8800
V-9	V-9	9000	900	9900
V-10	V-10	10000	1000	11000

Sponsor FinancingANGTS Cost Estimate Summary
(In millions of U.S. dollars)

	Current Filing with Center Pt. plus 10%	Adjust. Adger/ Berman	Current Filing	President's Decision with Center Pt.	March 1977
<u>1980 Constant Dollars</u>					
Alaska Plant	3944	3585	3331	--	--
Alaska Pipeline	11912	10829	8525	3229	2786
Canada	6365	5786	5213	4133	2635
US Eastern Leg	2098	1907	1717	1313	1250
US Western Leg	990	900	900	704	636
Total	25309	23007	21572	9379	7307

As Spent Dollars (Escalated)

Alaska Plant	5573	5067	4689	--	--
Alaska Pipeline	17474	15885	12399	4817	4156
Canada	9768	8880	7956	6429	4100
US Eastern Leg	2870	2609	2344	2089	1988
US Western Leg	1448	1316	1316	1238	994
Total	37133	33757	28704	14573	11238

Rate Base including Finance Charges

Alaska Plant	7451	6773	6306	--	--
Alaska Pipeline	23835	21668	18156	6289	5614
Canada	12295	11177	10024	8352	5327
US Eastern Leg	3462	3147	2872	2381	2283
US Western Leg	1697	1543	1543	1425	1146
Total	48740	44308	41556	18447	14370

ANGTS Cost Estimate Summary
(in millions of U.S. dollars)

	Current Filing w Center Pt. plus 10%	with Center Pt.	Adjust. Adger/ Berman	Current Filing	President's Decision with Center Pt.	March 1977
<u>1980 Constant Dollars</u>						
Alaska Plant	3944	3585	3585	3331	--	--
Alaska Pipeline	11912	10829	9401	8525	3229	2786
Canada	6365	5786	5786	5213	4133	2635
US Eastern Leg	2098	1907	1900	1717	1313	1250
US Western Leg	990	900	900	900	704	636
Total	25309	23007	21572	19143	9379	7307
<u>As Spent Dollars (Escalated)</u>						
Alaska Plant	5573	5067	5067	4689	--	--
Alaska Pipeline	17474	15885	13758	12399	4817	4156
Canada	9768	8880	8880	7956	6429	4100
US Eastern Leg	2870	2609	2609	2344	2089	1988
US Western Leg	1448	1316	1316	1316	1238	994
Total	37133	33757	31639	28704	14573	11238
<u>Rate Base including Finance Charges</u>						
Alaska Plant	7423	6748	6748	6280	--	--
Alaska Pipeline	22958	20871	18135	16959	6182	5491
Canada	12269	11154	11154	10024	8352	5327
US Eastern Leg	3399	3090	3090	2806	2370	2270
US Western Leg	1692	1538	1538	1538	1423	1144
Total	47741	43401	40665	37607	18327	14232

Sponsor FinancingANGTS Sensitivity Cost Estimate Summary
(in millions of U.S. dollars)

Percent Overrun or Underrun of Current Filing	-20%	-10%	40%	50%	-50%	80%	120%	160%
	<u>1980 Constant Dollars</u>							
Alaska Plant	2665	2998	4663	4997	1666	5996	7328	8661
Alaska Pipeline	6820	7673	11935	12788	4263	15345	18755	22165
Canada	4170	4692	7298	7820	2607	9384	11469	13554
US Eastern Leg	1374	1545	2060	2232	859	3091	3777	4464
US Western Leg	720	810	990	1080	451	1620	1980	2340
Total	15749	17718	26946	28917	9846	35436	43309	51184

	<u>As Spent Dollars (Escalated)</u>							
Alaska Plant	3751	4220	6565	7033	2344	8440	10316	12191
Alaska Pipeline	9970	11159	17359	18599	6200	22319	27279	32238
Canada	6365	7161	11139	11934	3979	14321	17503	20686
US Eastern Leg	1875	2110	2813	3048	1173	4220	5158	6096
US Western Leg	1052	1184	1447	1578	658	2368	2894	3421
Total	23013	25834	39323	42192	14354	51668	63150	74632

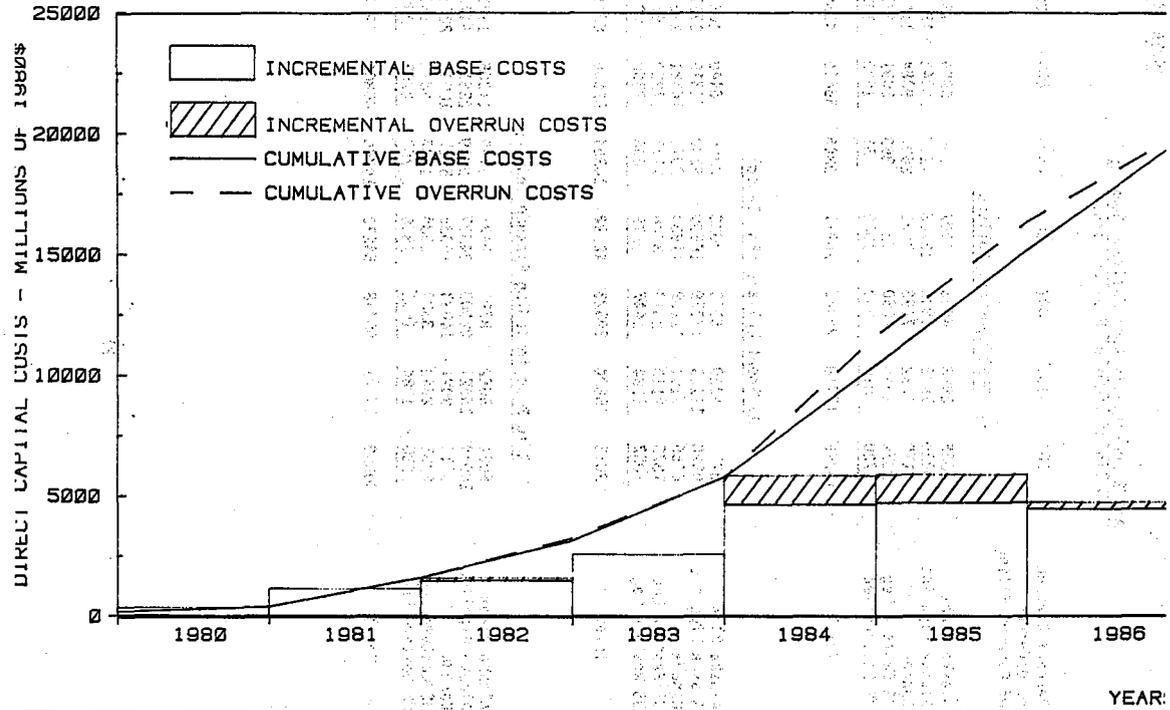
	<u>Rate Base including Finance Charges</u>							
Alaska Plant	5044	5675	8828	9458	3153	11350	13872	16394
Alaska Pipeline	15294	16756	24073	25540	10430	29928	35782	41636
Canada	8034	9040	14061	15066	5021	18079	22096	26114
US Eastern Leg	2362	2615	3375	3629	1629	4871	5849	6826
US Western Leg	1234	1388	1697	1851	771	2776	3393	4010
Total	31968	35474	52034	55544	21004	67004	80992	94980

ANGTS Sensitivity Cost Estimate Summary
(in millions of U.S. dollars)

Percent Overrun or Underrun of Current Filing	-20%	-10%	40%	50%	-50%	80%	120%	160%
	<u>1980 Constant Dollars</u>							
Alaska Plant	2665	2998	4663	4997	1666	5996	7328	8661
Alaska Pipeline	6820	7673	11935	12788	4263	15345	18755	22165
Canada	4170	4692	7298	7820	2607	9384	11469	13554
US Eastern Leg	1374	1545	2060	2232	859	3091	3777	4464
US Western Leg	720	810	990	1080	451	1620	1980	2340
Total	15749	17718	26946	28917	9846	35436	43309	51184
	<u>As Spent Dollars (Escalated)</u>							
Alaska Plant	3751	4220	6565	7033	2344	8440	10316	12191
Alaska Pipeline	9920	11159	17359	18599	6200	22319	27279	32238
Canada	6365	7161	11139	11934	3979	14321	17503	20686
US Eastern Leg	1875	2110	2813	3048	1173	4220	5158	6096
US Western Leg	1052	1184	1447	1578	658	2368	2894	3421
Total	23013	25834	39323	42192	14354	51668	63150	74632
	<u>Rate Base including Finance Charges</u>							
Alaska Plant	5024	5652	8792	9421	3140	11305	13817	16329
Alaska Pipeline	14044	15521	22908	24387	9319	28818	34728	40638
Canada	8018	9021	14033	15035	5011	18042	22051	26061
US Eastern Leg	2283	2543	3323	3584	1507	4872	5897	6922
US Western Leg	1230	1384	1692	1846	769	2768	3383	3999
Total	30599	34121	50748	54273	19746	65805	79876	93949

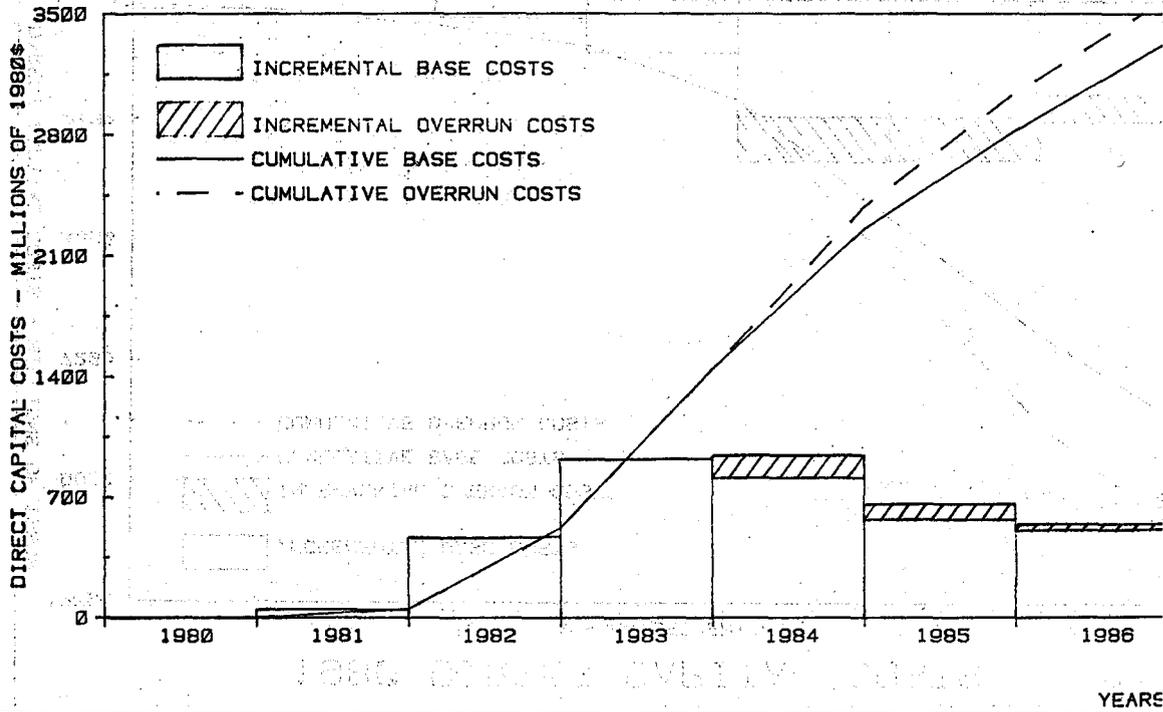
1980 DIRECT CAPITAL COSTS

TOTAL SYSTEM



1980 DIRECT CAPITAL COSTS

CONDITIONING PLANT

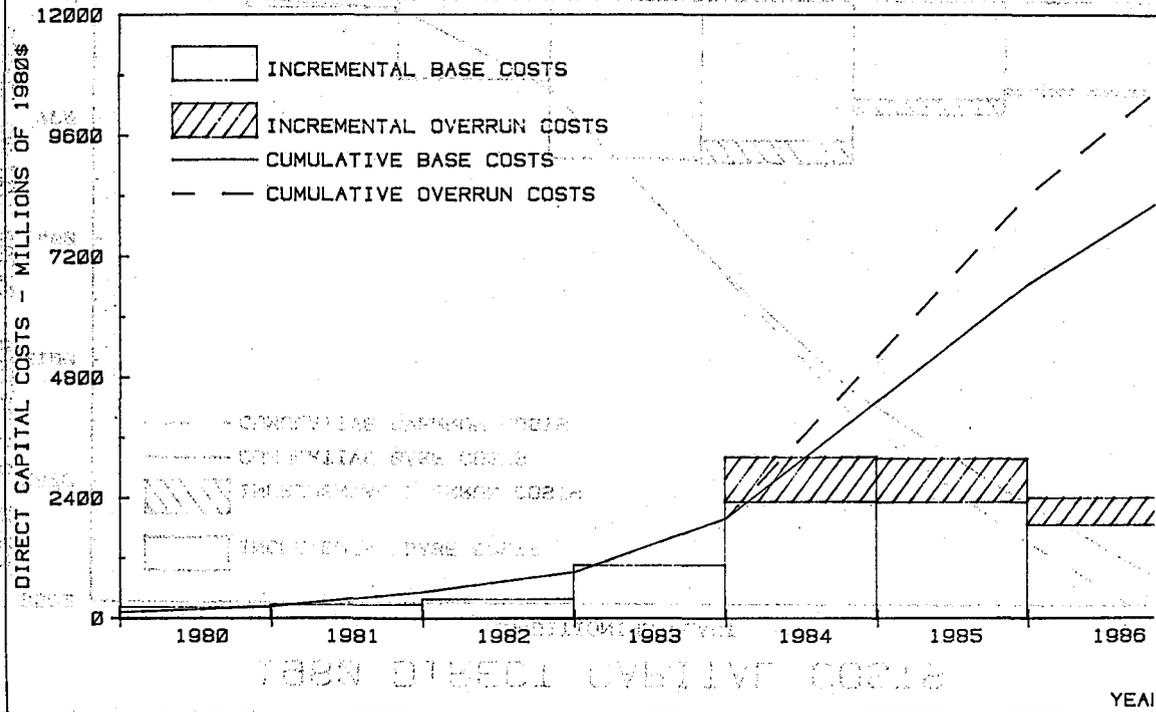


713

YEARS

1980 DIRECT CAPITAL COSTS

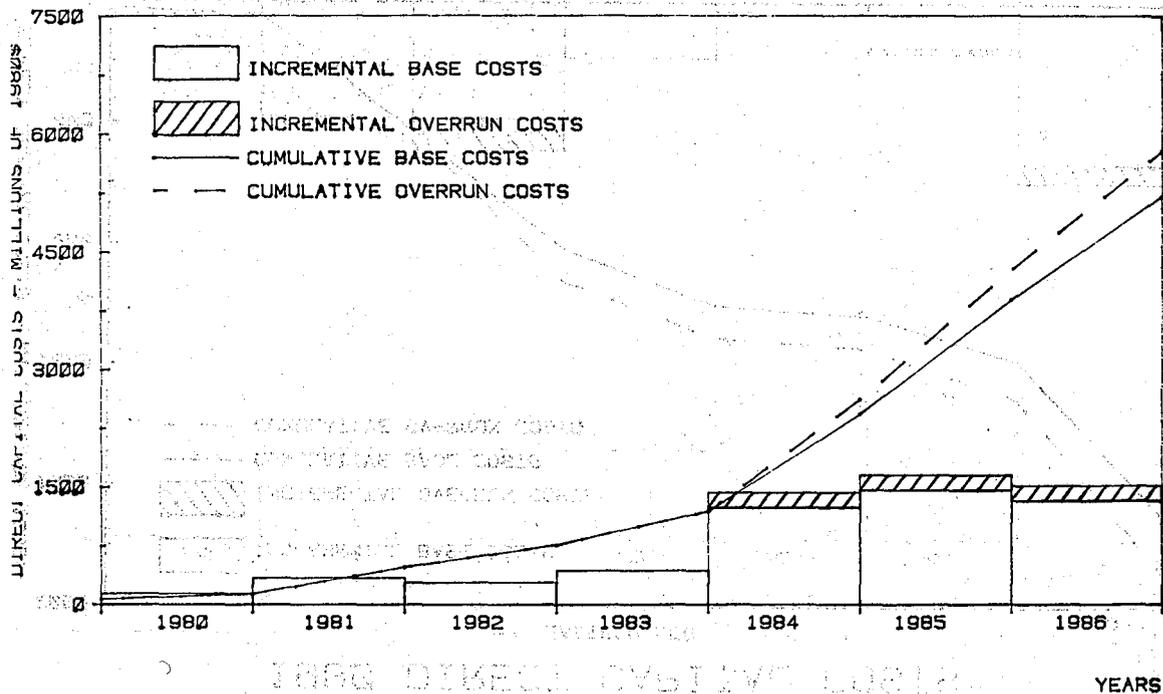
ALASKA SEGMENT



714

1980 DIRECT CAPITAL COSTS

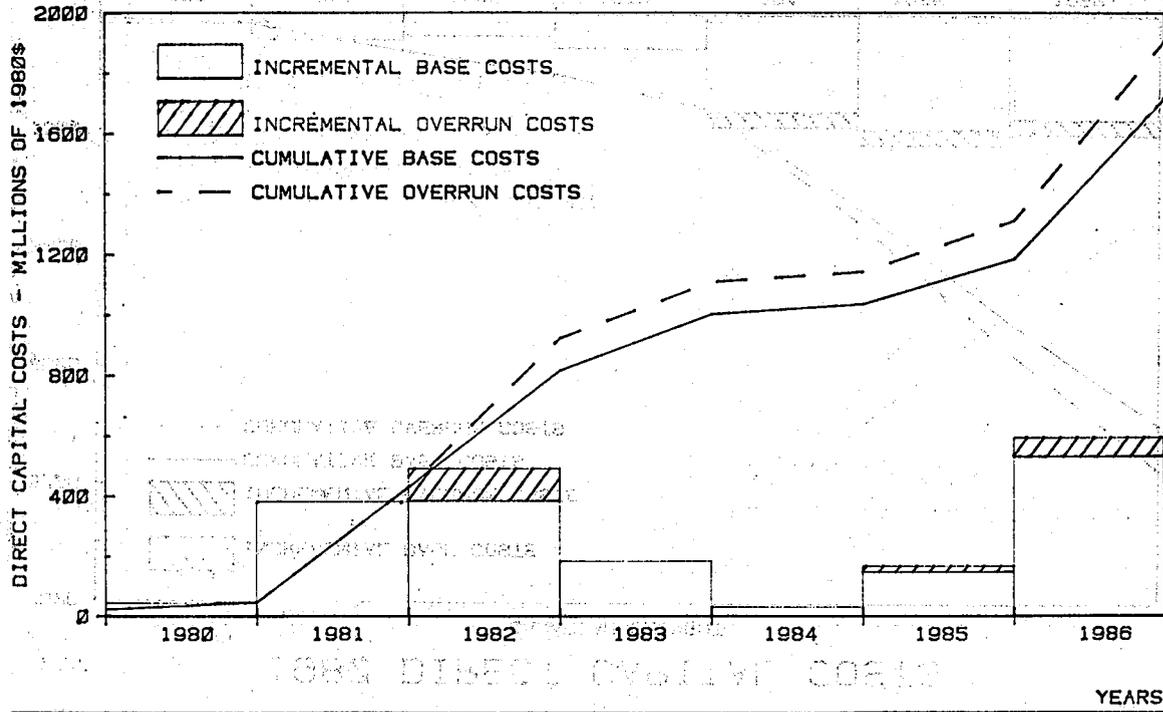
CANADIAN SEGMENT



715

1980 DIRECT CAPITAL COSTS

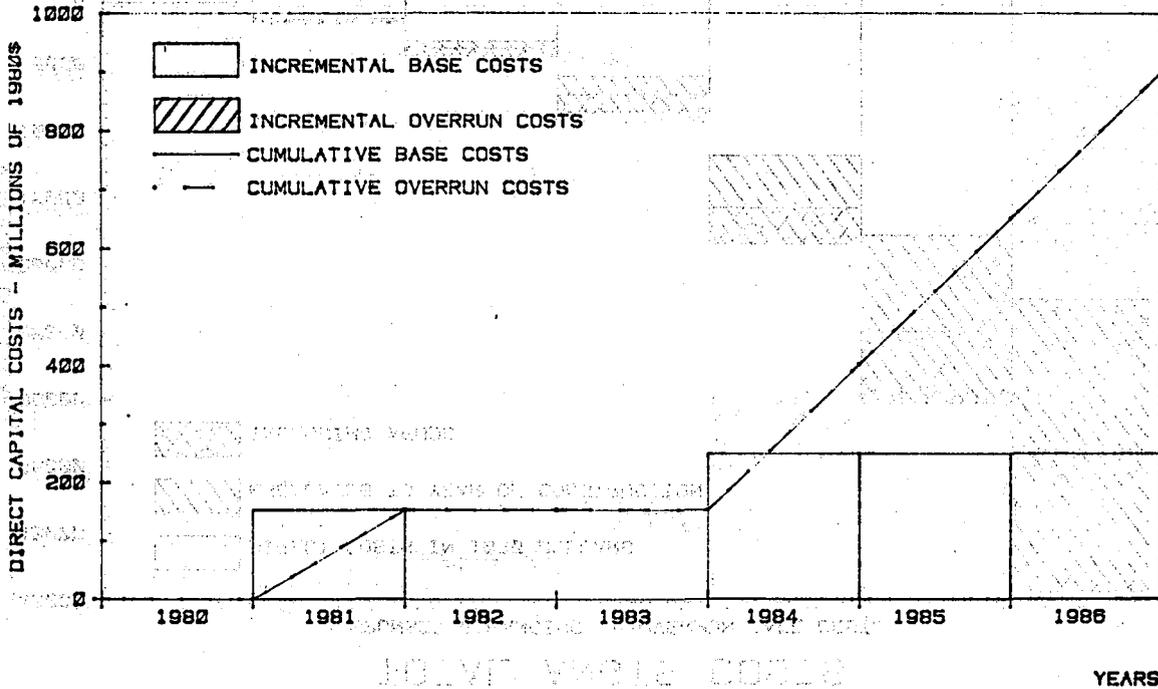
EASTERN LEG



716

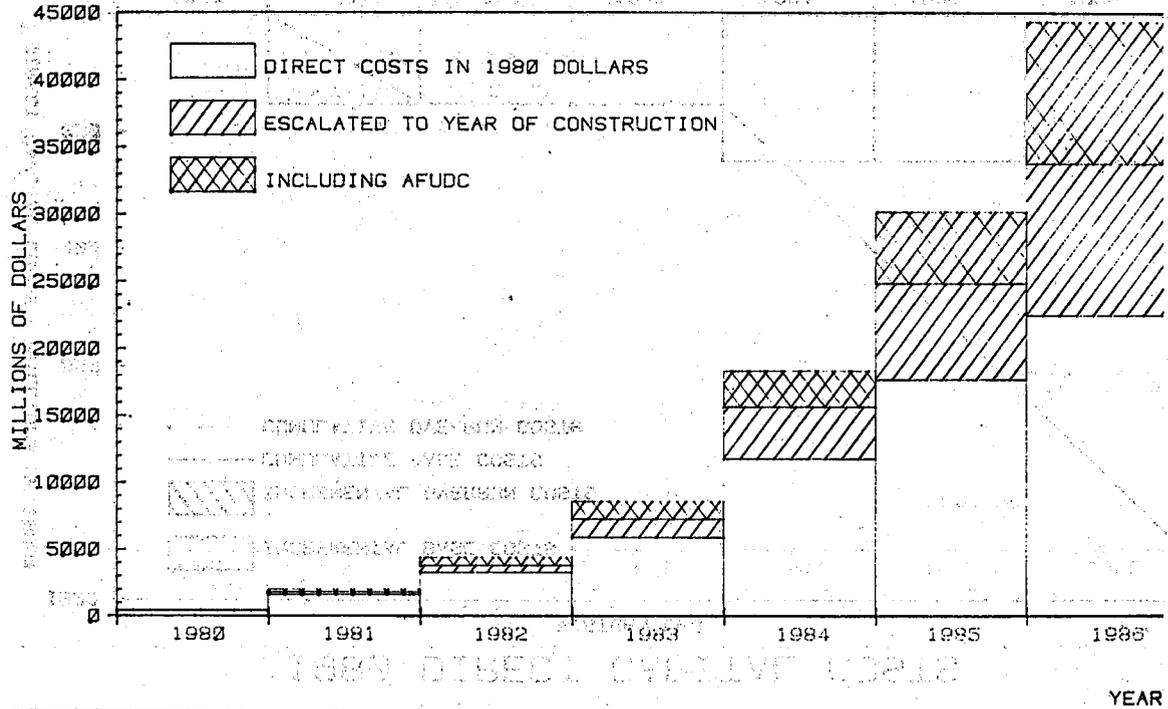
1980 DIRECT CAPITAL COSTS

WESTERN LEG



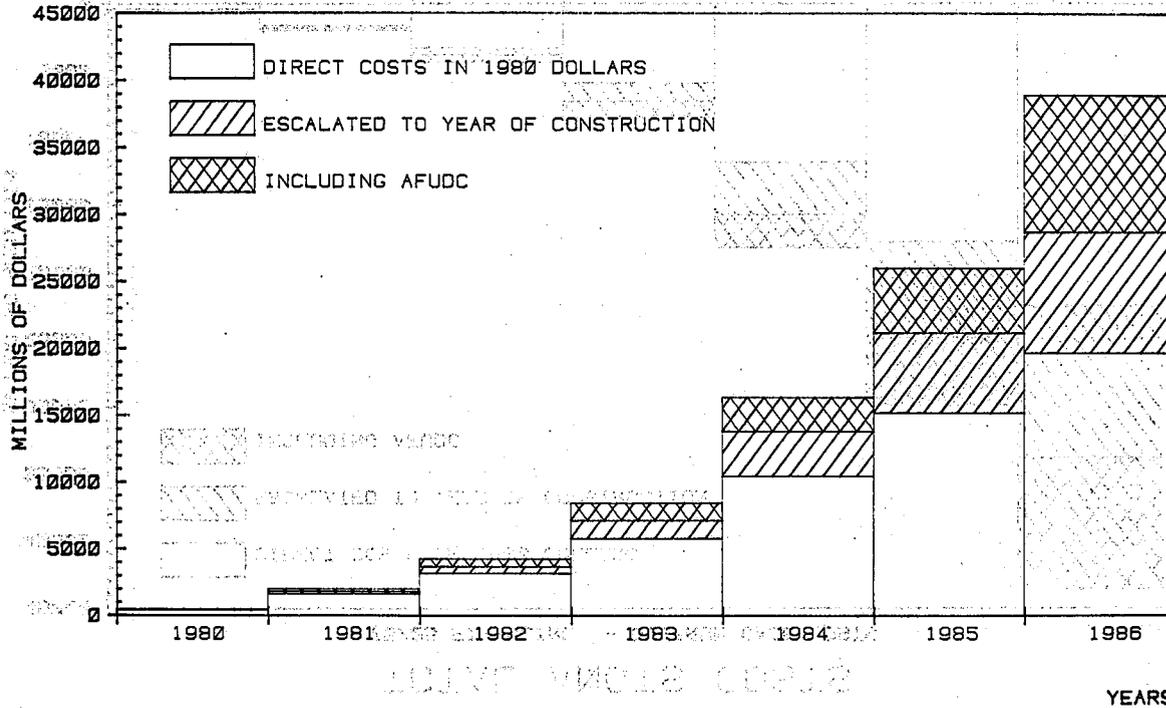
TOTAL ANGTS COSTS

SPONSOR FINANCING - OVERRUN CASE COSTS



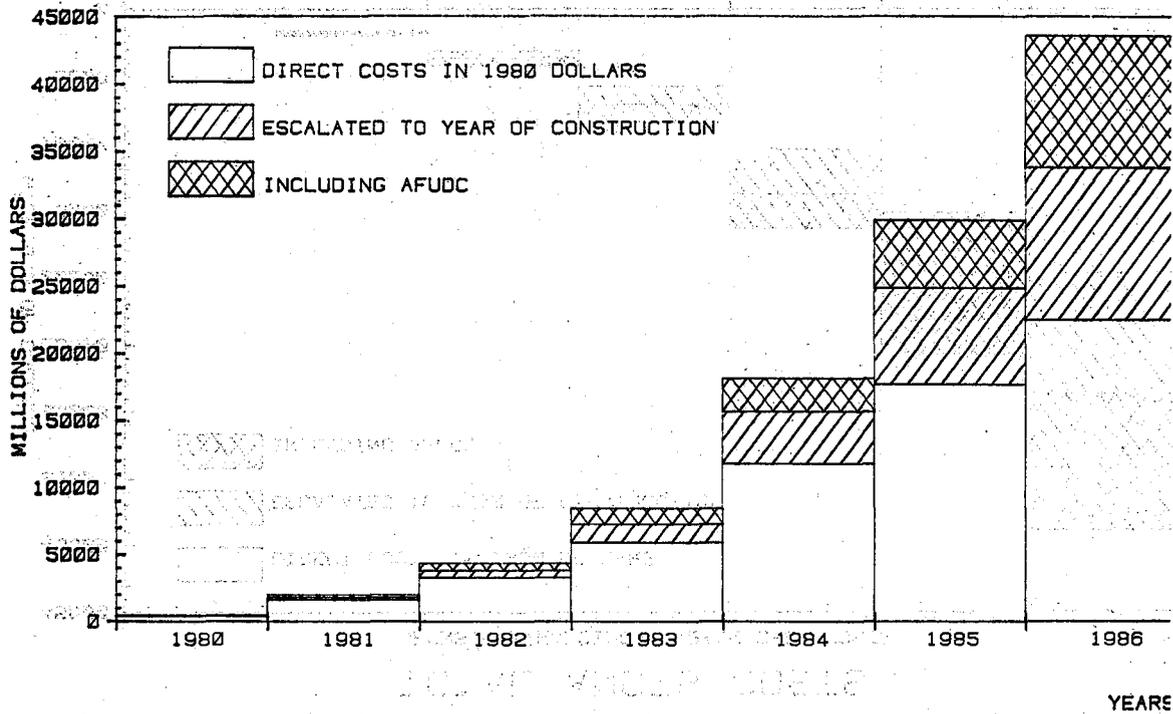
TOTAL ANGTS COSTS

SPONSOR FINANCING - BASE CASE COSTS



TOTAL ANGTS COSTS

75/25 FINANCING - OVERRUN CASE COSTS

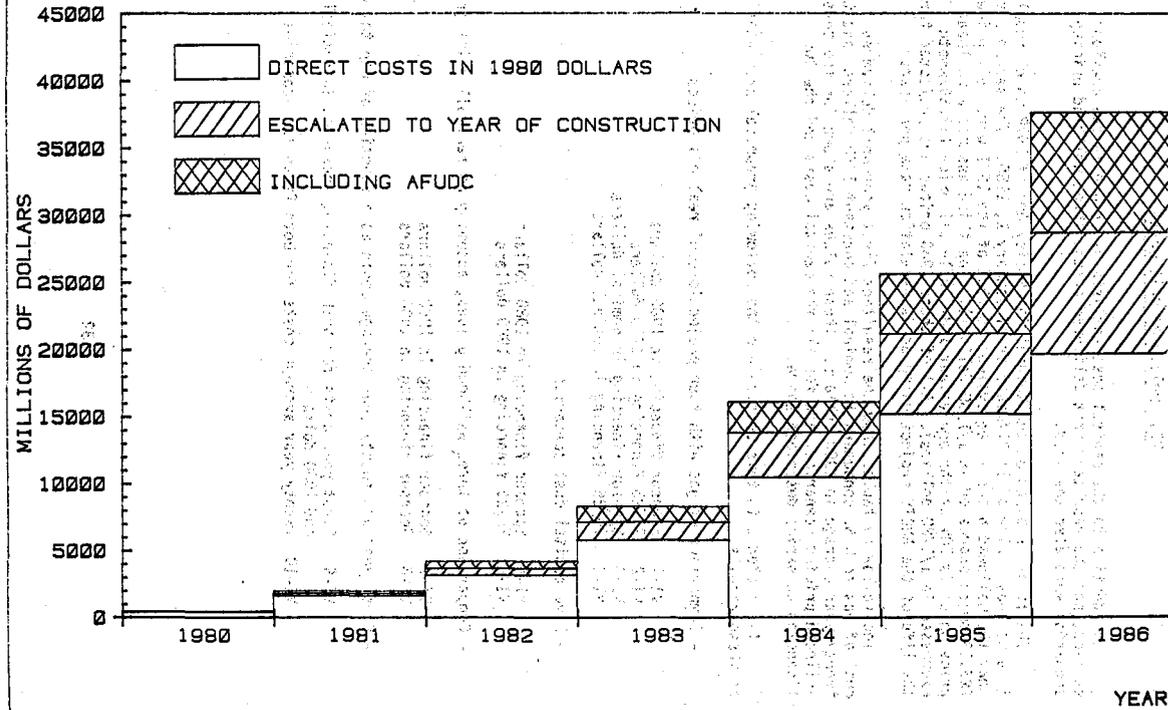


720

YEARS

TOTAL ANGTS COSTS

75/25 FINANCING - BASE CASE COSTS



VI. Delivered Unit Costs

In addition to the capital cost analysis described in the previous section, and the resultant unit delivered costs, three wellhead pricing scenarios were also analyzed.

The first is based on the Natural Gas Policy Act of 1978 which results in a wellhead price of \$1.97/mmbtu as of January 1, 1980. The second assumes that the wellhead price is equivalent to 100% of the 1981 world oil price (\$5.13/mmbtu expressed in 1/1/80 dollars). The third assumes a wellhead price which is 70% of the equivalent 1981 world oil price (\$3.59/mmbtu expressed in 1/1/80 dollars). All of these 1980 prices are projected through the life of the ANGTS project using an 8% escalation rate per year.

The following tables show the resultant first year unit delivered cost of gas to U.S. consumers in nominal and constant 1980 dollars, and the twenty year average in 1980 dollars. These values are shown for the three wellhead pricing scenarios, and for all the capital costs and the two financing scenarios described above.

Also included in this section are the following graphical presentations of these results:

- Comparison of gas with four projections of real oil prices
 - VI-1 Sponsor financing in 1980 dollars
 - VI-2 75/25 financing in 1980 dollars
 - VI-3 Sponsor financing in nominal dollars
 - VI-4 75/25 financing in nominal dollars
- Five capital cost scenarios
 - VI-5 Sponsor financing in 1980 dollars
 - VI-6 75/25 financing in 1980 dollars
- Comparison of three wellhead prices, assuming no real oil price growth
 - VI-7 Sponsor financing in 1980 dollars
 - VI-8 Sponsor financing in 1980 dollars
- First year and twenty year average costs as a function of capital costs
 - VI-9 First year costs for both financing scenarios in nominal and 1980 dollars
 - VI-10. Twenty year average costs for both financing scenarios

Sponsor FinancingTotal Delivered Unit Costs
(\$/mmbtu)

	Current Filing w Center Pt. plus 10%	Current Filing with Center Pt.	Adjust. Adger/ Berman	Current Filing	President's Decision with Center Pt.	March 1977
<u>NGPA Wellhead Pricing</u>						
First year nominal \$	\$17.07	\$15.90	\$15.18	\$14.87	\$ 8.86	\$ 7.76
First year 1980 \$	9.59	8.93	8.52	8.35	4.97	4.36
20 year ave 1980 \$	4.90	4.67	4.53	4.49	3.31	3.08
<u>70% Oil Equivalence Wellhead Pricing</u>						
First year nominal \$	\$20.18	\$19.00	\$18.29	\$17.97	\$12.25	\$11.15
First year 1980 \$	11.33	10.67	10.27	10.09	6.88	6.26
20 year ave 1980 \$	6.65	6.41	6.28	6.23	5.22	4.99
<u>100% Oil Equivalence Wellhead Pricing</u>						
First year nominal \$	\$23.12	\$21.95	\$21.23	\$20.92	\$15.31	\$14.21
First year 1980 \$	12.98	12.32	11.92	11.74	8.59	7.98
20 year ave 1980 \$	8.30	8.07	7.93	7.88	6.93	6.70

Total Delivered Unit Costs
(\$/mmbtu)

	Current Filing w Center Pt. plus 10%	Filing with Center Pt.	Adjust. Adger/ Berman	Current Filing	President's Decision with Center Pt.	March 1977
<u>NGPA Wellhead Pricing</u>						
First year nominal \$	\$16.13	\$15.04	\$14.32	\$13.70	\$ 8.72	\$ 7.63
First year 1980 \$	9.06	8.44	8.04	7.69	4.90	4.28
20 year ave 1980 \$	4.69	4.48	4.34	4.23	3.28	3.05
<u>70% Oil Equivalence Wellhead Pricing</u>						
First year nominal \$	\$19.23	\$18.14	\$17.43	\$16.80	\$12.11	\$11.02
First year 1980 \$	10.80	10.19	9.79	9.44	6.80	6.19
20 year ave 1980 \$	6.44	6.22	6.09	5.97	5.19	4.96
<u>100% Oil Equivalence Wellhead Pricing</u>						
First year nominal \$	\$22.18	\$21.09	\$20.37	\$19.75	\$15.18	\$14.08
First year 1980 \$	12.45	11.84	11.44	11.09	8.52	7.90
20 year ave 1980 \$	8.09	7.88	7.74	8.62	6.91	6.68

Sponsors FinancingTotal Delivered Unit Costs
(\$/mmbtu)

Percent Overrun or Underrun of Current Filing	-20%	-10%	40%	50%	-50%	80%	120%	160%
	<u>NGPA Wellhead Pricing</u>							
First year nominal \$	13.16	13.85	18.09	18.92	10.47	21.58	24.92	28.24
First year 1980 \$	7.39	7.77	10.16	10.62	5.88	12.12	13.99	15.86
20 year average 1980 \$	4.16	4.29	5.12	5.28	3.63	5.80	6.45	7.09

70% Oil Equivalence Wellhead Pricing

First year nominal \$	16.27	16.95	21.19	22.03	13.58	24.69	28.02	31.35
First year 1980 \$	9.13	9.52	11.90	12.37	7.62	13.86	15.73	17.60
20 year average 1980 \$	5.90	6.03	6.86	7.02	5.37	7.54	8.19	8.84

100% Oil Equivalence Wellhead Pricing

First year nominal \$	19.21	19.90	24.14	24.97	16.52	27.63	30.97	34.29
First year 1980 \$	10.79	11.17	13.55	14.02	9.28	15.51	17.39	19.25
20 year average 1980 \$	7.56	7.69	8.51	8.67	7.02	9.19	9.84	10.49

Total Delivered Unit Costs
(\$/mmbtu)

Percent Overrun or Underrun of Current Filing	-20%	-10%	40%	50%	-50%	80%	120%	160%
---	------	------	-----	-----	------	-----	------	------

NGPA Wellhead Pricing

First year nominal \$	12.08	12.71	16.73	17.51	9.61	20.01	23.09	26.30
First year 1980 \$	6.78	7.14	9.39	9.83	5.40	11.24	12.96	14.77
20 year average 1980 \$	3.91	4.04	4.82	4.97	3.43	5.45	6.05	6.68

70% Oil Equivalence Wellhead Pricing

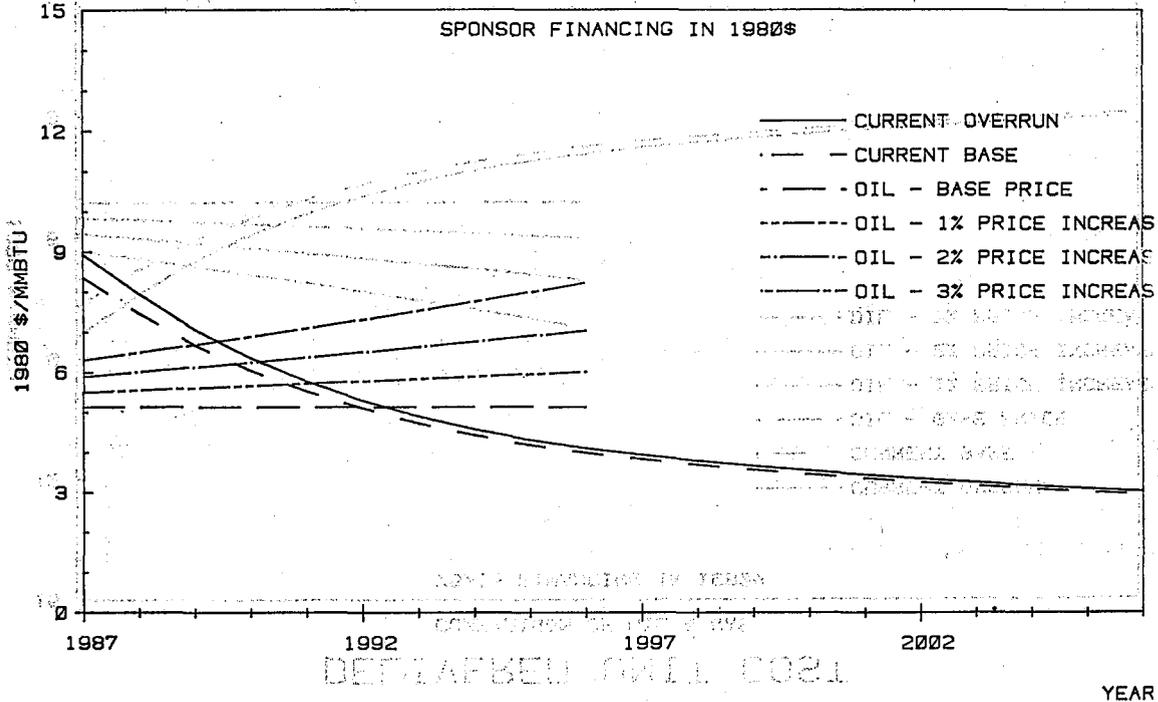
First year nominal \$	15.18	15.82	19.83	20.62	12.72	23.12	26.20	29.40
First year 1980 \$	8.53	8.88	11.14	11.58	7.14	12.98	14.71	16.51
20 year average 1980 \$	5.66	5.78	6.56	6.71	5.18	7.20	7.80	8.42

100% Oil Equivalence Wellhead Pricing

First year nominal \$	18.13	18.76	22.78	23.56	15.66	26.06	29.14	32.35
First year 1980 \$	10.18	10.54	12.79	13.23	8.79	14.63	16.36	18.16
20 year average 1980 \$	7.31	7.43	8.21	8.37	6.83	8.85	9.45	10.07

DELIVERED UNIT COST

COMPARISON OF OIL & GAS

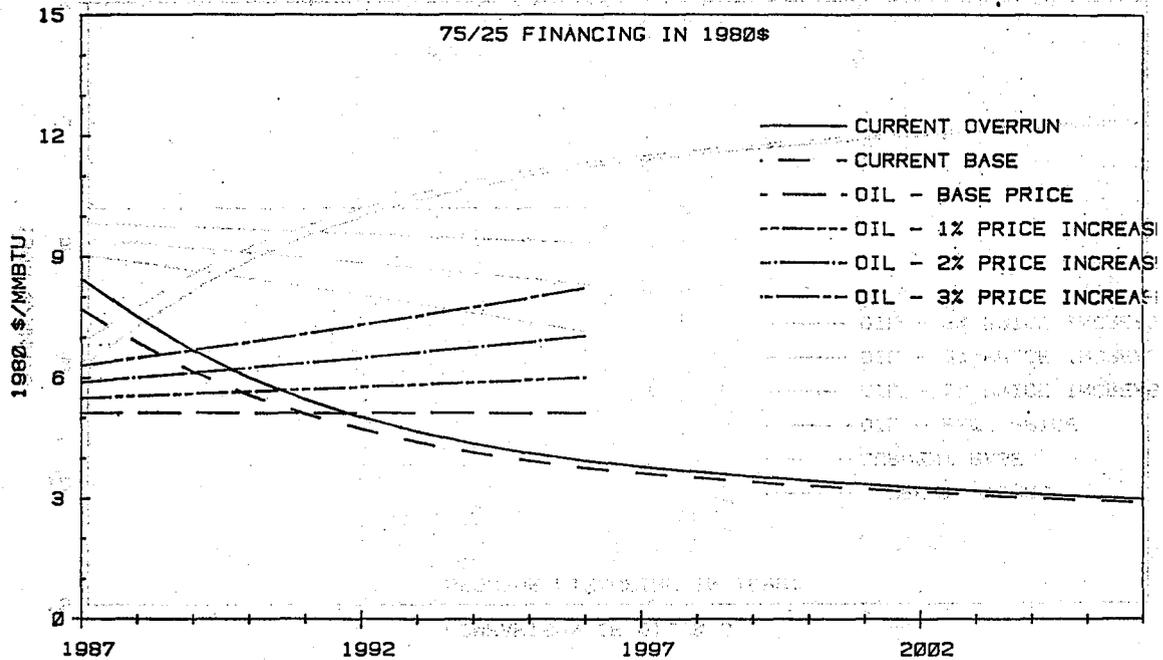


727

DELIVERED UNIT COST

COMPARISON OF OIL & GAS

75/25 FINANCING IN 1980\$

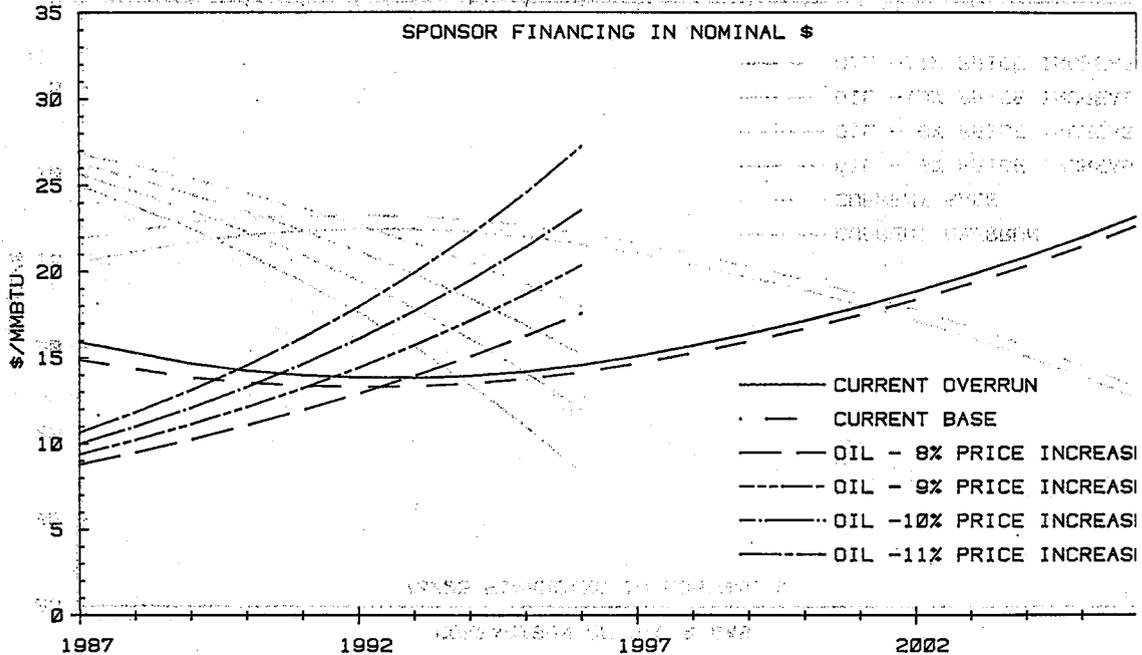


728

YEAR

DELIVERED UNIT COST

COMPARISON OF OIL & GAS



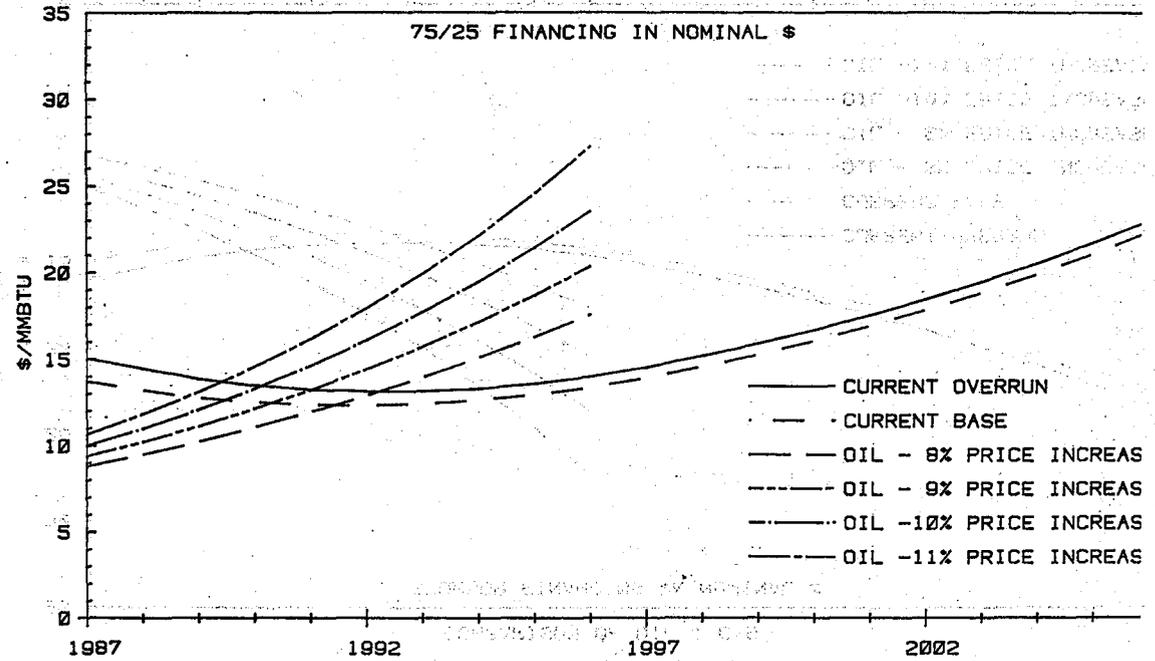
729

DELTA ENERGY PARTIAL CORP.

YEA

DELIVERED UNIT COST

COMPARISON OF OIL & GAS

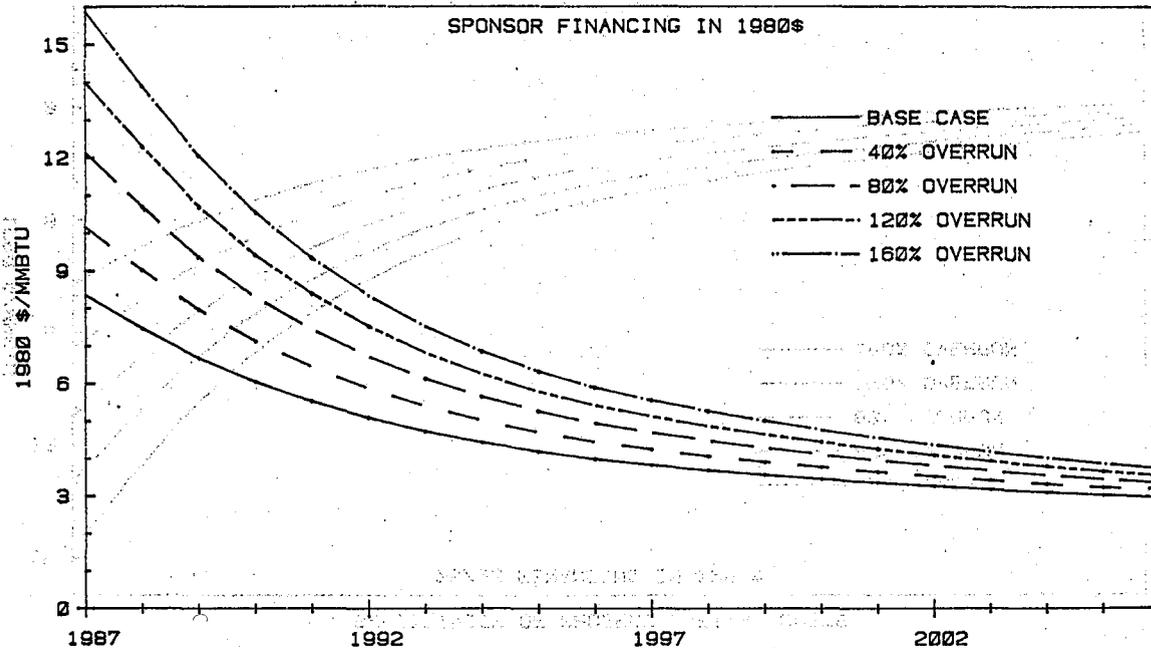


730

YE/

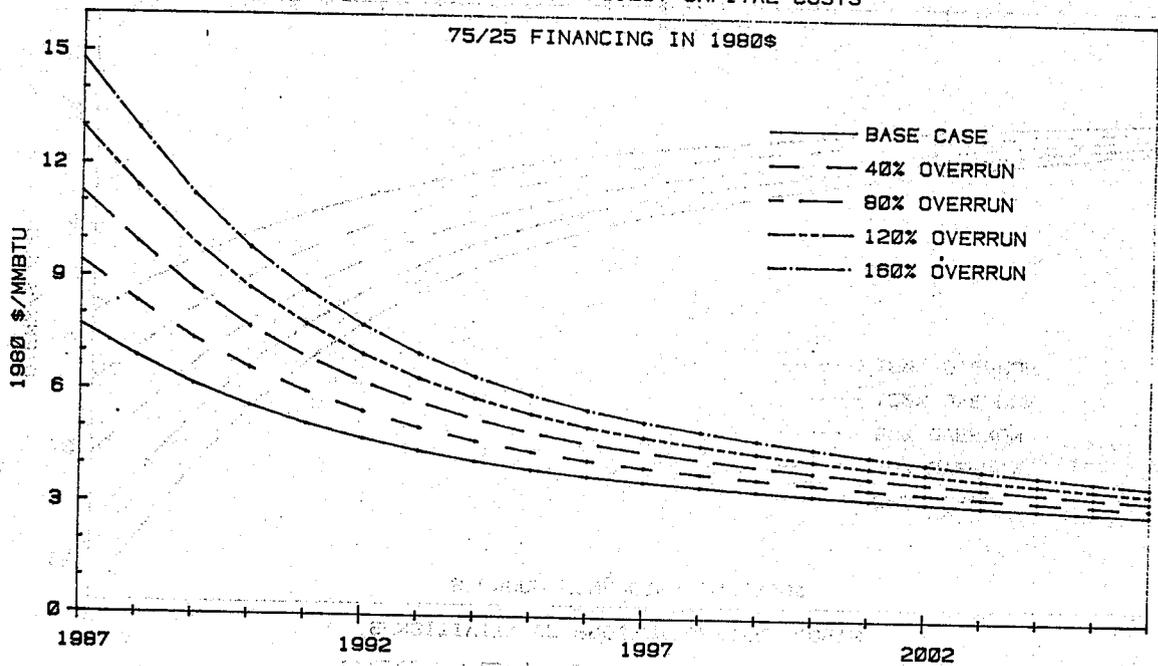
DELIVERED UNIT COST

SENSITIVITY OF PROJECT CAPITAL COSTS



DELIVERED UNIT COST

SENSITIVITY OF PROJECT CAPITAL COSTS

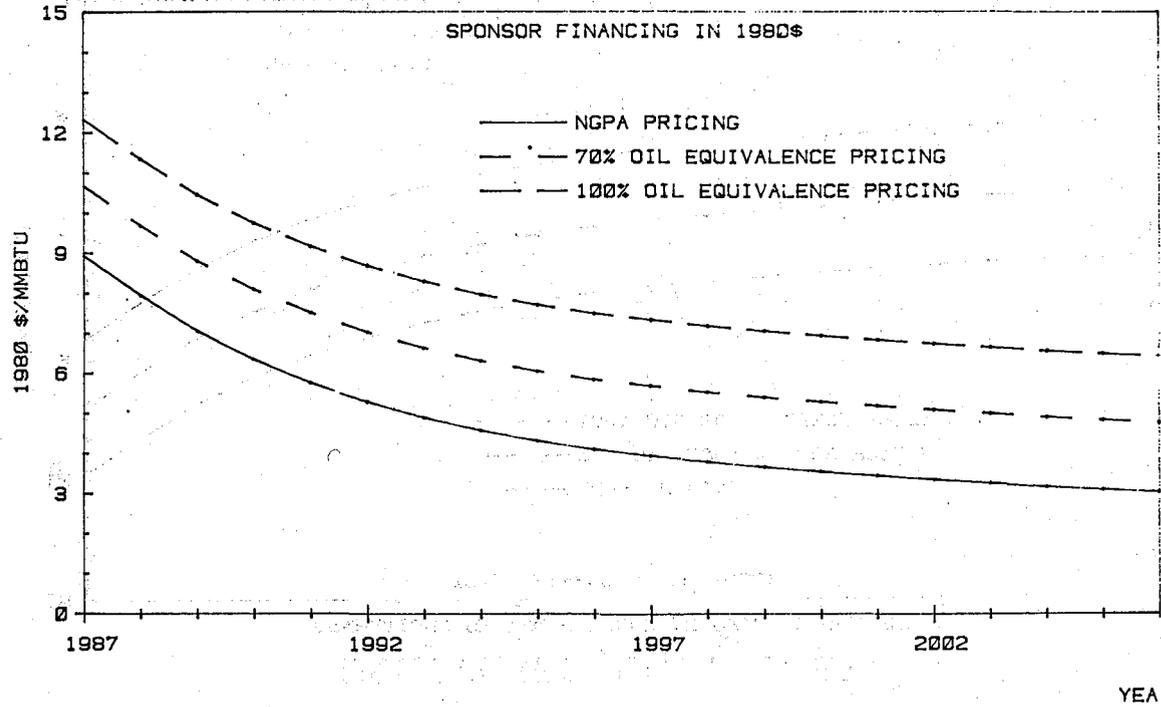


732

YE

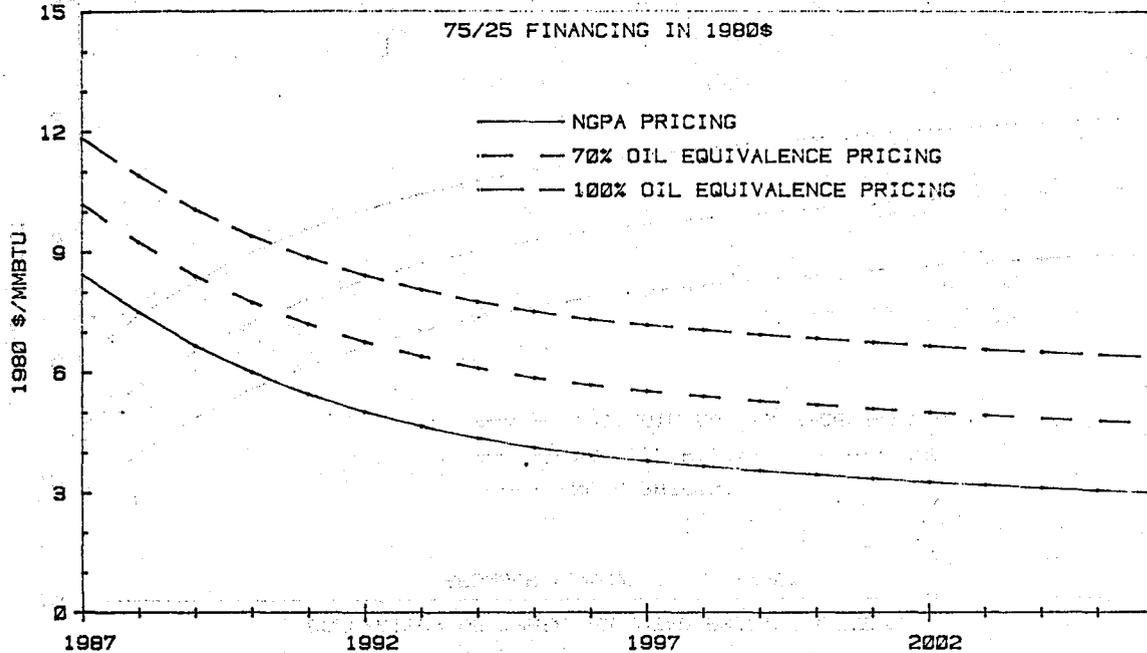
DELIVERED UNIT COST

COMPARISON OF THREE WELLHEAD PRICING SCHEMES



DELIVERED UNIT COST

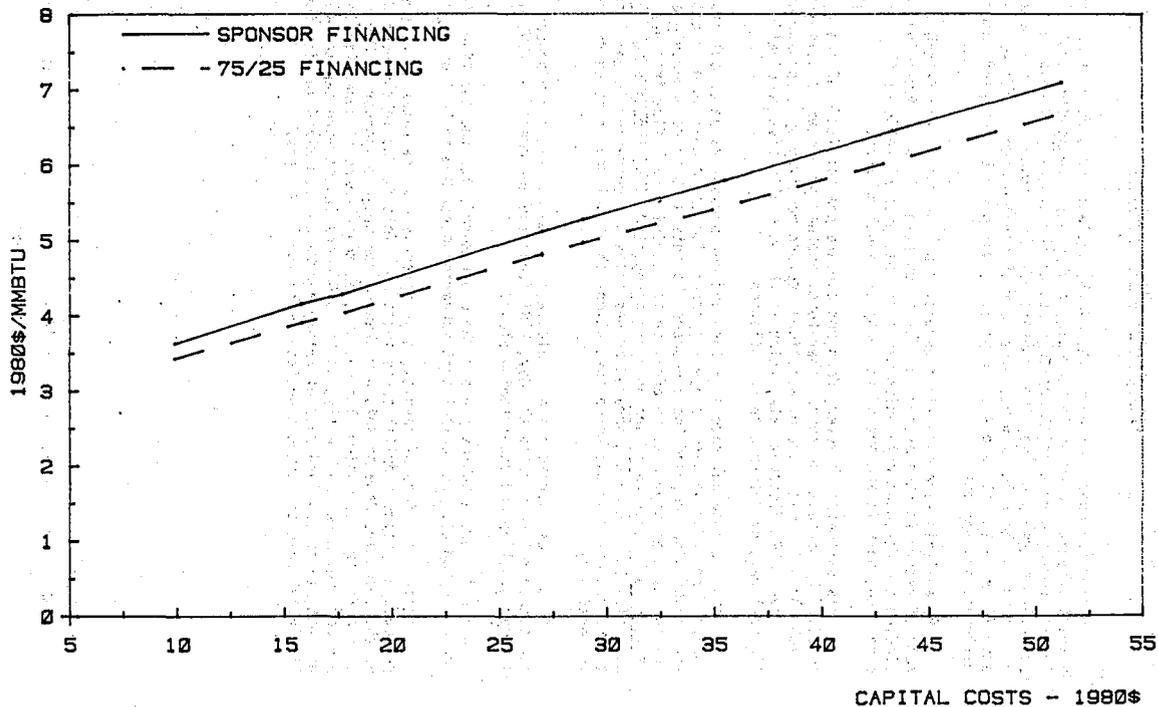
COMPARISON OF THREE WELLHEAD PRICING SCHEMES



784

YEA

TWENTY YEAR AVERAGE COST



VII. Profitability Analysis

During the construction of the ANGTS, project sponsors will be investing equity money while borrowing debt money from lending institutions to finance the direct construction costs of the project. During the operation of the pipeline, the sponsors will be allowed to earn a rate of return on their investment. The cost of service model generates these cash flows, both into and out the project, which can be analyzed under different assumptions.

By analyzing the cash flows generated by the model, the internal rate of return for the project can be calculated. This is determined by finding the discount rate which makes the net present value of the cash flow, both in and out of the project, equal to zero.

This parameter, however, does not capture the magnitude of the return received by project sponsors. Therefore, another parameter is calculated which shows the magnitude of additional return received by a sponsor over and above a 19% discount rate, which is the multiplicative combination of a 10% real rate of return with 8% inflation.

Both the internal rate of return and net present value calculations are performed for both the project sponsors for the conditioning plant and Alaska pipeline, and the producers who intend to share ownership of the two Alaskan segments, in addition to receiving cash flow from gas sales. It is assumed that there are no costs associated with producing the gas. Cash flow to producers generated by gas sales are converted to an after tax return based on the three assumptions about wellhead pricing discussed in Section VI.

Also, these parameters are calculated assuming that the producers own either 30% (according to the May, 1981 financing agreement) or 100% of the Alaskan pipeline and conditioning plant.

The following tables present these parameters for the two financing scenarios and all the capital cost scenarios described in Section V.

After the tables of results, a graph shows how the rates of return decrease as project capital costs increase. This is due to the operation of the Incentive Rate of Return mechanism for project sponsors. For producers, this mechanism also operates on their share of ownership in the project, but more importantly, as the producers invest more capital in the project, their combined rate of return decreases when mixed in with the "infinite" rate of return associated with the "free" gas.

Profitability Analysis

	Current Filing w Center Pt. plus 10%	with Center Pt.	Adjust. Adger/ Berman	Current Filing	President's Decision with Center Pt.	March 1977
Internal Rate of Return (nominal %)						
Alaska Sponsors	25.0	25.0	24.6	25.1	25.0	26.2
Producers:						
30% Equity owned NGPA wellhead	46.8	48.0	48.5	48.2	72.8	74.8
30% Equity owned 70% oil wellhead	57.8	59.4	60.2	59.6	92.8	94.9
30% Equity owned 100% oil wellhead	64.3	66.2	67.0	66.4	104.0	106.2
100% Equity owned NGPA wellhead	34.9	35.6	35.7	35.6	49.1	50.8
100% Equity owned 70% oil wellhead	41.3	42.3	42.7	42.4	62.2	64.1
100% Equity owned 100% oil wellhead	45.3	46.5	47.0	46.7	70.1	72.1

75/25 Financing

Profitability Analysis

	Current Filing w Center Pt. plus 10%	Current Filing with Center Pt.	Adjust. Adger/ Berman	Current Filing	President's Decision with Center Pt.	March 1977
Alaska Sponsors	35.9	35.9	35.6	36.9	26.8	27.9
Producers:						
30% Equity owned NGPA wellhead	70.5	72.5	73.9	75.1	79.8	81.2
30% Equity owned 70% oil wellhead	88.2	90.7	92.4	93.5	100.9	102.2
30% Equity owned 100% oil wellhead	98.4	101.3	103.9	104.0	112.5	113.9
100% Equity owned NGPA wellhead	51.4	52.56	53.3	54.6	54.1	55.5
100% Equity owned 70% oil wellhead	61.7	63.4	64.5	65.8	68.7	70.1
100% Equity owned 100% oil wellhead	68.3	70.2	71.6	72.8	77.3	78.8

Sponsor FinancingProfitability Analysis

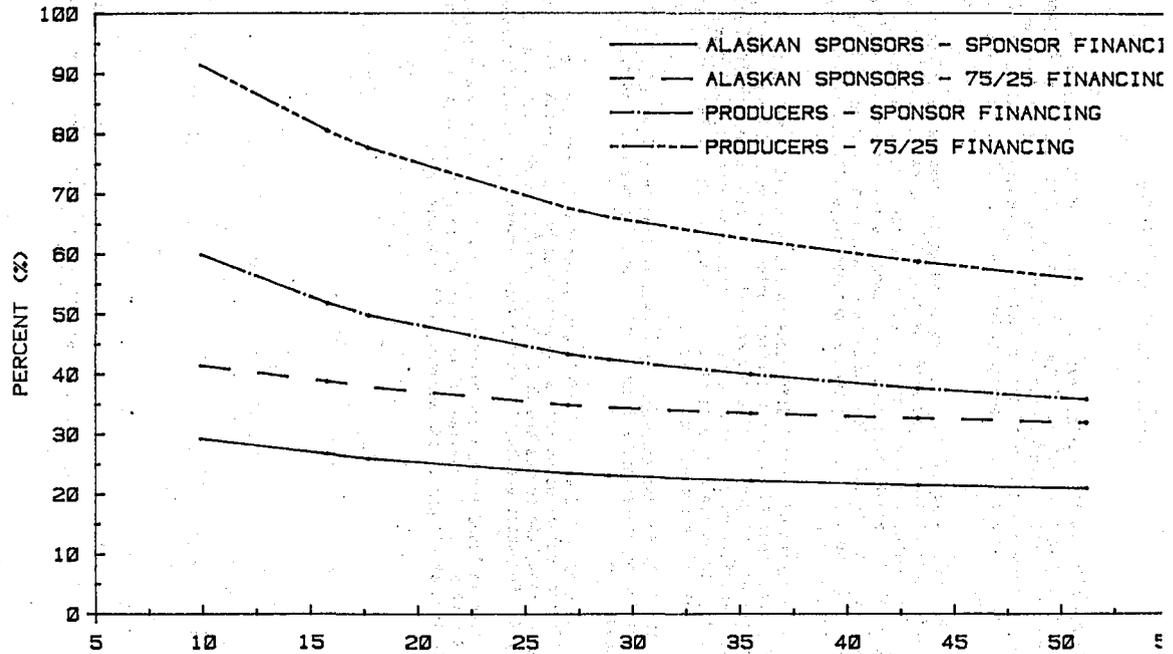
Percent Overrun or Underrun of Current Filing	-20%	-10%	40%	50%	-50%	80%	120%	160%
Alaska Sponsors	26.7	25.9	23.4	23.0	29.2	22.2	21.4	20.9
Producers:								
30% Equity owned NGPA wellhead	51.8	49.8	43.3	42.4	59.9	40.0	37.6	35.8
30% Equity owned 70% oil wellhead	64.1	61.7	53.6	52.4	74.1	49.4	46.4	44.0
30% Equity owned 100% oil wellhead	71.3	68.7	59.7	58.4	82.2	55.1	51.6	49.0
100% Equity owned NGPA wellhead	38.2	36.8	32.3	31.7	43.7	30.1	28.6	27.4
100% Equity owned 70% oil wellhead	45.6	43.9	38.2	37.4	52.6	35.4	33.4	31.9
100% Equity owned 100% oil wellhead	50.2	48.3	42.0	41.1	58.0	38.8	36.5	34.8

Profitability Analysis

Percent Overrun or Underrun of Current Filing	-20%	-10%	40%	50%	-50%	80%	120%	160%
Alaska Sponsors	38.8	37.9	34.8	34.4	41.4	33.5	32.6	31.9
Producers:								
30% Equity owned NGPA wellhead	80.5	77.7	67.6	66.1	91.4	62.4	58.7	55.8
30% Equity owned 70% oil wellhead	99.9	96.5	84.2	82.3	112.4	77.7	72.9	69.1
30% Equity owned 100% oil wellhead	110.8	107.2	93.8	91.8	123.9	86.7	81.3	77.1
100% Equity owned NGPA wellhead	58.5	56.4	49.5	48.6	67.1	46.2	43.9	42.1
100% Equity owned 70% oil wellhead	70.7	68.1	59.3	58.0	81.7	54.9	51.8	49.4
100% Equity owned 100% oil wellhead	78.2	75.3	65.4	64.0	90.5	60.5	56.9	54.1

INTERNAL RATE OF RETURN

IN PERCENT (%)



CAPITAL COSTS - 1984

VIII. Consumer Indifference

The ANGTS tariff declines over time because of the decreasing rate base due to the depreciation of the facilities. This means that in 1980 dollars, the unit delivered cost of Alaskan gas begins high and decreases during the operating life of the project. This declining cost is difficult to compare with alternative energy sources which are expected to increase over time.

Therefore, a methodology was developed which attempts to equate the declining cost of Alaskan gas with the projected increasing cost of world oil. This method tries to find the real oil price escalation rate that has an equivalent present value cost to consumers as the present value of the ANGTS gas. At this oil price growth rate, consumers would be "indifferent" between oil and gas, assuming that a consumer can easily switch from one fuel to the other.

If a series of these indifference points were determined, under varying assumptions about ANGTS direct capital costs, a curve would result which indicates how oil growth rates compare with assumptions about ANGTS capital costs. Multiple curves can also be developed depending on assumptions about the btu-equivalent value of gas, and what is the correct real discount rate to use to determine present values.

The following tables present the results from this methodology for both financing scenarios, all the capital cost assumptions, and two real discount rates.

Two graphs (VIII-1 and VIII-2) are included which present the indifference curves using the two financing scenarios described in Section V. On each graph, two curves are drawn which result from discount rates of 5% and 10%. For these graphs, 70% equivalence between oil and gas is assumed.

Also included are two graphs (VIII-3 and VIII-4) which show the declining ANGTS cost and the increasing oil price curves in 1980 dollars which are equivalent at 70% parity and assuming a 5% discount rate.

Sponsor FinancingConsumer Indifference Values

	Current Filing w Center Pt. plus 10%	Current Filing with Center Pt.	Adjust. Adger/ Berman	Current Filing	President's Decision with Center Pt.	March 1977
<u>NGPA Wellhead Pricing</u>						
ANGTS 1980 \$ Unit Costs						
Present Value at 5%	48.96	46.42	44.94	44.44	31.79	29.34
at 10%	26.89	25.41	24.54	24.24	16.88	15.47
Real Oil Escalation Equivalent to ANGTS PV						
- 5% discount rate	2.61	2.27	2.06	1.99	-0.16	-0.68
- 10% discount rate	3.45	3.06	2.82	2.73	0.18	-0.44

70% Equivalent of World Oil Wellhead Pricing

ANGTS 1980 \$ Unit Costs						
Present Value at 5%	64.78	62.25	60.77	60.26	49.08	46.63
at 10%	34.88	33.40	32.53	32.23	25.61	24.19
Real Oil Escalation Equivalent to ANGTS PV						
- 5% discount rate	4.47	4.11	3.96	3.91	2.62	2.30
- 10% discount rate	5.22	4.93	4.75	4.69	3.11	2.71

100% Equivalent of World Oil Wellhead Pricing

ANGTS 1980 \$ Unit Costs						
Present Value at 5%	79.78	77.25	75.77	75.26	64.66	62.21
at 10%	42.45	40.97	40.11	39.81	33.48	32.06
Real Oil Escalation Equivalent to ANGTS PV						
- 5% discount rate	5.65	5.45	5.33	5.29	4.35	4.11
- 10% discount rate	6.51	6.31	6.17	6.11	4.95	4.65

75/25 Financing

Consumer Indifference Values

	Current Filing w Center Pt. plus 10%	with Center Pt.	Adjust. Adger/ Berman	Current Filing	President's Decision with Center Pt.	March 1977
<u>NGPA Wellhead Pricing</u>						
ANGTS 1980 \$ Unit Costs						
Present Value at 5%	46.68	44.36	42.88	41.62	31.50	29.05
at 10%	25.56	24.21	23.34	22.61	16.71	15.29
Real Oil Escalation Equivalent to ANGTS PV						
- 5% discount rate	2.31	1.98	1.77	1.58	-0.22	-0.75
- 10% discount rate	3.10	2.72	2.46	2.24	0.11	-0.52

70% Equivalent of World Oil Wellhead Pricing

ANGTS 1980 \$ Unit Costs						
Present Value at 5%	62.51	60.18	58.71	57.45	48.79	46.33
at 10%	33.56	32.20	31.33	30.60	25.44	24.02
Real Oil Escalation Equivalent to ANGTS PV						
- 5% discount rate	4.14	3.90	3.75	3.61	2.58	2.26
- 10% discount rate	4.96	4.68	4.50	4.33	3.07	2.67

100% Equivalent of World Oil Wellhead Pricing

ANGTS 1980 \$ Unit Costs						
Present Value at 5%	77.51	75.18	73.70	72.45	64.37	61.92
at 10%	41.13	39.77	38.91	38.17	33.31	31.89
Real Oil Escalation Equivalent to ANGTS PV						
- 5% discount rate	5.47	5.28	5.16	5.05	4.32	4.08
- 10% discount rate	6.33	6.11	5.96	5.83	4.91	4.61

Sponsor FinancingConsumer Indifference Values

Percent Overrun or Underrun of Current Filing	-20%	-10%	40%	50%	-50%	80%	120%	160%
---	------	------	-----	-----	------	-----	------	------

NGPA Wellhead Pricing

ANGTS 1980 \$ Unit Costs in Present Value at 5%	40.85	42.31	51.25	53.01	35.12	58.62	65.67	72.69
at 10%	22.15	23.00	28.23	29.26	18.80	32.54	36.66	40.77

Real Oil Escalation
Equivalent to ANGTS PV

- 5% discount rate	1.46	1.68	2.90	3.11	0.48	3.74	4.45	5.07
- 10% discount rate	2.10	2.36	3.78	4.03	0.95	4.75	5.56	6.28

70% Equivalent of World Oil Wellhead Pricing

ANGTS 1980 \$ Unit Costs in Present Value at 5%	56.68	58.13	67.08	68.84	50.95	74.45	81.50	88.52
at 10%	30.14	30.99	36.22	37.25	26.79	40.53	44.65	48.76

Real Oil Escalation
Equivalent to ANGTS PV

- 5% discount rate	3.53	3.69	4.58	4.74	2.86	5.22	5.78	6.28
- 10% discount rate	4.23	4.42	5.48	5.67	3.42	6.24	6.88	7.47

100% Equivalent of World Oil Wellhead Pricing

ANGTS 1980 \$ Unit Costs in Present Value at 5%	71.68	73.13	82.08	83.84	65.95	89.45	96.49	103.52
at 10%	37.71	38.57	43.79	44.82	34.36	48.10	52.22	56.33

Real Oil Escalation
Equivalent to ANGTS PV

- 5% discount rate	4.99	5.11	5.82	5.95	4.47	6.35	6.81	7.24
- 10% discount rate	5.75	5.90	6.75	6.91	5.12	7.38	7.92	8.42

75/25 FinancingConsumer Indifference Values

Percent Overrun or Underrun of Current Filing	-20%	-10%	40%	50%	-50%	80%	120%	160%
---	------	------	-----	-----	------	-----	------	------

NGPA Wellhead Pricing

ANGTS 1980 \$ Unit Costs in Present Value at 5%	38.23	39.57	48.00	49.65	33.03	54.90	61.39	68.14
at 10%	20.62	21.42	26.34	27.30	17.58	30.37	34.16	38.11

Real Oil Escalation
Equivalent to ANGTS PV

- 5% discount rate	1.03	1.25	2.48	2.70	0.09	3.33	4.03	4.68
- 10% discount rate	1.60	1.87	3.30	3.55	0.47	4.28	5.08	5.82

70% Equivalent of World Oil Wellhead Pricing

ANGTS 1980 \$ Unit Costs in Present Value at 5%	54.05	55.40	63.83	65.48	48.85	70.72	77.22	83.97
at 10%	28.61	29.41	34.33	35.29	25.58	38.36	42.15	46.10

Real Oil Escalation
Equivalent to ANGTS PV

- 5% discount rate	3.23	3.39	4.27	4.43	2.59	4.91	5.45	5.96
- 10% discount rate	3.87	4.06	5.12	5.30	3.10	5.86	6.50	7.09

100% Equivalent of World Oil Wellhead Pricing

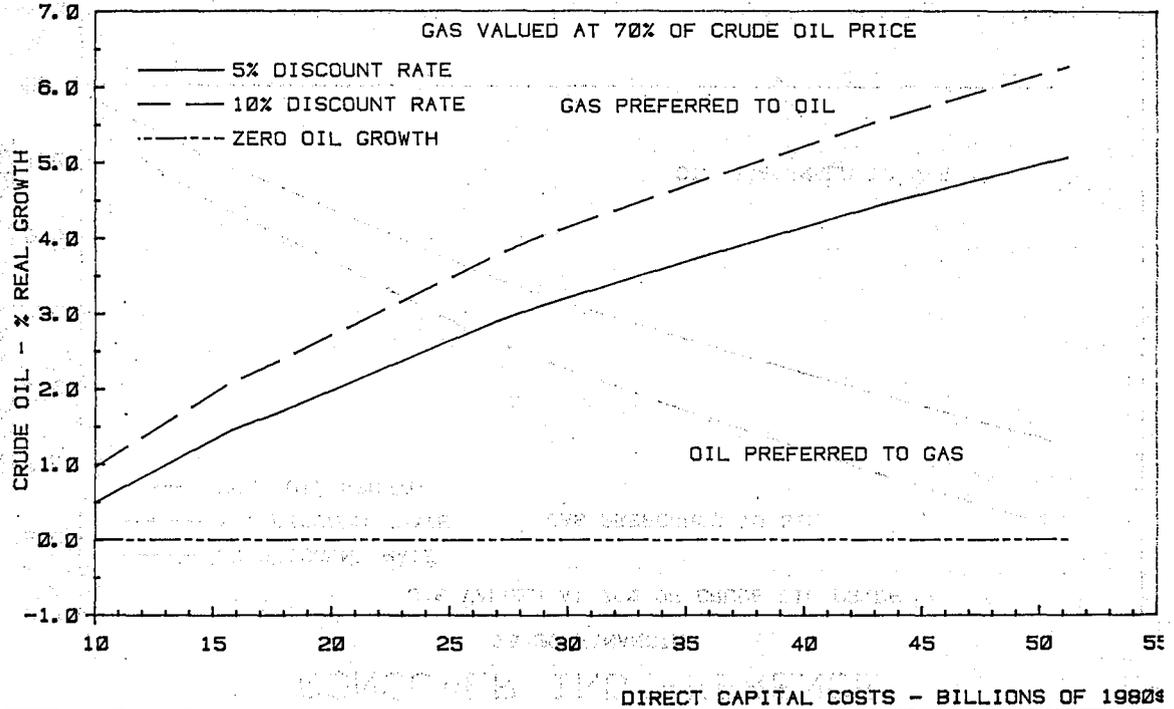
ANGTS 1980 \$ Unit Costs in Present Value at 5%	69.05	70.40	78.83	80.48	63.85	85.72	92.22	98.97
at 10%	36.19	36.98	41.90	42.86	33.15	45.93	49.73	53.97

Real Oil Escalation
Equivalent to ANGTS PV

- 5% discount rate	4.76	4.88	5.57	5.70	4.27	6.06	6.53	6.96
- 10% discount rate	5.47	5.62	6.46	6.61	4.88	7.07	7.60	8.14

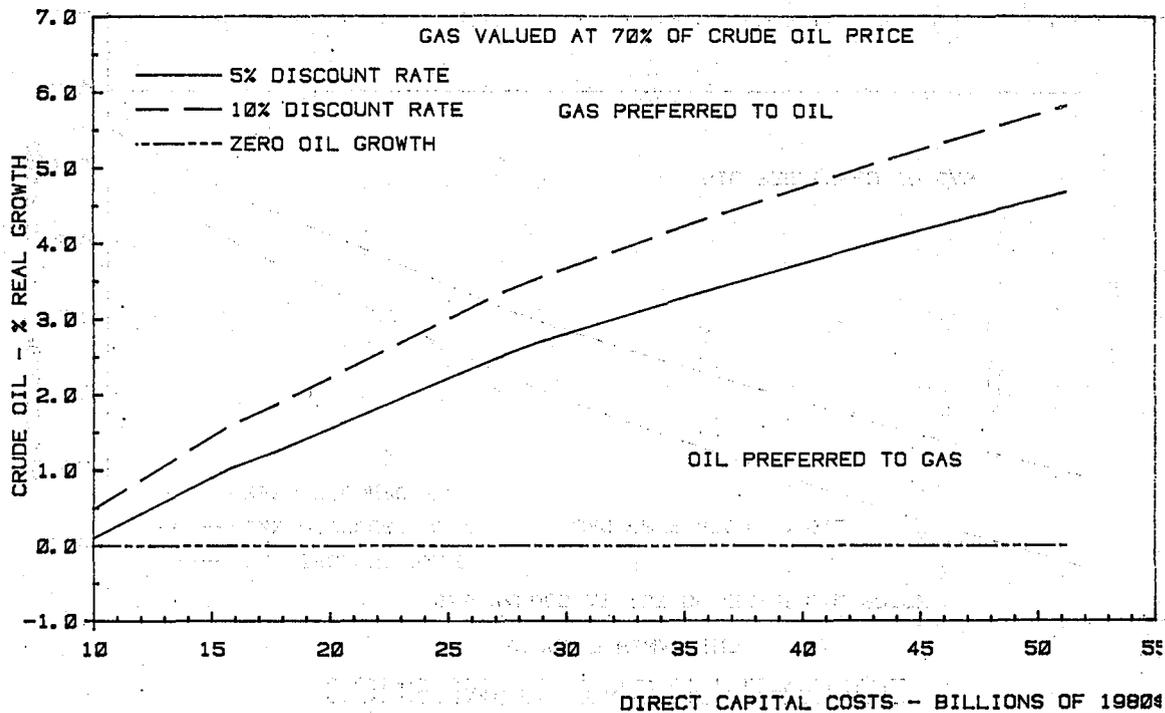
CONSUMER INDIFFERENCE

SPONSOR FINANCING



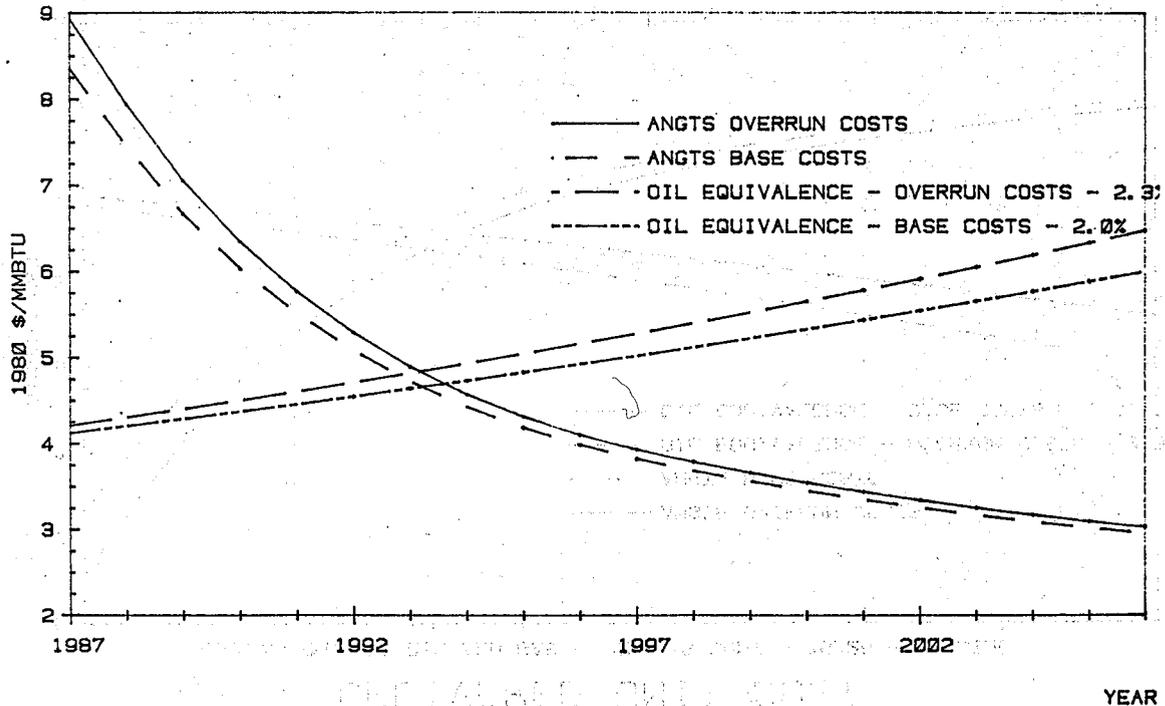
CONSUMER INDIFFERENCE

75/25 FINANCING



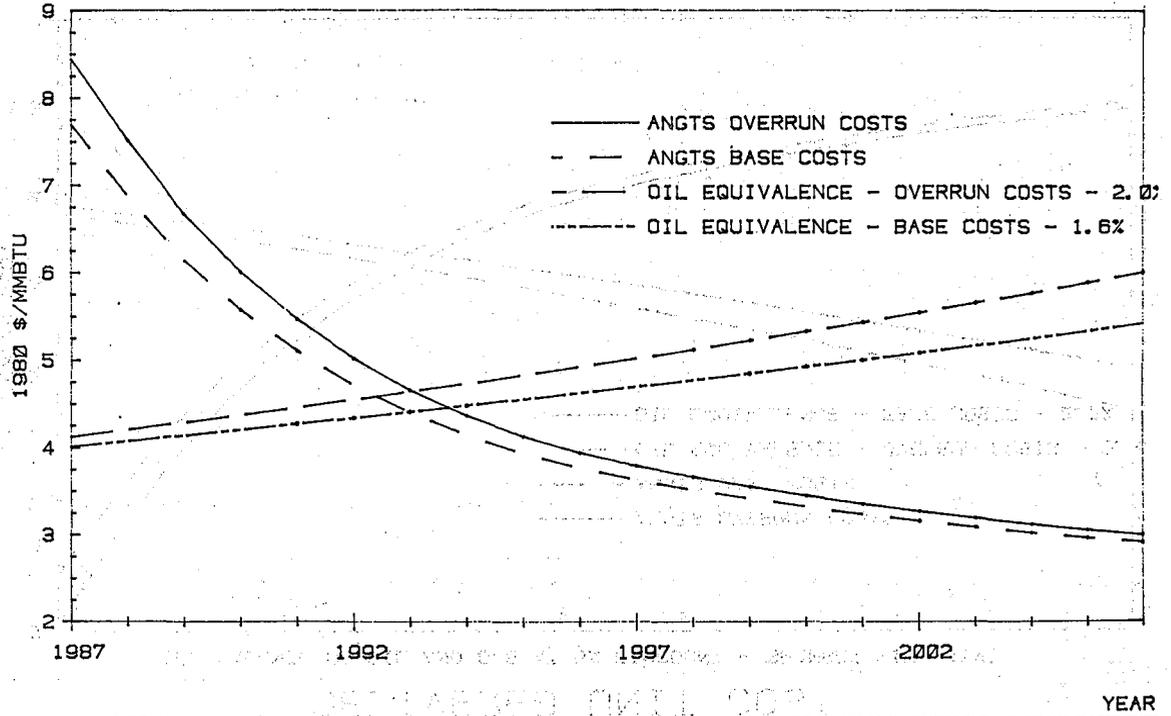
DELIVERED UNIT COST

EQUIVALENCE OF OIL AND GAS AT 5% DISCOUNT - SPONSOR FINANCING



DELIVERED UNIT COST

EQUIVALENCE OF OIL AND GAS AT 5% DISCOUNT - 75/25 FINANCING



IX. Billing Commencement

One of the waivers requested by the project sponsors provides for "pre-billing" of consumers for segments of the project that have been completed but no Alaskan gas is flowing because another project segment is not yet complete. This section attempts to calculate the impact on the average residential customer if this waiver provision is approved.

First, two cost allowances of three project segments are examined-- the "minimum bill" and "full cost of service" for the conditioning plant, Alaska pipeline, and the Canadian segment. The minimum bill consists of operation and maintenance expense, ad valorem taxes, debt expense, and debt repayment. The full cost of service includes these items plus return on and of equity, and federal and state income taxes.

For the two calibration cases described in Section II, the following table summarizes the results:

	Low Assumptions	High Assumptions
1980 Dollar Estimate	\$ 19.1 B	\$ 22.5 B
Interest Rate	8%	14%
Construction Escalation Rate	7%	11%
General Inflation Rate	5%	11%
ANGTS Costs in millions of 1987 dollars:		
Alaska Plant (min. bill)		
Oper & Main	\$ 92.45	\$ 140.35
Ad Valorem Tax	107.12	148.97
Interest	257.91	652.02
Debt Repayment	165.33	238.84
Subtotal	622.81	1180.18
1980 Dollars	432.0	539.5
Alaska Pipeline (min. bill)		
Oper & Main	\$ 55.44	\$ 84.08
Ad Valorem Tax	330.91	500.48
Interest	659.67	2036.41
Debt Repayment	422.86	745.94
Subtotal	1468.88	3366.91
1980 Dollars	1018.7	1539.3
Canada (Full Cost of Service)		
Canadian dollars	\$2350.85	\$ 4052.95
U.S. dollars	1880.2	3249.7
1980 Dollars	1304.0	1389.0
23.5% Share of ANGTS costs (residential sales to total sales)		
Alaska Plant	\$ 101.5	\$ 126.8
Alaska Pipeline	239.4	361.7
Canada	306.4	326.4
80.5% U.S. customers affected by Alaskan gas (in millions)		
	34.9	34.9
Monthly average increase in customer's bill (1980 \$)		
Alaska Plant	\$ 0.24	\$ 0.30
Alaska Pipeline	0.57	0.86
Canada	0.73	0.78

For the "Current Filing" and "Current Filing with Center Point" cost estimates, using the assumptions shown in Table II of Section I which are different from those used in the calibration analysis, the following table summarizes the monthly average increase in a residential customer's bill. Both financing scenarios are shown, as well as the "minimum bill" and "full cost of service" impacts for the three key segments of the project.

Scenario: Financing:	Current Filing Sponsor's 75/25		Current Filing with Center Point Sponsor's 75/25	
Average increase to residential customer's monthly bill:				
Min Bill Plant	\$0.29	\$0.29	\$0.31	\$0.31
Min Bill Alaska Pipeline	0.63	0.68	0.83	0.85
Min Bill Canada	0.41	0.41	0.45	0.45
Total COS Plant	\$0.43	\$0.42	\$0.46	0.45
Total COS Alaska Pipeline	1.40	1.14	1.55	1.37
Total COS Canada	0.68	0.68	0.75	0.75

X. Interest Rate and Inflation Rate Sensitivity

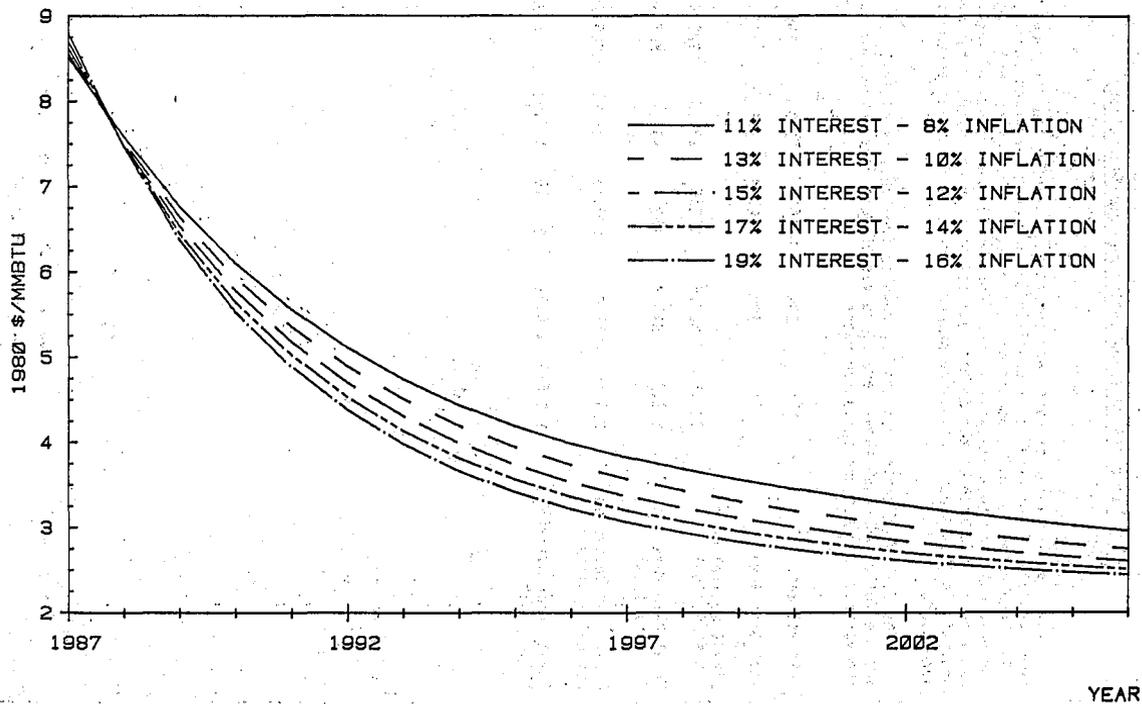
With varying interest rates and corresponding inflation rates possible over the life of the project, a sensitivity study was performed varying only those rates for all segments of the project to determine their impact. The base case for this analysis is the "Current Filing including Center Point" as filed in 1980 without the recent cost estimate update used in the other analysis is this study. Also, the project sponsor's financing assumptions were used.

The following table presents key results from this sensitivity study, and the following graph shows several curves of delivered unit costs for the various interest and inflation rates.

Interest Rate	11%	13%	15%	17%	19%
Inflation Rate	8%	10%	12%	14%	16%
Direct Capital Cost (US \$ Billion)	\$22.5	\$22.5	\$22.5	\$22.5	\$22.5
Total Rate Base (US \$ Billion)	\$43.4	\$48.3	\$53.7	\$59.7	\$66.3
First Year Delivered nominal \$/mmbtu	\$15.15	\$17.48	\$20.16	\$23.23	\$26.75
Twenty Year Average 1980 \$/mmbtu	\$ 4.51	\$ 4.31	\$ 4.15	\$ 4.02	\$ 3.92

DELIVERED UNIT COST

COMPARISON OF INTEREST AND INFLATION RATES



XI. Comparison of Effect of New Tax Law

This section presents the effect of the new tax depreciation schedule allowed in the Economic Recovery Tax Act of 1981. The assumptions for this case correspond to sponsor's financing and current filing with center point based on the sponsor's filing of 1980, without the recent updated capital cost estimates used in the other studies in this briefing book.

	Old Tax Law		New Tax Law	
1980 Dollar Capital Costs (US\$ Billion)	\$22.5		\$22.5	
Rate Base including AFUDC (US\$ Billion)	\$43.4		\$43.4	
Two Key Years Total Cost of Service (millions of US dollars)	<u>1994</u>	<u>1997</u>	<u>1994</u>	<u>1997</u>
Alaska Plant	710.4	667.0	598.9	591.6
Alaska Pipeline	3306.6	2884.6	2770.4	2521.9
Canada	1816.9	1696.8	1848.9	1696.8
Eastern Leg	303.3	271.0	262.4	249.0
Western Leg	158.1	141.5	129.7	123.0
TOTAL	6295.3	5660.9	5610.3	5182.3

Note: These two years are compared because 1994 corresponds to the cross-over year between accelerated and straight-line depreciation under the new tax law, and 1997 corresponds to the cross-over year under the old law.

Delivered Unit Costs - NGPA wellhead

First Year Nominal \$/mmbtu	\$ 15.16	\$ 15.15
First Year 1980 \$/mmbtu	8.51	8.51
Twenty year average 1980 \$/mmbtu	4.65	4.51

Consumer Indifference

Real oil price escalation rate equivalent to ANGTS, assuming market value of gas equal to 70% of world oil price	-0.74%	-1.14%
---	--------	--------

Profitability Analysis

Alaska Sponsors - Internal ROR	14.7%	15.5%
Producers - Internal ROR	36.4%	37.0%

Q.2. - Would you please provide the Committee with your Department's best estimates as to the amount of exposure natural gas consumers could have under the billing commencement waiver. Specifically, could you please provide your best estimate of the following:

- a. The annual cost of service for each segment of the ANGTS (conditioning plant, pipeline in Alaska and pipeline in Canada) beginning on January 1, 1987 and ending on January 1, 2007.

A. - The Department has not prepared any estimates on this subject. A study on the annual cost of service for ANGTS has been conducted by the Office of the Federal Inspector. Since that office conducted this study, we feel it would be more appropriate to make your request to it.

Q.2 b. - The breakdown of consumers to be served by the ANGTS (state-by-state, and type of use to be served, whether industrial, commercial, residential, etc.); and

2c. - The projected natural gas bill for each group of consumers identified above in 1986, in 1987, and in 1988, assuming the entire ANGTS is completed by January 1, 1987.

A. - This information is not available anywhere to our knowledge. There is some information on how much ANGTS gas will go to each state either directly or indirectly through displacement, and what portion of each state's gas consumption it will represent. This information has been submitted to the Committee by the sponsors and a copy of it is attached. The detailed information on which groups within each state will use ANGTS gas is not available.

10/20/81

STATES RECEIVING ALASKA NATURAL GAS

<u>States</u>	<u>Annual Volumes (MMcf)</u>	<u>Percent Received By State</u>	<u>Percent Received By Regions</u>
United States	<u>726,134</u>	100.0 %	100.0 %
New England	<u>17,061</u>		2.35
Connecticut	4,426	0.61	
Maine	142	0.02	
Massachusetts	10,424	1.44	
Rhode Island	1,570	0.22	
Vermont	-	-	
New Hampshire	499	0.07	
Middle Atlantic	<u>104,599</u>		14.40
New Jersey	20,848	2.87	
New York	41,197	5.67	
Pennsylvania	42,554	5.86	
East North Central	<u>199,562</u>		27.48
Illinois	77,326	10.65	
Indiana	26,989	3.72	
Michigan	29,274	4.03	
Ohio	46,481	6.40	
Wisconsin	19,492	2.68	
West North Central	<u>80,822</u>		11.13
Iowa	15,422	2.12	
Kansas	18,635	2.57	
Minnesota	16,207	2.23	
Nebraska	9,139	1.26	
Missouri	18,706	2.58	
South Dakota	1,428	0.20	
North Dakota	1,285	0.18	
South Atlantic	<u>73,920</u>		10.18
Delaware	428	0.06	
D.C.	1,642	0.23	
Florida	13,611	1.87	
Georgia	18,756	2.58	
Maryland	8,925	1.23	
North Carolina	9,282	1.28	
South Carolina	6,354	0.88	
Virginia	8,425	1.16	
West Virginia	6,497	0.89	

Source: Northwest Energy Inc.

<u>States</u>	<u>Annual Volumes (MMcf)</u>	<u>Percent Received By State</u>	<u>Percent Received By Regions</u>
East South Central	45,624		6.28
Alabama	12,495	1.72	
Kentucky	10,353	1.43	
Mississippi	9,853	1.36	
Tennessee	12,923	1.78	
West South Central	46,123		6.35
Arkansas	13,923	1.92	
Louisiana	20,991	2.89	
Oklahoma	2,570	0.35	
Texas	8,639	1.19	
Mountain	39,624		5.46
Arizona	8,425	1.16	
Colorado	13,494	1.86	
Idaho	2,570	0.35	
Montana	856	0.12	
Nevada	3,570	0.49	
New Mexico	2,499	0.34	
Utah	6,211	0.86	
Wyoming	1,999	0.28	
Pacific	118,799		16.36
Alaska	12,200	1.68	
California	94,962	13.08	
Hawaii	-	-	
Oregon	4,212	0.58	
Washington	7,425	1.02	

Source: Northwest Energy Inc.

Q.2 d - The projected natural gas bill for each group of consumers identified above in 1987, assuming: (1) the conditioning plant portion of the ANGTS is not completed, but the other portions are completed; (2) the pipeline in Alaska portion of the ANGTS is not completed, but the other portions are completed; and (3) the pipeline in Canada portion of the ANGTS is not completed, but the other portions are completed.

A. - The details for each group of consumers are not available by state. However, the additional charges per month (in 1980 dollars) based on the sponsors' cost estimates to an average residential gas customer were estimated in a study conducted by the staff of the Office of the Federal Inspector. This study indicates that for the three cases discussed above the monthly pre-completion charges would be about \$1.60, \$1.06, and \$1.16, respectively. A copy of this study was provided to your staff on October 19, 1981.

State	1987	1988	1989
Alaska	\$1.60	\$1.60	\$1.60
Canada	\$1.06	\$1.06	\$1.06
Conditioning Plant	\$1.16	\$1.16	\$1.16

- Q 3. Would you please provide the Committee with your Department's best estimate of the price that various types of alternative fuels for natural gas will be able to command in 1987? What is your projected price for oil from oil shale, for various types of SNG, for LNG imports, for natural gas imports from Canada and Mexico, and for imports of crude oil, distillate, and residual fuel oil?
- Q 4. What is your projected price for the types of alternative fuels listed above over the expected life of the ANGTS?
- A 3 and 4. Prices of Projected Alternatives to ANGTS Natural Gas Supplies:

Alaska natural gas will compete in the marketplace with supplemental natural gas supplies, (including substitute natural gas, liquified natural gas imports and Canadian and Mexican imports) and with substitutable petroleum products imported directly or produced from domestic or foreign crude oil. How successfully Alaskan natural gas competes will depend mainly on the relative prices of the available alternatives.

The prices for gas imports from Canada and Mexico, as well as liquified natural gas (LNG) imports depend on both the pricing policy of the exporting countries and the demand response in the U.S. to these pricing policies. Any projection of future prices for gas substitutes reflect implicit assumptions about these factors. The analytic assumptions used by DOE about the pricing policies for these alternatives are discussed below. These assumptions are uncertain and represent current best estimates for use in forecasting future natural gas prices.

Canada's stated policy is to price its exports at parity with its crude oil imports. However, in practice, Canada has demonstrated flexibility in allowing the border price to lag crude oil price increases when U.S. demand is soft. For example, in the past several years Canadian gas prices have averaged 70-80 percent of U.S. crude costs. Once partial decontrol of the U.S. wellhead gas market occurs in 1985, Canada may change its pricing rules. Canada could price its gas exports at parity with U.S. decontrolled wellhead gas prices. Alternatively, Canada could maintain its current gas pricing policy (where Canadian gas prices might lag crude oil prices).

It appears that the Mexican export pricing policy is to price its gas in the same manner as Canada. Continuation of this policy is expected.

LNG prices may be different for projects which have already received U.S. regulatory approval (such as Distrigas and Trunkline) compared to new projects. For projects already approved, we assume that the contract formulas will be observed, until the contract provides for renegotiation. Typically, these contracts have a fixed component and a component tied to oil price increases.

In the case of new LNG projects, DOE has a stated policy of requiring that gas imports pass an "alternative fuels" price test. This test is currently tied to a weighted average of 25 percent distillate fuel oil prices and 75 percent residual fuel oil prices. If new LNG projects are negotiated, it is reasonable to assume that the import price will meet this test.

Prices for substitute natural gas (SNG) from naphtha have been historically linked to petroleum prices, and are expected to remain slightly higher than distillate fuel prices (on a Btu equivalent basis).

Certain petroleum products (primarily distillate fuel oil and residual fuel oil) offer an alternative to natural gas for some uses. Several factors, including world oil prices, oil price decontrol and the expected consumers' responses to petroleum product price increases, influence our projections of petroleum product prices. With oil price decontrol, domestic and imported crude are allowed to compete equally in the marketplace. It can be reasonably assumed, therefore, that the refiner's cost for domestic crude is approximately equal to the cost for imported crude. In other words, the prices of refined petroleum products produced from imported crude should be approximately the same as prices of products produced from domestic crude.

Similarly, with decontrol, petroleum products produced by domestic refineries compete in the U.S. market with imported products. Therefore, the prices of imported petroleum products are projected to be roughly equivalent to the prices of domestically refined petroleum products.

Recent estimates indicate that the cost of producing shale oil, including upgrading to the equivalent of a high quality crude oil substitute (e.g., light Arabian crude imports) is about \$40 per barrel in current 1981 dollars. Although the price of imports and decontrolled domestic oil is expected to exceed the current estimates of the cost of producing shale over the long-term, it is expected that real increases in the capital and production costs for the shale process will also increase the per barrel cost of shale over time. How rapidly these shale production costs escalate in comparison to the real price of imported and domestic crudes will directly determine when shale oil will become competitive in the marketplace.

In the past, oil companies have, on the average, been able to pass 100 percent of crude acquisition cost increases through to consumers (on a real cost per Btu basis). Although this is the case for the average of all petroleum products sold, it is not the case for each individual product. A \$1.00 per million Btu increase in refiner crude costs has generally resulted in a greater than \$1.00 per million Btu increase in home heating oil prices and a less than \$1.00 per million Btu increase in industrial sector residual fuel oil prices. These differentials are indicative of the ability of industrial users to switch to alternative fuels in comparison to the relative inability of residential users to do so.

DOE's most recent set of energy price projections were published in a supplement to the National Energy Policy Plan (NEPP) in July of this year. A summary of these estimates is attached. Recent events indicate that the world oil price may, especially in the short-term, follow a low price path within the NEPP range. This should also cause the delivered price of petroleum products to fall in the low end of the ranges shown. As noted above, natural gas must compete with petroleum products in some markets and, therefore, lower world oil prices should also depress natural gas prices.

TABLE 3-1
 NEPP FUEL PRICE SUMMARY
 By Sector
 (1981 Dollars Per Million Btu's)^{1/}

	ESTIMATED ^{2/}		PROJECTED					
	1980	1985		1990		2000		
		Midrange	Range	Midrange	Range	Midrange	Range	
WORLD OIL PRICE ^{3/} (1981 \$/barrel)	37 ^{2/}	44	37-50	52	41-68	70	50-95	
RESOURCE PRICES								
Refiner Crude Oil Acquisition Cost	5.32 ^{5/}	7.59	6.4-8.6	8.97	7.1-11.7	12.07	8.6-16.4	
Domestic Average Wellhead Gas Price	1.61 ^{5/}	5.42	4.8-6.0	6.61	5.4-8.4	8.28	6.6-9.7	
Domestic Average Minemouth Coal Price	1.22	1.41	1.3-1.5	1.48	1.4-1.7	1.70	1.5-2.0	
DELIVERED PRICES								
Residential Sector								
Distillate	7.74 ^{5/}	10.22	8.6-11.8	11.81	9.3-15.5	15.40	11.0-21.1	
Liquid Gases	6.69	8.95	6.7-11.5	10.32	7.2-15.2	13.41	8.4-20.8	
Natural Gas	4.21 ^{5/}	7.79	6.7-8.7	8.80	7.3-10.9	10.50	8.6-12.2	
Electricity	17.26 ^{5/}	17.80	16.8-18.6	19.90	18.1-21.7	22.80	20.2-24.9	
Commercial Sector								
Distillate	6.94	9.41	7.9-10.9	10.91	8.5-14.4	14.29	10.1-19.8	
Residual	4.72 ^{5/}	7.53	5.9-9.2	8.83	6.4-12.4	11.74	7.8-17.2	
Liquid Gases	6.50	8.85	6.7-11.3	10.28	7.2-15.0	13.50	8.6-20.7	
Natural Gas	3.44	7.46	6.4-8.4	8.49	7.0-10.6	10.20	8.2-11.9	
Electricity	17.65 ^{5/}	18.60	17.9-19.0	20.90	19.6-22.2	24.20	22.3-25.4	
Industrial Sector								
Distillate	6.82	9.20	7.7-10.7	10.66	8.3-14.2	13.93	9.9-19.4	
Residual	4.72 ^{5/}	7.28	5.6-9.1	8.53	6.1-12.2	11.33	7.4-16.9	
Liquid Gases	6.50	8.85	6.7-11.3	10.28	7.2-15.0	13.50	8.6-20.7	
Natural Gas	2.85	6.97	6.0-7.9	8.00	6.6-10.1	9.73	7.8-11.4	
Coal	1.58	1.90	1.4-2.5	2.05	1.4-2.8	2.33	1.6-3.2	
Electricity	11.89 ^{5/}	13.10	12.3-13.8	15.20	13.6-16.7	18.00	15.6-20.1	
Transportation Sector								
Gasoline	10.73 ^{5/}	13.17	10.9-15.7	14.68	11.4-19.6	18.11	12.9-25.6	
Distillate ^{2/}	6.92 ^{5/}	10.41	8.2-11.5	12.07	8.8-13.4	15.80	10.4-17.7	
Residual ^{2/}	4.72 ^{5/}	7.28	5.6-9.1	8.53	6.1-12.2	11.33	7.4-16.9	
Jet Fuel ^{4/}	7.30 ^{1/}	9.85	7.7-12.1	11.55	8.4-16.3	15.44	10.1-22.8	

1/ 1981 dollars assumed to equal 1.099 times 1980 dollars.

2/ Except as noted, delivered prices are resource price plus estimated markups for processing and distribution.

3/ U.S. average refiner acquisition cost of imported crude oil.

4/ Excludes taxes.

5/ Energy Information Administration, Monthly Energy Review, April 1981.

6/ Data from the Monthly Energy Review, plus an estimate of taxes. The Monthly Energy Review does not give residual prices by sector.

7/ American Transport Association.

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON 20426

NOV 2 1981

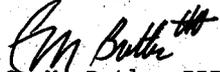
Honorable James A. McClure
Chairman
Committee on Energy and
Natural Resources
United States Senate
Washington, D.C. 20510

Dear Chairman McClure:

Thank you for your letter of October 26, 1981, requesting additional information for the hearing record on the Alaska Natural Gas Transportation Act proposed waiver package. We are pleased to provide this additional information for the record, in response to the questions posed by the Committee in your letter.

Finally, if I can be of further assistance in this matter or any other matter, please do not hesitate to contact me.

Sincerely,


C. M. Butler III
Chairman

Enclosure

Question No. 1

1. Would you please provide the Committee with any studies done by the Commission pertaining to the price that will be paid for the Alaska natural gas once the ANGTS is completed.

Answer to Question No. 1

The Commission is required to base its decisions on the record developed by the parties to its proceedings. Thus, the Commission usually does not prepare its own studies of the price of the gas to be delivered by a particular project, but rather considers the cost figures supplied by the sponsors of proposed projects, as evaluated by the Commission's staff and other parties to the proceeding considering the sponsors' proposal. The Commission currently has in progress a proceeding to consider the estimated direct construction costs for the Alaska segment. However, because the sponsors have not completed their filings for final certification, the Commission has no basis to estimate the other components of the delivered price of the gas.

Question No. 2

2. Would you please provide the Committee with the Commission's best estimate as to the amount of exposure natural gas consumers could have under the billing commencement waiver. Specifically, could you please provide your best estimate of the following:

- (a) The annual cost of service for each segment of the ANGTS (conditioning plant, pipeline in Alaska, and pipeline in Canada) beginning on January 1, 1987 and ending on January 1, 2007;
- (b) The breakdown of consumers to be served by the ANGTS (state by state, and type of use to be served, whether industrial, commercial, residential, etc.);

- (c) The projected natural gas bill for each group of consumers identified above in 1986, in 1987, and in 1988, assuming the entire ANGTS is completed by January 1, 1987;
- (d) The projected natural gas bill for each group of consumers identified above in 1987, assuming (1) the conditioning plant portion of the ANGTS is not completed, but the other portions are completed; (2) the pipeline in Alaska portion of the ANGTS is not completed, but the other portions are completed; (3) the pipeline in Canada portion of the ANGTS is not completed, but the other portions are completed.

Answer to Question No. 2

Exposure of natural gas consumers to costs under the billing commencement provision of the waiver was discussed in my written testimony at page 15, et seq. As stated, President Carter's Decision attempted to allocate all of the risk of noncompletion to the project sponsors. Its effect was to split project risk among the sponsors (equity owners) and lenders. However, accepting the lender's testimony that the project is not financeable under such conditions, there is no exposure of anyone as there is not a financeable project.

The waiver provisions referred to would change the status quo by allowing the Commission to impose some of the risk of delay and noncompletion of the system on consumers. As I indicated in my written testimony this approach is probably a correct policy choice from a regulatory standpoint because regulated companies may well not be compensated for costs attendant to such risks in the kind of cost-based regulatory regime which currently prevails. Importantly, whether such costs should be borne by consumers is left for the Commission to decide in the context of the case to be presented to it. Also importantly, that is a judgment neither the Commission nor I can now make because the project sponsors' case has yet to be presented. Accordingly, I have no estimate to provide as to costs of service for respective segments of the project.

Although the Commission could probably provide a breakdown of consumers to be served by the project, that task would take several weeks to perform. However, I would expect such information to be developed during the course of the Commission's decision on the the certificate application. I would

also expect information as to prospective cost impacts on various customer classes to be developed. However, that information is not subject to estimation at present.

I regret that I cannot provide more specific answers to this question. However, much data has yet to be addressed in the course of proceedings before the Commission, and I am constrained by my obligations as a quasi-judicial officer both from seeking such data and drawing conclusions from it at this point in time.

Question Nos. 3 and 4

3. Would you please provide the Committee with the Commission's best estimates of the price that various types of alternative fuels for natural gas will be able to command in 1987? What is your projected price for oil from oil shale, for various types of SNG, for LNG imports, for natural gas imports from Canada and Mexico, and for imports of crude oil, distillate, and residual fuel oil?

4. Would you please provide the Committee with the Commission's best estimates of projected prices for the types of alternative fuels listed above over the expected life of the ANGTS?

Answer to Question Nos. 3 and 4

The Commission does not, in general, have the resources to make the projections requested. Rather, it normally depends on other government agencies for such information. In considering the instant case, the Commission will scrutinize any projections made by the participants in the proceeding. However, price projections for various fuels are prepared by the Department of Energy Office of Policy, Planning and Analysis and by the Energy Information Administration. In this regard, the Office of Policy, Planning and Analysis issued price projections by fuel source in Energy Projections to the Year 2000: A Supplement to the National Energy Plan in July, 1981 (a report to Congress required by Title VII of the U.S. Department of Energy Act). Data on fuel price and supply through 1995 appear in the 1980 Annual Report to Congress of the Energy Information Administration (Volume Three: Forecasts, issued March, 1981). In addition, the Energy Information Agency issued both World Oil Market Outlook: Recent History and Forecasts of World Oil Prices and Short Term Energy Outlook in August, 1981.

Question No. 5

5. I'd like to talk about the price of this natural gas in a deregulated natural gas market. Let's assume the NGPA stays in effect. That means some portion of our gas supplies will be deregulated in January 1, 1985. Natural gas consumers will probably begin to pay an oil equivalent price for their gas supplies shortly after that. This natural gas will probably not come to market until 1987. Since gas consumers will already be paying a "market clearing price" for natural gas, how will this very expensive gas affect their bills?

Answer to Question No. 5

According to a recent DOE report, more than 10 TCF of our domestic gas supplies will be freed of price controls in 1985. This fraction will be added to the much smaller volumes already decontrolled prior to 1985, which will be followed by additional decontrolled quantities as various sections of NGPA lapse. Fundamental market and regulatory uncertainties blur any prediction of what consumers' costs will be, and when they will see them.

The primary uncertainty concerns which fuel, or fuels, gas will compete with. Market-clearing prices based on competition with middle distillates, high or low sulfur residual oil, or even coal, would obviously differ substantially. The type of fuel gas competes with depends in turn on how much gas we anticipate having available in the late 1980's including any supplies induced by higher deregulated prices. The response of consumers to higher prices, through conservation, will also affect the competitive position of gas, and thus market-clearing prices.

In addition to these basic market questions, there are several behavioral uncertainties that trace, in one fashion or another, to the history of gas price control. Foremost is the behavior of pipelines with access to substantial quantities of price controlled gas, the owners of the "gas cushion". How will these pipelines bid for new decontrolled gas supplies? Neither the simple assumption that they will bid true market-clearing prices, or that they will immediately exhaust their cushions by overbidding, seems likely to hold. Where between these extremes the price of decontrolled gas lands is highly uncertain, and obviously decisive to consumer costs.

Another uncertainty traces to the prevalence of gas contracts with escalator clauses pegged to other fuel prices, or to other pipelines' purchases. The prevalence, precise terms, and likely operation of these clauses are just beginning to be known.

Finally, a possible shift in gas supplies from intrastate to interstate markets, based on the larger cushions of interstate pipelines, would affect both the level and allocation of consumer costs.

Question No. 6

6. If deregulation were to occur earlier than 1985, would the project still be viable?

Answer to Question No. 6

First, it is important to remember that deregulation policy will not substantially alter the basic economic viability of the project, that is, whether it pays the nation to invest the resources necessary to bring Alaskan gas to market.

Early deregulation could, however, have a substantial impact on the financial viability of ANGTS, that is, how attractive it is to sponsors, lenders, and other investors. This impact would come from changes in the gas cushion which affect pipelines' ability to pay for ANGTS while holding on to their markets.

We simply do not know at present whether ANGTS is an economically viable project. Neither the Commission nor private markets have made a final determination on that point.

Even if it is, however, the gas cushion might be important to financing ANGTS. This importance stems from the tariff structure of ANGTS, which loads the real burdens of paying for the transportation system in the early years of its operations. Alaskan gas which might be a relatively inexpensive supply choice over the long term might still, in the early years, require costs of service exceeding prices consumers are willing to pay.

That prospect would discourage investors. But the availability of a gas cushion means, of course, that pipelines might pay high tariffs without raising their own rates above

market-clearing levels. I should emphasize that what we are dealing with here are questions, not answers. Hopefully, the answers will become clear in the course of the certificate proceeding before the Commission.

Question No. 7

7. I am curious about the effect this project will have on intrastate pipelines. Some of my colleagues are worried that the old gas "cushion" will enable interstate pipelines to siphon away a lot of intrastate gas.

- (a) Will this project "eat up" any of the old gas cushion? How much?
- (b) So it should enhance both intra- and interstate supplies?

Answer to Question No. 7(a)

The answer to this question depends on three major factors: the cost-of-service, especially in the early years, required by ANGTS; the market value of ANGTS gas; and the size of the cushion itself. All three factors are characterized by uncertainty and will be considered by the Commission in the course of the ANGTS certificate proceeding.

Generally, if ANGTS' gas is committed to those interstate pipelines with large shares of the gas cushion, then it might partially diminish the advantage these pipelines have in bidding for other new gas supplies. In any case, the availability of ANGTS gas should diminish pressure on other supply sources which may serve either interstate or intrastate markets.

Answer to Question No. 7(b)

Yes, it should. And it might do so for another, less obvious reason. The fact that ANGTS or other new supplies may be committed to a particular pipeline doesn't mean they will flow forever to that pipeline's customers. The availability of off-system sales, coupled with superior marketing opportunities elsewhere, might eventually divert a portion of any new supplies to pipelines which couldn't afford to make the initial commitment. The opportunities for this happening are uncertain,

depending on pipelines' business strategies as well as regulatory policies, but they are there and should be taken into account in assessing ANGTS impact on various markets.

The fact that ANGTS will enhance our gas supplies does not, by itself, mean it is an economically desirable supply choice. That question, as mentioned earlier, has not yet been finally resolved by the Commission, or the private markets which would have to support ANGTS construction.

Question 8(a)-(e)

8. I've heard a lot of discussion about the "tracking" portion of the waiver package. It seems to me to be the most technical part of a very technical package.

8(a). Would you please explain what tracking is?

Answer to Question No. 8(a)

The Alaska Natural Gas Transportation System will be comprised of four separately-owned pipeline segments: the Alaska segment, the Canadian segment, 1/ the Eastern Leg and the Western Leg. The owners of each segment will contract to provide transportation service to the companies purchasing gas from the Prudhoe Bay producers ("the Shippers"). The Shippers, who are U.S. gas transmission companies, will recover the cost of the transportation service, as well as the cost of the gas itself, through the rates they charge their customers for gas service.

The amounts of money billed to each Shipper under the transportation service contracts are expected to be large relative to their financial strength. Furthermore, responsibility for the transportation charges on the system will be allocated in proportion to the fraction of the design throughput capacity

1/ The Canadian segment is further subdivided into five operating entities within Canada: Foothills Pipe Lines (Yukon) Ltd., Foothills Pipe Lines (North B.C.) Ltd., Foothills Pipe Lines (Alta) Ltd., Foothills Pipe Lines (South B.C.) Ltd., and Foothills Pipe Lines (Sask.) Ltd.

for which each Shipper has contracted. 2/ This feature may give rise to some fluctuations in the unit cost of the gas delivered by the system in the event of fluctuations in the amount of gas throughput on the system.

For both of these reasons -- the magnitude of the ANGTS transportation charges in relation to the Shippers' ability to pay, and possible fluctuations in the delivered cost of the gas -- both the sponsors of the proposed systems and prospective Shippers on those systems have urged that the ANGTS transportation charges, both initially and on the occasion of any changes, be allowed to be flowed through essentially automatically ("tracked") into the Shipper's rates, rather than being reviewed in the course of general rate proceedings for each Shipper.

Further explanation of the mechanics of "tracking" appears in the answers to Questions 8(c), 8(d) and 8(e). "Tracking" means a mechanism which allows a pipeline to reflect in its rates, changes in an element of cost without showing whether other elements of cost have changed since the pipeline's last general rate proceeding.

Question No. 8(b)

8(b). Does the FERC have authority under existing law to implement tracking?

Answer to Question No. 8(b)

Yes. Tracking in the present context is simply a mechanism by which the Shippers' rates are adjusted to reflect the ANGTS transportation costs they incur. The only real limit on

2/ Application and Submission of Northern Border Pipeline Company," filed on the same date in Dockets No. CP78-124 and RM78-12, see, especially, Rate Schedules T-1. These tariffs, with modifications, were approved by the Commission in Order No. 31, "Order Setting Values for Incentive Rate of Return, Establishing Inflation Adjustment and Change in Scope Procedures, and Determining Applicable Tariff Provision," issued in Docket No. RM78-12 on June 8, 1979.

the Commission's authority to prescribe procedures for setting rates is that the end results of these procedures -- the resulting rates -- must meet the "just and reasonable" standard prescribed in the Natural Gas Act.

Question No. 8(c)

8(c). How does this represent a change --- if it does --- from normal practice?

Answer to Question No. 8(c)

Normal practice is for the natural gas companies regulated by the Commission to make filings for rate adjustments as prescribed by the Commission's regulations issued pursuant to the Natural Gas Act. These filings are adjudicated by the Commission, after affording all interested parties the opportunity to be heard, and rates for a given type of service are approved for use by the jurisdictional companies in providing gas service to their customers. In setting a company's rates, the Commission attempts to match costs with the revenues for a representative test period.

In the early 1970's, the prices of the new gas supplies available to the jurisdictional companies began to rise so rapidly that the normal time lag involved in processing the companies' rate change applications was causing cash flow problems for them. ^{3/} In response to this problem, the Commission amended its regulations to authorize jurisdictional companies to periodically adjust their rates to account for changes in purchased gas costs in lieu of their filing for

^{3/} The Natural Gas Act provides the Commission with a mechanism by which it can allow a company to file proposed rates and which permit the filed rates to go into effect, pending adjudication of those rates. This avoids a situation where a company's revenues become seriously out of balance with its costs during the pendency of the Commission's review process. However, any differences between the filed rates allowed to go into effect and those ultimately approved by the Commission are subject to a requirement to be refunded to the company's customers, with interest, upon completion of the Commission's rate change proceeding.

changes in all costs. 4/ The mechanism by which this is accomplished is Commission approval of the purchased gas adjustment (PGA) clause in each company's tariff which specifies the procedures, frequency and computational methods under which the changes in purchased gas costs may be flowed through. Generally, rate changes to "track" changes in a pipeline's purchased gas costs are made semi-annually. Any imbalances (both positive and negative) between costs and collections occurring within an accounting period for those rate adjustments are deferred. They are then collected, or refunded, together with interest, in the succeeding PGA accounting period. The date of the rate change usually lags the close of the accounting period by three months. This is done to allow adequate time for the assembling of required data by the pipeline, for a period of public noticing of the proposed rate change, and for Commission action on the proposed change.

Except in limited instances, the Commission has not previously authorized as a permanent tariff provision, any mechanism for the pass-through, or "tracking", of transportation charges, even for transportation charges for service provided by other jurisdictional companies. 5/ The Commission's concern in this regard has been generally related to the potential imbalance between a pipeline's total costs and revenues that may be occasioned by such tracking. The decision to authorize tracking of ANGTS costs would be an exception to the general rule which, if provided, would likely be made in the context of the unique circumstances of the ANGTS.

The Commission has on many occasions approved temporary tracking provisions as part of an overall settlement of a pipeline rate change proceeding. Such settlements are also generally in effect for a limited period of time and normally provide other mechanisms that address the concern of potential imbalance between revenues and costs that could occur as the result of tracking some transportation costs. Similar or other appropriate mechanisms could be developed for tracking the ANGTS charges.

Question No. 8(d)

8(d). Is the tracking waiver, in your opinion, an appropriate public policy?

4/ 18 C.F.R. 154.38(d)(4).

5/ For the most part, this is where the pipeline has served only as an "accounting conduit" to pass through transportation costs charged by others.

the Commission's authority to prescribe procedures for setting rates is that the end results of these procedures -- the resulting rates -- must meet the "just and reasonable" standard prescribed in the Natural Gas Act.

Question No. 8(c)

8(c). How does this represent a change --- if it does --- from normal practice?

Answer to Question No. 8(c)

Normal practice is for the natural gas companies regulated by the Commission to make filings for rate adjustments as prescribed by the Commission's regulations issued pursuant to the Natural Gas Act. These filings are adjudicated by the Commission, after affording all interested parties the opportunity to be heard, and rates for a given type of service are approved for use by the jurisdictional companies in providing gas service to their customers. In setting a company's rates, the Commission attempts to match costs with the revenues for a representative test period.

In the early 1970's, the prices of the new gas supplies available to the jurisdictional companies began to rise so rapidly that the normal time lag involved in processing the companies' rate change applications was causing cash flow problems for them. ^{3/} In response to this problem, the Commission amended its regulations to authorize jurisdictional companies to periodically adjust their rates to account for changes in purchased gas costs in lieu of their filing for

^{3/} The Natural Gas Act provides the Commission with a mechanism by which it can allow a company to file proposed rates and which permit the filed rates to go into effect, pending adjudication of those rates. This avoids a situation where a company's revenues become seriously out of balance with its costs during the pendency of the Commission's review process. However, any differences between the filed rates allowed to go into effect and those ultimately approved by the Commission are subject to a requirement to be refunded to the company's customers, with interest, upon completion of the Commission's rate change proceeding.

changes in all costs. 4/ The mechanism by which this is accomplished is Commission approval of the purchased gas adjustment (PGA) clause in each company's tariff which specifies the procedures, frequency and computational methods under which the changes in purchased gas costs may be flowed through. Generally, rate changes to "track" changes in a pipeline's purchased gas costs are made semi-annually. Any imbalances (both positive and negative) between costs and collections occurring within an accounting period for those rate adjustments are deferred. They are then collected, or refunded, together with interest, in the succeeding PGA accounting period. The date of the rate change usually lags the close of the accounting period by three months. This is done to allow adequate time for the assembling of required data by the pipeline, for a period of public noticing of the proposed rate change, and for Commission action on the proposed change.

Except in limited instances, the Commission has not previously authorized as a permanent tariff provision, any mechanism for the pass-through, or "tracking", of transportation charges, even for transportation charges for service provided by other jurisdictional companies. 5/ The Commission's concern in this regard has been generally related to the potential imbalance between a pipeline's total costs and revenues that may be occasioned by such tracking. The decision to authorize tracking of ANGTS costs would be an exception to the general rule which, if provided, would likely be made in the context of the unique circumstances of the ANGTS.

The Commission has on many occasions approved temporary tracking provisions as part of an overall settlement of a pipeline rate change proceeding. Such settlements are also generally in effect for a limited period of time and normally provide other mechanisms that address the concern of potential imbalance between revenues and costs that could occur as the result of tracking some transportation costs. Similar or other appropriate mechanisms could be developed for tracking the ANGTS charges.

Question No. 8(d)

8(d). Is the tracking waiver, in your opinion, an appropriate public policy?

4/ 18 C.F.R. 154.38(d)(4).

5/ For the most part, this is where the pipeline has served only as an "accounting conduit" to pass through transportation costs charged by others.

Answer to Question 8(d)

In July, the Commission received an inquiry regarding this aspect of the waiver package from Congressmen Sharp and Brown of the House Commerce Subcommittee on Fossil and Synthetic Fuels. The Commission's General Counsel responded extensively to that inquiry, and a copy of his evaluations was attached to the Chairman's prepared statement to the Committee.

The scope of the Commission's authority, particularly under Section 5 of the Natural Gas Act, has been controversial on a number of occasions in the past ^{6/} because of the alleged inability of investors to rely on initial Commission authorizations to govern the conditions of return on and of their investments for the life of the project. Under the scheme of regulation in the Natural Gas Act, investors in a project such as the ANGTS are subject to two types of "regulatory risk":

- (1) that the Commission would change the tariffs initially approved in light of changed circumstances, and
- (2) that a subsequent Commission, composed of individuals with a different view of the public interest in a given set of circumstances, would change the tariffs in light of that view.

The Commission's ability to change the tariffs in either of these events is uncertain. The effect of this aspect of the proposed waiver would be to eliminate that uncertainty by prohibiting the Commission from impairing debt service in either event.

The "full implications" of this proposal are difficult to forecast. In an effort to inform your deliberations, we have tried to assess what changes in circumstances, or changes in perceptions about a given set of circumstances, are possible over the life of the ANGTS which might be expected to give rise to Commission reconsideration of initially approved tariffs. The changes of which we can conceive are of the following types:

- (1) a changed economic environment such as would result in materially different costs of capital (i.e., interest rates and return on

^{6/} See, e.g., the hearings in the 92nd Congress regarding HR 2513 and all identical bills, wherein amendments to the Natural Gas Act were proposed to limit the Commission's authority to change producer certificates.

- equity) from those extant at the time of initial approval;
- (2) changed amounts of natural gas available to be transported such as would result in a materially different economic life for the transportation system; and
 - (3) changed economics of the gas to be delivered by the system, relative to other sources of energy supplies, such as would warrant a changed revenue pattern in order to avoid more serious economic dislocations.

Approval of the waiver would force the Commission to try to anticipate the possibility of such changes in its decisions regarding final certification. Although this would obviously make the Commission's job more difficult, we believe we could do it. Furthermore, in view of the vast sums required to construct the ANGTS, we consider it reasonable that we be asked to try.

Question No. 8(e)

If the waiver package is passed as proposed, will local distribution companies which do not purchase Alaska gas have to pay for the pipeline? Does tracking affect this?

Answer to Question No. 8(e)

Under the provisions of the Natural Gas Policy Act of 1978, ANGTS transportation charges and the wellhead price for Prudhoe Bay gas are afforded "rolled-in" pricing treatment. Thus, the ANGTS gas becomes part of the general system supply for the Shippers purchasing the Prudhoe Bay gas. In this manner, local distribution companies who are supplied by ANGTS Shippers will be served with gas from a mixture of supply sources, including some ANGTS gas.

The rates that each jurisdictional company charges its customers are based on the company's costs. Thus, the customers of the ANGTS Shippers, including local distribution companies, will pay charges for gas which will include some component for the recovery of ANGTS costs incurred by the Shippers.

As mentioned above, tracking is merely a mechanism by which adjustments would be made to the ANGTS Shippers' rates

in light of changes in ANGTS costs. The effects on individual customers of tracking the ANGTS charges could vary, depending on the final Commission approved procedures for "shipper tracking." A method could also be developed so that these charges would not vary among customers but would be assessed on a pro-rata basis. However, these specific matters are yet to be addressed by the Commission.

Questions Nos. 9 and 10

9. I'd like to talk to you about the effect this waiver package would have on the development of a petrochemical industry in Alaska. Several people have expressed a concern to me that the export/import waiver might hurt the petrochemical development potential. My staff has made informal inquiries to your staff on this subject. I understand that the waiver should not affect the petrochemical prospects one way or another.

- (a) Is that true?
- (b) Could you please elaborate?
- (c) Could you please provide the Committee with a memorandum of law on this subject?

10. On the same subject, could the Canadians take the petrochemical materials -- the "liquefiabiles" -- out of the gas stream in Canada for a petrochemical industry there? What, if anything, would preclude them from doing so?

Answer to Question Nos. 9 and 10

The question posed informally by your staff was whether the waiver of Section 3 of the Natural Gas Act would preclude the Commission from preventing the removal of liquefiable hydrocarbons from the gas stream while it is traversing Canada en route from Alaska to the lower 48 States. Attached to this letter is a staff memorandum on the Commission's jurisdiction over liquefiable hydrocarbons under Section 3 and 7 of the Natural Gas Act. The memorandum concludes that the Commission probably has the same authority to regulate this matter under Section 7 of the Act that it would have under Section 3 of the Act.

Under Section 3 of the Act, the Commission can attach conditions to the export and reimport authorizations issued to the Shippers of the Alaskan gas whereby they are authorized to technically export the gas from Alaska to Canada and technically reimport that same gas from Canada back into the lower 48 States.

Under Section 7 of the Act, the Commission can attach conditions to the certificates of public convenience and necessity issued to the Shippers of the Alaskan gas, authorizing them to ship the gas through the ANGTS from Alaska to the lower 48 States. Assuming that the Commission's conditioning authority under Section 7 of the Act is as broad as its conditioning authority under Section 3 of the Act, and without reaching the question of the precise limits of that authority under either of those two sections, it would appear to us that the waiver of Section 3 would not affect the Commission's jurisdiction to impose conditions on removal of liquefiable hydrocarbons while the gas is in transit; if the conditioning authority under Section 3 is co-extensive with the conditioning authority under Section 7, the same conditions could be attached under Section 7 even if the Commission had no jurisdiction under Section 3.

We cannot answer the question with certainty, however, because it is apparently a novel question never previously faced by the Commission or tested in court. To the best of our knowledge, the Commission has never previously had occasion to restrict the removal of liquefiable hydrocarbons from a gas stream under either section of the Act. Thus, although we do not readily perceive a distinction between our respective conditioning authority under Sections 3 and 7, we are not certain of our authority under either section to impose the condition at issue herein.

In any event, your Question No. 9, as well as Question No. 10, go beyond issues of domestic regulation under the Natural Gas Act. In a very real sense, the narrow issue of the Commission's jurisdiction under the Natural Gas Act is overshadowed by issues of international relations. The ANGTS is an international project premised on full cooperation with Canada. Conditions on activities occurring in Canada might raise questions of perceived infringement of Canadian sovereignty. The factual context would be further complicated at such time as Canada constructs the Dempster lateral to connect the system to its own reserves in the McKenzie River Delta; Canada would clearly have a legitimate interest in removal of liquefiable hydrocarbons from its own gas, and that gas would have become commingled with the Alaskan gas in the same pipeline. For all of these reasons, questions of removal of liquefiable hydrocarbons from the Alaskan gas while it is traversing Canada would be most appropriately addressed in the first instance in the context of discussions with Canada, rather than in the context of unilateral imposition of conditions by a U.S. domestic regulatory commission.

In this regard, Article II of the Transit Pipeline Treaty ^{7/} provides that "no public authority in the territory of either Party shall institute any measures . . . which are intended to, or which would have the effect of, impeding, diverting, redirecting or interfering with in any way, the transmission of hydrocarbons in transit." (There are exceptions for disasters and emergencies which are not relevant to your question.) If a Canadian governmental authority attempted to remove the liquefiable hydrocarbons from the gas stream while it was transiting Canada from Prudhoe Bay to the lower 48 States, it would appear to us that such an act might constitute a violation of the Treaty. The Treaty does not, however, appear to prohibit any private party from selling the liquefiable hydrocarbons while they are transiting Canada. Thus, the Treaty would not appear to preclude U.S. shippers from selling the liquefiable hydrocarbons in Canada, but would only appear to preclude Canadian governmental authorities from compelling them to do so.

Questions arise, however, for which we do not presently have the answers. If the shippers wished to sell liquefiable hydrocarbons from the gas stream while it is passing through Canada, would they (or the buyer, or Foothills) need to obtain certificate or other authority from the National Energy Board of Canada? Would such authority need to be obtained from the Province of Alberta? Would such certificate or other authority issued by the NEB or Alberta constitute Canadian government action potentially in violation of the Transit Pipeline Treaty?

Article 6 of the Agreement on Principles ^{8/} with Canada provides for a series of zones for allocating the cost of service of the Canadian segment of the Alaskan pipeline system. Paragraph (A) of Article 6 then provides for adjustment of the cost of service within each zone (calculated pursuant to

^{7/} "Agreement Between the Government of the United States of America and the Government of Canada Concerning Transit Pipelines," entered in force October 1, 1977 after ratification by the Senate.

^{8/} "Agreement Between the United States of America and Canada on Principles Applicable to a Northern Natural Gas Pipeline," signed by representatives of the two governments on September 20, 1977. The Agreement was made part of the President's Decision, and appears at pages 47-83.

contracted volumes) to reflect any differences in the Btu content of the Alaska gas stream resulting from commingling of Prudhoe Bay gas with Northern Canadian gas. The Agreement does not, however, appear to address any question of removing liquefiable hydrocarbons from the Prudhoe Bay gas.

All of these matters involve issues of interpretation of international agreements and our conduct of diplomatic relations with Canada. Thus, questions along these lines would be most appropriately addressed to the Department of State.

Question No. 11

11. If enacted, the waiver package would require the Commission, in conjunction with its tariff proceedings, to make a determination of the date the entire ANGTS is likely to be completed. That date will obviously assume that certain actions are begun and completed according to a projected construction schedule. What flexibility, if any, would the Commission have to change that date if the project sponsors do not adhere to the schedule? For example, could the Commission change the date if the conditioning plant is not begun on time?

Answer to Question No. 11

In my view, the Commission will have no flexibility to change the target date once set. That date will be relied on by the lender in connection with the financing of both the U.S. and Canadian segments of the project. The Commission's "whip hand" in requiring the project sponsors to avoid slippage in the construction schedule is to prohibit return on and of their equity investments until the project is complete. In addition, the project sponsors will no doubt be responsible for the debt component of each segment until it is completed and commissioned. These two factors provide powerful financial disincentives to be tardy in completion.

Question No. 12

12. The Committee understands that in preparing his memorandum to Congressman Sharp, the Commission's General Counsel had an opportunity to view a proposed waiver package in detail. The version the President transmitted to the Congress is slightly different than the version the General Counsel was asked to review. If you, or the members of your staff, have any questions about the intended effect of any of the language used

in the waiver package, the Committee would appreciate being apprised of those questions. Please provide us with whatever material you feel is appropriate in this regard.

Answer to Question No. 12

The proposed waiver incorporates a number of suggestions made by Congressional and Committee staff, as well as others. However, some suggestions follow which Commission staff believes would be helpful in clarifying the intent of portions of the waiver, if adopted as legislative history.

Producer Ownership Participation

In connection with Subpart (b) of the waiver of Section 1, ¶ 3 and Section 5, Conditions IV-4 and V-1, of the President's Decision, which states "...restrictions on access to the Alaska segment of the approved transportation system," we have assumed that the language "...Alaska segment of the approved transportation system" includes restrictions with respect to both the "Alaska pipeline segment" and the "gas conditioning plant segment" of the approved transportation system which are referred to in the fourth and fifth lines of the paragraph. While there is no express reference to restrictions on access to "the conditioning plant" in Subpart (b) of the waiver, it is assumed that such is intended in order to provide for Commission consideration of the antitrust implications with respect to the entire "Alaska segment," inclusive of the conditioning plant.

Waiver of Sections 4, 5, 7 and 16 of the
Natural Gas Act

As this waiver is generally intended to provide a basis for regulatory estoppel once final Commission action on the ANGTS has been taken, we have assumed that the language employed is intended to be specific. In that connection, Subpart (b) of the waiver employs the phrase "costs related to transportation." We have assumed the intent of that language is to cover all transportation charges for transportation of Alaska natural gas through the approved transportation system, as opposed to charges for transportation of gas (which might be commingled with or interconnected with Alaska natural gas) by totally unrelated pipelines downstream from the project. We understand the waiver is intended to encompass only the pass-through of transportation costs of the ANGTS itself and not transportation costs of other pipelines. Further, it has been assumed that the use of the term "approved tariff" is intended to mean

tariffs approved by the Federal Energy Regulatory Commission as opposed to State Commissions or Canadian provinces or agencies.

An expression of Congressional intent in this connection would be most helpful in the event that at some later date questions arise in a litigation context as to whether "final rules or orders" of the Commission could be changed or modified with respect to pipelines in the lower 48 States wholly unrelated to the ANGTS. Assuming the intention of Congress is to provide, as security for the financing, only for the recovery of such transportation charges incurred for transportation of Alaska natural gas through the ANGTS, the waiver language as submitted would accomplish the intended purpose with appropriate limitations.

MEMORANDUM OF LAW

Re: Commission Jurisdiction to Impose Conditions Restricting Removal of Liquefiable Hydrocarbons

A. Question Presented.

The question arises out of the proposed waiver of Section 3 of the Natural Gas Act. Absent such waiver, the Commission would have to issue Section 3 import and export authorization with respect to:

- (a) the export of Alaskan gas to Canada through the ANGTS, and the import of the gas back into the U.S. as it crosses the border of the lower 48 States.
- (b) the export of small amounts of Alaskan gas for sale to small communities along the route of the system in the Yukon, and the import of replacement volumes of Canadian gas that are injected downstream in Canada.

The question is whether the Commission has jurisdiction to restrict the removal of liquefiable hydrocarbons from the Alaskan gas as it traverses Canada en route from Alaska to the lower 48 States. More precisely, the question is whether the Commission currently has jurisdiction to regulate such a matter, and if so, whether the proposed waiver of Section 3 would affect the Commission's jurisdiction to deal with it.

B. "Liquids" versus "Liquefiable."

As a preliminary matter it is necessary to distinguish between gas "liquids" and "liquefiable hydrocarbons." Order No. 31, as discussed below, refers to liquefiable hydrocarbons. 1/ "It is the Commission's understanding that all of

1/ "Order Setting Values for Incentive Rate of Return, Establishing Inflation Adjustment and Change in Scope Procedures, and Determining Applicable Tariff Revisions," issued June 8, 1979 (Docket No. RM78-12).

the fluids moving through the Alaskan Northwest pipeline will be in gaseous state. There will be no droplets, slugs or phases (or any portion of the fluid to which any similar term can properly be applied) in the pipeline which will be in liquid form." Order No. 31 at 192. "The gas leaving Prudhoe Bay is sufficiently rich in liquefiable hydrocarbons (ethane and heavier hydrocarbons) to make extraction somewhere on ANGTS attractive. Alaska indicates that it may be economical to extract certain of the hydrocarbons within the State of Alaska." Order No. 31 at 196. Thus, what we are dealing with here is "liquefiable hydrocarbons," and not liquids.

C. The Natural Gas Act.

Section 1(b) of the Natural Gas Act restricts the scope of the Act to "natural gas." Liquefiable hydrocarbons, once separated and removed from the gas stream, are not "natural gas" within the meaning of the Act, and thus fall outside the Commission's jurisdiction. However, the Commission has always treated the undifferentiated gas stream as jurisdictional in its entirety. In other words, as long as the liquefiable hydrocarbons remain embedded in the gas stream and are not separated and removed from it, the Commission has asserted jurisdiction over the stream as such rather than limiting its jurisdiction to the methane molecules within the stream. ^{2/}

Section 3 of the Act authorizes the Commission to impose "terms and conditions as the Commission may find necessary or appropriate" when authorizing imports and exports of natural gas. Section 7(e) of the Act authorizes the Commission to attach to certificates "such conditions as the public convenience and necessity may require."

^{2/} The transportation of liquefiable hydrocarbons is jurisdictional while the transportation of liquid hydrocarbons is not. Mobil v. FPC, 483 F.2d 1238 (D.C. Cir. 1973). Certificates have been issued for transportation of liquefiables. Florida Gas Transmission Corp., CP79-160 (June 8, 1979); Northern Natural Gas Co., CP81-355-000 (August 24, 1981). Extraction operations can be jurisdictional, City of Detroit v. FPC, 230 F.2d 810, 820 (D.C. Cir. 1955); Panhandle Eastern Pipe Line Co. v. FPC, 359 F.2d 675, 682 (8th Cir. 1966), but there is no need to assert certificate jurisdiction where the public interest can otherwise be protected. Mid-America Pipeline Co. v. FPC, 330 F.2d 226 (D.C. Cir. 1963); Panhandle, supra.

We are not aware of any instance in which the Commission has imposed a condition to preclude removal of liquefiable hydrocarbons from a gas stream. We are aware of only one instance in which the Commission has had occasion to grant simultaneous import and export authorizations for the same stream of U.S. gas leaving and re-entering the country; it involved a small pipeline traveling from one part of Minnesota to another, briefly crossing a small piece of Canada.

The Commission has on numerous occasions conditioned its orders to reflect the Btu content of a stream of gas, and to allocate the cost consequences of differences or changes in Btu content in a gas stream. In the ANGTS context, for instance, the Commission in Order No. 31 (at pages 191-209) conditioned its approval of the transportation tariffs for the Alaska and Northern Border segments on a requirement that the transportation costs be allocated on an energy unit basis (Dekatherms) rather than a volume unit basis (Mcf). In so doing, the Commission considered the fact that "certain portions of the gaseous stream being transported are liquefiable in a hydrocarbon extraction plant" such that they might be removed from the gas stream while it traverses the State of Alaska. (Emphasis in the original order.)

Although there is no apparent precedent for doing so, it appears to us that the Commission could, if it wished, impose conditions on a Section 3 import and export authorization such that the shipper would be authorized to export the Prudhoe Bay gas to Canada and re-import back it into the U.S. on condition that the shipper not remove any liquefiable hydrocarbons from the gas stream while it is in transit. It also appears to us that the Commission could, if it wished, impose a comparable condition under Section 7 of the Act when certificating the shippers, authorizing them to ship Prudhoe Bay gas through the ANGTS for sale in the lower 48 States on condition that they not sell the liquefiable hydrocarbons in the gas stream while it is in transit.

D. Conclusion.

We would conclude that the Commission probably does have authority under both Section 3 and Section 7 of the Natural Gas Act to impose a condition precluding the removal of liquefiable hydrocarbons from Prudhoe Bay gas while it is transiting Canada. The waiver of the Commission's Section 3 jurisdiction would preclude the Commission from imposing such a condition under Section 3, but would not preclude the Commission from imposing the same condition under Section 7. We emphasize, however, that it is a novel question not previously faced by the Commission or tested in court. Thus, we cannot state a definitive answer.



DEPARTMENT OF STATE

Washington, D.C. 20520

OCTOBER 30 1981

Dear Mr. Chairman:

In response to your letter of October 26, 1981, I am enclosing answers to three of the four questions you asked for the hearing record. The answer to question two, which involves private conversations between the President with Prime Minister Trudeau, is being determined by the Administration.

Sincerely,

A handwritten signature in cursive script, appearing to read "Richard Fairbanks".

Richard Fairbanks
Assistant Secretary
for Congressional Relations

The Honorable
James A. McClure,
Chairman,
Committee on Energy and Natural Resources,
United States Senate.

ADDITIONAL QUESTIONS FOR THE HEARING RECORD

Answers are numbered based on the attached sheet of questions.

1. A copy of the President's address to Parliament is attached.
3. We found the government of Canada had anticipated the need for an official comment on the waiver package and was passing on its views through diplomatic channels. Unfortunately, the Canadian note did not arrive prior to the hearings on October 22. A copy of these comments, which arrived on October 29, is attached.
- 4a. Canada has not failed to ratify the U.S.-Canadian Transit Pipeline Agreement. It ratified the treaty on August 29, 1977, and the treaty has been in force between the two countries since October 1, 1977.

Similarly, the related U.S.-Canadian Agreement on Principles Applicable to a Northern Natural Gas Pipeline has been brought into binding force under international law. The Agreement on Principles entered partially into force upon signature on September 20, 1977, and all of its remaining provisions were brought into force on July 24, 1978 following legislative approval by the U.S. Congress and the Canadian Parliament.

- 4b. As noted in the preceding answer, both the Transit Pipeline Treaty and the Agreement on Principles Applicable to a Northern Natural Gas Pipeline have been brought into force and are fully binding upon Canada and the U.S. under international law. The Agreement on Principles does not commit the Canadian government to work out agreements with the provinces of British Columbia, Alberta, and Saskatchewan to implement the agreement. The Agreement on Principles provides that:

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 the 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 of other monetary charges on either the Pipeline or throughput. (section 5(a))

It is only in these statements by the three provinces, appearing in Annex V of the Agreement on Principles, that reference is made to federal-provincial agreements to spell out in detail the provincial undertakings. The three statements are quite similar. The Statement by the Government of the Province of Alberta provides:

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 throughput, are adhered to. Specific details on 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)

All but one of the federal-provincial agreements have been concluded to date. Nevertheless, the fact that one provincial-federal agreement remains outstanding does not affect the binding nature of Canada's legal commitments under the Transit Pipeline Treaty and the Agreement on Principles. The Canadian Government has provided assurances that it will take whatever actions necessary to meet these commitments. The Canadian Government is understood to be proceeding with the federal-provincial negotiations, but it regards their conclusion as essentially an internal Canadian matter, and has emphasized to us in past U.S.-Canadian negotiations that, as a matter of Canadian constitutional law, the provinces lack the legislative power to impose either: (1) any type of discriminatory tax upon either the pipeline or throughput; or (2) regulations which would in any substantial degree interfere with the federal government's exclusive control over ANGTS.

ADDITIONAL QUESTIONS FOR THE HEARING RECORD
ON THE ALASKA NATURAL GAS TRANSPORTATION ACT - PROPOSED WAIVER PACKAGE

October 26, 1981

QUESTIONS FOR DEPUTY ASSISTANT SECRETARY JOHNSTON

1. You testified that, "President Reagan affirmed to the Parliament in Ottawa that he was committed to a pipeline based on private financing." Please provide the Committee with a copy if his remarks.
2. You testified that, "He (President Reagan) also had discussions along this line in Ottawa with the Prime Minister, and in Washington." Please provide the Committee with whatever detailed information the State Department has concerning these discussions (meeting notes, communiques, cable traffic, etc.).
3. Members of the Committee staff requested the State Department to obtain the views of the Government of Canada on this waiver package through appropriate diplomatic channels. That request was made in advance of the hearing on Thursday, October 22. Yet you testified in response to a question from Senator Murkowski that "we have not" requested the Canadians to comment. Please explain why the Department failed to take up the Committee's request with the Canadians prior to the hearing so that we would have the benefit of their views at the time of the hearings.
4. Senator Murkowski indicated the Committee would provide you with the questions he posed with respect to the United States-Canadian Transit Pipeline Treaty and the 1977 Agreement in Principle between the United States and Canada. Those questions follow. Please provide the answers.
 - a. In 1977 the President transmitted to Congress the United States-Canadian Transit Pipeline Treaty. We ratified the treaty.
 1. What is the status of that Treaty in Canada?
 2. Why have they failed to ratify it?
 3. In the absence of such a Treaty, will the Canadian Federal Government be able to meet the terms of the 1977 Agreement in Principle between the two countries, especially with respect to nondiscriminatory taxation?
 - b. The 1977 Agreement in Principle between the two countries committed the Canadian Federal Government to working out agreements with the Provinces of British Columbia, Alberta, and Saskatchewan to implement the Agreement.
 1. What is the status of those agreements?
(Note: There is no binding agreement with B.C. nor with Alberta. There is not even a commitment to negotiate an agreement on the part of Saskatchewan, let alone a binding commitment.)
 2. What action do you understand the Federal Government plans to take in this area?

THE WHITE HOUSE

Office of the Press Secretary
(Ottawa, Canada)

EMBARGOED FOR RELEASE UPON DELIVERY
EXPECTED AT 11:15 am EST

MARCH 11, 1981

TEXT OF THE ADDRESS BY THE PRESIDENT
TO A JOINT SESSION OF PARLIAMENT

OTTAWA, CANADA
MARCH 11, 1981

I came to this great capital of this great nation by crossing a border not which divides us, but a border which joins us.

Nous nous sommes souvent serrés la main par dessus cette frontière et nous le faisons une fois encore aujourd'hui.

Nancy and I have arrived for this, the first state visit of my Presidency, in the spirit expressed so well by a Calgary writer and publisher some sixty years ago. The difference, he wrote, between a friend and an acquaintance is that a friend helps where an acquaintance merely advises.

We come here not to advise, not to lecture. We are here to listen and to work with you. We are here as friends, not as acquaintances.

Some years ago Nancy and I both belonged to a very honorable profession in California. And as I prepared for these remarks today, I learned that among those in the motion picture industry in Hollywood, it has been estimated that perhaps as many as one out of five are of Canadian origin.

Many of those whom I counted as close professional colleagues, if not close personal friends, did not come from America's heartland as I did, but from the heart of Canada, as did most of you in this historic chamber.

Art Linkletter, Glenn Ford, Raymond Massey, Walter Pidgeon and Raymond Burr are but a few of your countrymen who are celebrated in our entertainment industry.

I believe I know the very special relationship between Canada and the United States. But with all respect to those people I've mentioned -- I can do better than that. A young lady once came to Hollywood from Toronto. Before long, little Gladys Smith was embraced by our entire nation. Gladys Smith of Toronto became Mary Pickford. And I know you'll forgive us for adopting her so thoroughly that she became known the world over as "America's sweetheart."

Affinity, heritage, common borders, mutual interests -- these have all built the foundation for our strong bilateral relationship. This relationship has grown to include some of the strongest economic links among the nations on this earth.

Some 16 percent of America's total world trade is done with Canada. Our joint trade amounts to about \$90 billion Canadian annually. This is greater than the gross national product of some 150 countries.

It's estimated that three-quarters of a million U.S. workers are employed in exports to Canada, and, in turn Canadian exports to the U.S. account for one-sixth of your Gross National Product.

Not only is the vast bulk of this trade conducted between private traders in two free economic systems, but more than half crosses our borders duty free. Our seaways, highways, airways, and rails are the arteries of a massive, interconnecting trade network which has been critically important to both of us.

Thus, while America counts many friends across the globe, surely we have no better friend than Canada. And though we share bilateral interests with countries throughout the world, none exceeds the economic, cultural, and security interests we share with you.

These strong and significant mutual interests are among the reasons for my visit here. Already I've shared with Prime Minister Trudeau very helpful discussions across a range of issues -- to listen and to ensure that these important ties shall not loosen.

I am happy to say that in the recent past we have made progress on matters of great mutual importance.

- Our governments have already discussed one of the largest joint private projects ever undertaken by two nations -- the pipeline to bring Alaskan gas to the continental United States. We strongly favor prompt completion of this project based on private financing.
- We have agreed to an historic liberalization of our trade in the Tokyo Round of the Multilateral Trade Negotiations.
- We have continued our efforts, begun with the Great Lakes Water Quality Agreement of 1972, to protect our joint heritage in the Great Lakes. We want to continue to work cooperatively to understand and control the air and water pollution that respects no borders.

During my visit here, I have had the pleasure of participating in the conclusion of two other important agreements. We are renewing the North American Aerospace Defense Command Agreement for five more years. For more than two decades now, NORAD has bound us together in our common defense with its integrated command structure symbolizing our interdependence. This agreement represents continued progress in our relations and mutual security.

Second, we have concluded an agreement on social security benefits for those of our citizens who combine work in both nations. With this new agreement, these periods of employment in both countries can be combined to qualify workers for benefits.

We will continue to work steadily on those issues still before us such as evolving energy matters and additional fishery concerns. That is the very basis of our friendship.

We have never hidden our disputes, but we have always found room for their resolution. The issues upon which we still seek agreement should therefore proceed down the same path of cooperation, negotiation, and mutual understanding.

Our deep and longtime bilateral economic interests lead me to depart from the norm today and give to you a report on America's progress toward economic recovery.

Five weeks ago, I reported to the American people that the U.S. economy faced the worst economic mess since the great worldwide depression. We are a proud people, but we are also realists. The time came for us to face up to what I described as a potential economic calamity.

I raise this issue today because America holds a genuine belief in its obligation to consult with its friends and neighbors. The economic actions we take affect not just us alone, but the relationships across our borders as well.

As we examined America's economic illness, we isolated a number of contributing factors. Our Federal government had grown excessively in a very short period of time.

We found that there had grown up a maze of stifling regulations which began to crush initiative and deaden the dynamic industrial innovation which brought us to where we are. We saw unbelievable deficits -- this year alone reaching up to nearly \$90 billion, including off budget items.

And we found that these deficits got in no one's way because the government found it easy to fuel inflation by printing more money to make up the difference.

The American taxing structure the purpose of which was to serve the people, began instead to serve the insatiable appetite of government. Our citizens were being thrown into higher tax brackets for simply trying to keep pace with inflation. In just the last five years, Federal personal taxes for the average American household have increased 53 percent.

The results: crippling inflation; interest rates which went above 20 percent; a national debt approaching a trillion dollars; nearly eight million people out of work; and a steady three-year decline in productivity.

We decided not just to complain but to act. In a series of messages and actions, we have begun the slow process of stopping the assault on the American economy and returning to the strong and steady prosperity that we once enjoyed.

It is very important to us to have our friends and partners know and understand what we are doing. Let me be blunt, and honest.

The United States in the last few years has not been as solid and stable an ally and trading partner as it should be. How can we expect certain things of our friends if we do not have our own house in order?

Americans are uniting now as they always have in times of adversity. I have found there is a wellspring of spirit and faith in my country which will drive us forward to gain control of our lives and restore strength and vitality to our economic system. But we act not just for ourselves, but to enhance our relationships with those we respect.

First, we are taking near revolutionary steps to cut back the growth in Federal spending in the United States. We are proposing that instead of having our national budget grow at the unacceptable rate of 16 percent per year, it should rise at a much more sensible 6 percent. This enables us to maintain the kind of growth we need to protect those in our society who are truly dependent on government services.

Just yesterday, I submitted our proposed budget for the coming year. With extraordinary effort, we have isolated some 83 items for major savings and hundreds more for smaller savings which together amount to \$48.6 billion in the coming Fiscal Year.

Our second proposal is a 10 percent across-the-board cut every year for three years in the tax rates for all individual income taxpayers, making a total cut in tax rates of 30 percent. This will leave our taxpayers with \$500 billion more in their pockets over the next five years and create dramatic new incentives to boost productivity and fight inflation. When these personal cuts are combined with tax cuts to provide our business and industry with new capital for innovation and growth, we will be creating millions of new jobs -- many of them, ultimately, on your side of the border.

Our third proposal is to eliminate those unproductive and unnecessary regulations which have slowed down our growth and added to our inflationary burdens. We shall do this with care, while still safeguarding the health and safety of the American people -- and, I might add, while mindful of our responsibility to have equal regard for the health and safety of our neighbors.

Finally, we will be working closely with our Federal Reserve System to achieve stable and moderate growth patterns in our money supply.

As I said, America's Program for Economic Recovery is designed not merely to solve an internal problem. It is viewed by my Administration as part of an essential effort to restore the confidence of our friends and allies in what we are doing.

When we gain control of our inflation, we can once again contribute more helpfully to the health of the world economy. We believe that confidence will rise, interest rates will decline, and investment will increase. As our inflation is reduced, your citizens and other world citizens will have to import less inflation from us.

As we begin to expand our economy once again and as our people begin to keep more control of their own money, we will be better trading partners. Our growth will help fuel the steady prosperity of our friends.

The control we regain over our tax and regulatory structures will have the effect of restoring steady growth in U.S. productivity. Our goods will go into markets not laden down with the drag of regulatory baggage or punitive levies -- but with a competitive edge that helps us and those who trade with us.

Such new sustained prosperity -- in an era of reduced inflation -- will also serve, worldwide, to help all of us resist protectionist impulses. We want open markets. We want to promote lower costs globally. We want to increase living standards throughout the world. That is why we are working so hard to bring about this economic renewal.

There are, of course, other very important reasons for us to restore our economic vitality. Beyond our shores -- across this troubled globe -- the good word of the United States and its ability to remain stable and dependable, rely in good part on our having a stable and dependable economy.

Projecting solid internal strengths is essential to the West's ability to maintain peace and security in the world. Thus, our national interests, our bilateral interests and our hemispheric interests are profoundly involved in truly international questions.

That's why we must act now -- why we can no longer be complacent about the consequences of economic deterioration. We have entered an era which commands the Alliance to restore its leadership in the world. And before we can be strong in the world, we must be once again strong at home.

Our friend, our ally, our partner, and our neighbor -- Canada and the United States have always worked together to build a world with peace and stability -- a world of freedom and dignity for all people.

Now, with our other friends we must embark with great spirit and commitment on the path towards unity and strength.

On this side of the Atlantic, we must stand together for the integrity of our hemisphere -- for the inviolability of its nations, for its defense against imported terrorism, and for the rights of all our citizens to be free from the provocations triggered from outside our sphere for malevolent purposes.

Across the oceans, we stand together against the unacceptable Soviet invasion into Afghanistan and against continued Soviet adventurism across the earth.

And toward the oppressed and dispirited people of all nations, we stand together as friends ready to extend a helping hand.

I say to you, our Canadian friends -- and to all nations who will stand with us for the cause of freedom -- our mission is more than simply making do in an untidy world. Our mission is what it has always been -- to lift the world's dreams beyond the short limits of our sights and to the far edges of our best hopes.

This will not be an era of losing liberty; it shall be one of gaining it.

This will not be an era of economic pessimism, of restraint and retrenchment -- it will be one of restoration, growth, and expanding opportunities for all men and women.

And we will not be here merely to survive, we will be here, in William Faulkner's words, to prevail -- to regain our destiny and mutual honor.

Sometimes, it seems that, because of our comfortable relationship, we dwell perhaps a bit too much on our differences. I, too, have referred to the fact that we do not agree on all issues.

We share so many things with each other; yet, for good reasons, we insist on being different to retain our separate identities. This captured the imagination of Ernest Hemingway when he worked as a writer for the Toronto Star Weekly in 1922. Hemingway was traveling in Switzerland and noted that the Swiss made no distinction between Canadians and citizens of the United States. He wondered about this and asked a hotelkeeper

if he didn't notice any difference between the people from the two countries.

"Monsieur," he said to Hemingway, "Canadians speak English and always stay two days longer at any place than Americans do." As you know, I shall be returning to Ottawa in July, and if you don't mind, I will plan to stay as long as everyone else.

I'm not here today to dwell on our differences. When President Eisenhower spoke from this spot in 1953, he noted his gratitude as Allied Commander in World War II for the Canadian contribution to the liberation of the Mediterranean. This touched my curiosity, so I did some research.

In the second World War there was something called the 1st Special Service Force -- a unique international undertaking at the time. This force was composed of Canadians and Americans distributed equally throughout its ranks, carrying the flags of both nations. They served under a joint command, were taught a hybrid close-order drill, and trained together as paratroopers, demolition experts, ski troops and, then, as an amphibious unit.

The 1st Special Service Force became famous for its high morale, its rugged abilities, and tough fighting in situations where such reputations were hard-earned. Alerted to their availability, General Eisenhower requested them for special reconnaissance and raiding operations during the winter advance up the Italian peninsula. They were involved in the Anzio Beachhead campaign in Italy and were at the spearhead of the forces that captured Rome.

The 1st Special Service Force made no distinctions when it went into battle -- its men had the common cause of freedom at their side and the common denominator of courage in their hearts. They were neither Canadian nor American. They were, in General Eisenhower's term, liberators.

So let's speak no more of differences today -- certainly Ambassador Ken Taylor didn't when he first sheltered, and then spirited six Americans out of the center of Tehran to their freedom. Their daring escape worked not because of our differences but because of our shared likenesses.

A final word to the people of Canada.

We are happy to be your neighbor; we want to remain your friend; we are determined to be your partner; and we are intent on working closely with you in a spirit of cooperation. We are much more than an acquaintance.

Thank you. Merci.

- Selection of the ANGTS followed three years of careful consideration of several competing proposals by Canadian and U.S. regulatory authorities and intensive negotiations between the governments of both countries.
- Joint action by the Canadian and U.S. Governments on the ANGTS was preceded by conclusion of the Transit Pipeline Treaty, which provides for non-discriminatory treatment of pipelines in one country used to transport the hydrocarbon products of the other and non-interference with supplies of hydrocarbons crossing one country en route to the other.
- The broad commitment of the two governments to facilitate completion of the ANGTS found expression in the Agreement between Canada and the United States of America on Principles Applicable to a Northern Natural Gas Pipeline. The Agreement declared that the two governments would "facilitate the expeditious and efficient construction of the Pipeline" and that they would seek all required legislative authority and remove any impediments to this end.

....3

- 3 -

The Agreement expressed the understanding of both governments that the pipeline would be privately financed and made provision, inter alia, for determination of the pipeline's route and capacity, for close coordination and consultation between the appropriate regulatory agencies of both countries and for the procurement of goods and services related to construction of the pipeline on generally competitive terms.

- In the spirit of the undertakings of that Agreement, the Government of Canada made the difficult decision to authorize commencement in 1980 of construction of the southern sections of the pipeline in Canada. That decision was taken on the basis of:

- agreement between the project sponsors and the producers to share the cost of completing the final design and engineering of the system in Alaska and to cooperate in developing a financing plan;

....4

- resolutions adopted by the U.S. House of Representatives and Senate in July 1980 declaring that the ANGSTS remained "an essential part of securing this Nation's energy future" and that the system enjoyed "the highest level of congressional support for its expeditious construction and completion by the end of 1985";

- a letter of July 17, 1980 from the President of the United States to the Prime Minister of Canada stating that the U.S. Government was satisfied that the entire system would be completed, that the U.S. energy situation required its completion without delay, that the U.S. appreciated the steps taken by Canada to advance its side of the project, that the U.S. stood ready to take appropriate additional steps necessary for completion of the system, and

- 5 -

that the President was prepared at the appropriate time to initiate action before the U.S. Congress to remove any impediments that may exist under present law.

- Construction of the western leg of the southern portions of the pipeline has been completed and construction of the eastern leg is expected to be completed by the autumn 1982.

- While it would not be appropriate for the Government of Canada to comment on the specific provisions of the package of waivers submitted to the Congress President Reagan, the Government of Canada considers that approval of the waivers is required to facilitate private financing. The Government of Canada is pleased to note that the waiver provision relating to precommencement billing for the Canadian segment of the pipeline meets with the satisfaction of the Canadian sponsors.

The Government of Canada avails itself of this opportunity to the Department of State the assurances of its consideration.



WASHINGTON, D.C.
October 29, 1981

BRIEF ON

CANADA'S INVOLVEMENT

IN THE

ALASKA NATURAL GAS TRANSPORTATION SYSTEM

OCTOBER 29, 1981

Table of Contents

	<u>Page</u>
Summary	
The Road to Agreement	1
Delays	1
First-Stage Construction	2
Regulatory Consultations	3
The Proposed Waiver Providing for Contingency Billing in Canada	3
A. Choice of the Route and Selection of the Foothills' Group of Companies	6
B. The Transit Pipeline Treaty	9
C. The Canada-United States Pipeline Agreement and the President's Decision and Report to Congress	10
The Dawson-Whitehorse Cost-of-Service Formula	10
Pipe Size	12
Non-Discriminatory Taxation Regime	13
The President's Decision and Report to Congress ..	14
D. The Northern Pipeline Act	15
General Powers	16
Terms and Conditions	16
Yukon Lands	18
Cost Recovery	18
Native Land Claims	18
E. Establishment of Northern Pipeline Agency	20
F. Legislative and Regulatory Progress of the Project ..	22
G. Consultations Between the National Energy Board and the Federal Energy Regulatory Commission	26
Canadian Incentive Scheme	26
Range of Rates of Return on Equity	26
Canadian Full Cost-of-Service Tariff	27

... (ii)

	<u>Page</u>
Method of Regulation	27
Canadian Standard for Just and Reasonable Tolls	27
Starting Date of the Mainline Tariff	27
Sustained Outage Over 30 Days	28
H. Consultations Between NPA and OFI - Procurement	29
Qualification of Bidders	30
Technical Specifications and Tendering Documents	30
Recommended Decisions to Purchase or Negotiate	31
Award of Contract	32
I. Pre-Building - Phase I	33
Decision to Authorize Pre-build	38
Progress of Pre-build	39
J. Contingency Billing - Background to the Proposed Congressional Waiver Related to Financing of Stage II Construction in Canada	41

SummaryThe Road to Agreement

Over a three-year period between 1974 and 1977, a variety of proposals for transporting United States and/or Canadian natural gas in the Western Arctic to southern markets were considered by both U.S. and Canadian regulatory agencies. While the U.S. Federal Power Commission (FPC) favoured an all-land route without deciding between two competing proposals, Canada's National Energy Board recommended approval of the Alaska Highway Pipeline Project. This subsequently became the focus of consideration by the governments of the two countries. An agreement providing for the joint undertaking of the project was subsequently signed following a brief but intensive period of negotiations on September 20, 1977. These negotiations were facilitated by the earlier agreement reached between Canada and the United States on the Transit Pipeline Treaty, which provided for the non-discriminatory treatment of systems in one country used to transport the hydrocarbon products of the other.

The Canada-United States Agreement, which covered a wide number of aspects relating to the construction of the 5,500-mile system for the transportation to southern markets of up to 2.4 billion cubic feet daily of U.S. gas in Alaska and up to 1.2 billion cubic feet a day of Canadian gas from the Mackenzie Delta, was submitted to the Congress for approval by President Carter on September 22, 1977, and enacted on November 8. In Canada, legislation proposing adoption by Parliament of a Northern Pipeline Act was introduced in February the following year and came into force on April 13, 1978. The Act gave effect to the Agreement between the two countries and established the Northern Pipeline Agency to oversee the planning and construction of the project in Canada.

Delays

While the Canada-United States Agreement envisaged that the entire project would be completed and ready to go into operation by January 1, 1983, the target date has been progressively set back to the current schedule of 1986 for several reasons. These included: the prolonged debate in Congress over legislation to establish a new natural gas pricing regime - the nature of which was critical to the Alaska Highway Project, the lengthy period required to resolve major outstanding regulatory questions, the initially slow

progress of the Alaska Pipeline sponsor and Prudhoe Bay producers in reaching agreement on questions related to final design/engineering and financing of the Alaskan system, and the further period required for the consideration by the Administration of the waivers to U.S. legislation governing the project.

First-Stage Construction

A proposal for pre-building of the Western and Eastern Legs of the system in southern Canada and the continental United States for the initial purpose of transporting surplus Alberta gas to U.S. markets was first recommended by the National Energy Board of Canada and subsequently endorsed in principle by President Carter.

Findings by the National Energy Board at the end of 1979 and beginning of 1980 of a sufficient surplus of Alberta gas made first-stage construction financially feasible.

Therefore, because of the slow progress experienced in moving forward with resolution of the outstanding issues involving the entire project, the Canadian government sought assurances from the United States in the early summer of 1980 that the whole project would proceed expeditiously. The decision of the Government of Canada in July to approve the undertaking of this first stage was based on three main developments: (1) the agreement previously reached between the pipeline sponsor and producers on sharing the costs of completing final design and engineering of the system in Alaska and on working together to evolve a financing plan; (2) the high priority accorded to the project by Congress in a joint resolution unanimously approved by both the Senate and the House of Representatives; and, (3) a letter from President Carter on behalf of the United States government strongly supporting the project and expressing confidence that it would move ahead on a timely basis.

At the time of the decision and subsequently the Prime Minister and other spokesmen for the Canadian government have expressed their confidence that the United States government and Congress would take the necessary action to expedite the completion of the project in both countries. Consequently, in meetings between Canada and the United States since the pre-build decision, including meetings between the President and the Prime Minister, Canadian representatives reiterated that the Canadian decision was based on the assurances received from the U.S.A. government and the general support of both Houses of the Congress.

First-phase construction of the Western Leg was completed in the fall of 1981 and Canadian gas began flowing through the system on October 1. Construction of the Eastern Leg has been proceeding on schedule in both countries, with gas scheduled to begin flowing September, 1982.

Regulatory Consultations

In keeping with both provisions and spirit of the bilateral agreement, there have been extensive consultation and discussion between the appropriate Canadian and U.S. regulatory agencies with respect to a number of project-related issues of concern to the two countries.

The National Energy Board of Canada and the Federal Energy Regulatory Commission of the United States have discussed at length such issues as the tariff to cover transportation of gas through the Alaska Highway Gas Pipeline System - with particular concern for the question of just and reasonable tolls, the incentive rate of return scheme with respect to equity investment, and the establishment of a date for commencement of the mainline tariff.

Canada's Northern Pipeline Agency and the U.S. Office of the Federal Inspector, which share many similar responsibilities for ensuring that the planning and construction of the project within their jurisdictions is undertaken in accord with the terms and conditions established under the respective laws of the two countries, have also maintained close liaison. In particular, the two agencies have worked closely together in implementing the reciprocal arrangements for exchanging information on the procurement in both countries of certain designated items for the project in accordance with the Canada-United States Agreement and the procedures established through an exchange of notes between the governments of the two countries in June, 1980.

The Proposed Waiver Providing for Contingency Billing in Canada

Since the time when it testified during the course of hearings before the U.S. Federal Power Commission in 1976, Foothills Pipe Lines (Yukon) Ltd. has consistently taken the position that investment in the mainline project in Canada could be obtained only if it were assured that a full return on and of that capital could be obtained from the time construction had been completed and "leave-to-open" had been granted by the National Energy Board. A similar position was reflected in the proposed tariff which the company submitted for the approval of the NEB in 1977.

Over the course of a series of hearings that touched on this issue, the National Energy Board explored this question at considerable length. Initial decisions by the Board provided only for a minimum tariff covering operation, maintenance and debt service costs during any interim period in which gas from Alaska was not flowing through the completed Canadian system or flowing only in limited volume. The Board proposed that Foothills explore the possibility of raising additional debt capital to make possible the payment to equity investors of a full return on and of their investment in the event that should prove necessary because of delays in the start-up of the entire system or because of limited gas flows at the outset of operations.

Both Foothills and its investment advisor informed the NEB that financing could not be obtained to meet this equity requirement. In a report issued in May, 1980, the National Energy Board agreed, in recognition of these circumstances, to accept a form of tariff which would cover the full cost-of-service of the mainline of the project in Canada from the time "leave-to-open" the system had been granted.

At the same time, however, the Board recognized that implementation of its proposed tariff was dependent on the concurrent approval of U.S. regulatory authorities, together with the adoption of a system to enable the cost-of-service to be "tracked" through to their customers expeditiously by U.S. shippers. It was equally recognized by the Board and by the Canadian government that the institution of such a system pending the flow of gas from Alaska could require a waiver in the governing U.S. legislation.

In his letter to the Prime Minister of July 17, 1980, President Carter acknowledged the nature of the problem and undertook to initiate steps in an effort to overcome it. The President said he recognized "the reasonable concern of Canadian project sponsors that they be assured of recovery of their investment in a timely manner if, once construction is commenced, they proceed in good faith with completion of the Canadian portions of the project and the Alaskan segment is delayed".

The President said he accepted the view of the Canadian government that "such assurances are materially important to insure the financing of the Canadian portion of the system". He further stated that he would be "prepared at

the appropriate time to initiate action before the U.S. Congress to remove any impediments as may exist under present law providing that desired confidence for the Canadian portion of the line.

It should be noted that this issue, which is critical to the successful financing of the Canadian segment of the project, was a key consideration for Canadian authorities in their discussions with a number of key congressional leaders prior to the unanimous approval of the joint resolution by Congress in mid-1980 expressing strong support for the project.

While the assurance of payment of a full cost-of-service tariff to the Canadian company after the mainline is ready to go into service is regarded as vital from a Canadian perspective, the likelihood of a need to resort to this provision prior to the flow of Alaskan gas is also seen as only a remote contingency. This follows from the fact that before construction begins, regulatory authorities in both countries would have to be satisfied that the project has been financed and design, engineering and other requirements have been met. In addition, a completion date for the system would have been established by the Federal Energy Regulatory Commission in consultation with the Canadian authorities as provided for in the Canada-U.S. Agreement. Prior to this date, no tariff could be charged in the event that the transmission of Alaskan gas were not under way.

In conclusion, the Alaska Highway Gas Pipeline is a joint undertaking of the United States and Canada. Until a connection is made with Canadian Arctic natural gas reserves, the project is for the purpose of transporting Alaskan gas to the lower 48 states. Because of delays in the original schedule and on the basis of assurances provided by the North Slope natural gas producers, the pipeline sponsors, the Congress and the President of the U.S.A. for completion of the Alaskan section, the Canadian government authorized the beginning of the construction in the south to carry Alberta gas to U.S.A. markets. In the view of the Canadian government, the waiver package before the Congress includes the waiver requested by Canada to meet financing requirements of the Canadian section and will facilitate the financing of the whole line.

Choice of the Route and Selection of
the Foothills' Group of Companies

Following the discovery of a substantial volume of oil and natural gas at Prudhoe Bay on the North Slope of Alaska in 1968 and the subsequent find a few years later of significant gas reserves in the Mackenzie Delta of Canada's Northwest Territories, a number of alternative plans were developed by competing interests to transport the gas to southern markets in both countries.

Between 1974 and 1977, applications for permission to construct four alternative systems were put before the Federal Power Commission (FPC) in the United States (which later became the Federal Energy Regulatory Commission) and/or the National Energy Board in Canada.

A proposal by El Paso to transport the gas from Prudhoe Bay to the south coast of Alaska, where it would be liquefied and then moved by LNG tankers to the west coast of the continental United States, was considered solely by the FPC since only U.S. territory was involved. A second proposal put forward by Foothills in Canada for a pipeline to carry only Canadian gas in the Mackenzie Delta to domestic markets in the South, referred to as the "Maple Leaf" project involved only Canadian territory and, hence, was filed only with the NEB.

Canadian Arctic Gas Pipeline Ltd. proposed the construction of a pipeline that would transport Prudhoe Bay gas eastward across the North Slope of Alaska and the Yukon and Northwest Territories to the Mackenzie Delta, where Canadian gas would be fed into the system for transport to southern markets. At a point in the vicinity of Central Alberta, the pipeline would divide into an Eastern and Western Leg to transport U.S. gas to markets in the mid-western and western states. This application was filed with the regulatory authorities in both countries.

The last proposal to be submitted - that of Foothills (Yukon) in Canada and Northwest Alaskan in the United States - evolved over the period 1976-77. This plan, which was also put before regulatory authorities in both countries, involved the construction of a pipeline running south from Prudhoe Bay to Fairbanks alongside the oil pipeline being built to Valdez on the south shore of Alaska.

At Fairbanks, the pipeline would swing southeastward, generally following the route of the Alaska Highway through Alaska, the Yukon Territory in Canada and northeast British Columbia, swinging southward in Alberta to a point around 60 mile north of Calgary, where it would also divide into Eastern and Western Legs that extended into U.S. markets.

In the early summer of 1977, the FPC recommended by majority decision in favour of an all-land route for the transportation system, thus rejecting the El Paso pipeline/tanker proposal, but expressed no preference as between the Foothills (Yukon) application and that by Canadian Arctic Gas.

On July 4, 1977, the NEB in Canada released its Reasons for Decision on the three northern gas pipeline proposals before it, which recommended that the Canadian government approve the application submitted by Foothills (Yukon).

The Board's recommendation was based on its findings that a pipeline to transport Mackenzie Delta gas to Canadian markets would be required in the 1980s and that the Foothills' proposal had such a potential in the form of a Dempster Link. The Board did recommend that the pipeline be built following the Alaska Highway with the route being diverted to Dawson City in the Yukon Territory to provide easier access to Canadian reserves through the Dempster Lateral. The Board also recommended that Foothills (Yukon) should undertake a feasibility study of the Dempster Lateral and make an application to the Board by July 1, 1979, for a certificate to construct the link.

Other factors were taken into account by the Board in reaching its decision. One of these was the fact that Foothills had not requested financial backstopping by the Canadian government. As far as the socio-economic and environmental impacts associated with a northern gas pipeline were concerned, the Board was of the view that the Alaska Highway route would be less disruptive than a pipeline through the Mackenzie Valley. At the same time, however, the Board recognized the need for a government agency to monitor adverse impacts and recommended that a suitable mechanism be established. The Board also recommended that the company should bear any indirect costs associated with socio-economic matters north of the 60th parallel which were incurred during a period expiring two years after leave-to-open had been granted by the Board.

Shortly after the NEB's report was made public, the Canadian government decided to enter into negotiations with the United States in an effort to reach agreement on the joint undertaking of a pipeline system generally in line with that proposed by the Board. The undertaking of these discussions were facilitated by earlier negotiations which had taken place between the two countries to provide for the non-discriminatory treatment of pipelines passing through the territory of the other for the primary purpose of transporting domestically-owned hydrocarbon products.

The Transit Pipeline Treaty

In anticipation of the possibility that transportation of hydrocarbon supplies discovered in Alaska could involve the construction of pipelines through Canadian territory, and in light of the fact that Canada already made extensive use of pipelines running through U.S. territory to transport supplies to its own domestic markets, Canadian and U.S. authorities in 1974 began the negotiation of a proposed Transit Pipeline Treaty. In the United States, in particular, concern had been raised since the early 1970s that pipelines installed in Canada for the transportation of U.S. petroleum supplies might be subjected to discriminatory treatment, particularly through discriminatory taxation that could make their operation uneconomic or at least less attractive by comparison with other alternatives.

The negotiation of the Transit Treaty was not an attempt to prejudge the issue of finding the best means of transporting Alaskan gas. It was, however, a means of keeping all the options open. The Treaty, which finally came into effect in September, 1977, provides that neither party will interfere with the supply of hydrocarbons, from whatever source, which cross its territory en route to markets in the other country. It also stipulates that "transit" pipelines will not be subject to the imposition of any tax or other monetary charge which does not also apply to any similar pipeline intended purely for domestic use.

The commitment of both countries to the Transit Pipeline Treaty was reiterated in the Agreement on Principles Applicable to a Northern Natural Gas Pipeline, which was signed by Canada and the United States on September 20, 1977.

The Canada-United States Pipeline Agreement
and the President's Decision and Report to Congress

Formal negotiations with respect to the proposed Alaska Highway Gas Pipeline System which were launched in mid-summer of 1977 led to the signing in Ottawa on September 20, 1977, of what was designated as an Agreement between Canada and the United States of America on Principles Applicable to a Northern Natural Gas Pipeline.

It was agreed that construction of the system would provide access to the extensive gas reserves at Prudhoe Bay required in the United States and would provide Canada with the opportunity to gain access to its own supply through a connecting link with reserves already discovered in the Mackenzie Delta. Initially the system was to be designed to have the capacity to transport up to 2.4 billion cubic feet of U.S. gas a day and 1.2 billion cubic feet daily of Canadian gas.

In the bilateral agreement, both governments agreed "to facilitate expeditious and efficient construction of the pipeline". In addition, both governments undertook "expeditiously to 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", with the target date for the commencement of operation of the 4,800-mile system being January 1, 1983. An important condition of the agreement was that the pipeline was to be privately financed.

The Dawson-Whitehorse Cost-of-Service Formula

Under the terms of the Canada-U.S. Agreement, the pipeline would run from Prudhoe Bay to Fairbanks along the corridor of the existing Alyeska oil pipeline and from Fairbanks it would generally follow the route of the Alaska Highway through Alaska, the Yukon Territory and northern British Columbia and Alberta.

Provision was contained in the Agreement for access to Canadian gas through a lateral from the Mackenzie Delta following the route of the Dempster and Klondike Highways to join with the trunk system at Whitehorse, which would be built as and when these supplies were required to meet Canada's energy needs.

In its recommendations to the Canadian government, the National Energy Board had proposed that the line from Alaska be routed through Dawson City in order to provide closer access to Canadian gas via a connecting lateral along the Dempster Highway; the mainline running southward from Dawson to rejoin with the Alaska Highway route at Whitehorse.

U.S. negotiators were opposed to the proposal to divert the pipeline from the Alaska Highway corridor to Dawson, as recommended by the NEB, because of the additional cost that would be incurred. In the result, it was mutually agreed that the proposed diversion would be foregone and the pipeline routed along the Alaska Highway corridor in exchange for a U.S. undertaking to cover all or part of the cost-of-service of transporting Canadian gas through the Dempster Lateral over the 277-mile distance from Dawson to Whitehorse.

Under the sliding scale formula that was adopted, U.S. shippers would cover 100 per cent of the cost of transporting Canadian gas from Dawson to Whitehorse if total capital outlays for construction of the system carrying U.S. gas through Canada and the Dawson to Whitehorse extension, did not exceed forecast costs by more than 35 per cent. (Costs of the 48-inch high pressure system were estimated to be \$4.4 billion and that of the 54-inch system to be \$4.2 billion.) If cost overruns exceeded the estimates, there would be some reduction in the proportion of the cost-of-service on the Lateral to Dawson borne by U.S. shippers.

In no case, however, would U.S. shipper costs for the movement of Canadian gas from Dawson to Whitehorse be less than two-thirds and, regardless of the extent of cost overruns, they would be higher if the relative volume of Canadian gas moving through the joint system were less than one-third of the total. Even if the U.S. costs of service were reduced to the minimum provided for under the agreement, the charge for moving Canadian gas would still remain 15 cents per mcf below that which would prevail under the system originally recommended by the NEB.

This sliding scale formula, which provides a major incentive to hold down costs of construction of the system in Canada for the benefit of both Canadian consumers and gas producers, will be reinforced by a system under which the rate of return on equity investment in the pipeline will be geared to its performance in meeting cost estimates.

Should the company succeed in holding construction costs in Canada below a 35 per cent overrun, and U.S. shippers consequently picked up 100 per cent of the cost of moving gas from Dawson to Whitehorse, the resulting savings would represent a reduction of approximately \$1 billion in transportation costs for the existing reserves of 5.2 tcf already discovered in the Delta, as compared to the Dawson routing proposed by the NEB.

Pipe Size

One of the issues unresolved at the time of the signing of the Canada-U.S. Agreement was the size of the pipe to be used for that portion of the trunk system from a point near Whitehorse where the Dempster Lateral would connect with the system to the point where the pipeline bifurcated into the Eastern and Western Legs. While Foothills' original proposal was to use 48-inch diameter pipe under pressure of 1,260 psi, the National Energy Board deferred making its final decision until other alternatives, i.e., 48-inch heavy wall pipe at 1,680 psi, or 54-inch pipe at 1,120 psi, could be examined.

A joint Canada-U.S. Technical Study Group met in October and December, 1977, to review the relative merits of the designs from the point of view of safety, reliability, and economic efficiency. At the December, 1977, meeting, the United States proposed that a 56-inch pipe also be studied.

On February 17, 1978, the National Energy Board approved the use of a 56-inch diameter pipe operating at 1,080 psi. The Board's decision was based on the greater safety and reliability of the low-pressure pipe. The Board also took into account a possible two-year delay which would be required for thorough testing of the 48-inch high-pressure pipe. The Board determined that the 56-inch diameter pipe was the least costly of the low-pressure alternatives.

In a letter to the National Energy Board, the Federal Energy Regulatory Commission expressed its conditional willingness to accept the 56-inch pipe proposal if Canada would not approve the 48-inch system, but stated that the Canadian decision for the 56-inch pipe should be accompanied

by a firm indication of the government's intention to build the Dempster Lateral by 1990. The Board subsequently indicated to FERC that it still saw a need for the Dempster Lateral.

The capital costs for the 56-inch system between Whitehorse, Yukon, and Caroline, Alberta, were added to the original Pipeline Agreement through an exchange of diplomatic notes between the two countries on June 6, 1978.

Non-Discriminatory Taxation Regime

The Agreement reiterated the commitment of both countries as set out in the Transit Pipeline Treaty with respect to non-discriminatory taxation. (The Transit Pipeline Treaty was ratified by Canada on September 19, 1977.) It took note of the statements issued by the Governments of the Provinces of British Columbia, Alberta and Saskatchewan which were annexed to the Agreement. In these statements, all three provinces concurred with the Agreement and the Transit Pipeline Agreement and undertook to negotiate with the Federal Government agreements for co-operation on the construction of the pipeline. Such agreements have been concluded with Alberta and Saskatchewan. An agreement has not been concluded with British Columbia for reasons which do not pertain to taxation regimes or construction of the pipeline which has proceeded normally in southern British Columbia.

On the question of possible discriminatory taxes, Canada has assured the USA that, if provincial taxes were found to be discriminatory under the terms of the Transit Pipeline Agreement, Canada would meet its obligations under the Treaty.

Since there are no other major pipelines in Yukon, an upper limit on taxation was reached in the Agreement between the two countries not to exceed \$30 million (Cdn) per year adjusted annually from 1983 by the Canadian Gross National Product price deflator. Provision of a lower ceiling of taxation was made for the years of construction. To date, no taxation has been imposed on the pipeline as the company has no taxable assets in the Territory.

Although the Territory is under federal jurisdiction, the Federal Government has signed an agreement with the Territorial Government similar to the agreements with Alberta and Saskatchewan.

The President's Decision and Report to Congress

Following the signing of the bilateral agreement on September 20, 1977, President Carter transmitted his Decision on the Northern Natural Gas Pipeline to Congress on September 22. On November 2 of that year, Congress enacted by Joint Resolution the President's Decision to build the Alaska Highway Pipeline and the President signed the Joint Resolution into law on November 8.

The Northern Pipeline Act

On February 3, 1978, a Bill providing for a Northern Pipeline Act was introduced for first reading in the House of Commons by the Hon. Allan MacEachen, then Deputy Prime Minister and President of the Privy Council. Following approval of second reading of the Bill by the House of Commons, it was referred to the Special House Committee on a Northern Gas Pipeline on February 23, 1978. On March 21, the Bill was reported back to the House where it was passed on April 4. The Bill was passed by the Senate on April 10 and was proclaimed into law on April 13, 1978.

The Northern Pipeline Act gives effect to the Agreement between Canada and the United States on Principles Applicable to a Northern Gas Pipeline and provides for the establishment of the Northern Pipeline Agency to oversee the planning and construction of the project in Canada. The Agency was intended to provide a single regulatory window for undertaking most federal responsibilities directly related to the pipeline system in Canada.

The management and direction of the Agency come under the authority of a Minister designated for this purpose by the Governor in Council. A Commissioner, appointed through Order in Council, serves under the Minister as his deputy and is based at the Agency's head office in Ottawa. The main operations office is located in Calgary and functions under the direction of an Administrator, who is also appointed by Governor in Council.

The Act also provides for the appointment of a member of the National Energy Board who serves as its Designated Officer and, at present, also as a Deputy Administrator of the Agency. The Designated Officer exercises certain powers delegated from the Board as well as those granted to him by the Act.

The Minister responsible for the pipeline exercises powers under the Act, including the management and direction of the Northern Pipeline Agency (s.4(2)). In order to direct the Agency, s.12 of the Act provides that the Minister receive a report each year from the Auditor General on the operations of the Agency. The Minister under s.13 is required to report to Parliament on the operations of the Agency, before December 31 following the end of a fiscal year or if Parliament is not then sitting, within the first 15 days of the new session.

General Powers

S.9 of the Act outlines in general terms the powers of the Minister:

- i) When the Governor in Council so directs, the Minister can, in relation to the pipeline, exercise powers normally exercised by other Ministers (s.14). The Minister may also enter into agreements with other Ministers, departments and agencies of the government whereby they may exercise powers transferred to the pipeline Minister on his behalf in a manner determined by the Agreement (s.15).
- ii) The Minister may consult with the provinces and territories with respect to the pipeline and enter into such agreements with them as are necessary to carry out the objects of the Act.
- iii) The Minister is responsible for overseeing the planning, construction and procurement for the line.
- iv) The Minister is responsible for the carrying out of Canada's obligations under the Canada-U.S. Pipeline Agreement.

It should be noted that many of the Minister's powers under the Act are temporary. S.44 of the Act provides that when Part I of the Act (except s.20, 29 and 30) ceases to be in force, the power of the Minister in respect to the pipeline certificate reverts to the National Energy Board. Part I will cease to be in force one year after leave-to-open the pipeline is granted by the National Energy Board, unless the Dempster line is certificated, in which case Parliament by joint resolution may extend the life of the Agency and modify Part I of the Act.

Terms and Conditions

Ss. 20-22 of the Act relate to the terms and conditions and orders with which the pipeline companies must comply. Terms and conditions are fixed by the National Energy Board or the Designated Officer subject to the approval of the Governor in Council. They may be modified or added to by the

same process. All undertakings given by the pipeline companies before hearings of the National Energy Board were deemed to be terms and conditions. As well, terms and conditions were set out in Schedule III to the Act. Orders of the Designated Officer pursuant to the terms and conditions, are subject to the concurrence of the Minister. Most of the undertakings given by Foothills (Yukon) before the National Energy Board have since been superseded by socio-economic and environmental terms and conditions approved by the Designated Officer with the concurrence of the Governor in Council for all segments of the pipeline in Canada other than that in Yukon.

The terms outlined in Schedule III to the Act give the Minister certain important powers and duties. Under Condition 9, the company is required to file with the Minister a manpower plan and this plan, when approved by the Minister and subject to any modifications the Minister might make, binds the company.

Similarly, Condition 10 requires the company to submit to the Minister for approval a Procurement Plan for goods and services. This plan includes special procedures for prior approval by the Designated Officer of certain contracts specified by the Minister. Before final approval of such a plan was granted, the company could make no major purchases (identified by a former Minister as foreign purchases in excess of \$100,000 and domestic purchases in excess of \$500,000) without the approval of the Minister. In all cases where contracts involve designated items, copies of contracts must be submitted to the Minister and the Board prior to execution. Following adoption of the Procurement Plan with the concurrence of the Minister, the Designated Officer is required to approve procurement of designated items.

Under Condition 12, the companies, before beginning construction, must file documents with the Minister and the Board relating to financing indicating that the company is not a non-eligible person for purposes of the Foreign Investment Review Act (FIRA) and that debt instruments do not preclude construction of the Dempster line. The Minister must also be satisfied that financing is adequate and that there is sufficient protection against the risk of non-completion of the line. Contracts with pipeline shippers must be filed with the Minister and the Board, as well as monthly reports on the progress of the pipeline and periodic reports on pipeline design. The Minister and the Board have access to company books for audit purposes.

Finally, the company must, before beginning any construction, satisfy the Minister and the Board that all regulatory approvals have been obtained. The company must use pipe of specifications as approved by the Minister and the Board.

The Minister has extensive responsibilities in his role of ensuring that the pipeline companies comply with terms and conditions and orders. Under s.26(1.1) where the company has received notice of a violation and refuses to comply, the Minister may assess a civil penalty against the company of up to \$10,000 for each day of violation. The company may, within thirty (30) days of receiving such assessment, appeal to the Minister who may confirm or vary the assessment (s.26(3)). The company may further appeal any assessment to the Federal Court.

S.30 of the Act further allows the Minister, where the company has received due notice of a violation of terms and conditions or an order and does not take action, to have the obligations of the company performed by others at the company's expense.

Yukon Lands

Part III of the Act deals with the use of federal lands in Yukon for the pipeline. Under s.37(1), the Yukon Commissioner's lands in Yukon may, if needed for the pipeline, be transferred to the Minister by Order in Council. The pipeline company, Foothills (South Yukon) is required to provide the Minister with plans showing the lands needed.

Cost Recovery

S.29 of the Act provides that the cost of the Northern Pipeline Agency and of the National Energy Board in relation to the pipeline only shall be recovered from the company.

Native Land Claims

In the objects of the Act, the Northern Pipeline Agency is required to "take into account ... the interests of the residents, particularly the native people" and recognize "the responsibilities of the Government of Canada and other

governments, as appropriate, to ensure that any native claim related to the land on which the pipeline is to be situated is dealt with in a just and equitable manner". To make the protection of the native interest specific if construction of the line were to take place prior to a land claims settlement in Yukon, S23.1 of the Act states "Notwithstanding this Act, any native claim, right, title or interest that the native people of Canada may have had prior to the coming into force of this Act in and to the land on which the pipeline will be situated continues to exist until a settlement in respect of any such claim, right, title or interest is effected".

Establishment of Northern Pipeline Agency

The Northern Pipeline Agency was established with the proclamation of the Northern Pipeline Act on April 13, 1978, for the purpose of overseeing the planning and construction of the Canadian portion of the Alaska Highway gas pipeline to provide access to the substantial Arctic natural gas reserves of both Canada and the United States.

In addition to creating the Agency, the Act provides the legislative authority required to implement the bilateral agreement between the two nations of September 20, 1977, which governs the joint undertaking of the 9,000-kilometer (5,500 mile) system which includes the proposed Dempster Lateral.

The Agency was created as the principal instrument for carrying out the objects of the legislation approved by Parliament. The Agency's mandate is twofold. It is required to facilitate the efficient and expeditious planning, construction and initial operation of the system in Canada by Foothills Pipe Lines (Yukon) Ltd. and five of its subsidiary companies. It is also required to ensure that the project is carried forward in a way that will yield the maximum economic and industrial benefits for Canadians with the least possible social and environmental disruption. In particular, the Agency is directed by the Act to take account of the local and regional interests of residents, especially native residents, in areas affected by the undertaking.

The Northern Pipeline Agency was established to provide a 'single window' for the conduct of virtually all dealings at the federal level with the Foothills' Group of Companies which was authorized under the Act to undertake the project in Canada. In keeping with the provisions of the legislation, many of the regulatory powers of other federal departments and agencies relating to the planning, construction and operation of the Canadian system have been transferred to the Northern Pipeline Agency for pipeline purposes only. The principal exception involves responsibilities reserved exclusively to the National Energy Board or shared between the Board and the Agency. In addition, the Agency is responsible for facilitating the co-ordination of activities bearing on the project that involve other arms of the federal government, other levels of government in Canada, and U.S. departments and agencies.

The management and direction of the Agency come under the authority of a Minister designated for this purpose by the Governor in Council. A Commissioner appointed by

Order in Council serves under the Minister as his deputy in charge of the Agency. The Commissioner is based at the head office in Ottawa. The main operational office is located in Calgary and functions under the direction of an Administrator appointed by Order in Council, who is also responsible for the day-to-day direction of regional offices located in Vancouver, British Columbia, and Whitehorse, Yukon Territory. As provided for under the Act, a member of the National Energy Board serves as its Designated Officer, and as a Deputy Administrator of the Agency, exercising the powers of the Board that were delegated by it on July 27, 1978.

In an unprecedented step, the House of Commons in April, 1978, agreed to the establishment of a Standing Committee on Northern Pipelines to maintain continuing surveillance over the implementation of the Northern Pipeline Act and the operations of the Northern Pipeline Agency. Following its formation in June of that year, the Committee has met regularly to hear testimony from the responsible Minister and senior officials of the Agency; senior officers of the sponsoring company and members of the National Energy Board.

In October, 1978, the Senate also adopted a motion for the establishment of a Special Committee on the Northern Pipeline with authority to "inquire into all matters relating to the planning and construction of the pipeline for the transmission of natural gas from Alaska and Northern Canada ...". The Senate Committee has conducted a number of hearings related to the project.

Legislative and Regulatory Progress of the Project

By Joint Resolution of the House of Representatives and the Senate, the United States Congress on November 2, 1977, approved the Decision and Report submitted to it in September, 1977, by the President recommending construction of the Alaska Highway gas pipeline in keeping within the terms of the Canada-U.S. Pipeline Agreement. The Decision was formally enacted into law with the signing of the Joint Resolution by President Carter on November 8, 1977.

Despite the expeditious approval by Congress of the joint Canadian-U.S. undertaking recommended by the President, a series of other legislative and regulatory hurdles were encountered in the United States during the balance of the year which seriously impeded progress on the project. While the bilateral agreement established a timetable which envisaged the flow of gas from Alaska to the lower 48 states commencing by January 1, 1983, the consortium of companies sponsoring the pipeline in the United States concluded that the commencement of operations could not begin before November, 1984, because of these delays.

The first major obstacle arose out of the extended debate in Congress over the National Energy Plan presented to it by the Administration on April 20, 1977. One of the most controversial measures involved a Bill to establish a new regime with respect to the pricing of natural gas both at the well-head and in sales to the ultimate consumer - the determination of which was an essential prerequisite to the development of planning for the Alaska Highway pipeline system. A prolonged deadlock between the two Houses was not overcome until October 15, 1978, when the energy legislation, including the Natural Gas Pricing Act of 1978, was approved by Congress. It was signed into law by President Carter on November 9, 1978.

Within a matter of months following the passage of this legislation, however, it became increasingly evident that considerably more time than originally anticipated would be required to resolve a number of outstanding regulatory issues, many of which involved the breaking of major new policy ground.

Throughout 1979 several of the outstanding regulatory issues were dealt with by the responsible U.S. authorities. These issues included the form of the tariff for the transportation of gas to be applied by the various pipeline companies

operating the system within U.S. territory. The formula with respect to rate of return on equity to be adopted as an incentive to the pipeline companies to hold down capital costs and the general routing of the pipeline through Alaska, together with the design pressure and diameter to be adopted, were also determined.

Overshadowing all of these and other developments, however, was the critical, unresolved problem of financing construction of the gas conditioning plant at Prudhoe Bay and the 1,180-kilometer (730-mile) pipeline from the North Slope of Alaska to the Yukon border.

In his Decision and Report to Congress of September, 1977, President Carter ruled that the entire project must be privately financed. At the same time, he maintained that, as major beneficiaries of the project, both the Prudhoe Bay gas producers and the State of Alaska should participate in the funding of the Alaskan segment of the system.

Over a period of several months following submission of the President's Decision and Report and its subsequent approval by Congress, virtually no progress was made in resolving the financial role to be played either by the producers or the State. Furthermore, only a limited number of agreements had been concluded for the sale of Prudhoe Bay gas to U.S. shippers for distribution in markets in the lower 48 states. No work was under way to complete the final design and engineering of the large and complex conditioning plant to be built at Prudhoe Bay. In addition, the producers were strongly contesting an initial decision by the U.S. Federal Energy Regulatory Commission (FERC) that would require them to absorb most of the costs of conditioning the gas prior to its delivery to the pipeline system.

A speech made in Kansas City by President Carter on July 16, 1979, the day after he had outlined proposals for a major new national energy program, marked a significant turning point of events. Underlining the importance to the United States of gaining access to its substantial gas reserves at Prudhoe Bay in order to reduce the nation's reliance on uncertain supplies of foreign oil, the President asserted that the North Slope producers had "dragged their feet" in providing the financial assistance that was required to build the pipeline. "I have", he said, "instructed the Secretary of Energy to call them in and get them going and I will insist personally that this gas pipeline be built without further delay."

The statement by President Carter was followed by several months of intensive discussion between the Secretary of Energy and his officials and representatives of the pipeline sponsor in Alaska, the three major Prudhoe Bay producers, and the State of Alaska. These discussions centered on a variety of proposals put forward by the producers and alternative approaches suggested by a consultant retained by the Department of Energy to seek the development of an agreement acceptable to all parties concerned. At issue were such complex questions as the respective roles to be played by the pipeline sponsor and the producers in the management of the project and their relative share of equity, and the sharing of additional expenditures required to complete studies in order to establish final design and engineering of the Alaskan pipeline and conditioning plant. Other issues under consideration included the determination of final design costs of the system, the allocation of costs of conditioning the gas between the producers and shippers/consumers, and the nature and extent of debt financing that might be provided by the producers. Although progress was made in dealing with these issues as a result of the meetings held under the aegis of the U.S. Department of Energy, no final resolution had been arrived at by the end of the fiscal year. Throughout 1980, considerable progress was made in dealing with these issues as a result of negotiations held under the aegis of the U.S. Department of Energy.

A major advance was made in June, 1980, when the pipeline sponsor in Alaska - Alaskan Northwest - and the three leading owners of natural gas reserves at Prudhoe Bay - Exxon, Sohio and Atlantic Richfield - arrived at an agreement to share expenditures of some \$500 million or more to complete final design and engineering of both the pipeline and gas conditioning plant in the State.

At the same time, the pipeline sponsor and producers also stated their intention of working together to develop a plan aimed at meeting the single greatest challenge facing the entire project - raising the immense amount of private investment capital required to finance construction of the costly Alaskan portion of the system. The pipeline sponsor and the three gas producers reached agreement in May, 1981, on the concepts underlying a plan to finance the Alaskan segment of the pipeline and the gas conditioning plant at Prudhoe Bay. Under this plan, the producers would put up 30 per cent of the equity capital required for the Alaskan system and the pipeline sponsor would

be responsible for raising the remainder, while both would have a responsibility for arranging the additional debt capital required to finance the project.

A further important step was taken on October 16, 1981, when President Ronald Reagan submitted to the Congress a series of proposed waivers to the Alaska Natural Gas Transportation Act of 1976, and the President's Decision and Report to Congress of 1977 which was adopted under that legislation. In his submission, President Reagan said he had found that certain provisions of the law required waiver "in order to permit the expeditious construction and initial operation of the approved transportation system".

As explained later, the waiver providing for Foothills (Yukon) to recover its full cost of service following completion and testing of the system in Canada and, following a date established beforehand by the Federal Energy Regulatory Commission, is of particular importance from a Canadian perspective to enable the second-stage of the system in Canada to be financed.

An earlier significant step forward was taken in December, 1980, when the then U.S. Secretary of the Interior, Cecil Andrus, signed the grant providing a 30-year right-of-way for the pipeline across some 690 kilometres (430 miles) of federal lands in Alaska. The right-of-way grant contained a number of conditions, including the routing of the pipeline through the State and the separation of the gas line from the existing oil pipeline over the route from Prudhoe Bay to Fairbanks, Alaska. Applications filed for the grant of right-of-way for the pipeline through land owned by the State of Alaska and for the leasing from the State of the proposed site of the gas conditioning plant at Prudhoe Bay are understood to be still under consideration.

Consultations Between the National Energy Board
and the Federal Energy Regulatory Commission

Prior to the discussions between Canada and the United States on the tariff and other related matters applicable to the Northern Pipeline, the Transit Pipeline Treaty had been negotiated between the two countries, which was signed on January 28, 1977. The provisions of the Treaty recognized, among other things, the right of governmental authorities having jurisdiction to regulate a transit pipeline but the Treaty included a provision that all tolls should be just and reasonable and that no charge should be levied on a pipeline in one country which was not applicable to similar pipelines in the same country.

Canadian Incentive Scheme

The 1977 Agreement between Canada and the United States on Principles applicable to the Northern Natural Gas Pipeline made provision for the implementation of an incentive rate of return scheme on equity for the Canadian portion of the pipeline.

The incentive scheme was developed concurrently with the U.S. incentive scheme to be applied on the Alaskan and Northern Border portions of the pipeline. Both schemes were the subject of extensive discussions between representatives of the National Energy Board (NEB) in Canada and the U.S. Federal Energy Regulatory Commission (FERC). The Canadian scheme was patterned on the United States' proposal, which was finalized in FERC Order No. 31 of June, 1979, and the Canadian scheme was adopted in November, 1979.

Range of Rates of Return on Equity

The range of rates of return on equity to be applied under the incentive scheme in Canada was published following Phase III of the NEB 1979/80 Tariff Hearing. There had been discussions between the NEB and the FERC to establish a common understanding of the parameters within which the rates would be developed and of the different circumstances existing in each country. It was agreed that the incentive rates would be based on a rate similar to that allowed on existing pipelines with the same operating risk, to be known as the Operation Phase Rate. To this would be added premiums for the construction and completion risks unique to the Northern Pipeline and the risks associated with the variability of the rate of return to be earned under the incentive scheme.

... 27

Though the rates of return on equity applicable under the Canadian incentive scheme are higher than those approved for the U.S. scheme, they are based on a debt to equity ratio of 75:25, which is a lower proportion of equity than that prevailing in the U.S. As a result, the total return on rate base in Canada, including the cost of debt, equity and income taxes, could be lower than that applicable in the U.S.

Canadian Full Cost-of-Service Tariff

Development of the full Cost-of-Service Tariff and the method for its regulation were the subject of discussion between the NEB and the FERC, based on a draft of the U.S. tariff. The U.S. tariff was finalized with the issue of FERC Order No. 31 in June, 1979. The Canadian tariff was reviewed in six hearings during 1979 and 1980. The following are the areas on which discussion took place between the NEB and the FERC:

Method of Regulation

The NEB's proposed Method for the Regulation of Tolls and Tariffs of the Foothills Pipeline, based on a full cost-of-service tariff, was discussed with the FERC prior to public hearings in Canada.

Canadian Standard for Just and Reasonable Tolls

One of the subjects discussed was the Canadian standard for just and reasonable tolls. In the Method of Regulation it was stated that all U.S. shippers would have the right to intervene as interested parties in public hearings held by the NEB. In addition, both they and the FERC would have access to the NEB audit reports and other relevant information.

Starting Date of the Mainline Tariff

During Phase I of the Tariff Hearing, the starting date of the tariff applicable to the mainline (as opposed to the tariff applicable to the portions of the pipeline to be pre-built) was examined in detail. In its decision following that Phase of the hearing, the NEB approved the mainline tariff, but directed that the company should amend the starting date to provide for a gradual phasing-in of the

tariff over a period of up to 14 months - similar to the provision already approved by the FERC for the U.S. tariff. The company appealed that decision in Phases III, IV(a) and IV(b) of the hearing, stating repeatedly and categorically that the sponsors would not commit equity to the project and the company would not build the pipeline unless it was paid in full for its services under the mainline tariff when it had been granted "leave-to-open" for the pipeline in Canada. The Board accepted, after two appeals, the company's position and approved the starting date for the full cost-of-service tariff to commence on completion of the pipeline and the granting by the NEB of "leave-to-open".

Sustained Outage Over 30 Days

Following consideration in several hearings, the Canadian tariff was amended to contain a clause on sustained outage over 30 days, which is similar to the one in the United States' tariff.

Consultations Between NPA and OFI - Procurement

The Agreement between Canada and the United States of America on Principles Applicable to a Northern Natural Gas Pipeline states in its preamble that one of the principal objectives of the project is to "maximize related industrial benefits of each country". It further states in Clause 7(a) that "having regard to the objectives of this Agreement, each Government will endeavour to ensure that the supply of goods and services to the Pipeline will be on generally competitive terms". The same clause stipulates that the elements to be taken into account in weighing competitiveness will include price, reliability, servicing capacity and delivery schedules. Clauses 7(b) and 8 provide for co-ordination and consultation between the two governments with respect to the achievement of the objectives of the agreement with respect to procurement.

Prior to the approval of the company's Procurement Program, as required under the Northern Pipeline Act, the Agency had a series of consultations with the United States Administration, the Office of the Federal Inspector and the company itself. Extensive discussion also took place between officials of the Agency and the U.S. government regarding reciprocal arrangements for exchanging information on procurement for the pipeline in both countries of certain designated items. These designated items include line pipe of 36-inch diameter and larger, turbomachinery, large valves and fittings, which represent a substantial proportion of the total cost of the project.

The procedures governing the procurement of these items was established through an exchange of diplomatic notes between the U.S. and Canadian governments in June, 1980.

The procedures provide for the exchange of information between the Northern Pipeline Agency in Canada and the Office of the Federal Inspector in the United States with respect to the qualification of bidders, the nature of technical specifications and tendering documents, and the recommendations of project companies on the award of procurement contracts or the undertaking of negotiations aimed at arriving at contract agreement. The two regulatory authorities and the sponsoring companies were guided by these procurement procedures on an informal basis for several months prior to the formal exchange of notes.

In order to implement these principles, the Governments of Canada and the United States of America agreed that the following procedures, with respect to the procurement of certain designated items of supply for the Alaska Highway Gas Pipeline, would be adopted on a reciprocal basis by the appropriate regulatory authority in each country, namely, the Northern Pipeline Agency in Canada (NPA) and the Office of the Federal Inspector in the United States (OFI).

1. Qualification of Bidders

The project companies in each country will submit a list of qualified bidders they propose to invite to tender on any of the designated items to the appropriate domestic regulatory authority, which will expeditiously convey copies of any such lists to the regulatory authority of the other country both directly and through normal diplomatic channels. The regulatory authority of the other country will have 14 calendar days following its receipt in which to review the bidders' list and to propose to its counterpart the addition of any firm or firms which it considers should also be invited to tender. If any such modification is proposed, it is to be communicated to the originating project sponsor by the responsible regulatory authority in that country. Should the project sponsor not be prepared to accept the additional bidder or bidders proposed by the regulatory authority of the other country, the reasons for its position shall be communicated to that authority by the responsible domestic authority.

The project sponsors may, but are not required to, place advertisements inviting interested suppliers to pre-qualify as bidders for particular supplies. In the event that such advertisements are decided on for designated items, they shall be placed in appropriate trade journals or other publications in both Canada and the United States.

2. Technical Specifications and Tendering Documents

Prior to the actual solicitation of bids on designated items, listed in an attached schedule, the project sponsors in each country will submit technical specifications and tendering documents to the appropriate domestic regulatory authority, which will first expeditiously review the solicitation information for possibly restrictive language that would prohibit open competition and then expeditiously convey copies of such information on a confidential basis to the regulatory authority of the other country both directly and through normal diplomatic channels. The regulatory authority of the other country will have 14 calendar days following its receipt

to review such information and to submit any proposed modifications in the technical specifications or tender document to the responsible regulatory authority, which in turn will communicate such representations to the originating sponsor. Should the project sponsor not be prepared to accept the modification of the technical specifications or tender document proposed by the regulatory authority of the other country, the reasons for its position shall be communicated to that authority by the responsible domestic authority.

3. Recommended Decisions to Purchase or Negotiate

Following the receipt and evaluation of bids on designated items, the project sponsor will submit its conclusions in a report satisfactory to the domestic regulatory authority with respect to the purchase of supply, or of entering into negotiations with one or more firms for the purpose of reaching contract agreement, to the responsible domestic regulatory authority. After expeditiously reviewing these submissions for general competitiveness, the domestic regulatory authority shall prepare and submit to the regulatory authority of the other country a meaningful summary of the report and of its conclusions. Such information shall include an outline of the factors which were taken into account by the project sponsors in arriving at its conclusions, and, in cases where consideration of industrial benefit was involved, demonstrate that they came within the framework of general competitiveness. While maintaining the confidentiality of proprietary commercial information, including the tender prices of individual bidders, such summaries should be designed to make possible an assessment of the extent to which the proposed procurement conforms with the stated objectives of the Canada-United States Agreement. In cases where bids submitted by either Canadian or United States firms on tenders called by sponsoring companies in the other country have been rejected or accepted only in part, the conclusions of the project sponsor and the reasons for them as outlined in the project sponsor's report will be communicated by the responsible domestic regulatory authority to the regulatory authority of the other country as part of the meaningful summary.

In the event the regulatory authority in the other country wishes to raise questions with respect to the conclusions or the summary containing the factors which led to those conclusions, or wishes to initiate formal consultations as provided for under Clause 7(b) of the Canada-United States Agreement on Principles, it will be required to provide notification to the responsible domestic regulatory authority within a period of 14 calendar days.

Should consultations as provided for under the Agreement be invoked with respect to any aspect of the procurement process, it is recognized by the governments of both Canada and the United States that they should proceed expeditiously so as to avoid causing any undue delay in the timely completion of the project.

4. Award of Contract

Although no specific requirement for consultation should be necessary at this time in view of the extensive provisions at earlier stages, a short delay may be required to advise the other country's regulatory authority of any significant changes that resulted during negotiations with the selected vendor(s).

Pre-Building - Phase I

In its report to the federal government of July, 1977, on the northern pipeline project, the National Energy Board proposed that the southern segments of the Alaska Highway Gas Pipeline in Canada and the United States be "pre-built" somewhat in advance of the northern section of the line for the initial purpose of exporting what it considered to be a relatively small surplus of Canadian natural gas to U.S. markets in the West and mid-West. Subsequently, the concept was endorsed in principle by President Carter in the Decision and Report which he submitted to Congress a few months later.

The bilateral agreement between Canada and the United States of September, 1977, and the implementing legislation subsequently passed in the two countries, provided for the construction of an Alaska Highway Gas Pipeline to transport Prudhoe Bay gas to southern U.S. markets and for the building of a connecting lateral to enable Canada to gain access to its own reserves in the Mackenzie Delta.

It was never considered that pre-building of the southern segments of the line initially for the export of Canadian gas was precluded by the bilateral agreement or the implementing legislation. But the proposal as originally advanced by the National Energy Board envisaged that construction of this part of the project would take place only moderately in advance of the remaining northern section of the pipeline and would provide only for the short-term export of a relatively small volume of Canadian gas. This conception of arranging financing for the entire line at one time was reflected in Condition 12 of Schedule III of the Northern Pipeline Act approved by Parliament in April, 1978. Among other things, this Condition required Foothills to establish to the satisfaction of the NEB and the Minister responsible for the Northern Pipeline Agency that financing had been obtained for the whole of the pipeline in Canada before commencement of construction was authorized.

During the period that followed, however, there were two fundamental changes in circumstances that had major implications for the pre-build proposal. The first such change involved the scheduled completion date for the entire project, which by early 1980 had been set back from the original target of January, 1983, provided for in the

Canada-U.S. Agreement, to late 1985 as a result of a number of delaying factors. The second change involved the National Energy Board's calculation of the amount of surplus Canadian gas available for export to the United States from an initial estimate of some 800 billion cubic feet (bcf) to around 4.5 trillion cubic feet (tcf).

Pre-building had always been regarded from the outset as providing a significant advantage in easing the economic pressure that might be imposed on manpower and productive facilities in both countries if the whole project were to proceed at once. As a result of the delays which had been encountered, however, pre-building also came to assume even greater importance as a means of facilitating completion of the entire system by maintaining the momentum of the project and by the provision of a cash flow from the pre-build segments with which to help finance the heavy costs of the northern sections of the pipeline. The substantial increase in the available surplus determined by the National Energy Board over that originally estimated also had the potential to yield much greater economic benefits to Canada from gas exports through the Western and Eastern Legs of the system.

At the same time, however, the setback in the scheduled date for completion of the project of almost three years created a serious dilemma for Canada. As previously indicated, it had initially been assumed that pre-building of the southern segments would be undertaken only moderately in advance of construction of the remaining parts of the system in northern Canada and Alaska. This assumption was reflected in what was designated as Condition 12 in Schedule III of the Northern Pipeline Act. This provision required Foothills to satisfy both the Minister responsible for the Northern Pipeline Agency and the National Energy Board that financing had been obtained for the entire Canadian project before commencing construction.

Because of the delays encountered in plans for proceeding with construction of the northern segment, which resulted mainly from the lack of resolution of issues relating to the financing of the project in Alaska, it became impossible for Foothills to obtain assured financing for the whole of the system in Canada by the time construction of the southern segments was due to proceed. On April 2, 1980, the National Energy Board issued an order under the provisions of the Northern Pipeline Act amending Condition 12 of the legislation, subject to the approval of the Governor in Council. The effect of the amendment was to require Foothills

to establish to the satisfaction of the Minister and the Board that funds had been obtained for construction of the Western and Eastern Legs of the pipeline in southern Canada and could be obtained for the remaining northern section in this country.

In a letter of the same date, the Minister responsible for the Northern Pipeline Agency, Senator the Hon. H. A. (Bud) Olson, requested the Board to hold public hearings in order to determine whether Foothills could meet this revised condition. At the same time, the Minister advised the Board that the government intended to defer consideration of the proposed amendment to Condition 12 until it could simultaneously consider two other closely related matters. One was the then pending recommendation from the Board on the application for permission to increase the volume of surplus Canadian gas designated for export through the pre-built segments. The other concerned the expression of views by the government of the United States, in keeping with the Canada-U.S. Agreement, on the financing of the U.S. portion of the pipeline and the assurance of its timely completion.

Meanwhile, over a period of several months prior to this time, Foothills had identified a number of issues requiring resolution before it considered that financing would be forthcoming for the building of the southern sections in Canada. Foremost among them was the volume of gas available for export through the pre-built segment. In a decision in December, 1979, the National Energy Board recommended to the federal government that it authorize the export to the United States of 3.75 tcf out of a total surplus estimated to amount to 4.5 tcf. Out of the volume subsequently approved by the government for export in line with the NEB recommendation, a total of 1.8 tcf was allocated to Pan-Alberta Gas Ltd., an affiliate of Foothills, for transmission through the Western and Eastern Legs over a seven-year period. Both the Canadian and U.S. sponsors of the pipeline contended this volume was insufficient to permit the pre-build segment in both countries to be financed.

Throughout the late winter and spring, the National Energy Board conducted further rounds of public hearings to consider this and a variety of other issues which Foothills sought to have resolved in order to clear the way for commencement of first-stage construction of the project. The Board in particular recommended that some 500 bcf of the previously identified surplus which remained unallocated be earmarked for export by Pan-Alberta. It proposed in addition

that some 450 bcf of gas previously designated for transmission via the TransCanada Pipeline system by two other producer groups be transmitted instead through the Eastern Leg of the Alaska Highway Pipeline. The Board also resolved a number of other outstanding issues related to the pre-build in Canada, including approval of accelerated depreciation on a provisional basis in order to facilitate financing of the project and the establishment of the approved final design costs as the yardstick against which to measure actual construction costs, which in turn would determine the Incentive Rate of Return to be earned by Foothills on its equity investment.

On May 9, 1980, the NEB directed its attention to more fundamental problems involving both the pre-build and the mainline segments of the project in Canada. In a statement on the outcome of the hearings it conducted at the request of Senator Olson in relation to the proposed amendment in the financing provisions of Condition 12, the Board asserted that the early pre-building of the southern segment in Canada was in keeping with the legislation, forming part of a fully integrated, two-stage project. At the same time, however, the Board concluded that certain prerequisites for the successful financing of both the pre-build and the mainline project in Canada had not been fulfilled up to that point - all of them being dependent on favourable supporting action being taken in the United States.

In Reasons for Decision which it issued at the same time as its statement, as indicated previously, the Board authorized a tariff system as an alternative to that which it had approved earlier. This alternative tariff scheme would enable Foothills to begin recovering its full cost-of-service, including a return on and of equity, as soon as the mainline project had been completed and leave-to-open the system granted by the Canadian regulatory authority. The report noted that the company had categorically stated its refusal to commit equity capital to the project in the absence of such a tariff system. In the accompanying statement, however, the Board pointed out that the implementation of this approach was contingent on its approval by U.S. authorities and on their approval of a parallel system which would permit the full cost-of-service of the Canadian company to be "tracked" by U.S. shippers of Alaskan gas.

In addition, the statement raised concerns that the volume of assured throughput of gas to be transported via the Western and Eastern Legs might be insufficient to support financing of the project. In part, this was because one of the

Canadian gas producers, ProGas Ltd., had not yet made a commitment to ship a portion of its approved exports through the pre-build system. In part, the Board's concern related to an earlier decision by the U.S. Federal Energy Regulatory Commission (FERC) which limited the amount of gas U.S. shippers would be required to purchase from Canadian suppliers, a volume that varied in direct proportion to the export price established by the Canadian government.

Within a few days following the release of the National Energy Board's report, the pace of activity on the diplomatic front began to quicken. On May 12, 1980, Senator Olson met in Washington with U.S. Energy Secretary Duncan and other U.S. authorities. At the Summit Meeting of western leaders in Venice in the latter part of June, the Prime Minister discussed the pipeline issue with President Carter and the Hon. Marc Lalonde, Minister of Energy, Mines and Resources, pursued the subject further with Energy Secretary Duncan. On June 27, Senator Olson again went to Washington, meeting with Vice-President Walter Mondale, Secretary Duncan, and a number of congressional leaders.

On the same day as the Minister's trip to Washington, the U.S. Senate unanimously approved the resolution referred to earlier, which asserted the sense of Congress that the Alaska Highway Gas Pipeline "remains an essential part of securing this nation's energy future and, as such, enjoys the highest level of Congressional support for its expeditious construction and completion by the end of 1985". On July 1, 1980, the House of Representatives unanimously concurred in the resolution. The action by the U.S. Congress followed the Statement of Intention issued on June 19, 1980, by the Alaskan pipeline sponsor and the Prudhoe Bay producers with respect to the completion of final design and engineering of the system in the State and the joint development of a financing plan.

In response to a request from the National Energy Board for Foothills' views on the concerns which the NEB had raised in its statement of early May, 1980, the Canadian pipeline sponsor replied by letter on July 7, 1980, that because of subsequent developments in the United States the company was confident that all of these issues either had been, or would be, satisfactorily resolved.

Decision to Authorize Pre-build

The culmination of the protracted political and regulatory process leading to the point of decision on the issue came on July 17, 1980, with the announcement in the Senate by the Minister responsible for the Northern Pipeline Agency that the government had approved in principle the commencement in Canada of the Western and Eastern Legs as the first-stage in construction of the Alaska Highway Gas Pipeline Project. A similar announcement was also made in the House of Commons by the Minister of Energy, Mines and Resources. The decision by the government followed receipt of a letter that day from President Carter to the Prime Minister expressing the confidence of the U.S. government that the entire pipeline system would be completed. "The United States' energy requirements and the current unacceptable level of dependence on oil imports require that the project be completed without delay," the President stated.

In announcing the decision, Senator Olson said that the Canadian government "has accepted United States' assurances on timely completion of the whole project".

At the time of the decision and subsequently the Prime Minister and other spokesmen for the Canadian government have expressed their confidence that the United States government and Congress would take the necessary action to expedite the completion of the project in both countries.

Consequently, in meetings between Canada and the United States since the pre-build decision, including meetings between the President and the Prime Minister, Canadian representatives reiterated that the Canadian decision was based on the assurances received from the U.S.A. government and the general support of both Houses of the Congress.

The Senator noted that the early undertaking of the first-stage of construction would facilitate completion of the entire project and help to ensure a high Canadian input by easing the strain that might otherwise develop on the supply of manpower and goods and services. He referred to estimates that the building of the southern segment would result in direct capital expenditures in Canada of some \$1.6 billion both on the pipeline itself and on investment in

facilities for the production, gathering and conditioning of Canadian gas to be exported to the United States. Senator Olson also recalled that the National Energy Board had calculated that the building of the southern segment of the pipeline and the sale of gas allocated for export through the system would generate a net national economic benefit for Canada over a seven-year period of around \$4.5 billion.

While all necessary regulatory approvals had by this time been granted in the United States for commencement of the Western and Eastern Legs, a few steps remained to be completed in Canada. On July 21, the National Energy Board issued a report which concluded that the financing requirements of Condition 12 of the Northern Pipeline Act, as amended by the Board and subsequently approved by the Governor in Council, had been met by Foothills. The following day, Senator Olson announced that he was also satisfied the financing requirements had been met by the company. On July 25, Senator Olson announced that the Governor in Council had approved the socio-economic and environmental terms and conditions with which Foothills would be required to comply in undertaking first-stage construction of the pipeline in Alberta and southern British Columbia. On August 5, the Minister issued an order providing Foothills with "leave to proceed" on construction of the first section of the Western Leg, that across the mountainous Flathead Ridge in southeastern British Columbia.

Progress of Pre-build

Construction of the Western Leg in Canada, which began in August, 1980, involved the installation of 215 km (132 mi.) of additional pipeline sections to the existing sections of NOVA and Alberta Natural Gas Company Ltd. in Alberta and South B.C., respectively. Work on this section was completed in the spring of 1981. Between April 1 and May 21, 1981, the National Energy Board granted Foothills Pipe Lines Ltd. leave-to-open the newly constructed sections of the Western Leg. The facilities provide for the initial, short-term export of surplus Alberta gas in volumes of up to 6.7 million cubic metres (240 million cubic feet) per day.

Construction of the U.S. Western Leg, which began on December 10, involved the installation of 258 km (160.5 miles) of loops to the Pacific Gas Transmission pipeline from the Canadian border point at Kingsgate, B.C. to Stanfield, Oregon.

On October 1, 1981, gas began to flow through the Western Leg at an initial volume of 100 Mmcf per day.

In May, 1981, construction of the Eastern Leg, which is to be completed over a two-year schedule, got under way in both countries. Gas is expected to flow through the line in late 1982 at a rate of 800 million cubic feet per day.

The 635 km (394 mi.) of the Canadian section of the Eastern Leg runs southeast from Caroline, Alberta, to the provincial border near Burstall, Saskatchewan, and continues southeasterly to the international boundary near Monchy, Saskatchewan. At this point the line joins with the 1,321 km (821 mi.) American segment being built by Northern Border Pipeline Company. The progress of construction has been satisfactory in both countries.

It is expected that by December, 1981, construction will be complete on the 428.5 km (252.6 mi.) section of the Eastern Leg in Canada which was scheduled to be built this year. In the United States, approximately 1,021 km (640 mi.) of the Eastern Leg will be completed by early December.

Contingency Billing - Background to the
Proposed Congressional Waiver Related to
Financing of Stage II Construction in Canada

Construction of the northern segments of the pipeline system in the United States and Canada is to be co-ordinated as closely as possible. It has been Foothills' position from the very outset, however, that in order to finance the project, it required assurance that it would be fully compensated from the time construction had been completed and the Alaska Highway Gas Pipeline in Canada ready to go into operation - including payment sufficient to cover the return on and of equity. That position was stated by senior company officials in testimony before the Federal Power Commission during hearings in 1976 and incorporated in the form of tariff which Foothills submitted to the National Energy Board in 1977. Thus, this problem was identified before U.S. regulatory authorities by the Canadian companies prior to the conclusion of the agreement on the pipeline between Canada and the United States of America in September, 1977.

Contingency billing is not a normal regulatory practice in Canada. In the case of this pipeline, the question was considered in the context of the bi-national nature of the project with two distinct sets of sponsors and regulatory authorities.

In its Reasons for Decision on Phase I of a series of hearings with respect to tariffs, financing and other related matters, the National Energy Board in July, 1979, denied the application of Foothills for authorization to establish a full cost-of-service tariff from the time leave-to-open had been granted. Instead, the Board approved only the establishment of a minimum bill form of tariff prior to the commencement of Alaskan gas flow which was similar in most respects to the provision approved by the Federal Energy Regulatory Commission in the United States.

During the subsequent Phase III of these hearings, Foothills strongly opposed the tariff system adopted by the Board earlier. In its Reasons for Decision on this third-phase, the NEB maintained its position. At the same time, it recognized that supplementary financing might be required to cover the carrying costs on the investment in the Canadian system if there were a significant delay in the flow of Alaskan gas through the system.

The National Energy Board returned to this issue in its Reasons for Decision issued in May, 1980, on Phase IV(B) of the hearings. In that report, the Board asserted:

Foothills (Yukon) stated categorically throughout this and previous phases of the Hearing that its sponsors would not commit equity to the project and that Foothills (Yukon) would not build the pipeline unless it was paid in full for its services under the mainline tariff when it had been granted "leave-to-open" for the pipeline in Canada. Two means of achieving this were identified: first, by having a tariff which provided for payment of the full cost-of-service when the pipeline was ready for service and, second, by using the tariff as already approved, supplemented by a financing scheme. In the special circumstances of this case, the Board finds that either tariff would be just and reasonable. Therefore, the proposal of Foothills (Yukon) to receive full payment of the cost-of-service tariff for the mainline when leave-to-open has been granted for the whole of the pipeline in Canada is hereby approved. As an alternative, if supplementary financing is arranged to meet the requirements of Foothills (Yukon) that it be paid in full when able to provide service, the Board's approval in principle of the previous Foothills (Yukon)'s tariff containing a 60-day delay, minimum bill and interim rate is left unchanged.

It is our understanding that senior officers of the company testified that such financing would not be available in Canada - a contention that was supported in testimony by the spokesman for the company's lead bank.

In its report of July, 1980, with respect to Condition 12(1) of Schedule III of the Northern Pipeline Act, the National Energy Board recalled that following an earlier hearing on this issue it had identified four matters that were critical to the financeability of the project in Canada. The second of those matters concerned an assurance that the Canadian tariff would be tracked by United States regulatory authorities.

In its Finding of July, 1980, the Board noted the undertaking of the Federal Energy Regulatory Commission on June 20, 1980, to establish an appropriate mechanism for the requisite tracking of Canadian transportation charges.

In reaching its conclusion, the Board also took particular account of the undertaking provided with respect to this particular issue by President Carter on behalf of the United States government in his letter to the Prime Minister of July 17, 1980. In that letter, President Carter said he recognized "the reasonable concern of Canadian project sponsors that they be assured recovery of their investment in a timely manner if, once project construction is commenced, they proceed in good faith with completion of the Canadian portions of the project and the Alaskan segment is delayed". The President went on to say that he accepted the view of the Canadian government "that such assurances are materially important to insure the financing of the Canadian portion of the system". The President stated further that he "would be prepared at the appropriate time to initiate action before the U.S. Congress to remove any impediment as may exist under present law to providing that desired confidence for the Canadian portion of the line".

In its Finding, the NEB said that this letter from President Carter "acknowledges the right of the Canadian company to collect a full cost-of-service tariff once it is ready to go into operation and concedes also that some amendment to his Decision and Report to Congress may be necessary to permit such charges to be tracked through to U.S. consumers".

The Board noted that the removal of the impediment to tracking the Canadian tariff would require a waiver under Section 8 of the Alaska Natural Gas Transportation Act. "The President's statement in conjunction with the Congressional resolution ... lend confidence that such a waiver will be forthcoming," the NEB stated. "For all of the above reasons," it continued, "the Board is satisfied that tracking of the tariff will occur so as to permit the financing of the pipeline."

In the summer of 1980, the Canadian government accepted the Findings of the National Energy Board on what measures were required to finance successfully the entire pipeline in Canada and the U.S.A. Consideration of these measures was particularly significant during the deliberations by the government on whether to authorize the construction of the southern portions of the pipeline in advance of the remaining sections of the line. At that time, the Canadian government raised with the government of the United States

those questions pertaining to the financing which it considered would only be satisfied by U.S. authorities. In public hearings before the NEB, it was not possible to identify a solution in Canada to the question of billing commencement and full cost-of-service tariff for the Canadian section on the granting of leave-to-open by the Board. This was one of the points on which the Canadian government placed the highest priority because it was apparent that if some solution to this question were not found in the United States, the Canadian company would be unable to secure financing.

This question was one of the considerations of Canadian officials in discussions with key congressional leaders with the encouragement and participation of the Administration prior to the passage by Congress of the unanimously agreed resolution indicating that the pipeline project enjoyed the highest level of support of the Congress "for its expeditious construction". Considering this resolution, along with the letter to the Prime Minister from the then President, the Canadian government felt confident that this particular impediment would be overcome at the appropriate time.

Since July, 1980, whenever this question has been raised, government spokesmen have relied on the assurances outlined above. Indeed, in an appearance recently before the House of Commons Committee on Northern Pipelines, the Commissioner of the Northern Pipeline Agency, the Hon. Mitchell Sharp, reported to the Committee that the U.S. Administration was preparing the necessary waiver package and that he was confident one of the waivers would deal with this "requirement for the financing of the Canadian section". The confidence of the Canadian government that the high sense of importance that the Congress and the Administration placed on the successful completion of the pipeline remained undiminished was reassured during the visit to Canada in March, 1981, by President Reagan when he appeared before the joint session of Parliament and he stated that "we strongly favour prompt completion of this project based on private financing".

Finally, it should be understood that before commencement of construction on the northern sections of the system in both Canada and the United States, the regulatory authorities in both countries must be satisfied that the line has been financed. Further, the regulatory bodies will have to be satisfied with the engineering and construction schedules and will have agreed on a target date for the completion of the entire project, before which no pre-commencement billing would

be authorized. As well, when consulted by U.S.A. authorities preparing the waiver package, the Canadian regulatory agencies agreed that it would be appropriate to set a date for completion of the entire line before which time contingency billing would not apply to any completed segment. It will be in the interests of all concerned to co-ordinate closely the completion of the Canadian section, the Alaskan line and the gas conditioning plant. Given these conditions, it is expected that the necessity of resorting to the proposed contingency covering billing in advance of Alaskan gas flows is only a remote possibility and one that in any event would come into play only for a limited period prior to completion of the entire system.

OCT 30 1981

NORTHWEST ALASKAN PIPELINE COMPANY

JOHN G. McMILLIAN
CHAIRMAN AND
CHIEF EXECUTIVE OFFICER

October 30, 1981

1120 20TH STREET, N.W.
SUITE 2-700
WASHINGTON, D. C. 20036
(202) 672-0280

Honorable James A. McClure
Chairman
Committee on Energy and Natural Resources
United States Senate
3121 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator McClure:

In response to your letter of October 26, 1981, I am providing answers to the three questions that you posed.

Questions #1

Please explain how the proposed tariff for the completed ANTGS would operate in each of the following cases:

- A. A residential customer is supplied natural gas by a local distribution company. That LDC is supplied by an interstate pipeline which is not a member of the consortium; nor has it purchased any Alaska natural gas. Will the customer have to pay for the ANGTS?
- b. A large industrial customer is supplied natural gas by a local distribution company. That LDC is supplied by an interstate pipeline which is not a member of the consortium; nor has it purchased any Alaska natural gas. Will the customer have to pay for the ANGTS?
- c. A residential customer is supplied natural gas by a local distribution company. That LDC is supplied 50% of its natural gas by an interstate pipeline. That interstate pipeline has purchased 25% of its system supply of natural gas from Alaska North Slope producers. Will the customer have to pay for the ANGTS?
- d. A large industrial customer is supplied natural gas by a local distribution company. That LDC is supplied 50% of its natural gas by an interstate pipeline. That interstate pipeline has purchased 25% of its system supply of natural gas from Alaska North Slope producers. Will the customer have to pay for the ANGTS? What if that customer's use of natural gas in 1987 is the same or less than it was in 1981?

Answer #1

Under Section 208 of the Natural Gas Policy Act of 1978 the gas purchase and transportation costs of Alaskan gas are to be rolled-in or averaged by each interstate pipeline purchaser with all of its other gas supply costs in establishing the rates and charges to the customers of that purchasing pipeline. Therefore, the proportionate share of Alaskan gas costs will be charged to each customer of any interstate pipeline company who purchases, either directly or indirectly, Alaskan gas transported through the ANGTS. Such customers include local distributors, direct users and other interstate pipeline companies.

More specifically, in response to subparts (a) and (b) to the extent that either a residential or industrial customer is served by a distribution company who, in turn, is served either directly or indirectly by an interstate pipeline purchaser of Alaskan gas, such customer will pay its proportionate share of the Alaskan gas wellhead purchase and ANGTS transportation charges. However, if the interstate pipeline supplier of the distribution company does not purchase Alaskan gas, and does not purchase gas from any other supplier--e.g., another interstate pipeline--who purchases Alaskan gas, then the customers of that distribution company will not pay any wellhead purchase or ANGTS transportation charges.

With respect to subparts (c) and (d) the customers described therein will pay ANGTS charges only in proportion to the contracted volumes.

In summary, the wellhead purchase and ANGTS transportation costs of Alaskan gas will be shared only by those consumers who directly or indirectly receive the benefit of the supply. This conclusion is valid regardless of the customer's volume of gas purchases in prior years.

Question #2

Will you promise the Members of this Committee that if the Congress approves this expansive and unprecedented waiver that your company will not come back to the Congress later on to ask for any other support or subsidy, including any Federal loan guarantee?

Answer #2

We will do everything in in our power and exhaust every effort to privately finance the ANGTS. It is in connection with our continuing efforts to arrange private financing that we have

come before Congress in support of the proposed waiver of law, which would remove barriers to private financing. From those efforts we can assure you that private financing is impossible without the waiver. However, we cannot guarantee that private financing will ultimately be successful if the waiver as proposed by the President is approved. If, notwithstanding our efforts, the project cannot be privately financed with the waiver, then the only way that it can be financed may be with federal government support. The Alaskan gas reserves, proven and potential, are too vital a source of domestic supply to leave locked up. The ANGTS has been determined to be the most cost effective, environmentally acceptable means for transporting these gas supplies to the lower 48 States and is therefore too vital a project to abandon. Thus, we cannot promise that we will never ask for federal assistance. To do so would be contrary to our responsibility to attach new gas supplies to meet our customers' needs and deprive Congress of the opportunity to make the policy judgment of whether the project is of such national importance to justify federal support, if that is the only way the project can be built. All we can assure you is that, if the waiver is passed, we will do all we can to privately finance the project without further Congressional assistance.

Question #3

Without disclosing any proprietary information please describe the general terms of any purchase contracts, sales agreements or "first call" arrangements you may have entered into for the sale and transmission of Alaskan North Slope natural gas. Specifically, please state whether these contracts or agreements contain any indefinite price escalator clauses. If there is an alternative fuel clause, is the price tied to low sulfur number two or number six oil?

Answer #3

Neither Northwest Energy Company nor any of its affiliates have formally executed any agreements to purchase Alaskan North Slope gas. Northwest Pipeline Corporation, a subsidiary of Northwest Energy Company, is currently negotiating to purchase uncommitted gas reserves from the Prudhoe Bay Unit on the Alaskan North Slope.

While Northwest does not yet have an agreement to purchase Alaskan gas, I am familiar with the terms of certain executed contracts to purchase North Slope gas. I note that at least one contract contains provisions which afford the buyer and seller flexibility to take measures to ensure that the gas will be marketable, including a provision which allows the buyer and seller to reopen the contract in the event that the gas becomes unmarketable.

Other measures exist to ensure the marketability of Alaskan gas including the use of a levelized tariff. Under usual ratemaking principles the ANCTS transportation charges will be higher in the early years than in the later years of the project. For example, in 1980 dollars the delivered price of Alaskan gas in the first full year of operation is approximately \$9.20 to \$9.35 per MMBtu but declines to approximately \$2.75 to \$3.20 per MMBtu in the twentieth year. This dramatic decline occurs because of the amortization of the investment over the project life. However, because of the magnitude of the cost of the ANCTS the delivered cost of Alaskan gas under a customary tariff could be higher than alternate fuels in the first few years of operation. To remedy this, a levelized tariff could be utilized. As its name implies a "levelized" tariff would even out the delivered gas price for Alaskan gas over the life of the project by delaying recovery of certain costs until later, thereby ensuring that Alaskan gas is marketable from the outset of operations and thereafter.

Very truly yours,



John G. McMillian

JGM/dm

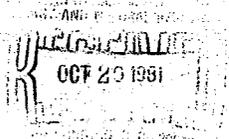
AMERICAN NATURAL ALASKAN COMPANY
 MEMBER OF THE AMERICAN NATURAL RESOURCES SYSTEM
 ONE WOODWARD AVENUE, DETROIT, MICHIGAN 48225



JAMES J. TREBILCOTT
 PRESIDENT

October 28, 1981

The Honorable James A. McClure
 Chairman - Committee on Energy
 and Natural Resources
 United States Senate
 Washington, D. C. 20510



Dear Senator McClure:

In accordance with your letter request of October 26, 1981, I am pleased to respond to your questions.

Question 1

Will you promise the Members of this Committee that if the Congress approves this expansive and unprecedented waiver that your company will not come back to the Congress later on to ask for any other support or subsidy, including any Federal loan guarantee?

Answer

American Natural Alaskan Company cannot promise the Members of your Committee that if the Congress approves the pending waiver package we will not come back to Congress to ask for "other support or subsidy, including any Federal loan guarantee."

We have been advised by our financial advisors and the lead banks who are attempting to privately finance the project that the requested waivers are an essential "step" in developing a private financing plan. We recognize and we have been cautioned by the banks and financial advisors that the magnitude of the financing requirement is such that they cannot "guarantee" that a private financing plan can be developed even with approval of the waivers.

The pipeline sponsors, standing alone, do not have sufficient credit-worthiness to support a private financing plan. If private financing is feasible, there must be substantial commitments on the part of the producers and other credit-worthy parties in excess of that presently identified. The concept of privately financing this \$27 billion project is an extremely challenging goal and may not be attainable.

The Honorable James A. McClure
October 28, 1981
Page 2

Question 2

Without disclosing any proprietary information please describe the general terms of any purchase contracts, sales agreements or "first call" arrangements you may have entered into for the sale and transmission of Alaskan North Slope natural gas. Specifically, please state whether these contracts or agreements contain any indefinite price escalator clauses or alternative fuel clauses. If there is an alternative fuel clause, is the price tied to low sulfur number two or number six oil?

Answer

Michigan Wisconsin Pipe Line Company, a subsidiary of American Natural Resources Company and an affiliate of American Natural Alaskan Company, in May of 1979 entered into a contract with Exxon for approximately one-third of their Prudhoe Bay gas. It appears that our one-third share would be somewhat in excess of 200 million cubic feet per day. Due to the passage of time and failure of certain events to occur, the contract is currently subject to cancellation and, therefore, must be renegotiated. The extent to which these renegotiations will impact on the general terms and conditions described below is unknown at this time.

The contract provides that the Buyer shall pay either the price stipulated in the contract or the maximum lawful price established under Section 109 of the Natural Gas Policy Act (NGPA) plus any amounts to compensate Seller for severance taxes and other costs allowed under Section 110 of the NGPA, whichever is higher. The contract stipulates a price of \$2.00 per million Btu's as of June 1, 1979 and Section 109 of the NGPA provides that the maximum lawful price for Prudhoe Bay gas shall be \$1.45 per million Btu's as of April, 1977. The maximum lawful price under the NGPA is adjusted monthly in accordance with the inflation adjustment provisions set forth in the NGPA and the price stipulated in the contract is adjusted monthly to reflect the inflation adjustment provisions set forth in the contract.

The contract states that the price payable by the Buyer shall not exceed the price which Seller may lawfully collect nor the amount which Buyer is permitted to include in its rates and charges to its jurisdictional customers. The contract also states that if any government authority changes the ceiling price of the gas, the Buyer will be obligated to pay such higher ceiling price.

The Honorable James A. McClure
 October 28, 1981
 Page 3

In the event of deregulation, the price is subject to redetermination and will be the highest of (i) the average of the two highest prices paid or contracted to be paid by buyer or any other interstate purchaser of gas in the Prudhoe Bay area and (ii) the Btu equivalent price of Number 2 fuel oil less buyers transportation costs per million Btu's of Prudhoe Bay gas between the field delivery point and the city gate in Detroit, Michigan.

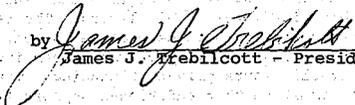
The contract also provides that if the delivered costs of Prudhoe Bay gas at buyers city gate is such that buyer cannot market the gas without an economic loss, the parties shall make a good faith effort to rectify the situation.

The above conditions and others in the present contract will be discussed in renegotiation sessions which will probably be conducted within the next two or three months, and we cannot predict in what manner, if any, changes will be effected.

I trust that the above satisfactorily answers the questions which you have posed but, if additional information is desired, don't hesitate to advise.

Very truly yours,

AMERICAN NATURAL ALASKAN COMPANY

by 
 James J. Trebilcock - President

JJT:js

PACIFIC GAS AND ELECTRIC COMPANY

+ 77 BEALE STREET . . . SAN FRANCISCO, CALIFORNIA 94108

JOHN A. SPROUL
EXECUTIVE VICE PRESIDENT

October 29, 1981

Senator James A. McClure
Chairman
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Senator McClure:

The following are the responses of Pacific Gas and Electric Company and Calaska Energy Company to the additional questions from the Committee which you have raised in your letter of October 26, 1981, concerning the proposed waiver package for the Alaska Natural Gas Transportation System:

1. Question No. 1. Will you promise the Members of this Committee that if the Congress approves this expansive and unprecedented waiver that your company will not come back to the Congress later on to ask for any other support or subsidy, including any Federal loan guarantee?

Response to Question No. 1. No. We cannot promise the Committee that we will not come back later to request further Congressional support for the project, including Federal loan guarantees. That is equivalent to asking the Congress to promise that inflation and interest rates will stay within fixed, reasonable limits. The testimony submitted to the Committee clearly states that the proposed waiver package will remove obstacles standing in the way of private financing, but its adoption will not in and of itself assure private financing. Therefore, we cannot guarantee to the Committee that additional support from the Congress will not be necessary. The ANGTS is very important to the energy security of our customers and this nation, and we are determined to see it built. Plainly, however, it is our hope that with the cooperation of all concerned parties, the waiver package now under consideration by the Congress will be sufficient to permit the successful financing and completion of the project.

2. Question No. 2. Without disclosing any proprietary information please describe the general terms of any purchase contracts, sales agreements or "first call" arrangements you may have entered into for the sale and transmission of Alaskan North Slope natural gas. Specifically, please state whether these contracts or agreements contain any indefinite price escalator clauses or alternative fuel clauses. If there is an alternative fuel clause, is the price tied to low sulfur number two or number six oil?

Response to Question No. 2. PGandE's March 1979 Gas Sale and Purchase Agreement with Exxon Corporation generally provides that in the event of deregulation, the base price may be redetermined at the highest of (i) the average of the two highest prices contracted to be paid by Buyer or any

Senator McClure
October 29, 1981
Page...2.

other interstate purchaser of gas in the Prudhoe Bay area under any contract then in effect, and (ii) the Btu equivalent price of No. 2 fuel oil on the West Coast, net of transportation costs, including conditioning, from Prudhoe Bay to the San Francisco Bay Area. In addition, Buyer is obligated to reimburse Exxon for severance taxes and for "excess" royalty payments, with provision for refund if the Federal Energy Regulatory Commission denies Buyer's recovery of such payments in its rates.

The contract also contains an economic-hardship clause, which suggests the possibility of a price adjustment if Buyer determines that the delivered cost of the gas in the Bay Area, priced on the lower of (i) a rolled-in basis (excluding imported gas, LNG and SNG), or (ii) an incremental basis, is such that the gas cannot be marketed, except at an economic loss to Buyer. Under such circumstances, the contract provides for review of the circumstances in a good faith effort to determine the measures necessary to rectify the situation, recognizing that implementation of such measures will require the efforts of all those involved with the total transportation system, including owners of the system, gas producers, regulatory authorities, and other participants.

I hope that these responses will assist the Committee in its deliberations.

Very truly yours,

John A. Sproul

COLUMBIA ALASKAN
Gas Transmission

John H. Croom
President

October 28, 1981

The Honorable James A. McClure
Chairman
Committee on Energy and Natural Resources
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

In response to questions submitted to me in your letter of October 26, 1981, I respectfully offer the following replies:

1. Q. Will you promise the Members of this Committee that if the Congress approves this expansive and unprecedented waiver that your company will not come back to the Congress later on to ask for any other support or subsidy, including any Federal loan guarantee?
 - A. The requested Waiver of Law is an indispensable step for private financing of the Alaska Natural Gas Transportation System. I assure you that the sponsors, including my company, are committed to the task of securing private financing of this important gas supply project that will benefit millions of gas consumers in our Nation. The magnitude of this financing effort is unprecedented. Even with your approval of the Waiver of Law, there is no certainty that we can attain this goal. Should private financing be unattainable, we will reassess the project. Because access to the Alaskan gas reserves is so vital to this Nation, I cannot respond affirmatively to your question.
2. Q. Without disclosing any proprietary information, please describe the general terms of any purchase contracts, sales agreements or "first call" arrangements you may have entered into for the sale and transmission of Alaskan North Slope natural gas. Specifically, please state whether these contracts or agreements contain any indefinite price escalator clauses or alternative fuel clauses. If there is an alternative fuel clause, is the price tied to low sulfur number two or number six oil?

- A. Columbia Gas Transmission Corporation, an affiliate of Columbia Alaskan Gas Transmission Corporation, has obtained the right to purchase gas from Sohio Natural Resources Company which, when coupled with other commitments, brings its potential total Alaskan entitlement to 5.6 trillion cubic feet. Such purchase would be subject to pricing provisions which are yet to be negotiated.

If I can be of any further assistance, please let me know.

Very truly yours,

John H. Croom

RESPONSES BY R. R. LATIMER
PRESIDENT OF TRANSCANADA PIPELINE ALASKA LIMITED
TO THE
ADDITIONAL QUESTIONS FOR THE HEARING RECORD
ON THE ALASKA NATURAL GAS TRANSPORTATION ACT
PROPOSED WAIVER PACKAGE
REQUESTED BY
JAMES A. McCLURE
CHAIRMAN
COMMITTEE ON ENERGY AND NATURAL RESOURCES

Q: 1. Will you promise the Members of this Committee that if the Congress approves this expansive and unprecedented waiver that your company will not come back to the Congress later on to ask for any other support or subsidy, including any Federal loan guarantee?

A: TransCanada believes that the proposed waiver package is essential to and will facilitate private financing of the ANGTs. If the waiver package is approved, TransCanada does not believe that future government support will be necessary. But just as we are confident that the waiver package will facilitate private financing, we are equally confident that without the waiver package private financing is not possible.

Whether a viable financing plan can be developed after the waiver package is approved will be determined only after intense negotiations among all parties. We intend to devote maximum effort, in association with the other sponsors and the producers, to the success of these negotiations.

While we believe that financing can be arranged if the waiver package is approved, an absolute commitment that TransCanada "...will not come back to the Congress later on...." would be neither prudent nor credible.

Q: 2. Without disclosing any proprietary information please describe the general terms of any purchase contracts, sales agreements or "first call" arrangements you may have entered into for the sale and transmission of Alaskan North Slope natural gas. Specifically, please state whether these contracts or agreements contain any indefinite price escalator clauses or alternative fuel clauses. If there is an alternative fuel clause, is the price tied to low sulfur number two or number six oil?

A: TransCanada has not entered into nor does it contemplate that it will enter into any contracts for the purchase of natural gas from the Alaskan North Slope.

October 29, 1981

R. R. Latimer
President, TransCanada PipeLine Alaska Limited

RESPONSE OF ROBERT P. RAASCH
 PRESIDENT, NORTHERN ARCTIC GAS COMPANY
 A Wholly Owned Subsidiary of INTERNORTH, INC.
 to
 Additional Questions of the Senate Committee
 on Energy and Natural Resources
 ANGA PROPOSED WAIVER PACKAGE

October 26, 1981

- Q. 1. Will you promise the Members of this Committee that if the Congress approves this expansive and unprecedented waiver that your company will not come back to the Congress later on to ask for any other support or subsidy, including any Federal loan guarantee?

- A. If granted by the Congress, the Waiver Proposal will allow us to, and we promise that we will, vigorously attempt to finalize a financing plan and a pipeline project which will bring Alaskan gas to the lower 48 states.

However, I cannot promise that we will not be back to ask for some other form of assistance, if the project cannot become reality without it.

The words "expansive and unprecedented" are certainly appropriate when applied to the scope of the Alaskan pipeline system. They are very nearly appropriate to describe the Alaskan natural gas reserves. That is why we say that we may have to return to Congress if circumstances dictate.

We believe that the national interest is served by tapping the Alaskan gas. Not coming back might unilaterally deprive Congress of the right to a grave decision affecting national security. Our discomfort at returning must not prevent it. Neither must the remote chance of a pre-completion burden on gas consumers. Please remember, also, that while the Waiver Package may be unprecedented, a package of some kind was specifically contemplated by the Congress when it passed ANGA, in recognition of the unprecedented scope of the project.

- Q. 2. Without disclosing any proprietary information please describe the general terms of any purchase contracts, sales agreements or "first call" arrangements you may have entered into for the sale and transmission of Alaskan Northern Slope natural gas. Specifically, please state whether these contracts or agreements contain any indefinite price escalator clauses or alternative fuel clauses. If there is an alternative fuel clause, is the price tied to low sulfur number two or number six oil?

- A. Northern Natural Gas Company, InterNorth Inc.'s Pipeline Division, has executed two gas sale and purchase agreements for Prudhoe Bay gas. The agreement with Exxon Corporation, dated April 30, 1979, covers one-third of Exxon's Prudhoe Bay gas. The other agreement is with Sohio Natural Resources Company, dated July 1, 1979, and covers one-third of Sohio's Prudhoe Bay gas, up to three trillion cubic feet.

Both contracts provide that Northern Natural Gas will purchase compressed dehydrated Prudhoe Bay gas at a point near the inlet of the Alaskan Gas Conditioning facility.

Under both contracts, the gas is to be priced under provisions of NGPA.

In the event of deregulation of Prudhoe Bay gas, both contracts provide that the producers may elect to redetermine price. These redeterminations are to be based on formulas which generally involve either (1) other prices paid in the general Prudhoe Bay vicinity or (2) equating the delivered price of the Prudhoe Bay gas on our system to distillate (#2 fuel oil) prices. Both of these formulas are considered to be indefinite price escalator clauses.

In the event the gas is not marketable, except at an economic hardship, the parties agree to seek ways to rectify such situation under both contracts.

PACIFIC INTERSTATE TRANSMISSION COMPANY

720 WEST EIGHTH STREET
LOS ANGELES, CALIFORNIA 90017

ROBERT SALTER
VICE PRESIDENT

October 29, 1981

Honorable James A. McClure
Chairman
Committee on Energy and Natural
Resources
United States Senate
Washington, D.C. 20510

Dear Senator McClure:

Attached are the responses of Harry L. Lepape,
President of Pacific Interstate Transmission Company, to
the additional questions attached to your letter of
October 26, 1981.

Very truly yours,

Robert Salter
Robert Salter,
Vice President

RS:bk

Enclosure

cc: Harry L. Lepape

RESPONSES OF HARRY L. LEPAPE
 TO ADDITIONAL QUESTIONS
 ON THE PROPOSED WAIVER PACKAGE

OCTOBER 29, 1981

Question 1

Will you promise the Members of this Committee that if the Congress approves this expansive and unprecedented waiver that your company will not come back to the Congress later on to ask for any other support or subsidy, including any Federal loan guarantee?

Answer 1

The passage of the waiver package will give the sponsors of the Alaska Highway Pipeline Project the only remaining opportunity to try to finance the construction of the Alaska portion of the project in the private sector. Pacific Interstate Transmission Company, the other sponsors, and the Prudhoe Bay producers have indicated a willingness to commit very substantial sums to the project. Ultimately, however, it will be the total dollars available from the financial community that will determine whether the project can be entirely privately financed. In the event the financial community falls short of providing the total necessary dollars, and it is in the national interest to proceed with the project, some form of governmental support during the construction period of the project may be the only alternative. Therefore, I feel it would be inappropriate for me to state that under no circumstances would government support be requested.

Question 2

Without disclosing any proprietary information please describe the general terms of any purchase contracts, sales agreements or "first call" arrangements you may have entered into for the sale and transmission of Alaskan North Slope natural gas. Specifically, please state whether these contracts or agreements contain any indefinite price escalator clauses or alternative fuel clauses. If there is an alternative fuel clause, is the price tied to low sulfur number two or number six oil?

Answer 2

Pacific Interstate Transmission Company has signed the attached Letter of Intent with Arco covering 33% of Arco's share of the gas. There have been no further negotiations with respect to the terms and conditions to be included in the final gas purchase contract.

ARCO Oil and Gas Company
 Post Office Box 2819
 Dallas, Texas 75221
 Telephone 214 651 4213
 Danny D. Echols
 Vice President
 Natural Gas Department



September 12, 1979

Pacific Interstate Transmission Co.
 Harry L. Lepape, President
 720 West Eighth Street
 Los Angeles, California 90017

Gentlemen:

ARCO Oil and Gas Company, a division of Atlantic Richfield Company, and Pacific Interstate agree that they will enter into negotiations towards execution of a Gas Purchase Contract providing for the sale by ARCO Oil and Gas Company and purchase by Pacific Interstate for a primary term of twenty years of a daily volume of gas production attributable to an undivided thirty-three percent (33%) of ARCO's working interest in the Prudhoe Bay (Permo-Triassic) Reservoir. Title shall pass at a mutually agreeable delivery point in the field at or near the inlet of any required gas conditioning facility. The contract price shall be negotiated but shall not be less than the price set forth in Section 109 of the NGPA of 1978 plus severance taxes and reimbursement of any other costs incurred by Seller and allowed under Sections 110 and 502 (c) of the NGPA. Customary deregulation and price escalation provisions permitted by any future statute or regulation will be included.

The parties hereto agree to begin as soon as mutually convenient, but in any event within 90 days after the date of this letter, negotiations to conclude a definitive Gas Purchase Contract. If the parties, after good faith negotiations, fail to finalize the Gas Purchase Contract by May 1, 1980, either party may terminate this agreement by giving written notice thereof to the other party.

This agreement shall be of no force and effect unless executed by both parties within 15 days of the date first above written.

Very truly yours,

Danny D. Echols

Danny D. Echols
 Vice President

DDE:bb

ACCEPTED AND AGREED this 12th
 day of September, 1979

PACIFIC INTERSTATE TRANSMISSION CO.

By

Harry L. Lepape
 Harry L. Lepape, President

ARCO Oil and Gas Company
Post Office Box 2819
Dallas, Texas 75221
Telephone 214 651 4213

Danny D. Echols
Vice President
Natural Gas Department



April 1, 1980

Mr. H. L. Lepape
Pacific Interstate Transmission Company
720 West Eighth Street
Los Angeles, California 90017

Re: September 12, 1979, Letter of Intent
Prudhoe Bay Unit Gas Reserves
Seller: ARCO Oil and Gas Company
Buyer: Pacific Interstate Transmission Company

Gentlemen:

Subject letter states that "If the parties, after good faith negotiations, fail to finalize the Gas Purchase Contract by May 1, 1980, either party may terminate this agreement by giving written notice thereof to the other party."

The parties hereto agree to amend said agreement by deleting "May 1, 1980" and inserting "August 1, 1980."

This amendment shall be of no force and effect unless executed by both parties on or before April 30, 1980.

Very truly yours,

Danny D. Echols

Danny D. Echols
Vice President

RRH:nm

ACCEPTED AND AGREED to this
8 day of April, 1980

PACIFIC INTERSTATE TRANSMISSION COMPANY

By *Harry L. Lepape*
Harry L. Lepape, President

ARCO Oil and Gas Company
 Post Office Box 2819
 Dallas, Texas 75221
 Telephone 214 651 4213
 Danny D. Echols
 Vice President
 Natural Gas Department



September 12, 1979

Pacific Interstate Transmission Co.
 Harry L. Lepape, President
 720 West Eighth Street
 Los Angeles, California 90017

Gentlemen:

ARCO Oil and Gas Company, a division of Atlantic Richfield Company, and Pacific Interstate agree that they will enter into negotiations towards execution of a Gas Purchase Contract providing for the sale by ARCO Oil and Gas Company and purchase by Pacific Interstate for a primary term of twenty years of a daily volume of gas production attributable to an undivided thirty-three percent (33%) of ARCO's working interest in the Prudhoe Bay (Permo-Triassic) Reservoir. Title shall pass at a mutually agreeable delivery point in the field at or near the inlet of any required gas conditioning facility. The contract price shall be negotiated but shall not be less than the price set forth in Section 109 of the NGPA of 1978 plus severance taxes and reimbursement of any other costs incurred by Seller and allowed under Sections 110 and 502 (c) of the NGPA. Customary deregulation and price escalation provisions permitted by any future statute or regulation will be included.

The parties hereto agree to begin as soon as mutually convenient, but in any event within 90 days after the date of this letter, negotiations to conclude a definitive Gas Purchase Contract. If the parties, after good faith negotiations, fail to finalize the Gas Purchase Contract by May 1, 1980, either party may terminate this agreement by giving written notice thereof to the other party.

This agreement shall be of no force and effect unless executed by both parties within 15 days of the date first above written.

Very truly yours,

Danny D. Echols

Danny D. Echols
 Vice President

DDE:bb

ACCEPTED AND AGREED this 12th
 day of September, 1979

PACIFIC INTERSTATE TRANSMISSION CO.

By

Harry L. Lepape
 Harry L. Lepape, President

ARCO Oil and Gas Company, a Division of Atlantic Richfield Company

ARCO Oil and Gas Company
Post Office Box 2819
Dallas, Texas 75221
Telephone 214 651 4213
Danny D. Echols
Vice President
Natural Gas Department



April 1, 1980

Mr. H. L. Lepape
Pacific Interstate Transmission Company
720 West Eighth Street
Los Angeles, California 90017

Re: September 12, 1979, Letter of Intent
Prudhoe Bay Unit Gas Reserves
Seller: ARCO Oil and Gas Company
Buyer: Pacific Interstate Transmission Company

Gentlemen:

Subject letter states that "If the parties, after good faith negotiations, fail to finalize the Gas Purchase Contract by May 1, 1980, either party may terminate this agreement by giving written notice thereof to the other party."

The parties hereto agree to amend said agreement by deleting "May 1, 1980" and inserting "August 1, 1980."

This amendment shall be of no force and effect unless executed by both parties on or before April 30, 1980.

Very truly yours,

Danny D. Echols

Danny D. Echols
Vice President

RRH:nm

ACCEPTED AND AGREED to this
8 day of April, 1980

PACIFIC INTERSTATE TRANSMISSION COMPANY

By *Harry L. Lepape*
Harry L. Lepape, President

ARCO Oil and Gas Company
Post Office Box 2819
Dallas, Texas 75221
Telephone 214 551 4213

Danny D. Echols
Vice President
Natural Gas Department



July 1, 1980

Mr. H. L. Lepape
Pacific Interstate Transmission Company
720 West Eighth Street
Los Angeles, California 90017

Re: September 12, 1979, Letter of Intent
Prudhoe Bay Unit Gas Reserves
Seller: ARCO Oil and Gas Company
Buyer: Pacific Interstate Transmission Company

Gentlemen:

Subject letter as amended on April 1, 1980, states that "If the parties, after good faith negotiations, fail to finalize the Gas Purchase Contract by August 1, 1980, either party may terminate this agreement by giving written notice thereof to the other party."

The parties hereto agree to amend said agreement by deleting "August 1, 1980" and inserting "November 1, 1980."

This amendment shall be of no force and effect unless executed by both parties on or before July 31, 1980.

Very truly yours,

Danny D. Echols

Danny D. Echols
Vice President *RRH*

RRH:nm

ACCEPTED AND AGREED to this
7th day of July, 1980

PACIFIC INTERSTATE TRANSMISSION COMPANY

By *[Signature]*
Harry L. Lepape, President

ARCO Oil and Gas Company
 Post Office Box 2679
 Dallas, Texas 75221
 Telephone 214 651 4213
 Danny D. Echols
 Vice President
 Natural Gas Department



October 1, 1980

Mr. H. L. Lepape
 Pacific Interstate Transmission Company
 720 West Eighth Street
 Los Angeles, California 90017

Re: September 12, 1979, Letter of Intent
 Prudhoe Bay Unit Gas Reserves
 Seller: ARCO Oil and Gas Company
 Buyer: Pacific Interstate Transmission Company

Gentlemen:

Subject letter as amended on July 1, 1980, states that "If the parties, after good faith negotiations, fail to finalize the Gas Purchase Contract by November 1, 1980, either party may terminate this agreement by giving written notice thereof to the other party."

The parties hereto agree to amend said agreement by deleting "November 1, 1980" and inserting "April 1, 1981."

This amendment shall be of no force and effect unless executed by both parties on or before October 31, 1980.

Very truly yours,

Danny D. Echols

Danny D. Echols
 Vice President

RRH:nm

ACCEPTED AND AGREED to this

7th day of October, 1980

PACIFIC INTERSTATE TRANSMISSION COMPANY

By

Harry L. Lepape
 Harry L. Lepape, President

ARCO Alaska, Inc.
 Post Office Box 2819
 Dallas, Texas 75221
 Telephone 214 651 5151



March 2, 1981

Mr. H. L. Lepape
 Pacific Interstate Transmission Company
 720 West Eighth Street
 Los Angeles, California 90017

Re: September 12, 1979, Letter of Intent
 Prudhoe Bay Unit Gas Reserves
 Seller: ARCO Alaska, Inc.
 Buyer: Pacific Interstate Transmission Company

Gentlemen:

Subject letter as amended on October 1, 1980, states that "If the parties, after good faith negotiations, fail to finalize the Gas Purchase Contract by April 1, 1981, either party may terminate this agreement by giving written notice thereof to the other party."

The parties hereto agree to amend said agreement by deleting "April 1, 1981" and inserting "July 1, 1981."

This amendment shall be of no force and effect unless executed by both parties on or before March 31, 1981.

Very truly yours,

Danny D. Echols
 Attorney-In-Fact

RRH:nm

ACCEPTED AND AGREED to this
10th day of March, 1981

PACIFIC INTERSTATE TRANSMISSION COMPANY

By
 Harry L. Lepape, President

ARCO Alaska, Inc.
 Post Office Box 2819
 Dallas, Texas 75221
 Telephone 214 651 5151



September 8, 1981

Mr. H. L. Lepape
 Pacific Interstate Transmission Company
 720 West Eighth Street
 Los Angeles, California 90017

Re: September 12, 1979, Letter of Intent
 Prudhoe Bay Unit Gas Reserves
 Seller: ARCO Alaska, Inc.
 Buyer: Pacific Interstate Transmission Company

Gentlemen:

Subject letter as amended on March 2, 1981, states that "If the parties, after good faith negotiations, fail to finalize the Gas Purchase Contract by July 1, 1981, either party may terminate this agreement by giving written notice thereof to the other party."

The parties hereto agree to amend said agreement by deleting "July 1, 1981" and inserting "January 1, 1982."

This amendment shall be of no force and effect unless executed by both parties on or before September 30, 1981.

Very truly yours,

Danny D. Echols

Danny D. Echols
 Attorney-In-Fact

RRH:nm

ACCEPTED AND AGREED to this:

14th day of September, 1981

PACIFIC INTERSTATE TRANSMISSION COMPANY

By

Harry L. Lepape
 Harry L. Lepape, President

PAN ALASKAN GAS COMPANY

P. O. BOX 1346

KANSAS CITY, MISSOURI 64141

October 29, 1981

OCT 30 1981

The Honorable James A. McClure
Chairman, Committee on Energy
and Natural Resources
3121 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator McClure:

The following responds to the two questions for the hearing record on the Alaska Natural Gas Transportation Act - proposed waiver package, in your letter of October 26, 1981:

- (1) QUESTION: Will you promise the Members of this Committee that if the Congress approves this expansive and unprecedented waiver that your company will not come back to the Congress later on to ask for any other support or subsidy, including any Federal loan guarantee?

ANSWER: We must respectfully decline to make the promise implicit in this question. We do promise to make every reasonable effort to obtain financing for the Project, including expanding participation in ownership and reorganization of the Partnership so as to permit greater participation in the Project. Attempts to devise a workable financing plan and to obtain financing have been ongoing for three years or more with the proposal to permit Producer participation being only one of the aids to obtaining financing that has been considered. The conditions which approval of the waiver of law package will create offers for the first time the realistic hope to the Partners that private financing of the Project can be achieved.

Representatives of the four largest banks in the United States testified that they cannot assure the Congress or the parties that Congress' approval of the waiver package will permit the completion of a satisfactory financing plan. The bankers do state that without the waiver package, there is no possibility of privately financing the Project.

Our judgment as to the possibility of obtaining necessary financing must follow that of the bankers because we lack the necessary expertise or resources to make our own assessment.

Please let us affirm our belief and testimony before your Committee that the exposure to consumers of having to pay any amount because of the noncompletion of the Alaskan pipeline and plant is nil. The Administration has assured Canadian authorities that Canadian pipeline companies will be permitted to bill the full cost of service on the Canadian segment when it is completed or on a date set by the Canadian authorities, whichever last occurs. (Agreement between Canada and the United States of America on Principles Applicable to the Northern Natural Gas Pipeline, September 20, 1977.) Thus, the expansiveness of the waiver package is not as great as appears on its face. It must be remembered that the owners of the Alaskan segment will be investing \$5.5 to \$7.5 billion of up-front equity money in the Project and that until the full system, including the Canadian segment is in service with gas flowing, no revenue will be received from the outlay of that huge amount of capital. Further, before construction of any segment (including the Canadian segment) is commenced, all owners will commit their resources by debt support to completion of the Alaskan pipeline and plant. Moreover, both Canadian and U.S. companies are now engaged in construction of the "prebuild" facilities of ANGTS in the two countries with complete coordination to assure that the facilities will be ready for service on the same day. Under this set of circumstances, it is inconceivable that either the Alaskan pipeline or plant segment of ANGTS would be left incompletd or would be delayed in completion except as caused by governmental actions or other forces unforeseen and completely beyond the control of the owners.

We earnestly commit our resources within the parameters of reasonable business prudence, to do everything within our power to obtain necessary financing for the Alaskan Project without coming back to the Congress for any other support or subsidy, including any Federal loan guarantee."

Further, your attention is invited to testimony by a witness of each of the Partners in joint hearings before the Subcommittee on Energy and the Environment of the Committee on Interior and Insular Affairs and the Subcommittee on Fossil and Synthetic Fuels of the Committee on Energy and Commerce. Each witness testified in substance that he could not assure the Congress that the waiver of law package will suffice for effecting necessary financing, and that while his company will endeavor to not come to Congress again, conditions may arise requiring further Congressional involvement.

- (2) **QUESTION:** Without disclosing any proprietary information please describe the general terms of any purchase contracts, sales agreements or "first call" arrangements you may have entered into for the sale and transmission of Alaskan North Slope natural gas. Specifically, please state whether these contracts or agreements contain any indefinite price escalator clauses or alternative fuel clauses. If there is an alternative fuel clause, is the price tied to low sulfur number two or number six oil?

ANSWER: Pan Alaskan Gas Company and Panhandle Eastern Pipe Line Company are wholly owned subsidiaries of Panhandle Eastern Corporation. Panhandle Eastern Pipe Line Company and ARCO Oil and Gas Company are parties to Letter Agreement, dated September 10, 1979, which provides that the parties will enter into negotiations towards execution of a Gas Purchase Contract providing for the sale by ARCO Oil and Gas Company and purchase by Panhandle Eastern for a primary term of twenty years of a daily volume of gas production attributable to an undivided twenty percent (20%) of ARCO's working interest in the Prudhoe Bay (Permo-Triassic) Reservoir. Title to the gas shall pass at a mutually agreeable delivery point in the field at or near the inlet of any required gas conditioning facility. The Contract price shall be negotiated, but shall not be less than the price set forth in Section 109 of the NGPA of 1978 plus severance taxes and reimbursement of any other costs incurred by Seller and allowed under Sections 110 and 502 (c) of the NGPA. Customary

deregulation and price escalation provisions permitted by any future statute or regulation will be included in the Contract.

The Letter Agreement has been amended from time to time to extend the time for beginning negotiations and finalizing the Gas Purchase Contract. The most recent amendment provides that if the Contract is not finalized by January 1, 1982, either party may terminate the Letter Agreement by written notice to the other party.

We trust that this information answers your questions and that it will be useful to you and your Committee in reaching a sound conclusion as to the need for the Congress' approval of the President's waiver of law package.

Respectfully Submitted,

Kenneth E. Kalen
Kenneth E. Kalen
President

KEK:rls

**TEXAS
EASTERN
Transmission Corporation**

NOV 2 1981

**GEORGE H. EWING
SENIOR VICE PRESIDENT
AND
GAS GROUP EXECUTIVE**

October 29, 1981

Senator James A. McClure
Chairman
United States Senate
Committee On Energy and
Natural Resources
Washington, D. C. 20510

SENATE COMMITTEE ON
ENERGY AND NATURAL RESOURCES
RECEIVED
NOV 2 1981
WASHINGTON, D. C. 20541

Dear Senator McClure:

Enclosed are my answers to the additional questions from the Committee on Energy and Natural Resources for the hearing record on the Alaska Natural Gas Transportation Act proposed waiver package. I am pleased to be of further assistance in your deliberations on this important energy matter.

Yours truly,

George H. Ewing

Enclosures

ADDITIONAL QUESTIONS FOR THE HEARING RECORD
ON THE ALASKA NATURAL GAS TRANSPORTATION ACT - PROPOSED WAIVER PACKAGE

- Q 1. Will you promise the Members of this Committee that if the Congress approves this expansive and unprecedented waiver that your company will not come back to the Congress later on to ask for any other support or subsidy, including any Federal loan guarantee?
- A 1. As I stated in an answer to a similar question while testifying before the House subcommittees, I cannot assure the Members of this Committee that if the Congress approves the President's waiver and we are unable to privately finance the project, I will not be back before Congress asking for whatever it takes to finance a gas pipeline from Alaska. I firmly believe that this energy project, and its security of supply, is simply too important to the nation's welfare and to the national defense needs of the United States for us not to be back if future circumstances so dictate. I can assure the committee members that if the Congress approves the waiver package, we will do the utmost to put together an achievable private financing package for the project. I can also assure the committee that without the waiver package the project has no chance of being privately financed.
- Q 2. Without disclosing any proprietary information please describe the general terms of any purchase contracts, sales agreements or "first call" arrangements you may have entered into for the sale and transmission of Alaskan North Slope natural gas. Specifically, please state whether these contracts or agreements contain any indefinite price escalator clauses or alternative fuel clauses. If there is an alternative fuel clause, is the price tied to low sulfur number two or number six oil?
- A 2. Texas Eastern Transmission Corporation and Transwestern Pipeline Company each have executed letters of intent with Arco to purchase an undivided 10% of Arco's working interest in the Prudhoe Bay (Permo-Triassic) Reservoir, which is the equivalent of approximately 70,000 Mcf of natural gas per day for each of them. Contracts having pricing clauses have yet to be finalized.

UNITED ENERGY RESOURCES, INC.

700 MILAN - P.O. BOX 1478 - HOUSTON, TEXAS 77001
TELEPHONE (713) 237-4123

J. HUGH ROFF, JR.
President

October 29, 1981

The Honorable James A. McClure, Chairman
Committee on Energy and Natural Resources
United States Senate
Washington, D. C. 20510

Dear Mr. Chairman: Attached are answers to the additional questions from the Committee for the hearing record on the Alaska Natural Gas Transportation Act proposed waiver package which you sent to me by your letter dated October 26, 1981.

Yours very truly,



J. Hugh Roff, Jr.

ADDITIONAL QUESTIONS FOR THE HEARING RECORD
ON THE ALASKA NATURAL GAS TRANSPORTATION ACT - PROPOSED WAIVER PACKAGE

October 26, 1981

QUESTIONS FOR MR. ROFF, JR.

1. Will you promise the Members of this Committee that if the Congress approves this expansive and unprecedented waiver that your company will not come back to the Congress later on to ask for any other support or subsidy, including any Federal loan guarantee?
2. Without disclosing any proprietary information please describe the general terms of any purchase contracts, sales agreements or "first call" arrangements you may have entered into for the sale and transmission of Alaskan North Slope natural gas. Specifically, please state whether these contracts or agreements contain any indefinite price escalator clauses or alternative fuel clauses. If there is an alternative fuel clause, is the price tied to low sulfur number two or number six oil?

ANSWERS:

1. If the Project cannot be financed after the passage of the waiver package the sponsors will undoubtedly report back to the Congress and the Administration that the Project cannot be so financed. At that point the Congress and the Administration would have to decide whether the national interest would be better served by doing nothing or by further support, in whatever form, to make sure the system is built.
2. Attached hereto is a copy of the letter of intent between United Gas Pipe Line Company and ARCO Alaska, Inc., which is the present extent of the agreement for United's purchase of Prudhoe Bay gas.

ARCO Oil and Gas Company
 Post Office Box 519
 Dallas, Texas 75221
 Telephone 214 651 4213

Danny D. Echols
 Vice President
 Natural Gas Department



September 10, 1979

Mr. D. L. Smith
 United Gas Pipe Line Company
 Post Office Box 1478
 Houston, Texas 77001

Gentlemen:

ARCO Oil and Gas Company, a Division of Atlantic Richfield Company, and United Gas agree that they will enter into negotiations towards execution of a Gas Purchase Contract providing for the sale by ARCO Oil and Gas Company and purchase by United Gas for a primary term of twenty years of a daily volume of gas production attributable to an undivided fifteen percent (15%) of ARCO's working interest in the Prudhoe Bay (Permo-Triassic) Reservoir. Title shall pass at a mutually agreeable delivery point in the field at or near the inlet of any required gas conditioning facility. The contract price shall be negotiated but shall not be less than the price set forth in Section 109 of the NGPA of 1978 plus severance taxes and reimbursement of any other costs incurred by Seller and allowed under Sections 110 and 502 (c) of the NGPA. Customary deregulation and price escalation provisions permitted by any future statute or regulation will be included.

The parties hereto agree to begin as soon as mutually convenient, but in any event within 90 days after the date of this letter, negotiations to conclude a definitive Gas Purchase Contract. If the parties, after good faith negotiations, fail to finalize the Gas Purchase Contract by May 1, 1980, either party may terminate this agreement by giving written notice thereof to the other party.

This agreement shall be of no force and effect unless executed by both parties within 15 days of the date first above written.

Very truly yours,

Danny D. Echols

Danny D. Echols
 Vice President *DDE*

EJK

DDE:nm

ACCEPTED AND AGREED this 15th
 day of September, 1979

UNITED GAS PIPE LINE COMPANY

By *[Signature]*

ARCO Alaska, Inc.
 Post Office Box 2013
 Dallas, Texas 75221
 Telephone 214 651 5151



September 8, 1981

Mr. D. L. Smith
 United Gas Pipe Line Company
 1300 Pennzoil Place North
 Houston, Texas 77001

Re: September 10, 1979, Letter of Intent
 Prudhoe Bay Unit Gas Reserves
 Seller: ARCO Alaska, Inc.
 Buyer: United Gas Pipe Line Company

Gentlemen:

Subject letter as amended on June 1, 1981, states that "If the parties, after good faith negotiations, fail to finalize the Gas Purchase Contract by October 1, 1981, either party may terminate this agreement by giving written notice thereof to the other party."

The parties hereto agree to amend said agreement by deleting "October 1, 1981" and inserting "January 1, 1982."

This amendment shall be of no force and effect unless executed by both parties on or before September 30, 1981.

Very truly yours,

Danny D. Echols

Danny D. Echols
 Attorney-In-Fact

RRH:nm

ACCEPTED AND AGREED to this

14 day of September, 1981

UNITED GAS PIPE LINE COMPANY

By *D. L. Smith*
 D. L. Smith

Atlantic Richfield Company 515 South Flower Street
Los Angeles, California 90071
Telephone 213 486 1789

William D. Leake
Vice President and Project Director
Alaska Natural Gas Transportation System



October 29, 1981

RECEIVED
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES
OCT 30 1981

Senator James A. McClure
Chairman
Senate Energy and Natural Resources
Committee
Washington, D.C. 20510

Dear Mr. Chairman:

Attached are Atlantic Richfield Company's answers to your questions on the Alaska Natural Gas Transportation Act proposed waiver package sent to me on October 26, 1981.

Yours very truly,

William D. Leake

William D. Leake

WDL:bdi

Enclosure

ADDITIONAL QUESTIONS FOR THE HEARING RECORD
ON THE ALASKA NATURAL GAS TRANSPORTATION ACT - PROPOSED WAIVER PACKAGE

October 26, 1981

QUESTIONS FOR MR. LEAKE

1. Has ARCO looked at the economics of turning the North Slope natural gas into methanol and transporting it through the TAPS? If so, please provide a copy of your analysis.

RESPONSE

Atlantic Richfield Company has studied the possibility of converting Prudhoe Bay gas to methanol as a potential alternate to the ANGTS pipeline. Our comparative cost estimates of a total system based on a 2 BSCFPD pipeline inlet volume are summarized below:

	Capital (1980 \$'s)	Operating Cost Excluding Fuel (1980 \$'s/Yr.)	Energy Delivered to Consumers
ANGTS	\$23 Billion	\$.3 Billion	88%
Methanol	\$17 Billion	\$1 Billion	52%

As shown in the table, the methanol alternative requires less capital and has a higher annual operating cost. However, the cost per unit energy delivered to the consumer is 30% higher for methanol because of the significant and fundamental energy inefficiency of the conversion process. Given the preliminary nature of our methanol analysis and the advanced stage of the ANGTS design any methanol system would be delayed well beyond the 1986-87 projected gas pipeline system.

We do, however, consider methanol to be an emerging energy fuel with the potential to improve air quality in certain applications.

2. Will you promise the Members of this Committee that if the Congress approves this expansive and unprecedented waiver that your company will not come back to the Congress later on to ask for any other support or subsidy, including any Federal loan guarantee?

RESPONSE

We wish to respond to what we perceive to be the substance of the question.

As we informed the Energy and Natural Resources Committee in our testimony on October 23, 1981, Atlantic Richfield did not seek to become an owner of the Alaska Natural Gas Transportation System. Rather, we responded to requests from numerous Administration officials to assist the pipeline sponsors in their effort to arrange financing for the project. In a letter agreement dated May 21, 1981, Atlantic Richfield, other North Alaska producers and the pipeline sponsors agreed to cooperate in an effort to arrange financing for the project. Among the prerequisites to financing listed in the letter was the condition that the producer's participation would be the lesser of 30% of project cost or \$2.25 billion equity and \$6.75 billion debt.

Even with the involvement of the producers, increased commitments from pipeline sponsors and Congressional approval of President Reagan's recommended waiver package, project financing cannot be assured. If adequate private financial support is not forthcoming, either the project will be delayed or will fail. In such event, it is conceivable that the present pipeline consortium or another group might again appear before the Congress seeking further modifications of law to facilitate the financing of a gas transportation system. If, at that time, it appears that such a proposal is in the national interest and is necessary to provide North Alaska energy resources to the lower 48 states, it is possible that Atlantic Richfield will join with others in urging the adoption of new legislation to permit the construction of the system.

3. Without disclosing any proprietary information, please describe the general terms of any purchase contracts, sales agreements or "first call" arrangements you may have entered into for the sale and transmission of Alaskan North Slope natural gas. Specifically, please state whether these contracts or agreements contain any indefinite price escalator clauses or alternative fuel clauses. If there is an alternative fuel clause, is the price tied to low sulfur number two or number six oil?

RESPONSE

Enclosed herewith are representative copies of agreements entered into by Atlantic Richfield and purchasers of its share of Prudhoe Bay gas. Negotiations are currently underway to develop definitive sales agreements, and we are unable to determine at this time what terms will be included in such agreements or when these negotiations will be finalized. Once the definitive agreements are executed, they will be filed by the gas purchasers with the Federal Energy Regulatory Commission.

ARCO Oil and Gas Company
 Post Office Box 819
 Dallas, Texas 75221
 Telephone 214 651 4213
 Danny D. Echols
 Vice President
 Natural Gas Department



September , 1979

Gentlemen:

ARCO Oil and Gas Company, a division of Atlantic Richfield Company, and _____ agree that they will enter into negotiations towards execution of a Gas Purchase Contract providing for the sale by ARCO Oil and Gas Company and purchase by _____ for a primary term of twenty years of a daily volume of gas production attributable to an undivided _____ percent (%) of ARCO's working interest in the Prudhoe Bay (Permo-Triassic) Reservoir. Title shall pass at a mutually agreeable delivery point in the field at or near the inlet of any required gas conditioning facility. The contract price shall be negotiated but shall not be less than the price set forth in Section 109 of the NGPA of 1978 plus severance taxes and reimbursement of any other costs incurred by Seller and allowed under Sections 110 and 502 (c) of the NGPA. Customary deregulation and price escalation provisions permitted by any future statute or regulation will be included.

The parties hereto agree to begin as soon as mutually convenient, but in any event within 90 days after the date of this letter, negotiations to conclude a definitive Gas Purchase Contract. If the parties, after good faith negotiations, fail to finalize the Gas Purchase Contract by May 1, 1980, either party may terminate this agreement by giving written notice thereof to the other party.

This agreement shall be of no force and effect unless executed by both parties within 15 days of the date first above written.

Very truly yours,

Danny D. Echols
 Vice President

DDE:bb

ACCEPTED AND AGREED this _____
 day of September, 1979

By _____

ARCO Oil and Gas Company
Post Office Box 2819
Dallas, Texas 75221
Telephone 214 651 4213

Danny D. Echols
Vice President
Natural Gas Department



August 22, 1980

Mr. J. H. Welsh, Jr.
Texas Gas Transmission Corporation
1100 Milam Bldg., Suite 1533
Houston, Texas 77002

Gentlemen:

Reference is made to the Letter Agreement of September 10, 1979, and the amendments thereto of April 16, 1980, and July 10, 1980, between ARCO Oil and Gas Company (ARCO), a Division of Atlantic Richfield Company, and Texas Gas Transmission Corporation (Texas Gas) under which they agree that they will enter into negotiations toward execution of a Gas Purchase Contract providing for the sale by ARCO and the purchase by Texas Gas for a primary term of twenty years of a daily volume of gas production attributable to an undivided twelve percent (12%) of ARCO's working interest in the Prudhoe Bay (Permo-Triassic) Reservoir.

While the parties have entered into negotiations pursuant to the Letter Agreement, they have not executed the Gas Purchase Contract and in all likelihood could not complete those negotiations prior to November 1, 1980, the date on which the existing agreement is subject to cancellation. Accordingly, the parties desire to replace and revise the Letter Agreement as hereinafter set forth.

ARCO and Texas Gas agree to negotiate a Gas Purchase Contract containing terms and conditions that are no less favorable to ARCO and no less burdensome to Texas Gas than those provided in any other long-term Prudhoe Bay gas purchase contract with another Prudhoe Bay producer for delivery of substantial volumes of gas to the lower 48 states and shall provide generally that:

1. ARCO will sell and Texas Gas will purchase a daily volume of gas production attributable to an undivided twelve percent (12%) of ARCO's working interest in the Prudhoe Bay (Permo-Triassic) Reservoir.
2. The daily volume of gas attributable to ARCO's undivided twelve percent (12%) of the gas production from the Prudhoe Bay Reservoir will be approximately 78 MMCFD and ARCO will proceed with reasonable diligence in implementing the development and operation of the Prudhoe Bay Field to provide such daily volume to Texas Gas at the delivery point during its term after deducting quantities of gas reserved by it with respect to such gas.

3. Title shall pass at a mutually agreeable delivery point in the field at or near the inlet of any required gas conditioning facility and ARCO shall warrant title to the gas delivered.
4. The contract price shall be negotiated but shall not be less than the price set forth in Section 109 of the Natural Gas Policy Act (NGPA) of 1978 plus severance taxes and reimbursement of any other costs incurred by Seller and allowed under Sections 110 and 502 (c) of the NGPA.
5. Customary deregulation and price escalation provisions permitted by any future statute or regulation will be included.
6. If ARCO is authorized to sell its Lessors' royalty interest share of production, Texas Gas will purchase its pro rata share of such royalty gas on the same terms and conditions provided for the sale and purchase of ARCO's gas under the Gas Purchase Contract.
7. Processing rights prior to delivery and at any reasonable location on the Alaskan Natural Gas Transportation System (ANGTS) shall be retained by ARCO.
8. Mutually satisfactory provisions will be included concerning the disposition of liquids and other products resulting from conditioning the gas in the gas conditioning facility.

The Gas Purchase Contract shall have a term of twenty years and be subject to:

- a. The receipt of governmental authorizations necessary to finance, construct and operate the gas conditioning facility and the ANGTS on terms and conditions satisfactory to each of the parties hereto.
- b. The receipt of governmental authorization for Texas Eastern to recover, on a current rolled-in basis, in its rates the cost of gas purchased under the Gas Purchase Contract and all other costs incurred by Texas Gas with respect to the transportation and delivery of that gas to Texas Gas's system in the lower 48 states.

The parties hereto agree to continue to negotiate toward concluding the Gas Purchase Contract. If the parties, after good faith negotiations, fail to finalize the Gas Purchase Contract by April 1, 1981, either party may terminate the agreement by giving written notice thereof to the other party. In the event that this agreement or such Gas Purchase

[Faint, illegible text, likely bleed-through from the reverse side of the page]

Contract as negotiated is terminated by ARCO for any reason, Texas Gas shall have a one time, 30 days, right of first refusal to purchase the aforesaid gas volumes if ARCO determines to offer such gas for sale prior to the earlier of the Commitment Date set forth in the Alaskan Northwest Natural Gas Transportation Company's General Partnership Agreement or December 31, 1985. This right is limited to the sale of this gas for transportation and resale as gas in the lower 48 states.

Very truly yours,

Danny D. Echols
Vice President

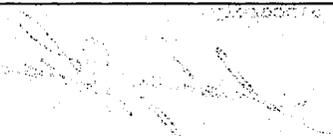
RRH:nm

ACCEPTED AND AGREED to this _____

day of _____, 1980

TEXAS GAS TRANSMISSION CORPORATION

By _____



1980

EXXON COMPANY, U.S.A.

POST OFFICE BOX 2180 • HOUSTON, TEXAS 77001

SIDNEY J. RESO
SENIOR VICE PRESIDENT

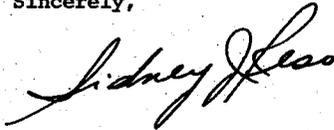
October 29, 1981

The Honorable James A. McClure
Chairman
Committee on Energy and Natural Resources
United States Senate
3121 Dirksen Building
Washington, D.C. 20510

Dear Senator McClure:

With your letter to me of October 26, 1981, you sent additional questions from the Committee to be answered for the hearing record on the Alaska Natural Gas Transportation Act proposed waiver package. My responses to the three additional questions are in the attachment to this letter. Please include the attachment with my statement presented to the Committee on October 22, 1981, as part of the hearing record.

Sincerely,

SJR:ct
Attachment

Responses by Mr. S. J. Reso, Senior Vice President,
Exxon U.S.A., to the Additional Questions of October 26, 1981,
from the Committee on Energy and Natural Resources,
United States Senate

1. Has Exxon looked at the economics of turning the North Slope natural gas into methanol and transporting it through the TAPS? If so, please provide a copy of your analysis.

Answer: Although the ANGTS is the best economic alternative for producing and using the Prudhoe Bay gas reserves, we have evaluated an alternative of using Prudhoe Bay gas in a methanol project. For our evaluation, a methanol plant would be installed at Prudhoe Bay to convert 2.4 Bcf/D of gas to wet methanol which would be batched through TAPS to Valdez. From there, the methanol would be transported in tankers to the lower U.S. for use as a bulk fuel or motor gasoline. The total capital cost for such a project was estimated to range from \$33.4 to 37.0 Billion in as-spent dollars.

Several concerns involved with the methanol alternative:

- (1) The most significant concern is the amount of fuel that is consumed in converting the gas to methanol, sending it to Valdez, and shipping it to the West Coast of the lower U.S. For every Btu delivered to the market, 1.8 Btu's must be produced in the field. The efficiency of this process is 55 percent compared to the ANGTS' efficiency of 85 percent. Over the life of the Prudhoe Bay field, the methanol project would deliver considerably less Btu's to consumers than would the ANGTS.
- (2) In addition to being less efficient, a methanol project has the disadvantage that the alcohol occupies valuable capacity in the TAPS pipeline. Assuming Alaska oil will continue to fill the TAPS line, every barrel of alcohol having 2.7 MMBtu/BBL will displace a barrel of crude having about 4.7 MMBtu/BBL.
- (3) Separating the methanol and Prudhoe Bay crude at Valdez is a critical operation. If too much methanol is left in the crude, the high biological oxygen demand of the methanol could overload the wastewater treatment plants at lower forty-eight refineries receiving the crude. Our study assumed that the allowable alcohol content in the crude is 165 ppm by weight, and this could be an optimistic

-2-

assumption. If this proves optimistic, substantial additional distillation equipment would be required at Valdez.

- (4) The uncertainty of the installation and operation of a very large chemical plant at Prudhoe Bay to convert the natural gas to methanol is a major concern. No large methanol plant, similar to the one required for this project, exists. In fact, the plant evaluated contains 27 trains of modular equipment. A major disadvantage of the methanol project is that complete modular trains of equipment would have to be added to accommodate increased gas throughput. In contrast, the ANGTS could be expanded to transport additional gas by the addition of relatively inexpensive compressor stations.
- (5) A marketing and distribution system must be available in the lower U.S. for handling over 500 MB/D of methanol. This does not exist today and it appears very difficult to develop within the timeframe needed.
- (6) A methanol conversion project has serious permitting, scheduling, and financing problems, and because of these problems the project could not be brought onstream until some four to seven years after the currently projected startup of the ANGTS facilities, even if all the technical concerns are resolved in the near term.

In conclusion, the use of Prudhoe Bay gas for a methanol project is not an attractive alternative to an Alaska Natural Gas Transportation System.

2. Will you promise the Members of this Committee that if the Congress approves this expansive and unprecedented waiver that your company will not come back to the Congress later on to ask for any other support or subsidy, including any Federal loan guarantee?

Answer: At this time, Exxon is not a member of the Alaskan Northwest partnership, the sponsor group for the Alaska segment of the ANGTS, and is not in a position to speak for that group as to what may be done in the future. Exxon has agreed to participate in the project under certain conditions, including those mentioned in my statement filed with the Committee. As mentioned in my statement, Exxon does not know whether the project can be financed even with producer participation. That is a question which the financial community must assess in its evaluation of the sponsors' financing plan.

3. Without disclosing any proprietary information please describe the general terms of any purchase contracts, sales agreements or "first call" arrangements you may have entered into for the sale and transmission of Alaskan North Slope natural gas. Specifically, please state whether these contracts or agreements contain any indefinite price escalator clauses or alternative fuel clauses. If there is an alternative fuel clause, is the price tied to low sulfur number two or number six oil?

Answer: In 1979, Exxon signed contracts with Pacific Gas and Electric Company, Northern Natural Gas Company and Michigan-Wisconsin Pipeline Company for the sale of Exxon's gas as produced at Prudhoe Bay. Such contracts were filed with the Federal Energy Regulatory Commission and are public records. The terms and provisions of the three contracts are essentially the same. A copy of one such contract, that between Exxon and Michigan-Wisconsin, is forwarded herewith for use of the Committee.

As you will see, certain critical dates mentioned in the contracts have passed and each contract is subject to cancellation by either party at any time. Exxon has advised each of the gas purchasers under the three contracts that the contracts will have to be revised in view of the changes in circumstances which have occurred since the contracts were first signed. At this time, however, the three contracts are the only agreements Exxon has for the sale of Prudhoe Bay gas to be transported in the ANGTS.

In addition to such three contracts mentioned above, Exxon has agreements for the sale of Prudhoe Bay gas to Exxon Pipeline Company and to Union Pipeline of California. Such agreements relate to gas purchased by the pipeline companies for use as fuel at pump stations along the Trans Alaska Pipeline System, the oil pipeline.

GAS SALE AND PURCHASE AGREEMENT

Prudhoe Bay Unit, Alaska

Between

EXXON CORPORATION, "Seller"

And

MICHIGAN WISCONSIN PIPE LINE COMPANY, "Buyer"

Dated

May 18, 1979

GAS SALE AND PURCHASE AGREEMENT

Prudhoe Bay Unit, Alaska

Between

EXXON CORPORATION, "Seller"

and

MICHIGAN WISCONSIN PIPE LINE COMPANY, "Buyer"

INDEX

<u>ARTICLE</u>		<u>PAGE</u>
I.	Definitions	1
II.	Scope of Agreement.	5
III.	Conditions	7
IV.	Reservations of Seller	10
V.	Quantity	13
VI.	Point of Delivery	15
VII.	Delivery Pressure	16
VIII.	Quality	17
IX.	Natural Gas Liquids Allocation	17
X.	Gas Measurement and Tests	23
XI.	Price	30
XII.	Tax Reimbursement	41
XIII.	Billing, Payments and Records	42
XIV.	Financial Responsibility	43
XV.	Term	44
XVI.	Warranty of Title and Payment of Royalties.	44
XVII.	Remedy for Breach	45
XVIII.	Force Majeure	46
XIX.	Processing	48
XX.	Miscellaneous and Addresses	52

GAS SALE AND PURCHASE AGREEMENT

Prudhoe Bay Unit, Alaska

THIS AGREEMENT, made and entered into as of the 18th day of May, 1979, by and between EXXON CORPORATION, a New Jersey corporation, hereinafter referred to as "Seller", and MICHIGAN WISCONSIN PIPE LINE COMPANY, a Delaware corporation, hereinafter referred to as "Buyer";

WITNESSETH:

WHEREAS, Seller is the owner of an interest in certain oil and gas leases included in the Prudhoe Bay Unit of Alaska, and desires to sell to Buyer a portion of Seller's natural gas which may be produced from certain wells completed within the Prudhoe Bay (Permo-Triassic) Reservoir underlying such Unit; and

WHEREAS, Buyer requires natural gas to supply its markets and desires to purchase said gas from Seller;

NOW, THEREFORE, in consideration of the premises and mutual benefits and covenants herein contained, the parties hereto have agreed and do hereby covenant and agree as follows:

ARTICLE I.

DEFINITIONS

The following terms when used in this Agreement shall have the meanings set forth in this Article unless the

context indicates otherwise:

1.1 The term "Leases" shall mean Seller's interest in the oil and gas leases described in Exhibit "A" hereto covering lands included within the Prudhoe Bay Unit and subject to the Prudhoe Bay Unit Agreement ("Unit Agreement") and the Prudhoe Bay Unit Operating Agreement ("Unit Operating Agreement") both dated as of April 1, 1977, and more particularly described hereinafter, insofar only as such leases cover the Prudhoe Bay (Permo-Triassic) Reservoir within the Initial Participating Areas.

1.2 The term "Initial Participating Areas" shall mean the Prudhoe Bay (Permo-Triassic) Oil Rim Participating Area and Gas Cap Participating Area as described in Sections 5.1(c) and 5.1(e) of the Unit Agreement, as such Initial Participating Areas are outlined on maps attached as Exhibits "D-1" and "D-2" to the Unit Agreement.

1.3 The term "Prudhoe Bay (Permo-Triassic) Reservoir" means the accumulation of oil, gas and associated substances found in the A. R. Co.-Humble (now A. R. Co.-Exxon) Prudhoe Bay State No. 1 well between the depths of 8,117 feet and 8,785 feet below Kelly Bushing as measured by the Schlumberger Dual Induction Laterolog, Run 4, dated February 8, 1968, and in Run 5, dated March 9, 1968 (including also the Put River Sandstone, which is that sandstone interval that correlates with the interval 9,638 to 9,719 measured feet on the Borehold Compensated Sonic Log, Run 2, dated September 28,

1975, in the Atlantic Richfield-Exxon NGI No. 1 well) within the Prudhoe Bay Unit, as such Reservoir is now constituted. The Prudhoe Bay (Permo-Triassic) Reservoir is outlined on the map attached as Exhibit "F" to the Unit Agreement, which map is subject to modification to reflect the Reservoir as now constituted. Seller will provide Buyer with such modified map, to be an Exhibit "B" hereto, when available.

1.4 The term "Prudhoe Bay Unit" (sometimes called "Unit") shall mean the geographic area subject to the Unit Agreement and Unit Operating Agreement approved by the Commissioner of the Department of Natural Resources of the State of Alaska on June 2, 1977, and referred to as the "affected area" in Conservation Order No. 145 of the Alaska Oil and Gas Conservation Committee, Division of Oil and Gas Conservation, Department of Natural Resources of the State of Alaska, as such order was in effect on June 1, 1977.

1.5 The term "Separator Off-Gas" shall mean hydrocarbon and nonhydrocarbon natural gas, including natural gas liquids, as produced from unit wells and which is recovered in a vapor state from any separation facility handling gas provided from unit wells.

1.6 The term "Seller's Gas" shall mean Seller's share of Separator Off-Gas Production (as that term is defined in Section 26.002 of the Unit Operating Agreement) which is attributable to Seller's Leases and available for taking and disposal under Section 27.701 or Section 27.702 of the Unit Operating Agreement less that portion thereof reserved by Seller in ARTICLE IV.

1.7 The term "Contract Volume" shall mean the volume of gas determined pursuant to Section 5.1 hereof.

1.8 The term "day" shall mean a period of twenty-four (24) consecutive hours beginning at 12:01 a.m., Prudhoe Bay time.

1.9 The term "month" shall mean the period beginning at 12:01 a.m., Prudhoe Bay time, on the first (1st) day of a calendar month and ending at the same time on the first (1st) day of the next succeeding calendar month.

1.10 The term "year" shall mean each successive period of twelve (12) consecutive months beginning on the first day of the month following the month in which deliveries of gas are commenced hereunder to Buyer and any anniversary of such date.

1.11 The term "Mcf" shall mean 1,000 cubic feet of gas as determined on the measurement basis set forth in Section 10.1 hereof.

1.12 The term "Btu" shall mean British thermal unit.

1.13 The term "psia" shall mean pounds per square inch absolute.

1.14 The term "psig" shall mean pounds per square inch gauge.

1.15 The term "Btu content" or "gross heating value" shall mean the total heating value determined as provided in Section 10.14 hereof.

ARTICLE II.SCOPE OF AGREEMENT

2.1 Subject to all of the terms and provisions herein after set forth, Seller agrees to deliver for sale to Buyer, and Buyer agrees to take and purchase from Seller each day during the term hereof, one-third (1/3) of Seller's Gas, as produced. Seller may deliver and sell to Buyer and Buyer shall purchase and take, to the extent that Buyer has available pipeline capacity to do so, quantities of Seller's Gas each day in excess of that committed to Buyer hereunder.

2.2 It is recognized that Seller is entering into or has entered into agreements with other purchasers ("Other Purchasers") providing for the sale and purchase of the remainder of Seller's Gas as produced each day. Buyer and Other Purchasers will receive Seller's Gas at the same delivery point, as hereinafter described, and it will be the responsibility of Buyer and Other Purchasers to take all of Seller's Gas as produced every day and to coordinate the taking so as to avoid any continuing or permanent imbalance between their obligations to take and their actual takes of Seller's Gas. Seller shall have no obligation to Buyer or to Other Purchasers to allocate deliveries of Seller's Gas between Buyer and Other Purchasers to avoid or offset imbalances in their respective purchases of Seller's Gas.

2.3 It is recognized further that Seller's Leases are subject to the Unit Agreement and Unit Operating Agreement

executed by and between Seller and other owners of interests in the oil and gas in and under the Prudhoe Bay Unit, and that this Agreement shall be subordinate to such Unit Agreement and Unit Operating Agreement, and Seller's obligations thereunder. Seller shall provide Buyer with copies of said Unit Agreement and Unit Operating Agreement, which have been filed in the Division of Minerals and Energy Management, Department of Natural Resources, State of Alaska. In particular, the sale of Seller's Gas hereunder is subject to the right of the State of Alaska, as lessor, to take its royalty share of gas in kind.

It is recognized that the owners of interests in oil and gas leases included in the Initial Participating Areas will be selling gas to several purchasers, all of whom will be transporting such gas in the Alaska Natural Gas Transportation System (ANGTS). Buyer agrees to use reasonable efforts to coordinate its purchase of gas with the purchases by other purchasers to the end that all purchasers will have an opportunity to take their contractual amount of gas. Buyer further agrees to use reasonable efforts to arrange balancing agreements with other purchasers in order to better assure that all purchasers will have greater flexibility in their purchases of gas from the Initial Participating Areas. Seller shall have no obligation to avoid or offset imbalances in the rights of purchasers to receive and actual receipts of gas entering the ANGTS at Prudhoe Bay.

2.4 As hereinafter provided, Buyer shall acquire in the purchase of Seller's Gas the net volume of natural gas liquids attributable to Seller's Gas which is required to be removed to condition that gas for transport through pipeline facilities used by Buyer to transport gas from the Prudhoe Bay area. The volume of natural gas liquids so acquired by Buyer shall not exceed the minimum required to be removed prior to transportation of the gas in the pipeline for efficient pipeline operation under pipeline specifications on the date of initial deliveries hereunder. (For the allocation of natural gas liquids attributable to Seller's Gas, refer to ARTICLE IX hereof, entitled "Natural Gas Liquids Allocation").

ARTICLE III.

CONDITIONS

3.1 Buyer and Seller recognize that in order for Buyer to purchase and receive the gas covered hereby, it will be necessary for Buyer to arrange for the installation of a transportation system therefor, which "transportation system" for the purposes hereof shall include conditioning facilities and pipeline necessary to transport the gas from the delivery point herein to Buyer's pipeline facilities in the contiguous United States. Upon execution of this Agreement, Buyer shall promptly seek to conclude all agreements and contractual arrangements necessary for the transportation system for gas to be purchased hereunder. If necessary for the successful

completion of the transportation system for Alaska gas authorized by the President's Decision under the Alaska Natural Gas Transportation Act of 1976, Buyer shall participate in the ownership of such transportation system. Not later than January 1, 1980, Buyer shall complete its contractual arrangements for the transportation system and shall provide Seller with such documentation of such arrangements as Seller may request. It is recognized that the Federal Energy Regulatory Commission has instituted a proceeding, Docket No. RM79-19, concerning the conditioning facilities for gas entering the Alaska Natural Gas Transportation System. If the decision in such proceeding affects Buyer's ability to perform its responsibility as to such conditioning facilities, and if the decision is not acceptable to either Seller or Buyer, then either party may terminate this Agreement. If the Federal Energy Regulatory Commission fails to approve Buyer's arrangements for the transportation system, in a form acceptable to both Seller and Buyer, or Buyer fails to assure Seller to Seller's satisfaction with respect thereto, by March 1, 1980, either Seller or Buyer shall have the right and option at any time thereafter to declare this Agreement terminated.

3.2 As soon as practicable after the execution of this Agreement, Buyer shall file or cause to be filed applications for all certificates, permits and other authorizations which Buyer will require from the Federal Energy Regulatory

Commission and other governmental agencies to commence the purchase of gas hereunder. In particular, Buyer shall promptly file a copy of this Agreement with the Federal Energy Regulatory Commission for approval pursuant to Section 5.V.2. of the President's Decision under the Alaska Natural Gas Transportation Act. Buyer may accept or reject any certificate, permit or other authorization issued to it. If Seller is dissatisfied with the certificate, permit or other authorization received by Buyer, Seller shall have the right to terminate this contract by giving Buyer written notice of such termination together with its reasons therefor. Buyer agrees to furnish Seller with a copy of any certificate, permit or other authorization received by it, together with a copy of its notice of acceptance or rejection thereof, in which latter event Buyer will include its reasons for such rejection.

3.3 Buyer shall use due diligence in an effort to obtain, not later than January 1, 1982, on terms and conditions acceptable to both parties all certificates, permits or other authorizations from the Federal Energy Regulatory Commission and other governmental agencies which Buyer deems necessary for Buyer to perform its obligations under this Agreement, including a certificate of public convenience and necessity to construct, own and operate facilities required for Buyer to carry out its obligations under this Agreement. Buyer shall notify Seller at such time as Buyer

has received all such certificates, permits and authorizations, and in the event that Buyer has not so notified Seller by March 1, 1982, Seller shall thereafter have the right and option, to be exercised at any time, to terminate this Agreement by giving notice of termination to Buyer. If Buyer fails to obtain the required authorization by such date, or rejects same upon issuance thereof, then either party may terminate this Agreement by giving notice to the other party and neither party shall be liable thereafter hereunder.

3.4 Upon the fulfillment of the foregoing conditions, Buyer will proceed with due diligence to install or make arrangements for installation of all facilities necessary to receive delivery of gas from Seller hereunder no later than January 1, 1986, and Seller will proceed to install any necessary facilities and use due diligence to make delivery of such gas to Buyer at the delivery point hereinafter specified.

ARTICLE IV.

RESERVATIONS OF SELLER

4.1 Seller hereby expressly reserves from this Agreement the following prior rights, together with sufficient volumes of gas to exercise any such rights and to meet the obligations set forth hereinafter:

4.1.1 To operate the Leases covered hereby free from any control by Buyer in such manner as Seller, in Seller's sole discretion, may deem advisable, including

without limitation the right, but never the obligation, to drill new unit wells, to repair and rework old unit wells, to renew or extend, in whole or in part, Seller's Leases and to abandon any unit well or surrender Seller's Leases, in whole or in part.

4.1.2 To sell Seller's Gas committed hereunder on a day-to-day basis to any purchaser, when said gas is available for sale and before the date of initial deliveries hereunder.

4.1.3 To use or to sell such quantities of Seller's Gas as required to fulfill Seller's obligations pursuant to the terms of any agreements under which Seller now or hereafter delivers gas for fuel for operation of the Trans Alaska Pipeline System.

4.1.4 To use Seller's Gas in such quantities as Seller in its sole discretion deems necessary:

- (a) For developing and operating Seller's Leases, including but not limited to gas for drilling or sale to drilling contractors; gas for fuel, gas lift, pressure maintenance, additional recovery, cycling or related operations; gas for the operation of Unit Equipment or other facilities, whether located on or off Seller's Leases, installed to handle oil or gas production from attributed to any reservoir underlying such Leases or other leases adjacent to or in the vicinity of the Prudhoe Bay Unit, in which Seller may have an interest.

(b) For drilling or sale to drilling contractors and for fuel in developing and operating other lands and leases adjacent to or in the vicinity of Seller's Leases.

(c) For uses such as heating, lighting, cooking, etc., for housing, office buildings and other facilities utilized by or for personnel employed in the development and operation of Seller's Leases and other leases in the vicinity.

4.1.5 To fulfill Seller's obligations to deliver gas to its lessor, the State of Alaska, pursuant to the terms of Seller's Leases, and the Unit Agreement and Unit Operating Agreement, as they now exist.

4.1.6 To alter the Initial Participating Areas by agreement with the other parties to the Unit Agreement, in which event this Agreement will cover Seller's Gas produced from any such altered Participating Area to the extent that such gas is attributed to Seller's Leases covered hereby; Seller's interest in lands and leases not within the Initial Participating Areas shall not become subject to this Agreement by reason of any such alteration except on mutual agreement of the parties. Seller shall promptly notify Buyer of any agreement affecting Seller's Leases; however, Seller shall not be liable if through oversight it fails to give Buyer such notice.

4.1.7 Subject to Section 2.4, to process or cause Seller's Gas to be processed after delivery to Buyer, as hereinafter provided in ARTICLE XIX.

ARTICLE V.

QUANTITY

5.1 Upon fulfillment of the conditions set forth in Article III above, delivery and receipt of gas shall commence under this Agreement. Commencing on the date of first delivery of gas hereunder and thereafter during the term hereof, Buyer shall take delivery or arrange for the taking on each and every day, of one-third (1/3) of Seller's Gas which is available for delivery and sale at the delivery point. Such one-third (1/3) of Seller's Gas shall be the "Contract Volume" each day, and Buyer shall take delivery of or arrange for the taking of such Contract Volume of gas. If Buyer takes less than the Contract Volume on any day for any reason, other than force majeure which results in the ANGTS not receiving gas at Prudhoe Bay, Seller shall have the right, as elsewhere provided herein, to sell any such gas not taken by Buyer to another purchaser if Buyer does not first arrange for such gas to be taken by another purchaser. The sale or delivery of such gas to another purchaser shall discharge Buyer's obligation hereunder to the extent Seller receives payment equivalent to that it would have received had Buyer purchased such gas.

5.2 The Prudhoe Bay (Permo-Triassic) Reservoir is an associated oil and gas reservoir. Accordingly, the production of Seller's Gas will not permit Buyer to take certain quantities of gas on a fixed schedule or to make up for gas which Buyer is unable or fails to take on any day.

Under existing State of Alaska regulations, the annual average gas production from the Prudhoe Bay (Permo-Triassic) Reservoir may not exceed 2.7 billion standard cubic feet (2.7 Bcf) per day. It is estimated that the Contract Volume hereunder (one-third (1/3) of Seller's Gas available for delivery and sale at the delivery point) will be about 290,000 Mcf per day at the delivery point, and will have a gross heating value of about 1060 Btu's per cubic foot.

Seller shall furnish Buyer a revised estimate of the Contract

Volume as soon as practicable after Seller becomes aware that such estimate or any subsequently furnished estimate should be changed by more than ten (10) per cent.

5.3 Subject to Section 5.1 above, Seller shall have the right to deliver and sell to another purchaser any part or all of the Contract Volume of Seller's Gas which Buyer fails to take on any day, but Buyer shall not be excused for failure to perform this Agreement by reason of said right whether or not exercised. Unless otherwise excused, Buyer shall be liable to Seller for the price for any of Seller's Gas taken at the delivery point without compensation as a result of Buyer's failure to take, or for the difference in

the price which Seller receives for sale of Seller's Gas to another and the price applicable hereunder, if the latter is the greater. Even though Buyer's failure to take may be excused under any other provision of this Agreement, Buyer shall not have a right to make up for gas which Buyer fails to take on any day.

5.4 Buyer and Other Purchasers shall have the right to allocate gas purchases from Seller among themselves to the end that all of the Contract Volume will be taken hereunder on any day. Performance by Other Purchasers of Buyer's obligation to take the Contract Volume shall be deemed adequate performance hereunder provided payment is made to Seller as required hereunder.

ARTICLE VI.

POINT OF DELIVERY

6.1 The point of delivery for gas sold hereunder shall be at the outlet of the Unit gas gathering system, downstream of the gas/oil separators and Unit gas dehydration and certain compression and cooling facilities, at such point as may be mutually acceptable to Seller and Buyer and at or near the inlet of the gas conditioning facility. If other parties to the Unit Agreement execute agreements for the sale of Separator Off-Gas at the gas/oil separators or elsewhere upstream of the point of delivery herein described, Seller shall have the option to designate the same delivery point as designated by said other parties. In the event of

such designation, Seller shall have an option to require that this Agreement be amended to conform to approximately the same terms and conditions as such other Agreement or Agreements.

6.2 Title to Seller's Gas shall pass from Seller to Buyer at the point of delivery. Seller will provide all

facilities upstream of the point of delivery including facilities necessary to separate Seller's Gas from oil, to gather, dehydrate, compress and cool said gas to the quality standards hereinafter specified. Buyer will provide all facilities at the delivery point for receipt and measurement of Seller's Gas and all downstream facilities necessary for the transportation of such gas.

6.3 Seller shall be in control and possession of Seller's Gas prior to delivery thereof to Buyer and Seller shall be responsible for any damage or injury or death caused thereby prior to such delivery. Following such delivery, Buyer shall be deemed to be in exclusive control and possession of Seller's Gas and shall bear responsibility for any and all claims, causes of action or judgments arising from property damage or injury or death caused thereby or arising from the conduct of Buyer.

ARTICLE VII.

DELIVERY PRESSURE

7.1 Seller agrees to deliver Seller's Gas at a pressure which is the greater of (i) the operating pressure of Seller's facilities at the point of delivery, or (ii) a pressure of

500 psig. To the extent that compression of Seller's Gas is required in order to enter Buyer's facilities at the point of delivery, Seller agrees to install and operate such equipment for compression of the gas to a pressure sufficient to enter Buyer's facilities at the point of delivery up to but not in excess of 500 psig.

ARTICLE VIII.

QUALITY

8.1 Seller's Gas sold and delivered to Buyer hereunder shall be as produced in its natural state, except that such gas may be compressed as specified in Section 7.1 above, and shall be dehydrated to contain not more than two-tenths (.2) of a pound of water per million cubic feet and cooled to a temperature not in excess of 120 degrees Fahrenheit (120° F.). Seller shall install separation and dehydration equipment for removal of oil, condensate, and nonhydrocarbon liquids and objectionable solids from such gas prior to its delivery to Buyer. All such liquids and solids so separated by Seller shall be and remain the property of Seller.

ARTICLE IX.

NATURAL GAS LIQUIDS ALLOCATION

9.1 As provided in Section 3.1 herein, Buyer intends to join with other gas purchasers to construct or have constructed a transportation system which includes a gas conditioning facility. For purposes of this Agreement, any such gas conditioning facility located in the Unit Area, or

its vicinity, is hereinafter referred to as Conditioning Facility. Gas purchased hereunder will be commingled in the Conditioning Facility with gas owned by other purchasers for conditioning prior to delivery into a pipeline for transportation to Buyer's markets, it is anticipated that in the operation of the Conditioning Facility, certain quantities of natural gas liquids (as such term is defined in the Unit Operating Agreement) will be extracted from Seller's Gas and, unless purchased by Seller as provided in Section 9.2, such natural gas liquids so extracted, shall be owned by Buyer. Allocation of natural gas liquids to Seller's Gas shall be accomplished as provided in Article 29 of the Unit Operating Agreement. Buyer shall conduct such tests and measurements as may be required and Buyer and Seller shall furnish each other monthly statements concerning the operations conducted by each which will contain whatever information is necessary for Seller to make or cause to be made such allocation in compliance with the Unit Operating Agreement. Seller and Buyer agree that the detailed information to be furnished by each to the other will be determined prior to the commencement of gas deliveries so that when gas deliveries do commence there will be no delay in determining the volume of natural gas liquids allocated to Seller's Gas and the volume and Btu content of Seller's Gas sold and delivered.

9.2 In the event Buyer elects to sell to an unaffiliated party natural gas liquids recovered by operation of the Conditioning Facility and attributable to Seller's Gas, Seller

shall have the right of first refusal to purchase and receive such quantities thereof that Buyer desires to sell. From time to time if Buyer offers such natural gas liquids for sale to others, Seller shall have the option to meet the terms of any bona fide offer that Buyer receives for the purchase thereof. Upon receipt of an offer which is acceptable to Buyer, Seller agrees to meet the terms of such offer within sixty (60) days of receipt of written notice from Buyer or to then be deemed to have forfeited its option to purchase said natural gas liquids but only with regard to the terms of such offer.

9.3 Buyer shall transport in the transportation system, as gas, all of the natural gas liquids recovered in the Conditioning Facility and attributable to Seller's Gas except that portion of the liquids which, as provided in Section 2.4 hereof, Buyer must remove for efficient pipeline operation. It is not anticipated that Buyer will have difficulty in using or disposing of such natural gas liquids acquired by Buyer pursuant to Section 2.4; nevertheless, if Buyer is unable to use, transport, sell, or otherwise dispose of all such natural gas liquids, Buyer may return to Seller the volume thereof which Seller can use or can transport in an oil pipeline (such liquids are referred to herein as "Usable Natural Gas Liquids"). It shall be necessary, however, for Buyer to give Seller written notice not less than three (3) months in advance of any return of such liquids, and Buyer shall specify in such notice the daily quantity and composition of the Usable Natural Gas Liquids to be tendered to Seller.

Natural gas liquids shall be deemed Usable Natural Gas Liquids to the extent that (1) Seller, under terms and conditions acceptable to Seller, may be able to use such liquids as an alternate fuel in accordance with the terms and provisions of Section 30.007 of the Prudhoe Bay Unit Operating Agreement and/or (2) Seller, under terms and conditions acceptable to Seller, may be able to tender such liquids for transport through an oil pipeline.

The total Btu's of the Usable Natural Gas Liquids that Seller takes from Buyer and uses as fuel shall be deducted from the amount of Btu's for which Buyer is obligated to pay Seller, and it shall be deemed that the ownership of such Btu's as contained in Seller's Gas when delivered to Buyer was never transferred to Buyer. However, Buyer shall reimburse Seller for any fuel substitution costs incurred by Seller in accordance with the provisions of Section 30.007 of the Unit Operating Agreement.

The total Btu's of the Usable Natural Gas Liquids that Seller takes from Buyer for transport through an oil pipeline shall be deducted from the amount of Btu's for which Buyer is obligated to pay Seller for gas delivered hereunder, and it shall be deemed that the ownership of such Btu's was never transferred to Buyer. However, Buyer shall reimburse Seller for any costs incurred by Seller associated with putting such natural gas liquids into an oil pipeline for transport, including any reduction in Btu value as a result thereof.

In addition to volumes of Usable Natural Gas Liquids, if any, there may be volumes of natural gas liquids (herein referred to as "Surplus Natural Gas Liquids") acquired by Buyer pursuant to Section 2.4 that Buyer cannot use, transport, sell or otherwise dispose of and that Seller may not be able to use or transport. To the extent there are Surplus Natural Gas Liquids attributable to Seller's Gas, Seller shall make a good faith effort to obtain rights for Buyer to inject, at Buyer's sole expense, such Surplus Natural Gas Liquids into the Prudhoe Bay (Permo-Triassic) Reservoir in accordance with the terms and provisions of Sections 27.802 and 27.803 of the Unit Operating Agreement and under terms and conditions acceptable to the Seller and Buyer.

Upon the injection of Surplus Natural Gas Liquids into the Reservoir, all rights and interests of Buyer in such liquids shall revert to Seller. The total Btu's of such Surplus Natural Gas Liquids so injected into the said Reservoir shall be deducted from the amount of Btu's for which Buyer is obligated to pay Seller for gas delivered hereunder; and it shall be deemed that the ownership of such Btu's was never transferred to Buyer. However, Buyer shall reimburse Seller for any costs incurred by Seller associated with injecting such liquids into the Reservoir including any penalties Seller may incur for injecting such liquids.

9.4 If the Conditioning Facility is operated to remove carbon dioxide ("CO₂") from the inlet stream of gas, Buyer may have, in addition to the gas to be transported, a volume of

residue gas composed of a high percentage of CO₂. If such residue CO₂ gas has sufficient hydrocarbons to be usable as fuel, then at Buyer's request, and if the Unit owners are agreeable to using or allowing the use of the residue CO₂ gas as fuel by Seller under terms and conditions acceptable to Seller, Buyer may return to Seller a volume of such gas attributable to the Seller's Gas sold at the inlet of the Conditioning Facility under the terms of this Agreement.

To the extent Seller takes from Buyer such residue CO₂ gas as fuel, the total Btu's contained therein shall be deducted from the amount of Btu's for which Buyer is obligated to pay Seller for gas sold hereunder. However, Buyer shall reimburse Seller for any fuel substitution costs incurred by Seller in accordance with the provisions of Section 30.007 of the Prudhoe Bay Unit Operating Agreement. Further, it is agreed that there shall be no conditioning charges paid by Seller as a result of taking residue CO₂ gas.

If Buyer is required to dispose by subsurface injection of residue CO₂ gas, Seller shall make a good faith effort to obtain rights for Buyer, at Buyer's sole cost, to inject such residue CO₂ gas attributable to Seller's Gas into the Prudhoe Bay (Permo-Triassic) Reservoir in accordance with the terms and provisions of Sections 27.802 and 27.803 of the Prudhoe Bay Unit Operating Agreement and under terms and conditions acceptable to Seller.

To the extent residue CO₂ gas is injected into the Reservoir, the Btu content thereof (determined in accordance

with Section 10.14) shall be deducted from the amount of Btu's Buyer is obligated to pay Seller for gas sold hereunder. However, Buyer shall reimburse Seller for any costs incurred by Seller associated with the injection of such residue CO₂ gas, including any penalties Seller may incur for such injection. Upon injection of residue CO₂ gas into such Reservoir all rights and interests of Buyer in such residue CO₂ gas shall revert to and be vested in Seller.

ARTICLE X.

GAS MEASUREMENT AND TESTS

10.1 Units of Volume. The unit of volume for purposes of measurement of volumes hereunder shall be that amount of gas which will occupy one (1) cubic foot of space when held at a base temperature of sixty degrees Fahrenheit (60° F.) and when under a base pressure of fourteen and sixty-five hundredths (14.65) pounds per square inch absolute; the volume measured shall be adjusted for deviation from the Ideal Gas Law.

10.2 Calculation of Volumes. The computation of volumes delivered hereunder shall be made by Buyer, using the orifice meter equation prescribed in American Petroleum Institute Publication 2530, "Orifice Metering of Natural Gas", as amended or revised from time to time.

10.3 Barometric Pressure. The atmospheric pressure shall be assumed to be 14.70 psia, irrespective of the actual

atmospheric pressure at the point of delivery or any factors that may cause fluctuation in the barometric pressure.

10.4 Flowing Gas Temperature. The temperature of the gas shall be determined by a recording thermometer(s) continuously used and installed so as to properly record the temperature of the gas. The arithmetic average of gas temperatures recorded during the periods of flow only shall be deemed the daily average gas temperature for the purpose of calculating volumes.

10.5 Specific Gravity. The specific gravity of the gas shall be determined by the use of a continuous recording gravitometer of make and type agreed upon by Buyer and Seller and so installed that it will monitor the specific gravity of the gas measured. The daily average specific gravity recorded during the periods of flow only shall be deemed the specific gravity of the gas for the purpose of calculating volumes. The continuous recording gravitometer shall be checked at least once each month by the use of the Acme gravity balance or any other approved method mutually agreed upon.

10.6 Ideal Gas Law Deviation. Except as otherwise agreed by Seller and Buyer, the gas delivered shall be assumed to deviate from the Ideal Gas Law to the extent determined from the American Gas Association's "Manual for the Determination of Supercompressibility Factors for Natural Gas" developed under P.A.R. Research Project NX-19 completed December 1962, as such manual may be hereafter

amended or changed, at the specific gravity and average flowing temperature of the gas, and at the arithmetic average static pressure recorded during period of gas flow only. At the request of either Seller or Buyer the deviation from the Ideal Gas Law for the gas delivered hereunder shall be experimentally determined by a method mutually agreed upon. If the results of such determination indicate that use of the above AGA Manual for the calculation of gas volumes will result in an error of one-half of one percent (.5%) or more then the experimentally determined deviation from the Ideal Gas Law shall be used.

10.7 Measurement Records. The original copy of all records and chart recordings shall remain the property of the owner of the equipment from which such record or recording was obtained, and shall be retained for a period of three (3) years, or such longer period as may be required by any public authority having jurisdiction, with the other party having the right to examine these records or recordings during this period. At the end of the three-year period or such longer required period, the owner shall have the right to destroy the records without permission or recourse from the other party; provided, however, that the owner electing to destroy any such records shall first give the other party advance notice thereof in writing and a period of sixty (60) days after receipt of such notice to request that such records be delivered into its possession for retention, as long as such party desires.

10.8 Measuring Equipment. Volumes delivered hereunder shall be calculated or otherwise determined from records and chart recordings which will be made from an orifice type metering station fabricated to conform to the "Construction and Installation Specifications" the American Petroleum Institute Publication 2530, "Orifice Metering of Natural Gas", as amended or revised from time to time.

10.9 Primary Measuring Equipment. Buyer shall install, maintain and operate at no expense to Seller all equipment required for the measurement, calculation and allocation of volumes delivered hereunder and the calibration and adjustment thereof shall be done by Buyer unless it is agreed by the parties hereto that Seller shall change charts. Seller shall be permitted to connect computerized production control monitoring devices to Buyer's measuring equipment.

10.10 Check Measuring Equipment. Seller shall have the option to install any measuring equipment it may desire, but same shall be installed so as not to interfere with Buyer's equipment, nor shall the recordings from such check measuring equipment be used in determination of deliveries hereunder unless Buyer's equipment be out of service or be found by test to be in error by an amount exceeding allowed tolerances as set out in Section 10.12 hereof.

10.11 Equipment Inspections. Buyer shall calibrate, test and otherwise inspect all measurement recorders, devices and equipment used in measuring gas delivered hereunder prior to the commencement of delivery, and thereafter at

least twice during each succeeding month that gas deliveries are made or at other mutually acceptable intervals. Buyer shall inspect orifice plates and meter tubes not less often than twice each year. Additional tests and inspections shall be made at irregular and non-scheduled intervals when in the judgment of either Buyer or Seller the equipment is believed not to be recording satisfactorily. Meter tubes may be inspected by use of a borescope or other comparable method.

Seller shall have the right to have a representative present to witness the installation, calibration, testing, cleaning, changing, repairing or adjustment of any portion of the primary measurement equipment or other equipment used in determining the volume delivered hereunder.

Seller and Buyer will each inform the other with reasonable notice of the date and time an equipment inspection or test is desired.

Any labor and transportation costs accruing as a result of a regularly scheduled test or inspection shall be borne by both Buyer and Seller to the extent each shall defray the expense of its own personnel. However, should either party request a test or inspection at an irregular interval, the cost accruing to the other party shall be reimbursed by the party requesting the test if it is found that the equipment is functioning within the allowed tolerance of accuracy; otherwise, each party shall defray its own expense.

10.12 Equipment Accuracy Tolerances. If, upon testing and inspecting all recorders and other equipment comprising a single metering installation, the aggregate volumetric error is found not to exceed plus or minus one percent (1%) of accuracy, then previous recordings shall be considered accurate in computing deliveries hereunder, but such equipment shall forthwith be adjusted to record accurately.

If, upon testing and inspecting all recorders and other equipment comprising a single metering installation, the aggregate volumetric error is found to exceed plus or minus one percent (1%) of accuracy, such equipment shall forthwith be adjusted to record accurately, and compensating adjustment shall be made to previous recordings and volumetric calculations for the period of time the recording was in error, if known. If the period of time is not known, recordings and calculations shall be adjusted for a period of time agreed to by Buyer and Seller, or in the absence of agreement, such correction shall be for a period covering the last half of the time elapsed since the previous test, but not exceeding a period of eight (8) days.

10.13 Failure of Measuring Equipment. If, for any reason, the measuring equipment installed for Buyer is out of service or out of tolerance, with the result that the quantity of gas delivered is not correctly indicated by the reading thereof, the gas delivered during the period in

which such measuring equipment is out of service or out of tolerance shall be estimated and agreed upon on the basis of the best data available, using one of the following methods listed in order of preference unless some other order is adjudged by both parties as more feasible:

(a) By using the registration of any check measuring equipment, if installed and accurately registering, or

(b) By adjusting for the error, if the percentage of error is ascertainable by calibrating, test, or mathematical calculations, or

(c) By estimating the quantity of delivery, by use of other metered volumes which may be available in Seller's facilities, or by reference to actual deliveries during preceding periods under similar conditions when the equipment in question was measuring accurately.

10.14 Heating Value. The gross (or total) heating value of the gas delivered by Seller to Buyer, expressed in Btu's per cubic foot, shall be determined by Buyer by means of a continuous sampler or other mutually agreeable method(s) in general use in the gas industry, as selected by Buyer and approved by Seller. Seller shall have the right to determine, at such time or times as it may desire, the gross heating value of the gas in British Thermal Units per cubic foot by means of any method in general use in the gas industry. Each party shall give to the other notice of the time of all

tests for determining the Btu content of the gas to be conducted by such party reasonably in advance of making the test in order that the other party may conveniently have its representative present. Should there be any material variance between tests by Buyer and Seller, a joint test will be run employing a mutually agreeable method and the result thereof will be controlling, effective from the first day of the calendar month preceding such joint test.

The Btu content per cubic foot shall be determined for a cubic foot of gas as such unit of volume is defined in Section 10.1 and said Btu content shall be adjusted for the actual water vapor content of the gas at the Point of Delivery hereunder. The actual water vapor content of the gas shall be determined periodically at mutually agreeable intervals using mutually agreeable methods in general use in the gas industry.

ARTICLE XI.

PRICE

11.1 Buyer shall pay Seller for Seller's Gas sold and delivered hereunder the price specified below for the applicable period indicated in subsections (a), (b), (c) and (d), or the price determined in subsection (e) below, whichever is highest. Each calculated price shall be expressed to four (4) decimal places. The price shall be determined as follows:

(a) Effective on the first day of the month next following the date of this Agreement, the price hereunder shall be Two Dollars (\$2.00) per million Btu's.

(b) Commencing on the first day of the second (2nd) month following the date of this agreement and continuing through the sixtieth (60th) month following the date of initial delivery of gas to Buyer hereunder, the price specified in Section 11.1 (a) above shall increase each month by multiplying the price for the preceding month by the monthly equivalent of the annual inflation adjustment factor applicable for such month, determined in the manner provided in Title I of the Natural Gas Policy Act of 1978.

(c) On the first day of the sixty-first (61st) month following the date of initial delivery of gas to Buyer hereunder, the price per million Btu's as determined for the sixtieth (60th) month in accordance with (b) above shall increase by multiplying the price for the preceding month by the monthly

equivalent of the annual inflation adjustment factor applicable for such month, determined in the manner provided in Title I of the Natural Gas Policy Act of 1978, plus one-fourth of one percent (0.25%) per month.

(d) On the first day of the sixty-second (62nd) month following the date of initial delivery of gas to Buyer hereunder and thereafter on the first day of each succeeding month during the term of this agreement, the price per million Btu's as determined for the immediately preceding month shall be increased by multiplying the price for the preceding month by the monthly equivalent of the annual inflation adjustment factor applicable for such month, determined in the manner provided in Title I of the Natural Gas Policy Act of 1978, plus one-fourth of one percent (0.25%) per month.

(e) During each month the price for gas delivered to Buyer hereunder shall be equal to the maximum lawful price per million Btu's prescribed under Section 109, plus the amounts to compensate Seller for severance taxes and costs allowed under Section 110

of the Natural Gas Policy Act of 1978 for the month in which the gas is delivered. The price for gas delivered for sale to Buyer hereunder during any month shall be increased to any higher adjusted rate permitted or allowed by the Federal Energy Regulatory Commission (FERC) or any other governmental authority having jurisdiction in the premises, as hereinafter provided.

In no event, however, shall the price due hereunder exceed the price which Seller may lawfully collect nor the amount which Buyer is permitted to include in its rates and charges to its jurisdictional customers.

11.2 If Congress, the Federal Energy Regulatory Commission, or any other governmental authority having jurisdiction in the premises, shall at any time enact legislation, prescribe or allow by law, order, rule, regulation, or in any other manner a ceiling price(s) which is (i) higher than the effective price or prices then being paid hereunder, and (ii) applicable to any portion(s) of Seller's Gas committed hereunder, then the price(s) hereunder shall be increased to the level of such higher price(s) for that portion(s) of Seller's Gas which is of the type, quality and vintage for which such price(s) is prescribed or allowed. Such higher price(s) shall include any adjustment for gathering, taxes and any other factors permitted by law, the FERC, or other governmental authority having jurisdiction. Such

higher price(s) shall become effective as of the date such higher price(s) becomes law or is prescribed or allowed.

In the event such higher price(s) is not applicable to Seller's Gas because this Agreement does not contain those terms and conditions set forth in such law, order, rule, or regulation as requisite to collection of such higher price(s), the Seller may elect to amend, and Buyer shall agree to amend, this Agreement in a manner set forth by Seller and to the extent necessary to permit Seller to collect hereunder such higher price(s), including any allowances. Any amendment shall be effective as of the effective date hereof, subject to the receipt of all necessary governmental certificates, permits and other authorizations, provided that Buyer shall not be required to make retroactive price adjustments for prior deliveries, except to the extent permitted by such law, order, rule or regulation.

Regardless of the level of area or nationwide price(s) applicable (or made applicable by amendment) hereunder, the price to be paid for Seller's Gas from any particular well at any given time shall be no lower than the highest price allowed by the Federal Energy Regulatory Commission or any governmental authority for the said Seller's Gas taking into consideration in determining said price all of the factors which the Federal Energy Regulatory Commission or such governmental authority deems relevant to such a determination, including elements of price justified and

on an industry basis or by Seller.

11.3. Whenever an increase in price occurs under this agreement which increased price exceeds levels provided in Sections 11.1(a), (b), (c) or (d) hereof, such increased price shall thereupon be substituted for and become the price hereunder in 11.1(a), (b), (c) and (d) for the applicable month and such increased price shall thereafter be subject to future increases in accordance with the provisions of this Agreement.

11.4 Deregulation. If at any time during the term of this Agreement the Federal Energy Regulatory Commission or any other governmental authority having jurisdiction over the price or prices of gas sold and delivered hereunder, ceases to have jurisdiction over the price or prices of gas sold and delivered hereunder, ceases to have jurisdiction over all or any portion of the subject matter or ceases to have or exercise price control over this Agreement, then Seller shall have the right to request that the base price or prices at which gas is sold hereunder be redetermined effective as of the later of (i) the date of such request or (ii) the effective date of such deregulation. Any such request shall be made to Buyer in writing.

When such a request has been made, representatives of Buyer and Seller shall promptly meet to redetermine the base price or prices of the gas sold hereunder. Such redetermination shall establish a base price or prices equal to the

highest of (i) the average of the two highest prices paid or contracted to be paid by Buyer or any other interstate purchaser(s) of gas in the Prudhoe Bay area (hereinafter called "Area") under any gas sales contracts in effect in the Area at the time of such redetermination between a producer(s) and an interstate pipeline company purchasing gas for resale; and (ii) the Btu equivalent price of Distillate (Fuel Oil No. 2) per million Btu's, less Buyer's transportation costs per million Btu's of Prudhoe Bay gas incurred between the delivery point for gas specified herein and the city gate at Detroit, Michigan. In determining the price under (i) above, appropriate adjustments shall be made in such price for significant differences in quality, quantity, delivery pressure and other delivery conditions which exist between the provisions of this Agreement and such other agreements or contracts under consideration. In determining the price under (ii) above, Distillate (Fuel Oil No. 2) shall be assumed to have a heat content of 5,880,000 Btu per barrel and shall be valued at the price for such commodity (Fuel Oil No. 2 to Resellers, East North Central) as published monthly by the U. S. Department of Labor-Bureau of Labor Statistics in its publication entitled "Producer Prices and Price Indexes" during the latest monthly period for which such publication is available to the parties. In the event the U. S. Department of Labor ceases to make such information available, the parties will agree upon a substitute method

for determining an average price for such commodity. In the event that the price determined under (ii) above shall become the price hereunder, the provisions of ARTICLE XII hereof shall not apply; further, such price shall be adjusted each month, as necessary, to reflect the latest monthly price published for Fuel Oil No. 2 to Resellers, East North Central. Notwithstanding the price or prices, terms selected, the redetermined price or prices shall, in being made applicable to this Agreement between Seller and Buyer, be substituted for the price provided herein and in the case of the price determined under (i) above only shall thereafter be subjected to the escalations and adjustments provided for in this ARTICLE XI.

Thereafter during the term of this Agreement, Seller may request similar price redeterminations; provided, however, that such requests from Seller shall not be made sooner than one (1) year following the effective date of the last redetermined price.

In the event representatives of Buyer and Seller are unable to agree upon a redetermined base price or prices within a period of sixty (60) days of the written request for such redetermination, then either Buyer or Seller shall have the right to subject the matter to arbitration in the following manner: Upon written request for arbitration made by either party and served upon the other as provided by law, Buyer shall appoint one arbitrator and Seller shall appoint one arbitrator and the two arbitrators so appointed

shall select a third arbitrator. If either Buyer or Seller shall fail to appoint an arbitrator within fifteen (15) days after said request for arbitration is made by the other party in writing, or if the two arbitrators so appointed shall fail within fifteen (15) days after the appointment of the second of them to agree on a third arbitrator, the arbitrator or arbitrators necessary to complete a board of three arbitrators shall be appointed upon application by either party therefor by the Chief Judge of the United States Fifth Circuit Court of Appeals. Within thirty (30) days after three arbitrators are appointed pursuant to the foregoing provisions of this paragraph, they shall meet at a place selected by the third arbitrator, hear the parties with respect to the matter of said price, and arrive at a determination of the price or prices at which gas is to be sold hereunder during the particular period in question. Such determination shall be made not later than sixty (60) days after the receipt of evidence. Any determination agreed to in writing by at least two of said arbitrators shall be final and binding on the parties hereto. All arbitrators appointed pursuant to this paragraph shall be individuals qualified by education, knowledge and experience to determine the price of gas in accordance with the criteria set forth above and shall not be in the regular salaried employ of either party. The compensation and expenses of the arbitrator named for the Seller shall be paid by Seller; the compensation and expenses of the arbitrator named for

Buyer shall be paid by Buyer; and the compensation and expenses of the third arbitrator shall be paid in equal portions by Buyer and Seller.

In the event the price for Seller's Gas determined pursuant to this Section 11.4 is greater than the price in effect hereunder during the period immediately preceding Seller's request for redetermination and is greater than the price which Buyer is permitted to recover by the FERC or any successor governmental authority, then Buyer may terminate this Agreement thirty (30) days after giving written notice to Seller; provided, however, Seller may nullify such notice by advising Buyer in writing within fifteen (15) days thereafter that Seller elects to accept the price in effect hereunder during the period immediately preceding Seller's request for redetermination. In event of such election by Seller, this Agreement shall continue in force and effect subject to all the terms and conditions herein provided including future price redetermination as hereinabove provided. In the event Seller does not elect to continue this Agreement in force and effect, Buyer shall continue purchasing Seller's Gas under the terms of this Agreement at the price in effect hereunder during the period immediately preceding Seller's request for price redetermination until Seller has made arrangements for commencing delivery to an alternative disposition of Seller's Gas released by termination of this Agreement.

11.5 Excess Royalty Payments. Buyer agrees to make payments to Seller for Seller's Gas in addition to those

provided for elsewhere in this Agreement for the purpose of reimbursing Seller for "Excess Royalty Payments" made by Seller with respect to said Seller's Gas. "Excess Royalty Payments" shall mean actual royalty payments which Seller is required to pay on Seller's Gas delivered hereunder to the extent that such payments exceed the amount such payments would be if the royalty were computed on the basis of the price or prices paid by Buyer to Seller for such gas less Seller's gas marketing costs incurred for dehydration/cleaning, compression and transportation to the point of delivery. Seller agrees to provide monthly statements to Buyer identifying the quantities and Btu content of gas upon which Seller has made Excess Royalty Payments and the amount of Excess Royalty Payments. Buyer agrees to reimburse Seller for such payments within ten (10) days following receipt of said statement from Seller. Seller shall refund to Buyer any payments made pursuant to this provision if and to the extent that the FERC denies Buyer the right to include the same in its rates and charges to jurisdictional customers.

11.6 Economic-Hardship. If, for any reason, the delivered cost of Prudhoe Bay gas at Buyer's city gate delivery points, priced on the lower of (i) a rolled-in basis (excluding imported natural gas and LNG, as well as SNG), or (ii) an incremental basis, is such that Buyer determines the gas cannot be marketed, except at an economic loss to Buyer, the parties shall review the circumstances then existing in a good faith effort to determine such measures as are necessary to rectify the situation. Buyer

and Seller recognize that implementation of such measures will require the efforts of all those involved with the total transportation system, including owners of the system, gas producers, regulatory authorities having direct jurisdiction, and other participants in the transportation of Prudhoe Bay gas to the contiguous United States.

ARTICLE XII.
TAX REIMBURSEMENT

12.1 Buyer agrees to reimburse Seller for all State of Alaska and Federal production, gathering, delivery, sales, severance, excise or other taxes or assessments of a similar nature (except ad valorem and general property taxes, other than those on gas in place, and income taxes, franchise taxes and other taxes of a similar nature), upon or with respect to the production, severance or delivery of gas sold hereunder, or the value thereof in place or otherwise, now or hereafter levied or assessed upon Seller. The parties agree that there shall be added to the price(s) Buyer is obligated to pay Seller for gas delivered hereunder, so long as the tax or assessment shall be in effect, an amount per Mcf sufficient to reimburse Seller for one hundred percent (100%) of any such tax or assessment. Should all or any part of the liability of Seller not be determined by the end of any month, then the additional amount not determined shall be set forth monthly in a statement to be rendered by Seller to Buyer and Buyer shall pay Seller the amount due pursuant to such statement within ten (10) days, subject to later adjustment when the tax is finally determined.

ARTICLE XIII.BILLING, PAYMENTS AND RECORDS

13.1 On or before the sixth (6th) day of each month after delivery of Seller's Gas is commenced hereunder, Buyer shall furnish to Seller a statement of the data pursuant to Section 9.1 during the preceding month.

13.2 Based upon Buyer's statement furnished under Section 13.1 above, and Seller's statement, if any, under Section 19.3, Seller will prepare an invoice setting forth (a) the quantity and Btu content of Seller's Gas delivered to Buyer and (b) the payment due Seller therefor. Seller shall submit such invoice to Buyer on or before the tenth (10th) day following receipt of said Buyer's statement. On or before the fifth (5th) day following receipt of said Seller's invoice, Buyer shall make payment to Seller of all amounts due hereunder in immediately available funds to a bank account to be designated by Seller. If the invoiced amount of any payment is not paid when due, interest on all unpaid amounts shall accrue at 125 percent (125%) of the prime rate in effect at Citibank N.A. of New York at the time payment is due, or at the maximum rate for short-term loans permitted by law in Alaska, whichever is less.

13.3 Each party shall have the right at reasonable times to examine the books, records and charts of the other party to the extent necessary to verify the accuracy of any statement, charge or computation made pursuant to the provisions of any Article hereof. If any such examination

reveals any inaccuracy in such billing or payments theretofore made, the necessary adjustment in such billing and payments shall be promptly made. Any such adjustment shall be subject to accrual of interest as set forth in Section 13.2 without prejudice to other remedies.

13.4 In the event Seller elects pursuant to ARTICLE XIX to process or cause Seller's Gas to be processed subsequent to delivery to Buyer, then Seller in preparing the invoice required in Section 13.2 shall deduct the Btu content attributable to fuel and shrinkage occurring in the gas processing facility in processing Seller's Gas. Also, Seller shall deduct in said invoice the cost of transporting fuel and shrinkage related volumes to the processing facility, pursuant to Section 19.8 hereof; except that no such deduction for fuel and shrinkage or transportation shall be made if, as provided in Section 19.8, Seller shall restore the Btu equivalent of the gas used or lost to Buyer at a mutually agreeable point.

ARTICLE XIV

FINANCIAL RESPONSIBILITY

14.1 If, during the term of this Agreement, the financial responsibility of the Buyer becomes impaired or unsatisfactory to Seller, advance cash payment or security satisfactory to Seller shall be given by the Buyer upon demand of Seller, and deliveries may be withheld until such payment or security is received. If such payment or security is not received within fifteen (15) days from Seller's

demand therefor, Seller may terminate this Agreement. In the event the Buyer makes an assignment for the benefit of creditors or any general arrangement with creditors, or if there are instituted by or against Buyer proceedings in bankruptcy or under any insolvency law or law for reorganization, receivership or dissolution, Seller may withhold deliveries or terminate this Agreement without notice. Seller's exercise of any right reserved under this ARTICLE shall be without prejudice to any claim for damages or any other right of Seller under this Agreement or applicable law.

ARTICLE XV.

TERM

15.1 This Agreement shall become effective as of the date first above written and shall continue and remain in effect for a term of twenty (20) years from the date of first delivery of gas to Buyer hereunder.

ARTICLE XVI.

WARRANTY OF TITLE AND PAYMENT OF ROYALTIES

16.1 Seller hereby warrants the title to all gas delivered hereunder, the right to sell such gas, and that it is free from all liens and adverse claims, and agrees, if notified thereof by Buyer, to indemnify Buyer against all suits, actions, debts, accounts, damages, costs, losses and expenses arising from or out of any adverse claims of any and all persons to or against said gas.

16.2 Seller shall pay or cause to be paid to the parties entitled thereto all royalties, overriding royalties, payments out of production, and other like charges on gas delivered hereunder.

ARTICLE XVII.

REMEDY FOR BREACH

17.1 Either party may, at its option, terminate this Agreement upon written notice to the other party if: (i) the other party fails to pay any sum due in accordance with this Agreement within thirty (30) calendar days of receipt of written notice from the terminating party demanding said payment, or (ii) the other party fails to perform any material covenant or obligation (other than payment of a sum) imposed upon it in this Agreement (except where such failure shall be excused under the provisions of ARTICLE XVIII hereof) within a reasonable time and not more than sixty (60) days, exercising all due diligence, after receipt of written notice from the terminating party stating with particularity the covenant or obligation not performed. Any such termination shall be an additional remedy and shall not prejudice the right of the party not in default to collect any amounts due it hereunder or any damage or loss suffered by it and shall not waive any other remedy to which the party not in default may be entitled for breach of this Agreement.

ARTICLE XVIII.FORCE MAJEURE

18.1. In the event of either party hereto being rendered unable, wholly or in part, by force majeure, to carry out its obligations under this Agreement, other than to perform the conditions specified in ARTICLE III hereof and to make payments due hereunder, it is agreed that on such party's giving notice and full particulars of such force majeure in writing, or by telegraph, to the other party as soon as practicable after the occurrence of the cause relied on, then the obligations of the party giving such notice, so far as they are affected by such force majeure, shall be suspended during the continuance of any inability so caused, but for no longer period, and such cause shall as far as possible be remedied with all reasonable dispatch.

18.2. The term "force majeure" as employed herein shall mean acts of God, strikes, lockouts or other industrial disturbances, acts of the public enemy, wars, blockades, military action, insurrections, riots, epidemics, landslides, lightning, earthquakes, fires, storms or storm warnings, crevasses, flood, washouts, arrests and restraints of governments and people, civil disturbances, explosions, breakage or accident to machinery or lines of pipe, the necessity for testing (as required by law, governmental regulation or for safe operation thereof, in the judgment of the testing party) or making repairs or alterations to machinery or

lines of pipe, freezing of wells or lines of pipe, partial or entire failure of wells, inability of any party hereto to obtain necessary materials, supplies or permits due to existing or future rules, regulations, orders, laws or proclamations of governmental authorities having jurisdiction over the operations of the facilities of either party hereto, including both civil and military authorities of the State of Alaska, the United States of America or the governments of Canada, and any other causes, whether of the kind herein enumerated or otherwise, not within the control of the party claiming suspension, and which by the exercise of due diligence such party is unable to prevent or overcome such term shall likewise include (a) in those instances where either party hereto is required to obtain servitudes, rights-of-way grants, permits or licenses to enable such party to fulfill its obligations hereunder, the inability of such party in acquiring, at reasonable cost and after the exercise of reasonable diligence, such servitudes, right-of-way grants, permits or licenses; and (b) in those instances where either party hereto is required to furnish materials and supplies for the purpose of constructing or maintaining facilities, the inability of such party to acquire, or the delays on the part of such party in acquiring, at reasonable cost and after the exercise of reasonable diligence, such materials and supplies, permits and permissions.

Such term shall not include any act on the part of any purchaser or purchasers of gas from Buyer to reduce such

purchaser or purchasers' takes of gas from Buyer; nor shall it include conditions described in ARTICLE III hereof.

18.3 The settlement of strikes or lockouts shall be entirely within the discretion of the party having the difficulty, and the above requirement that any force majeure shall be remedied with all reasonable dispatch shall not require the settlement of strikes or lockouts by acceding to the demands of opposing party when such course is inadvisable in the discretion of the party having the difficulty.

ARTICLE XIX.

PROCESSING

19.1 In the event Seller shall elect to process or cause the gas sold and delivered hereunder to be processed subsequent to delivery thereby to Buyer, such processing shall be at a location or locations acceptable to Seller and Buyer. If the location or locations agreed upon are on a pipeline system, it is recognized that the gas sold and delivered hereunder may have been commingled with other gas streams of different composition, or may have been diverted or used by Buyer, so that at the location or locations agreed upon for processing the composition of the gas in the pipeline system will not be the same as Seller's Gas sold and delivered hereunder. Buyer shall make available to Seller for processing a volume of gas flowing in the pipeline system sufficient to permit recovery of an amount of liquefiable hydrocarbons that would have been recovered if it were possible to process Seller's gas in a separate stream; provided, Buyer shall not be required to make available to

Seller any volume of gas, and the liquids attributable thereto, which Buyer has sold to purchasers upstream of Seller's processing facilities. At the time the parties agree upon the location of the facilities for gas processing, as herein provided, the parties shall agree concerning any subsequent arrangements for withdrawals of gas from the pipeline system upstream of Seller's processing facilities.

Buyer will install or cause to be installed all facilities and equipment including metering facilities, necessary to effectuate delivery of the volume of gas to be processed from said location or locations on the pipeline system to the processing plant or plants. Similarly, Buyer shall install or cause to be installed all facilities and equipment, including metering facilities, necessary to effectuate the redelivery of processed gas from the processing plant or plants to the pipeline system.

19.2 Seller shall reimburse Buyer for an equitable portion, to be determined by mutual agreement of the parties, of the costs incurred by Buyer for installation of pipelines connecting the processing plant or plants with the pipeline. Seller shall also reimburse Buyer for an equitable portion of the value of the gas vented by Buyer in making the required connections. In the event the parties shall be unable to agree upon Buyer's costs or the value of the gas vented, then either party may proceed to arbitration in accordance with the procedure provided in Section 11.4 hereof, mutatis mutandis.

19.3 Seller shall furnish or cause to be furnished to the Buyer, on or before the sixth day of the second month after the commencement of such processing and each succeeding month, an allocation statement setting forth the amount of shrinkage in gas volumes resulting from such processing expressed in Mcf and the heating value thereof attributable to gas processed by or for Seller during the second preceding month. Said allocation statement shall also set forth the percent of residue gas attributable to such gas. Buyer shall be entitled to adjust the payment otherwise due hereunder for the Btu content attributable to fuel and shrinkage in Seller's processing facility as set forth in Section 13.4 hereof.

19.4 Seller shall cause the installation, maintenance and operation of such measurement facilities, the conduct of such tests and analyses and the utilization of such procedures as are necessary for Seller or Seller's agent to determine the amount of shrinkage in gas volumes, the gross heating value thereof expressed in Btu's per cubic foot and the percent of residue gas attributed to gas processed by or for Seller. Seller shall not be required to measure the plant inlet or plant residue gas volumes in its determination of such volume of shrinkage or said percent of residue gas; however, Buyer shall have the right to have a representative present to witness the installation, calibration, testing,

cleaning, changing, repairing or adjustment of Seller's equipment or other equipment used in determining such shrinkage in gas volumes.

19.5 Seller agrees to restore (or cause to be restored) any pressure decline greater than fifty (50) psig measured from plant inlet to plant outlet resulting from such processing.

19.6 Seller shall return processed gas to Buyer which has a water content no greater than the lower of (a) the water content of the gas delivered by Buyer to Seller for processing; or (b) a water content of seven (7) pounds per 1,000,000 cubic feet of gas.

19.7 All Seller's gas processing operations shall be at Seller's sole cost and expense, and Seller shall be deemed to be in exclusive control and possession while the gas is in Seller's possession and shall hold Buyer harmless from all injuries or damages which may occur as the result of Seller's exercise of its right to process gas hereunder.

19.8 As consideration for transporting or arranging transportation and delivery of gas to Seller for processing, Seller shall pay Buyer the cost of transporting the volumes of gas lost as shrinkage or lost in the processing operation at such rates as the FERC and the National Energy Board (NEB) of Canada may allow; however, it is agreed that Seller shall have the option of using gas from other gas sources available to Seller for delivery to Buyer at the processing location and/or at a mutually agreeable point or points up to the extent of the Btu content of the volume of shrinkage

gas. The foregoing charge for transporting and delivering gas to Seller hereunder shall not be applicable if and to the extent that Seller restores the Btu equivalent of the gas used or lost in kind at the processing plant and/or at said mutually agreeable point.

ARTICLE XX.

MISCELLANEOUS AND ADDRESSES

20.1 No waiver by either party of one or more defaults by the other in the performance of any of the provisions of this Agreement shall operate or be construed as a waiver of any other or further default or defaults, whether of a like or of a different character.

20.2 This Agreement shall be binding upon and inure to the benefit of the legal representatives, successors and assigns of the respective parties hereto and shall be binding upon any purchaser or assignee of Buyer's properties or pipeline system and upon any purchaser or assignee of the properties of Seller which are subject to this Agreement, and Seller and Buyer both agree that no sale or assignment of said properties of Seller or any part thereof or all or substantially all of Buyer's system shall be made unless the purchaser or assignee thereof shall assume and agree to be bound by this Agreement insofar as it shall affect and relate to the property or interest sold or conveyed. It is agreed, however, that except as hereinafter provided, and as provided in Section 5.4, the respective rights and duties of the parties hereunder may not be assigned without the

written consent of the other, provided, however, that such consent shall not be unreasonably withheld.

(i) Seller may assign, transfer, convey, and hypothecate, in one or more transactions, all or part of the Leases, or create or carve out royalty or other interests in such Leases, but any such assignment, transfer or conveyance shall be expressly subject to this Agreement.

(ii) Either party hereto may assign its rights hereunder in whole or in part to a wholly-owned subsidiary or to an affiliate. An affiliate is defined as a corporation controlling, controlled by or under common control with such party. No such assignment shall relieve a party hereto of any liability or responsibility hereunder.

20.3 Notwithstanding any other actual or constructive knowledge of or notice to Buyer, no change or division in ownership in this Agreement by Seller shall be binding upon Buyer for any purpose until after Buyer receives, at the place provided for herein, copies of the instrument or instruments constituting or accomplishing the change in ownership from the party acquiring the interest or right in this agreement or from Seller.

20.4 This Agreement is subject to all applicable state and federal laws and all present and future applicable orders, rules and regulations of any governmental authority having jurisdiction, so long as such orders, rules and regulations shall be in force and effect, provided, however, that no such governmental order, rule or regulations shall be deemed

effective to enlarge or increase the obligations of either party except after final judicial determination to that effect or the consent of the party affected.

20.5 Buyer is and shall be deemed to be a purchaser and transporter of Seller's Gas only and is not and shall not be deemed to be an owner, operator, partner, venturer, agent, participant, or otherwise involved in any of Seller's operations or facilities. Seller will be responsible for and will hold Buyer harmless from any damages or death or injury or civil penalties caused by or happening in connection with such operations or facilities. Buyer will be responsible for Buyer's facilities and will hold Seller harmless from any damages or death or injury caused by or happening in connection with operation of such facilities.

20.6 The parties hereto recognize that all operations conducted by or on behalf of Seller hereunder together with determining ownership and allocation of (i) Seller's Gas sold and delivered to Buyer and (ii) natural gas liquids which may be extracted from Seller's Gas, shall be governed by and subject to the Prudhoe Bay Unit Agreement and the Prudhoe Bay Unit Operating Agreement. It is therefore agreed that should any conflict arise between the Unit Agreements and this Agreement, the terms and provisions of the Unit Agreements shall be controlling.

20.7 All notices, requests and demands provided for in this Agreement shall be in writing and shall be addressed to the parties as follows:

Seller - Exxon Corporation
ATTENTION: Natural Gas Department
P. O. Box 2180
Houston, Texas 77001

Buyer - Michigan Wisconsin Pipe Line Company
One Woodward Avenue
Detroit, Michigan 48226

All statements and invoices provided for herein shall
be addressed to the parties as follows:

Seller - Exxon Company, U.S.A.
(a Division of Exxon Corporation)
ATTENTION: EPAC, Gas Accounting Services
P. O. Box 2180
Houston, Texas 77001

Buyer - Michigan Wisconsin Pipe Line Company
One Woodward Avenue
Detroit, Michigan 48226

or such other address as either party may designate by notice.
Communications, including monthly statements and payments,
shall be considered as duly delivered when mailed by either
registered or certified mail.

IN WITNESS WHEREOF, this instrument is executed as of
the day and year first above written.

ATTEST OR WITNESS:

E. Lawrence Travis Jr.

SELLER:
EXXON CORPORATION

By: Ray J. Lynch
General Manager,
Natural Gas Department
Exxon Company, U.S.A.
(a division of Exxon Corporation)

ATTEST OR WITNESS:

Cliff McBurney
Secretary

BUYER:
MICHIGAN WISCONSIN PIPE LINE COMPANY

By: Ray J. Lynch

EXHIBIT "A"
TOGAS SALE AND PURCHASE AGREEMENT
PRUDHOE BAY UNIT, ALASKASeller's Leases - Initial Participating Areas

Oil Rim Participating Area

Tract No.	ADL No.	Description of Tract
18	28239	Secs. 27,28,33,34 T12N,R11E,UM
19	28238	Secs. 25,26,35,36 T12N,R11E,UM
26	28299	Secs. 29,31,32 T12N,R14E,UM
27	28300	Secs. 27,28,33,34 T12N,R14E,UM
28	28301	Secs. 25,26,35,36 T12N,R14E,UM
29	34628	Secs. 29,30,31,32 T12N,R15E,UM
30	34629	Secs. 27,28,33,34 T12N,R15E,UM
39	34631	Secs. 3,4,9,10 T11N,R15E,UM
40	34632	Secs. 5,6,7,8 T11N,R15E,UM
41	28302	Secs. 1,2,11,12 T11N,R14E,UM
42	28303	Secs. 3,4,9,10 T11N,R14E,UM
43	28304	Secs. 5,6,7,8 T11N,R14E,UM
50	28240	Secs. 1,2,11,12 T11N,R11E,UM

<u>Tract No.</u>	<u>ADL No.</u>	<u>Description of Tract</u>
52	28244	Sec. 15 T11N,R11E,UM
53	28245	Secs. 13,14,24 T11N,R11E,UM
61	28306	Secs. 15,16,21,22 T11N,R14E,UM
62	28307	Secs. 13,14,23,24 T11N,R14E,UM
63	28321	Secs. 17,18,19,20 T11N,R15E,UM
64	28322	Secs. 15,16,21,22 T11N,R15E,UM
65	28323	Secs. 13,14,23,24 T11N,R15E,UM
70	28324	Secs. 25,26,35,36 T11N,R15E,UM
71	28325	Secs. 27,28,33,34 T11N,R15E,UM
72	28326	Secs. 29,30,31,32 T11N,R15E,UM
73	28308	Secs. 25,26,35,36 T11N,R14E,UM
79	28264	Secs. 25,26,35,36 T11N,R12E,UM
82	28246	Sec. 25 T11N,R11E,UM
84	28265	Secs. 1,2,11,12 T10N,R12E,UM
88	28313	Secs. 5,6,7,8 T10N,R14E,UM

Tract No.	ADL No.	Description of Tract
91	28329	Secs. 5,6,7,8 T10N,R15E,UM
92	28328	Secs. 3,4,9,10 T10N,R15E,UM
93	28327	Secs. 1,2,11,12 T10N,R15E,UM

Seller Owns a 50% working interest in all of the above listed leases.

Gas Cap Participating Area

Tract No.	ADL No.	Description of Tract
18	28239	Secs. 27,28,33,34 T12N,R11E,UM
19	28238	Secs. 25,26,35,36 T12N,R11E,UM
21	28258	Secs. 27,28,33,34 T12N,R12E,UM
26	28299	Secs. 29,31,32 T12N,R14E,UM
27	28300	Secs. 27,28,33,34 T12N,R14E,UM
40	34632	Secs. 5,6,7,8 T11N,R15E,UM
41	28302	Secs. 1,2,11,12 T11N,R14E,UM
42	28303	Secs. 3,4,9,10 T11N,R14E,UM
43	28304	Secs. 5,6,7,8 T11N,R14E,UM

<u>Tract No.</u>	<u>ADL NO.</u>	<u>Description of Tract.</u>
50	28240	Secs. 1,2,11,12 T11N,R11E,UM
52	28244	Sec. 15 T11N,R11E,UM
53	28245	Secs. 13,14,24 T11N,R11E,UM
61	28306	Secs. 15,16,21,22 T11N,R14E,UM
62	28307	Secs. 13,14,23,24 T11N,R14E,UM
63	28321	Secs. 17,18,19,20 T11N,R15E,UM
64	28322	Secs. 15,16,21,22 T11N,R15E,UM
65	28323	Secs. 13,14,23,24 T11N,R15E,UM
70	28324	Secs. 25,26,35,36 T11N,R15E,UM
71	28325	Secs. 27,28,33,34 T11N,R15E,UM
72	28326	Secs. 29,30,31,32 T11N,R15E,UM
73	28308	Secs. 25,26,35,36 T11N,R14E,UM
79	28264	Secs. 25,26,35,36 T11N,R12E,UM
82	28246	Sec. 25 T11N,R11E,UM
84	28265	Secs. 1,2,11,12 T10N,R12E,UM
88	28313	Secs. 5,6,7,8 T10N,R14E,UM

<u>Tract No.</u>	<u>ADL No.</u>	<u>Description of Tract</u>
91	28329	Secs. 5,6,7,8 T10N,R15E,UM
92	28328	Secs. 3,4,9,10 T10N,R15E,UM
93	28327	Secs. 1,2,11,12 T10N,R15E,UM
94	28345	Secs. 5,6,7,8 T10N,R16E,UM
97	28346	Secs. 17,18,19,20 T10N,R16E,UM
98	28332	Secs. 13,14,23,24 T10N,R15E,UM
104	47476	Secs. 13,14,24 T10N,R13E,UM

Seller owns a 50% working interest in all of the above listed leases.

Seller's interest in said leases insofar only as such leases cover the Prudhoe Bay (Permo-Triassic) Reservoir within the Initial Participating Areas constitute the "Leases" subject of this Agreement.



THE STANDARD OIL COMPANY

1050 SEVENTEENTH STREET, N.W., SUITE 650
WASHINGTON, D.C. 20036

October 30, 1981

The Honorable James A. McClure
Chairman, Committee on Energy
and Natural Resources
3121 Dirksen Senate Office Building
Washington, DC 20510

Dear Mr. Chairman:

I am enclosing responses to the questions raised by your letter of October 26, 1981. If you or your staff wish to discuss these questions and answers further, please contact me at (202) 785-4888.

Very truly yours,

Don Nyberg
Donald A. Nyberg
Associate Director
Federal Government Affairs

DAN/pr

Enclosure

Questions Asked by the U.S. Senate Committee on Energy and Natural Resources
on October 26, 1981 and Responses by The Standard Oil Company (Ohio).

Question No. 1

Has SOHIO looked at the economics of turning the North Slope natural gas into methanol and transporting it through the TAPS? If so, please provide a copy of your analysis.

Response

We have not conducted an intensive evaluation of the methanol alternative, but we have conducted a screening evaluation of a number of alternatives, of which methanol production was one. This screening process indicated to us that a methanol project would have capital costs not greatly different from the other alternatives, would lose about half of the BTU content of the gas in the process, and may have marketability problems when the product gets to destination. Consequently, the economics of methanol production appear to be marginal.

The facilities required at Prudhoe Bay would include over thirty of the largest methanol plants ever built, with an operating work force of three to four thousand people. The methanol process would require a lot of water, which is in short supply in the North Slope area. Most studies assume the methanol would move down the oil pipeline, but there may be technical problems with that. In any event, we believe it would be less than prudent to plan to use the remaining design capacity of the TAPS pipeline for methanol, rather than reserving it for future increases in North Slope oil production from fields already discovered and those which may be discovered in the future.

We continue to believe the concept of a large diameter pipeline through Alaska and western Canada is as good as any means to bring this gas to market. Certainly, the methanol alternative or any other alternative for that matter, would encounter similar problems in financing now faced by the proposed Alaska-Canada pipeline, and in addition, would lose the benefit of all of the engineering and related work that has been done on that pipeline.

Question No. 2

Will you promise the Members of this Committee that if the Congress approves this expansive and unprecedented waiver that your company will not come back to the Congress later on to ask for any other support or subsidy, including any Federal loan guarantee?

Response

No. As Sohio pointed out in a prepared statement for the Senate Energy Committee on October 23, 1981, it is not clear to us that a project of the magnitude of the Alaska Natural Gas Transportation System can be financed without Federal government participation. Since, in our opinion, the Alaska North Slope gas is a viable source of energy for the United States, we would feel it appropriate to come back to the Congress if the waiver is passed but proved to be inadequate in arranging for financing.

Question No. 3

Without disclosing any proprietary information please describe the general terms of any purchase contracts, sales agreements or "first call" arrangements you may have entered into for the sale and transmission of Alaskan North Slope natural gas. Specifically, please state whether these contracts or agreements contain any indefinite price escalator clauses or alternative fuel clauses. If there is an alternative fuel clause, is the price tied to low sulfur number two or number six oil?

Response

On August 3, 1971 Sohio and Columbia Gas Transmission Corporation entered into a Preliminary Gas Agreement. In general, the Agreement recognized that it was being entered into well in advance of the time when definitive terms could be negotiated. It gives either party the right to require the other to enter into negotiations looking to the execution of a sale and purchase agreement for Sohio's Prudhoe Bay gas at a time in the future when definitive terms could be arrived at. The Agreement has no specific price provision, but rather says that Sohio will receive a price at least as high as the highest price being paid to other producers for gas in the same field, of similar quality, in comparable quantities, and under comparable delivery conditions.

In 1977 an agreement among Sohio, Columbia and Northern Natural Gas Company and others provided that Columbia would have rights to two-thirds of Sohio's gas on the terms set forth in the 1971 Preliminary Gas Agreement and Northern would have rights to one-third of Sohio's gas (up to three trillion cubic feet) on the same terms.

An agreement was executed by Sohio and Northern on July 1, 1979 and filed with the Federal Energy Regulatory Commission by Northern on August 29, 1979. Under this agreement, Northern is entitled to buy one-third of Sohio's production from the Prudhoe Bay leases (excluding certain reservations) up to a total of three trillion cubic feet. The price to be paid by Northern equals \$2.045 per million BTU's as of August 1979 adjusted each month by an escalator which is based on a monthly equivalent of the annual inflation adjustment factor determined in the manner provided in Title I of the Natural Gas Policy Act. However, if a higher price may legally be charged, then the price will be that higher legal price. In the event of deregulation, the price will be renegotiated with the intention of agreeing on a price which reflects the higher of other deregulated gas sales at Prudhoe Bay or the BTU equivalent price of No. 2 distillate fuel oil less a transportation allowance from Prudhoe Bay to Minneapolis, Minnesota. The Sohio/Northern agreement sets out conditions under which either party may terminate it. In the event of termination, Northern's rights under the 1977 agreement are revived. The rapidly changing events which continue to surround the Alaska natural gas pipeline project make it likely that some modification of the Sohio/Northern agreement will be required.

OCT 30 1981

McHENRY & STAFFIER, P.C.

ATTORNEYS AT LAW
SUITE 408GEORGE W. MCHENRY, JR.
JOHN R. STAFFIER
JOHN H. BURNES, JR.1300 NINETEENTH STREET, N.W.
WASHINGTON, D.C. 20086TELEPHONE
(202) 467-5880

October 30, 1981

Senator James A. McClure
United States Senate
3121 Dirksen Senate Office Bldg.
Washington, D.C. 20510

RE: Waivers Relating to the
Alaska Natural Gas Trans-
portation System

Dear Senator McClure:

On behalf of the Canadian sponsors of the Alaska Natural Gas Transportation System, I am writing to provide a joint response to the questions which you presented in identical letters of October 26, 1981, to Mr. Robert L. Pierce, President and Chief Executive Officer of Foothills Pipe Lines (Yukon) Ltd., Mr. S. Robert Blair, Chairman of Foothills and President and Chief Executive Officer of NOVA, AN ALBERTA CORPORATION, and Mr. Edwin C. Phillips, Vice Chairman of Foothills and Chairman and Chief Executive Officer of Westcoast Transmission Company Limited.

Question: Your prepared statement refers to your present construction schedule. It states that you support the waiver if FERC selects a date that does not "significantly depart" from your date. Congress has no way of knowing what date FERC will determine meets the statutory requirements. Do you intend your statement to convey the idea that you do not support the waiver package as submitted to Congress?

Response: No. The Canadian sponsors fully and unconditionally support the expeditious approval of the waiver package as presently drafted, and never intended to convey a different impression to the committee. The comment in question was intended only to emphasize our view that the targeted completion date ultimately established by the FERC should not be significantly different from the completion date which the sponsors believe to be feasible and achievable.

McHENRY & STAFFIER, P.C.

Senator James A. McClure
 October 30, 1981
 Page Two

Question: The committee assumes that you intend to coordinate your construction schedule with the schedule for the Alaska segments of the ANGSTS. Is that correct?

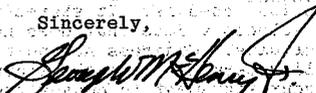
Response: Yes. The Canadian sponsors and the Alaskan segment sponsors, working in conjunction with their respective regulatory authorities, the Northern Pipeline Agency and the Federal Inspector, intend to coordinate their construction schedules with the goal of achieving completion of the entire project by the target date which is established by the FERC and accepted by the sponsors. Based upon our performance in the "prebuild" phase of the project, we believe that our efforts in this regard will prove successful.

Question: What is your anticipated date for completion of the pipeline segment in Canada? Does that comport with Northwest's anticipated date for completion of the pipeline segment in Alaska and the gas conditioning plant?

Response: The sponsors of both the Alaskan and the Canadian segments presently anticipate that the entire project, including the conditioning plant, will be completed and ready for service prior to November 1986.

I trust that the foregoing accurately responds to your inquiry. If you have any further questions, do not hesitate to notify me.

Sincerely,



George W. McHenry, Jr.

Counsel for:
 FOOTHILLS PIPE LINES (YUKON) LTD.,
 NOVA, AN ALBERTA CORPORATION, and
 WESTCOAST TRANSMISSION COMPANY
 LIMITED

cc: Howard Useem
 S. R. Blair
 R. L. Pierce
 E. C. Phillips

ADDITIONAL QUESTIONS FOR THE HEARING RECORD

ON THE ALASKA NATURAL GAS TRANSPORTATION ACT - PROPOSED WAIVER PACKAGE

October 26, 1981

QUESTIONS FOR MR. TUCHER

1. You indicated that you will retain consultants to look at the question of the marketability of Alaska natural gas. Will your consultants analyze the marketability question assuming the NGPA is not amended between now and 1985 and that partial deregulation occurs at that time?

2. Will your consultants also analyze the marketability question assuming the NGPA is amended and that some form of deregulation occurs prior to 1985?

ADDITIONAL QUESTIONS FOR THE HEARING RECORD

ON THE ALASKA NATURAL GAS TRANSPORTATION ACT - PROPOSED WAIVER PACKAGE

October 26, 1981

QUESTIONS FOR MR. LEWAND

1. You indicated that you will retain consultants to look at the question of the marketability of Alaska natural gas. Will your consultants analyze the marketability question assuming the NGPA is not amended between now and 1985 and that partial deregulation occurs at that time?

2. Will your consultants also analyze the marketability question assuming the NGPA is amended and that some form of deregulation occurs prior to 1985?

ADDITIONAL QUESTIONS FOR THE HEARING RECORD
ON THE ALASKA NATURAL GAS TRANSPORTATION ACT - PROPOSED WAIVER PACKAGE

October 26, 1981

QUESTIONS FOR MR. GRAHAM

1. You indicated that you will retain consultants to look at the question of the marketability of Alaska natural gas. Will your consultants analyze the marketability question assuming the NGPA is not amended between now and 1985 and that partial deregulation occurs at that time?
2. Will your consultants also analyze the marketability question assuming the NGPA is amended and that some form of deregulation occurs prior to 1985?

ADDITIONAL QUESTIONS FOR THE HEARING RECORD
ON THE ALASKA NATURAL GAS TRANSPORTATION ACT - PROPOSED WAIVER PACKAGE

October 26, 1981

QUESTIONS FOR MR. JENKS

1. You indicated that you will retain consultants to look at the question of the marketability of Alaska natural gas. Will your consultants analyze the marketability question assuming the NGPA is not amended between now and 1985 and that partial deregulation occurs at that time?
2. Will your consultants also analyze the marketability question assuming the NGPA is amended and that some form of deregulation occurs prior to 1985?

BANK OF AMERICA

OCT 30 1981

H. ANTON TUCHER
Vice President

October 29, 1981

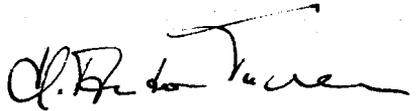
The Honorable James A. McClure
United States Senate
Washington, D. C. 20810

Dear Senator McClure:

Thank you for your letter of October 26 requesting additional information for the hearing record on the Alaska Natural Gas Transportation Act - Proposed Waiver Package.

Inasmuch as Chase Manhattan Bank is coordinating the gas marketability study, the Banks have agreed that Mr. Lewand should respond on behalf of the four Banks. I trust this is acceptable to you. We are happy to confirm that we concur with his response.

Sincerely,



The Chase Manhattan Bank, N.A.
1 Chase Manhattan Plaza
New York, New York 10081

Stanley J. Lewand
Vice President



CHASE

October 29, 1981

The Honorable James A. McClure
Chairman
Committee on Energy and Natural Resources
United States Senate
Washington, D.C.

Dear Senator McClure:

In response to your letters of October 26, 1981 to each of the coordinating banks, Bank of America, Chase, Citibank and Morgan, and on behalf of these banks, please be advised that in connection with our addressing the financing feasibility of the ANGS project, the gas marketability committee of the banks will treat the various possibilities with regard to de-control of natural gas as very significant variables in the study the committee plans to undertake.

With kindest personal regards.

Sincerely,

BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES

U. S. SENATE

PREPARED STATEMENT
OF
JOHN G. McMILLIAN
CHAIRMAN, BOARD OF PARTNERS
ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

OCTOBER 22, 1981

TABLE OF CONTENTS

	<u>Page</u>
Introduction.....	1
I. Procedural Background.....	3
A. Selection Process.....	3
1. FPC Proceedings.....	4
2. ANGTA.....	5
3. FPC Recommendation.....	6
4. Federal Agency Comments.....	6
5. Canadian Selection of Alaskan Northwest Route.....	8
6. Transit Pipeline Treaty.....	9
7. Agreement on Principles.....	9
8. President's 1977 <u>Decision</u>	10
9. Congressional Approval of Selection of Alaskan Northwest to Build the ANGTS.....	12
10. FERC Issuance of Conditional Certificates..	12
11. Northern Pipeline Act.....	13
B. Related Matters.....	13
1. Natural Gas Policy Act.....	13
2. Office of the Federal Inspector.....	14
3. Reorganization Plan No. 1.....	15
II. ANGTS Construction to Date.....	16
III. Other Major Regulatory Approvals Already Secured and Significant Milestones.....	18
A. Partnership Agreement.....	18

	<u>Page</u>
B. Incentive Rate of Return.....	20
C. FERC Approved Gas Tariffs.....	22
1. Billing Commencement Date and Minimum Bill.....	23
2. Interim Rate.....	24
3. Service Interruption.....	24
i) More than a 10 percent reduction in service.....	24
ii) Less than a 10 percent reduction in service.....	24
iii) Extended total service interruption.....	25
D. Pipe Size and Pressure.....	25
E. Federal Right-of-Way in Alaska.....	26
F. Environmental Terms and Conditions.....	27
G. Equal Employment Opportunity/Minority Business Enterprise.....	27
H. Delegations to and Approvals by the Federal Inspector.....	28
I. Cooperative Agreement Among Alaskan Northwest, the Principal North Slope Producers, and the State of Alaska.....	28
IV. Current Activities.....	30
A. Alaskan Pipeline Segment.....	30
1. Design and Field Programs.....	31
a. Frost Heave and Other Testing.....	33
b. Site Specific Requirements.....	34
c. Environmental Concerns.....	35

	<u>Page</u>
..... d. Alyeska Experience.....	36
..... 2. Certification Cost Estimate.....	37
..... a. Estimate Highlights.....	37
..... b. Estimate Components.....	38
..... B. Prudhoe Bay Gas Conditioning Plant.....	41
..... 1. Design.....	41
..... 2. Cost Estimate.....	42
..... C. Construction Coordination and Logistics for the Plant and Pipeline.....	43
..... V. ANGSTS Capital Costs.....	45
..... VI. Marketability.....	46
..... VII. National Benefits.....	50
..... VIII. Remaining Governmental and Regulatory Approvals.....	52
..... A. Alaskan Northwest.....	52
..... B. Northern Border and Pacific Gas Transmission.....	54
..... C. Shipper Tracking.....	54
..... IX. Financing.....	55
..... A. Financing Parameters Established by the Federal Government.....	56
..... B. Original Sponsor Financing Plan.....	58
..... C. Efforts to Arrange Financial Support from the State of Alaska and the North Slope Producers.....	61

	<u>Page</u>
1. State of Alaska.....	61
2. North Slope Producers.....	61
D. Comparison of Original Sponsor Financing Plan and Sponsor/Producer Agreement.....	65
E. Position of U.S. Commercial Bank Lenders...	66
F. Risk/Benefit Sharing Objectives of President's <u>Decision</u> Fundamentally Preserved.....	69
G. Impact of the Waiver Upon Private Financing.....	71
H. Present Status of Financing Negotiations...	74
X. Proposed Waiver of Law.....	76
A. Public Law 95-158 and the President's <u>Decision</u>	77
1. Producer Equity Participation.....	77
2. Prudhoe Bay Gas Conditioning Plant.....	79
3. Billing Commencement.....	80
a. Risk of Non-Completion of Any One Segment.....	82
b. Sponsor/Lender Risks.....	83
c. Consumer Cost.....	84
d. Canadian Considerations.....	84
e. Financing Considerations.....	85
f. Conclusion.....	86
B. Natural Gas Act.....	87
1. Evidentiary Hearing Requirements.....	87
2. Regulatory Certainty.....	88
3. Status of Alaskan Northwest.....	91

	<u>Page</u>
4. Export and Import Authorization.....	92
C. Energy Policy and Conservation Act.....	92
Conclusion.....	93
Appendix A.....	Pub. L. No. 95-158
Appendix B.....	Letter from President Carter to Prime Minister Trudeau (July 18, 1980)
Appendix C.....	S. Con. Res. 104
Appendix D.....	Map
Appendix E.....	Report on the Demand for Alaskan Natural Gas
Appendix F.....	Comparison of ANGTS Cost- of-Service with Alter- nate Fuel Prices
Appendix G.....	Net National Economic Benefits of the ANGTS
Appendix H.....	Joint Statement of Intention
Appendix I.....	Banks' Funding Letter
Appendix J.....	Memorandum to Chairman Sharp and Congressman Brown from Charles A. Moore, General Counsel, FERC
Appendix K.....	President's Waiver Proposal

Prepared Statement

of

John G. McMillian
Chairman, Board of Partners
Alaskan Northwest Natural Gas Transportation Company

Mr. Chairman, I am John G. McMillian, Chairman and Chief Executive Officer of Northwest Energy Company and Chairman of the Board of Partners of Alaskan Northwest Natural Gas Transportation Company, the consortium of natural gas companies selected to design, construct, and operate the Alaskan segment of the Alaska Natural Gas Transportation System.

We are very pleased to appear here today to support the waiver of law proposed by the President. The Alaskan Northwest partnership, its Canadian counterpart, Foothills Pipe Lines (Yukon) Ltd., the three principal North Slope gas producers, Arco, Exxon, and Sohio, the project's financial advisors, both here and in Canada, and the lenders who are expected to provide a significant portion of project debt, have reached a critical stage with respect to completion of the ANGTS. Many hurdles, regulatory and otherwise, have been successfully surmounted. Over one-third of the total pipeline mileage is either complete or currently under construction. However, one significant hurdle remains -- final development of a private sector financing plan which will enable the remaining portions of the ANGTS to be constructed. The waiver you are considering is essential to development of a financing plan. Without the waiver, the ANGTS cannot be completed by private industry alone. If the ANGTS is not completed, consumers in this country

would be denied access to over 13 percent of our nation's proven domestic gas reserves, and our country would be forced to maintain a greater dependency on vulnerable and insecure foreign energy sources.

Those who have become involved with this project following the discovery of the Prudhoe Bay field in 1968 are firmly committed to completion of this vital transportation link to the North Slope. This group includes most of the largest gas transmission companies in this country and Canada; the North Slope oil and gas producers which have developed the Prudhoe Bay reserves and were instrumental in the construction of the facilities necessary to bring the North Slope oil to lower 48 markets; and, collectively, both our financial advisors and the prospective lenders who have arranged the financing for most, if not all, major energy projects during the last two decades, and who are expected to arrange for and contribute significant amounts of the debt necessary to assure completion of the ANGTS.

We believe the ANGTS can and must be completed, and we welcome the opportunity to testify on behalf of the waiver proposal. We believe these hearings will amply justify the need for the proposed waiver and the need for expeditious, positive action. The waiver proposed by the President is not the same as that requested by Alaskan Northwest in June of this year. However, the modifications which have been made are acceptable to Alaskan Northwest as the minimum necessary to attempt to develop a private financing plan that will assure completion of the project.

My testimony today will provide a summary of the procedural background of the project, the construction to date, the major regulatory approvals and milestones, current activities, the estimated capital costs, the marketability of Alaskan gas, the benefits of the project to the U.S., the financing parameters, the regulatory approvals that still must be obtained, and a discussion of the waiver transmitted by the President.

I. PROCEDURAL BACKGROUND

A. Selection Process

In 1968 the largest single discovery of oil and natural gas ever found on the continent of North America was made at Prudhoe Bay on the North Slope of Alaska. The Prudhoe Bay field contains over twenty-six trillion cubic feet of recoverable natural gas, or 13 percent of all proven domestic gas reserves. Potential gas reserves in Alaska have been estimated at over 100 Tcf.

In view of the significant demand for natural gas in this country, it was recognized by all involved in the natural gas industry that construction of an economical transportation system for bringing Alaskan natural gas to the lower 48 states was imperative. This recognition led to the filing with the Federal Power Commission, the predecessor to the Federal Energy Regulatory Commission, of applications to construct such a transportation system.

1. FPC Proceedings

Between 1974 and 1976 three separate and competing gas company consortia, including Alaskan Northwest's predecessor, Alcan Pipeline Company, applied to the Federal Power Commission for authority to build a system to transport Alaskan gas to the lower 48 states. The three competing transportation proposals were consolidated for hearing and decision at the FPC and a massive formal evidentiary proceeding to determine the best proposal was initiated. During the course of the three years of hearings over 45,000 pages of testimony and over 1000 exhibits were compiled on all aspects of the design, financing, construction, and operation of two different overland pipeline routes through Alaska and Canada and an alternative Alaskan pipeline/liquified natural gas tanker system. Detailed consideration was given to such matters as gas reserves and deliverability, construction schedules and techniques, financing and cost of service, tariffs, marketability, geotechnical concerns, and socio-economic impacts. Additionally, comprehensive environmental impact statements were prepared by both the FPC staff and the Department of Interior. The FPC staff statement concluded that the most environmentally acceptable pipeline route was along the Alcan highway corridor and followed the 1975 issuance of a report to Congress by the Secretary of Interior, which concluded that an overland transportation system through Alaska and Canada for the transportation of North Slope gas reserves, including the

Alcan highway corridor route, was economically and technologically feasible. */

2. ANGTA

While the FPC was holding these hearings, Congress, recognizing the potential for delay at the FPC and the urgent need for Alaskan gas, enacted the Alaska Natural Gas Transportation Act of 1976. The purposes of the ANGTA were to provide a means for making a sound decision with respect to the selection of an Alaska Natural Gas Transportation System and, once the selection had been made, to expedite its construction and initial operation by expediting agency decisions, limiting and expediting judicial review of such agency decisions, and providing a mechanism by which the President could propose and Congress could waive laws that applied to the gas transportation system if necessary to permit the expeditious construction and initial operation of the system.

The ANGTA provided a six-part procedural framework to expedite a final decision on and construction of an Alaska Natural Gas Transportation System: (1) a FPC recommendation to the President based upon the record developed during the two years of evidentiary hearings on the three competing applications and briefs and comments to the Commission; (2) comments to the President on the FPC's recommendation by Federal agencies and others; (3) a Presi-

*/ U.S. Dept. of the Interior, Alaskan Natural Gas Transportation Systems: A Report to the Congress, Pursuant to Public Law No. 93-153 (1975).

dential decision on the best possible ANGTS; (4) Congressional consideration and approval by joint resolution of the President's decision; (5) expedited handling of all Federal authorizations necessary or related to the construction and initial operation of the approved ANGTS; and (6) waiver of provisions of law where necessary for the expeditious completion of the ANGTS.

3. FPC Recommendation

On May 1, 1977, the FPC recommended that the President select the system for transporting Alaskan natural gas from the two overland pipeline proposals across Canada to the lower 48 states. Each of these pipeline proposals, however, took a different route through both Alaska and Canada.

4. Federal Agency Comments

On July 1, 1977, comments by various Federal agencies were submitted to the President. Every important issue regarding every major element of the FPC's recommendation was exhaustively studied through this system of recommendation and comments.

- The Federal Energy Administration, predecessor to the Department of Energy, concluded that any of the proposed systems to transport Alaskan gas to the lower 48 would help ensure that natural gas shortages do not occur and would reduce our dependence on foreign energy resources. The FEA also concluded that net national economic benefits of an ANGTS would be substantially positive.
- The Department of the Treasury stated that an economically viable system to transport natural

- gas from Alaska to the lower 48 states could be privately financed.
- The Office of Coastal Zone Management of the Department of Commerce found that the adverse effects on native communities and local lifestyles would be less with the Alaskan Northwest route than with the other two competing proposals.
 - The Council on Environmental Quality concluded that the Alaskan Northwest proposal was "the most environmentally acceptable" of the three competing proposals.
 - The Department of the Interior found that the Alaskan Northwest route best minimized the environmental impact in Alaska if proper mitigative actions were taken.
 - The Department of State concluded that a viable option existed for the transportation of Alaskan natural gas across Canada.
 - The Justice Department report found that antitrust considerations did not militate against selection of any of the proposed transportation systems and that competitive considerations did not indicate the selection of one transportation system proposal in preference to the others.
 - The Department of Transportation concluded that "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." DOT also concluded that there was a "significant efficiency advantage to an all-pipeline system."

- A report by the Department of the Interior and the Department of Transportation found that the Alaskan Northwest proposal had the earliest expected delivery date and the least total cost.
- The Department of Defense found that a system to transport gas from Alaska to the continental United States was necessary to national security since it would enable the United States to reduce oil imports.

5. Canadian National Energy Board Selection of Alaskan Northwest Route

Following extensive hearings and deliberations, the Canadian National Energy Board on July 4, 1977 unanimously recommended certification of the Canadian portion of the route proposed by Alaskan Northwest's predecessor, Alcan, with several modifications. The NEB's decision was premised, in part, upon the environmental unacceptability of alternative routes.

Specifically, the NEB recommended certification of a Canadian segment consisting of approximately 2000 miles of pipeline to begin at the Alaska-Yukon border and proceed to a point near the James River, Alberta, where the pipeline would divide into the Eastern and Western Legs and proceed to delivery points near Monchy, Saskatchewan and Kingsgate, British Columbia. This route was

sponsored by Foothills Pipe Lines (Yukon) Ltd., which is owned equally by NOVA; an Alberta corporation, (formally The Alberta Gas Trunkline Company Limited) and Westcoast Transmission Company Limited.

6. Transit Pipeline Treaty

On August 3, 1977, the U.S. Senate ratified a treaty between the United States and Canada concerning "transit pipelines." This Transit Pipeline Treaty applies to the transmission by pipeline through one country of hydrocarbons not originating in that country for delivery in the other country.

The treaty prohibits authorities in either country from taking any measures which would impede, divert, redirect, or interfere with the transmission of hydrocarbons in transit. It also provides that each country will facilitate the expeditious issuance of permits, licenses, and other authorizations needed for the import or export through its territory of hydrocarbons through a transit pipeline.

The treaty mandates that public authorities in both countries not impose fees, duties, taxes, or other monetary charges on a transit pipeline not placed on similar pipelines not transiting the national border.

7. Agreement on Principles

On September 20, 1977, the United States and Canada signed an "Agreement on Principles Applicable to a Northern Natural Gas Pipeline" which established the terms and conditions by which the two countries would cooperate on a joint gas pipeline system for

the transportation of gas from Alaska and northern Canada. This Agreement provides for:

- prompt governmental approval of necessary permits, licenses and certificates;
- nondiscriminatory charges assessed in a just and reasonable manner;
- expeditious and efficient construction;
- sufficient capacity to meet the needs of U.S. and Canadian shippers;
- private financing and a variable rate of return;
- nondiscriminatory taxation;
- procurement practices on "generally competitive" terms;
- coordination and consultation between the governments and their respective regulatory authorities (the FERC and the NEB); and,
- each government to take measures necessary to facilitate timely construction, consistent with their respective regulatory requirements, and to seek all required legislative authority to facilitate expeditious construction and remove any causes of delay.

8. President's 1977 Decision

On September 22, 1977, the President issued his Decision and Report to Congress on the Alaska Natural Gas Transportation System selecting the Alaskan Northwest pipeline proposal and route as the most efficient, economic and cost effective means to bring Alaska gas to the lower 48 states. The Decision designated Alaskan

Northwest's predecessor, Alcan, to construct and operate the 745 mile pipeline segment commencing at the outlet of the Prudhoe Bay gas conditioning plant and extending to the Alaska-Yukon border; Northern Border Pipeline Company to construct and operate the U.S. Eastern Leg, consisting of approximately 1,130 miles of pipeline extending from Monchy, Saskatchewan to Ventura, Iowa for the transport of approximately 70 percent of the Prudhoe Bay gas to markets in the Midwestern, Eastern, and Southern portions of the United States; and Pacific Gas and Electric Company and its affiliate, Pacific Gas Transmission Company, to construct and operate the U.S. Western Leg, extending approximately 910 miles from Kingsgate, British Columbia to the San Francisco Bay area, for the transport of approximately 30 percent of the Prudhoe Bay gas to markets in the Western United States.

The President's Decision specifies certain terms and conditions that would apply to the ANGTS:

- Enforcement of the terms and conditions by a Federal Inspector;
- Approval or, in certain instances, review by the Federal Inspector of a comprehensive management plan, cost and schedule control techniques, final construction design, purchase procedures, labor management programs, quality assurance and control procedures, safety precautions, and environmental protections;
- Approval by the Federal Inspector of an affirmative action program for minority business enterprises;

- Use of a variable rate of return mechanism to provide incentives for project completion below budgeted costs;
- No tariff could be used which required payment from consumers prior to the completion and commissioning of the system; and
- Requirement that Alaskan gas producers have no equity, voting, or management position in the ANGTS.

The Decision also incorporated the complete text of the September 20, 1977 Agreement on Principles between the U.S. and Canadian governments.

9. Congressional Approval of Selection of Alaskan Northwest to Build the ANGTS

On November 2, 1977, Congress approved the President's Decision and the environmental impact statement prepared for the approved ANGTS. (H.J. Res. 621, Pub. L. No. 95-158) (Appendix A).

10. FERC Issuance of Conditional Certificates

Under Section 5(a)(2) of the ANGTA, the completion of the selection process in the U.S. required that the Commission issue certificates to those chosen to construct and operate the ANGTS. Accordingly, on December 16, 1977 the Commission issued conditional certificates to Alaskan Northwest's predecessor, Alcan, Northern Border Pipeline Company, and Pacific Gas Transmission Company for their respective segments of the ANGTS. */ In that order, the Commission identified several additional areas of

*/ The segment to be constructed within California by Pacific Gas and Electric Company is subject to the jurisdiction of the California Public Utilities Commission.

inquiry that needed to be addressed before final certificates could be issued. The Commission appointed an Alaskan Delegate to conduct proceedings on these areas on its behalf and to make recommendations with respect to their resolution.

11. Northern Pipeline Act

On April 12, 1978, the Canadian Parliament enacted the Northern Pipeline Act, which ratified the July 4, 1977 decision of the Canadian National Energy Board certificating the Canadian segment of the ANGTS and approved the construction and operation of that segment of the ANGTS. This Act also established the Northern Pipeline Agency to facilitate planning and construction of the Canadian pipeline, to implement the terms and conditions of the Agreement on Principles, and to monitor and minimize the social, economic, and environmental effects of the construction and operation of the Canadian segment of the ANGTS.

B. Related Matters

1. Natural Gas Policy Act

On November 9, 1978, the pricing of natural gas was modified by enactment of the Natural Gas Policy Act. That Act established the wellhead price of Prudhoe Bay gas at \$1.45 per MMBtu as of April 1977, subject to escalation for inflation; provided that price regulation of Prudhoe Bay gas will continue beyond January 1, 1985, when wellhead price regulation will end for certain other categories of gas; and allowed the delivered price of Alaskan gas to be rolled-in with the prices paid by U.S. pipelines

for gas from other sources for resale to distribution companies, industrial customers, and other end users.

2. Office of the Federal Inspector

Congress included a provision in the ANGTA requiring the appointment of a Federal Inspector and authorizing him to take the following actions to facilitate government monitoring of the ANGTS: establish a joint surveillance and monitoring agreement with the State of Alaska; monitor compliance with applicable laws and the terms and conditions of any applicable certificate, right-of-way, permit, lease, or other Federal authorization; monitor actions taken by the sponsors to assure timely completion of construction schedules and the achievement of quality construction, cost control, safety, and environmental protection objectives; subpoena information necessary to carry out his responsibilities; keep the President and Congress currently informed on any significant departures from compliance; and issue quarterly reports to the President and the Congress.

As previously indicated, the President's 1977 Decision provided the Federal Inspector with certain additional specific duties and responsibilities including the following: approval of the ANGTS sponsors' overall management plans; approval of insurance, bonding, and pre-qualification requirements for contractors; approval of the design of any segment prior to construction; and approval of affirmative action plans.

In addition, the Federal Inspector must also review the methods for supplying equipment, repair facilities, and spare

parts inventories to the execution contractors; collective

bargaining agreements and labor relations procedures; quality assurance and control procedures; proposed cost and schedule control techniques; and all plans for implementation of specific environmental safeguards.

3. Reorganization Plan No. 1

In May 1979, Congress allowed the President's Reorganization Plan No. 1 of 1979 to take effect, which transferred to the Federal Inspector from various Federal agencies the responsibility to enforce the terms and conditions imposed by those agencies in the permits, rights-of-way, or other authorizations issued with respect to the ANGTS. This responsibility includes compliance or oversight activities reasonably related to the enforcement process. In addition to enforcement functions, Reorganization Plan No. 1 charged the Federal Inspector with the responsibility to coordinate the expeditious discharge of permitting activities by all Federal agencies and to ensure their compliance with Section 9 of the ANGTA, which requires expeditious agency action on all ANGTS-related matters. The purpose of this provision was to establish a "one window" approach to the governmental approval process.

Finally, the Federal Inspector is acting in the role of the "senior official" contemplated in the Agreement on Principles with Canada, whose obligation is to consult with Canada concerning implementation of the principles relating to the construction and operation of the ANGTS.

II. ANGTS CONSTRUCTION TO DATE

Construction of approximately 1,000 miles of the ANGTS in the lower 48 states and approximately 500 miles in southern Canada, or 30 percent of the total pipeline mileage, is now either complete or underway. This portion of the system is being "pre-built" to permit the U.S. to import an additional 1.215 billion cubic feet per day of Canadian gas for transportation through these "pre-built" facilities, pending completion of the entire ANGTS and transportation of Alaskan gas.

Following a hearing process on the pre-build facilities lasting one and one-half years, including formal evidentiary hearings, the Commission in 1980 authorized Northwest Alaskan to import for transportation through the Western Leg pre-built facilities of the ANGTS up to 300,000 Mcf of natural gas per day purchased from Pan-Alberta Gas, Ltd. for delivery to southern California markets. Imports through these facilities commenced October 1, 1981.

In 1980 the Commission also authorized Northwest Alaskan and others to import through the Eastern Leg pre-built facilities of the ANGTS up to an average of 975,000 Mcf of natural gas per day purchased from Pan-Alberta for delivery to Eastern, Midwestern, and Southern markets. Imports through these facilities will commence in the fall of 1982.

The estimated cost of the pre-build facilities is approximately \$1.7 billion in 1980 dollars. Construction to date on the pre-build facilities has been on schedule and modestly under budget.

The related authorizations of the National Energy Board of Canada, both for the export of Canadian gas through the "pre-built" facilities and the construction of such facilities in Canada, were issued only after assurances were provided by both the Congress and the President that the ANGTS remained in the national interest and should be completed expeditiously and that steps would be taken in the U.S. to permit the Canadian sponsors to commence billing for the Canadian segment when it was completed and ready to operate.

Specifically, on July 18, 1980 President Carter sent a letter to Prime Minister Trudeau of Canada stating that the United States ". . . stands ready to take appropriate additional steps necessary for completion of the ANGTS." (Appendix B). With respect to the financing of the Canadian portion of the ANGTS, President Carter stated as follows:

. . . the reasonable concern of Canadian project sponsors that they be assured recovery of their investment in a timely manner if, once project construction is commenced, they proceed in good faith with completion of the Canadian portions of the project and the Alaskan segment is delayed. In this respect, they have asked that they be given confidence that they will be able to recover their cost from U.S. shippers once Canadian regulatory certification that the entire pipeline in Canada is prepared to commence service is secured.

and concluded that:

. . . I accept the view of your government that such assurances are materially important to insure the financing of the Canadian portion of the system.

- 18 -

I would be prepared at the appropriate time to initiate action before the U.S. Congress to remove any impediment as may exist under present law to providing that desired confidence for the Canadian portion of the line.

In July 1980, Congress passed a concurrent resolution (S. Con. Res. 104) expressing the "... sense of the Congress that the System remains an essential part of securing this Nation's energy future and, as such, enjoys the highest level of congressional support for its expeditious construction and completion by the end of 1985." (Appendix C). This Congressional expression of support provided the Canadian government with a critical assurance that construction of the entire ANGTS remained a U.S. priority. Support for the ANGTS by both the President and the Congress was necessary before the Canadian government would proceed to authorize the export of Canadian gas in support of the pre-built portions of the ANGTS.

III. OTHER MAJOR REGULATORY APPROVALS ALREADY SECURED AND SIGNIFICANT MILESTONES

Progress has also been made on the non-pre-build portions of the ANGTS in the four years since issuance of the President's 1977 Decision and Congressional ratification of that Decision. Numerous regulatory approvals required -- both in the U.S. and Canada -- have been issued and other significant milestones have been achieved.

A. Partnership Agreement

The Alaskan Northwest Natural Gas Transportation Company partnership was formed effective January 31, 1978 by subsidiaries

of six major natural gas companies to own the Alaskan pipeline segment of the ANGTS. Since then, four other major natural gas companies, through their subsidiaries, have joined the partnership, bringing the membership to a total of ten companies. Thus, the Alaskan Northwest partnership is presently composed of affiliates of the following U.S. and Canadian natural gas companies: Northwest Alaskan Pipeline Company - an affiliate of Northwest Pipeline Corporation and subsidiary of Northwest Energy Company; American Natural Alaskan Company - an affiliate of Michigan Wisconsin Pipe Line Company and a subsidiary of American Natural Resources Company; Calaska Energy Company - an affiliate of Pacific Gas Transmission Company and a subsidiary of Pacific Gas and Electric Company; Northern Arctic Gas Company - a subsidiary of InterNorth Inc., of which Northern Natural Gas Company is a division; Pacific Interstate Transmission Company (Arctic), an affiliate of Pacific Interstate Transmission Company and a subsidiary of Pacific Lighting Corporation; Pan Alaskan Gas Company - an affiliate of Panhandle Eastern Pipe Line Company, a subsidiary of Panhandle Eastern Corporation; Columbia Alaskan Gas Transmission Corporation - an affiliate of Columbia Gas Transmission Corporation, a subsidiary of The Columbia Gas System, Inc.; Tetco Four, Inc., - an affiliate of Transwestern Pipeline Company and Texas Eastern Transmission Corporation, a subsidiary of Texas Eastern Corporation; Trans-Canada Pipe Line Alaska Ltd. - an affiliate of TransCanada PipeLines Limited; and United Alaska Fuels Corp. - an affiliate of United Gas Pipe Line Company, a subsidiary of United Energy Resources, Inc.

The combined assets of these partners and their parents and affiliates exceeds \$40 billion. Their total 1980 gas sales were in excess of 7.8 Tcf, or 56 percent of all gas sales by major interstate pipelines in that year. As illustrated in the map attached as Appendix D, the affiliates of the partners transport gas ultimately distributed in 48 of the 50 states.

Alaskan Northwest, as a General Partnership under the Uniform Partnership Act of the State of New York, will finance, own, construct, and operate the Alaskan facilities that are part of the ANGTS.

Northwest Alaskan Pipeline Company has been designated operating partner by the partnership agreement with responsibilities for day-to-day activities necessary to plan, design, construct, and operate the Alaskan facilities.

The partnership is the successor in interest to Alcan Pipeline Company under ANGTA, the President's Decision, and related Federal Power Commission and Federal Energy Regulatory Commission orders, pursuant to a Commission order of June 30, 1978, which transferred the conditional certificate of public convenience and necessity from the original certificate holder, Alcan, to the Alaskan Northwest partnership. This order also found the terms and conditions of the partnership agreement consistent with the requirements of ANGTA and the President's Decision.

B. Incentive Rate of Return

In a normal pipeline certificate application, the FERC reviews the applicant's estimate of construction costs in deter-

mining whether to issue a certificate of public convenience and necessity authorizing the construction and operation of the proposed pipeline. Once a certificate is issued and construction completed, all costs are reviewed for prudence, and all prudent costs are then included in the pipeline's rate base. The pipeline earns its approved just and reasonable return on the investment deemed prudent, even if actual costs exceed the estimate approved by the Commission at the time of certification.

The President's Decision imposed a requirement in addition to the Commission's normal certification cost review and prudence determination -- establishment of a variable rate of return mechanism which would increase the ANGTS sponsors' allowable return for cost underruns or decrease their return for cost overruns. Unlike the normal pipeline certification process, under the President's guidelines the ANGTS sponsors would be penalized for cost overruns even if such additional costs were found prudent.

Pursuant to the mandate of the President's Decision to devise a variable rate of return mechanism, the FERC on May 8, 1978 commenced a rulemaking which culminated in the issuance of its Orders 31 and 31-B on June 8 and September 6, 1979. These orders established an incentive rate of return (IROR) mechanism applicable to the Alaskan Northwest and Northern Border segments governing the rate of return that the ANGTS sponsors of those segments may earn on project investment.

The basic elements of the Commission-approved IROR mechanism are the Cost Performance Ratio and an associated IROR schedule of

rates of return. The Cost Performance Ratio is the ratio of Actual Capital Costs (derived from the final construction costs) to the Projected Capital Costs (derived from the FERC-approved Certification Cost Estimate, as modified by the Federal Inspector-approved Final Design Cost Estimate, which is the total estimated cost at the start of construction and any approved scope changes during construction). The Cost Performance Ratio is intended to measure how well project management has succeeded in controlling the costs of the project. An IROR schedule specifies an allowed rate of return for each possible Cost Performance Ratio. The lower the value of the Cost Performance Ratio the higher will be the allowed rate of return, and vice versa. The lowest return is referred to as the Marginal Rate of Return, which is 8 percent. Thus, the Alaskan Northwest partnership will earn only 8 percent return for each equity dollar of cost overrun above the government-established target cost estimate. Given today's interest rates, the 8 percent return is truly a penalty rate.

The proceeding to determine the initial target cost estimate to be used in the later establishment of the sponsors' actual equity return is now pending at FERC.

C. FERC Approved Gas Tariffs

In addition to the IROR mechanism, Commission Orders 31 and 31-B also approved Alaskan Northwest's and Northern Border's pro forma tariffs for the transportation of natural gas on behalf of the shippers of Alaskan gas. These approved tariffs specify

the services to be performed, the method for computing the amount of payment for those services, and all related terms and conditions.

The tariffs are based on the concept of a monthly "cost-of-service" charge, which provides that the total charges to all shippers will equal the actual costs to Alaskan Northwest and Northern Border of performing the transportation service, including an allowed return on invested capitals. Pursuant to the tariffs, service agreements will be entered into by Alaskan Northwest and each individual shipper and by Northern Border and the Eastern Leg shippers. */

The following key provisions are included in the Alaskan Northwest and Northern Border tariffs approved by the FERC:

1. Billing Commencement Date and Minimum Bill

The FERC ruled that billing commencement for Alaskan gas can begin when all ANGTS pipeline segments -- the Alaskan pipeline segment, the Canadian pipeline segment, the U.S. Eastern Leg, and the U.S. Western Leg -- are completed, tested, and proved capable of operating. Thus, under the existing approved tariffs, billing can in effect commence before the gas conditioning facility is operational and/or before gas is available for transport. The rate to be charged upon completion and commissioning is limited to a "Minimum Bill" which permits recovery of (i) actual operating and maintenance expenses, (ii) current taxes, and (iii) debt

*/ Western Leg shippers will enter into service agreements with PGT and PG&E. Alaskan gas tariffs for the Western Leg were not considered in Commission Orders 31 and 31-B, because the Western Leg is not subject to the IROR mechanism.

service including interest and scheduled debt retirement. This level of reduced billing (which does not include a return on, or of, equity investment) would continue until gas is tendered for shipment and transportation service commences.

2. Interim Rate

The FERC established an Interim Rate to commence with the initial delivery of gas through the system, which terminates on the earlier of the first year of operation or upon the attainment of design capacity throughput, whichever occurs earliest. The level of the Interim Rate is to be computed on the basis of the projected cost of service for the first 12 months of operation divided by the system design capacity throughput. The Interim Rate is to be no lower than the Minimum Bill then applicable.

3. Service Interruption

The tariff as approved by the FERC provided for three categories of service interruption:

i) More than a 10 percent reduction in service --

If Alaskan Northwest or Northern Border is unable to accept and transport at least 90 percent of the Alaskan gas tendered to it for any one month, charges to shippers would be reduced for return on equity and associated income taxes proportional to the percentage of volumes tendered but not transported.

ii) Less than a 10 percent reduction in service --

If Alaskan Northwest or Northern Border is able to transport more than 90 percent of the gas tendered by the

shippers, there would be no reduction in charges to shippers.

(ii) Extended total service interruption -- In the event of a total cessation of service for 30 consecutive days, the segment responsible for the service interruption would be permitted to continue to collect that portion of its charges attributable to equity costs (i.e., that portion of depreciation expense not necessary for debt service and associated taxes), subject to refund pending determination of the cause of the interruption. However, under no circumstances would debt service ever be impaired.

D. Pipe Size and Pressure

Following application by Alaskan Northwest, a report by the Commission's Alaskan Delegate and comments by all interested parties, the Commission on August 6 and October 15, 1979 issued orders establishing the design specifications and initial capacity of the Alaskan segment of the ANGTS. These specifications included the pipe diameter and maximum operating pressure of the pipeline, which largely determine the capacity throughput of the line and the ability of the gas stream to carry natural gas liquids. Based on its review of the report by its Alaskan Delegate and the comments of the parties, the Commission determined that the Alaskan pipeline segment of the ANGTS would be built with 48-inch diameter pipe, have a maximum operating pressure of 1260 psig, and have compressor station size and spacing for an initial capacity of 2.0 to 2.4 billion cubic feet per day but

capable of expansion to an average daily volume of 3.2 billion cubic feet per day. The FERC orders were affirmed on appeal on January 3, 1980 in Earth Resources Company of Alaska v. FERC, 617 F.2d 775 (D.C. Cir.).

E. Federal Right-of-Way in Alaska

Since the majority of the lands traversed by the Alaska pipeline segment of the ANGTS is controlled by the Federal government, it was necessary to obtain a pipeline right-of-way from the Department of Interior. On August 19, 1980, the Department of Interior stated its intent to grant a right-of-way to Alaskan Northwest to cross Federal lands in the State of Alaska. Pursuant to Section 28(w)(2) of the Mineral Leasing Act of 1920, the Department of Interior requested that Congress waive the prescribed 60-day review period, which was done. On December 1, 1980 the right-of-way grant was formally issued by the Department of Interior.

The right-of-way contains numerous terms and conditions with which Alaskan Northwest must comply. In addition to extensive environmental restrictions, two of the most important stipulations are the requirement that Alaskan Northwest assist in the training of Alaskan natives for employment on the project and the requirement that the ANGTS be separated from the existing Alyeska oil line by 200 feet. The Department of Interior had previously required that the sponsors of the Alaska pipeline segment enter into a mutual indemnification agreement with the owners of the

Alyeska oil pipeline for damages that may occur on the respective rights-of-way. Such agreement was executed on November 26, 1980.

F. Environmental Terms and Conditions

On February 26, 1980, the Commission incorporated two general conditions into the conditional certificates of public convenience and necessity which had been issued to the ANGTS sponsors by Commission order of December 16, 1977. These conditions are applicable to all lands crossed by the pipeline, regardless of ownership. The first condition requires compliance with the Commission's regulations that establish guidelines for the location, clearing, and maintenance of pipeline rights-of-way and sites for related facilities. The second condition provides for the issuance of stopwork orders by the Federal Inspector.

G. Equal Employment Opportunity/Minority Business Enterprise

On May 7, 1980 the Department of Interior, pursuant to Section 17 of ANGTA and Condition I-11 of the President's Decision, promulgated final rules to ensure that no person will be excluded from participating in any activity connected with the construction and operation of the ANGTS on the basis of race, creed, color, national origin, or sex. On May 8, 1980 the Commission issued an order attaching the above-referenced rules to the ANGTS sponsors' conditional certificates of public convenience and necessity.

H. Delegations to and Approvals by the Federal Inspector

On March 31, 1980 the Commission delegated to the Federal Inspector the authority to attach terms and conditions to the certificates of public convenience and necessity issued to the ANGTS sponsors to implement the requirements of the National Historic Preservation Act of 1966 and the Preservation of Historical and Archaeological Data Act Amendments of 1974.

In May 1980 Alaskan Northwest filed its overall management plan with the Federal Inspector, in accordance with Condition I-1 of the President's Decision. This plan was approved in principle by letter dated June 6, 1980 subject to submission of supplemental support of specific details of that plan.

By order issued December 19, 1980 the Commission delegated to the Federal Inspector the responsibility to determine the prudence of expenditures to construct the ANGTS.

On August 13, 1981, the Federal Inspector approved Alaskan Northwest's Affirmative Action Plan, which covers both equal employment opportunity and minority and female business goals and timetables.

I. Cooperative Agreement Among Alaskan Northwest, the Principal North Slope Producers, and the State of Alaska

After extensive negotiations, Alaskan Northwest and the major Prudhoe Bay gas producers -- Arco, Exxon, and Sohio -- entered into a Cooperative Agreement in June 1980 relating to the design and engineering of the Alaskan gas pipeline and the related gas conditioning plant. This document was reviewed by

the Department of Justice and the Department of Energy prior to its execution. The Alaskan Northwest partnership and the producers stated their joint intention to work together to expedite the design, engineering, and cost estimation of the Alaskan pipeline and gas conditioning facilities and to develop a financing plan in such a time and manner that all necessary government approvals could be obtained and facilities completed at the earliest practicable date. The Cooperative Agreement, to which the State of Alaska was also a signatory, became effective on June 20, 1980 and established a jointly funded, jointly managed Design and Engineering Board to continue the design, engineering, and construction planning of the Alaska pipeline segment and to begin the design and engineering of the gas conditioning plant necessary to prepare the gas for pipeline transmission.

Under the Cooperative Agreement, the producers agreed to contribute approximately \$90 million to the design and engineering undertaking prior to further contributions by the Alaskan Northwest partnership. This contribution level was reached during January 1981. Thereafter, the Alaskan Northwest partnership and the producers have been contributing on a 50-50 basis toward design and engineering work for the Alaska gas pipeline and the conditioning plant. To date over \$550 million has been spent in this effort alone.

The State of Alaska has thus far participated in monitoring the design and engineering effort as an observer. The State can,

however, elect to participate actively in the financing and management of the design and engineering effort at any time.

IV. CURRENT ACTIVITIES

A. Alaskan Pipeline Segment

In 1978 Alaskan Northwest selected Fluor Engineers and Constructors, a subsidiary of Fluor Corporation, as its Project Management Contractor. Fluor was selected on the basis of its proven record as one of the world leaders in project management and arctic engineering and contracting.

Alaskan Northwest and Fluor have assembled a team of over 400 highly experienced cost estimators, cost engineers, design and pipeline engineers, and environmental and other experts representing every discipline necessary for estimating, designing, engineering, constructing, and controlling the cost of a project of the magnitude of the ANGTS. The companies working with Alaskan Northwest and Fluor in this effort include Gulf Interstate Engineering, Michael Baker, Jr., Inc., Northern Technical Services, Inc., and R&M Consultants, Inc. Also involved are execution contractors who participated in the construction of the Alyeska oil pipeline, as well as many other multi-billion dollar construction projects in Alaska and Canada, including Morrison-Knudsen, Reading & Bates Construction Company, a subsidiary of Reading & Bates Corporation, Peter Kiewit and Sons, Curran Houston Inc., a subsidiary of Sedco Inc., and Green Construction Company.

Collectively, Alaskan Northwest, Fluor, and these consultants have spent over three years and more than 1,000,000 workhours in the design and engineering of the Alaskan pipeline segment, including extensive, highly technical field programs to ensure the correct design, and over one year in preparing a detailed capital cost and schedule estimate for this segment. The final Alaskan pipeline design and engineering work is approximately 34 percent complete, and preconstruction field programs will be approximately 72 percent complete by the end of this year.

1. Design and Field Programs

The ANGTS will be designed and constructed as a chilled, high pressure, buried pipeline system utilizing traditional and well-established techniques. Certain problems are encountered in the far north which require special attention due to the severe climate and unusual soil conditions. However, with the design and engineering work accomplished to date, no insurmountable technical problems have been identified. Hence, the remaining challenge is to determine the conditions to be encountered and to develop the most cost-effective design and construction mode to complete the system in a safe and cost-effective manner.

During the development of the design, numerous engineering review sessions were held between Alaskan Northwest, Fluor, their consultants and leading engineers from several key Federal agencies -- the United States Geological Survey, the Corps of Engineers, and its Cold Regions Research and Engineering Laboratories.

These technical experts, along with engineering specialists from Alyeska, have provided an additional source of expertise which adds significantly to the project effort, especially in the critical areas of frost heave design and geotechnical/geothermal requirements.

An additional source of technical expertise comes from the producer and pipeline companies participating in the project. Engineering specialists in soil mechanics, geotechnical, and geothermal disciplines have been made available to Northwest Alaska for special engineering assignments. The Foothills engineering group in Canada is another important source of expertise. The exchange of technical data with Foothills has been quite valuable. The Canadians have considerable experience in arctic engineering dating back to the early 1950s. Significant areas where the project is benefiting from Canadian participation is in frost heave, fracture control, and the development of new construction methods. Foothills has operated a frost heave test site facility near Calgary for several years and has just concluded an extensive full scale pipe burst testing program, part of which was carried out to Alaskan Northwest specifications in order to determine optimum fracture control design. Additionally, late last year Foothills initiated field testing of materials and construction methods at their Quill Creek facility in the Yukon. Aside from the testing of construction modes, this facility was designed to verify insulation systems and construction methods, including development of new equipment.

a. Frost Heave and Other Testing

Of all design requirements, the development of suitable methods for frost heave mitigation is probably the most demanding. Much of the soils in Alaska are characterized by permafrost. The pipeline will operate in a chilled state in Alaska and part of Canada to avoid damage to these soils from melting of the frost in the soil. However, the chilled pipeline must be designed to avoid or withstand frost heave. Frost heave is the phenomena where unusual stress may be placed on the pipeline causing potential movement or heaving due to growth of a frost bulb around the pipeline caused by the cold pipeline freezing water which has migrated to the pipeline from surrounding soil.

A full scale field testing installation, comprised of ten different modes or types of pipe sections, was completed at Fairbanks in the fall of 1979. The Fairbanks site was selected because the soil type prevalent in this area is considered by geotechnical specialists to be a worst case situation. The Fairbanks frost heave test site has been in operation since October 1979. The results to date have been most encouraging, with the magnitude of heave experienced being approximately one half of the amount predicted.

In recognition of the value of full scale testing, a decision was made in 1980 to install six additional frost heave test sites, which sites were selected for the purpose of providing the widest range of soil types and silt content attainable. Installation work at the six sites was completed in the first quarter of 1981,

and operational start-up is in progress at all sites. Initial results from the first site to become fully operational are comparable to the data obtained from the Fairbanks installation.

A similar field testing approach is being utilized in other specialized engineering areas, e.g., the development of a suitable pipe insulation system, fracture arrest, and soil stability. The expertise needed to develop satisfactory methods for handling these requirements has been assembled by the project as a means of assuring that the most cost effective design is achieved.

b. Site Specific Requirements

Another important element of the project engineering effort involves site specific requirements. For example, almost one-third of the pipeline location in Alaska is either parallel and adjacent to the Alyeska oil pipeline or the State Haul Road, which connects central Alaska with Prudhoe Bay and the North Slope. To establish a suitable location in these areas the design must give adequate consideration to the adjacent structures.

In some cases, where problems exist due to terrain, cross-drainage, slope stability, or other external factors, the design must be modified. Quite often, the most cost effective solution is to change the gas pipeline alignment so that the problem can be completely avoided.

The necessary interaction between the Alaskan Northwest/Fluor project group, Alyeska, and State/Federal representatives can best be described with an example. The original pipeline alignment included over 60 crossings of the Alyeska oil pipeline system.

Because of the problems involved in several of these crossings, route studies were conducted and the number of crossings reduced to 23. Subsequent discussions with Alyeska engineers have resulted in resolving the design criteria for most of these crossings.

Detailed working sessions have been initiated with both Alyeska and the State for the purpose of resolving all matters pertaining to proximity of the oil pipeline, State Haul Road, and the gas pipeline. These working sessions will involve special engineering groups, comprised of Alaskan Northwest/Fluor engineering, environmental, and construction personnel and engineers and other disciplines from Alyeska and the State. Each working group will have specific tasks assigned and participation will be limited to those who have the knowledge and experience required to resolve specific engineering problems.

c. Environmental Concerns

Equally important, the development of the engineering design for the project includes direct participation by the Alaskan Northwest/Fluor environmental affairs group. Their representatives are working with project design engineers on a continuous basis to assure that environmental requirements are incorporated at an early stage into the development of the design. The early recognition of environmental requirements in the design process will provide a better basis for alleviating sensitive environmental concerns and for obtaining government approval of the basic design prior to the commencement of construction.

d. Alyeska Experience

The risk of cost overruns in the construction of the Alaskan ANGTS facilities has been lessened as a result of completion of the Alyeska oil pipeline. The following points are noted:

- Both the similarities and differences of the two projects are such that the uncertainties, risks, and potential for cost increases to which the gas line will be exposed are considerably less than was the case for the oil line.
- Today, much more is understood about the process of building a large diameter pipeline in Alaska -- from a technical point of view and with regard to management, government involvement, infrastructure, and the supply and demand for critical manpower and equipment resources.
- Transporting chilled gas through permafrost is inherently easier than transporting heated oil in the arctic.
- The oil line was a pioneer project, built across a tremendous expanse of land that had nothing in the way of support infrastructure, such as highways to the job site and communications systems. To a large extent, the gas line will take advantage of this existing infrastructure. Furthermore, the entire infrastructure in the State of Alaska is now significantly more supportive than what existed in 1971, and much

improved technical, managerial, and construction capability exists in Alaska today.

2. Certification Cost Estimate

Simultaneous with the design and engineering of the Alaskan pipeline segment, the Alaskan Northwest/Fluor team has prepared a detailed, fifty-volume cost and schedule estimate for FERC review in accordance with the mandate of the President's Decision and FERC orders implementing the Decision. This estimate was filed with the FERC on July 1, 1980, as revised on October 27, 1980. The total estimate is comprised of a base engineering estimate of the cost of construction, a normal contingency allowance, plus an estimate of the possible cost impacts from abnormal events.

a. Estimate Highlights

The base engineering estimate includes the management, engineering, procurement, construction, testing, and start-up for the Alaskan pipeline segment of the ANGTS from the outlet of the gas conditioning plant at Prudhoe Bay, Alaska to the Canadian (Yukon) Border. The following are the highlights of major facilities.

-- Compressor Stations - Four stations containing one 25,000 horsepower compressor each and three with two such units. Each station will also have a refrigeration system to chill the gas.

-- Metering Stations - One station at Prudhoe Bay, which is combined with the plant's metering facilities, and one at the Yukon Border.

-- Operations and Maintenance Facilities - One leased facility at Fairbanks and three other facilities located at compressor stations.

-- Temporary Facilities - camps, airfields, warehousing, freight, and office space.

-- Communications and Supervisory Controls Systems -

Utilizes existing and new facilities, land-based and satellite.

-- Pipeline - 745 miles of arctic grade 48" main line pipe. It is planned that pipe will be purchased in 40-foot lengths, and a central Fairbanks facility will be used for all double jointing (welding two 40-foot lengths of pipe into an 80-foot length), coating, and insulation.

-- Project Directorate - All Northwest Alaskan activities; Project Management Contractor management and consultants' activities; pre-certification efforts including cost sharing studies; third-party monitoring (State of Alaska, Department of the Interior, and Federal Inspector), and permits, insurance, and taxes.

b. Estimate Components

The base engineering estimate equals \$7.06 billion, excluding all contingencies and an amount covering abnormal or unexpected events. In accordance with standard cost estimation practice, a contingency of 12 percent was then added to the base estimate to account for normal estimating uncertainty concerning accuracy of

material quantities and prices, human productivity assumptions, equipment reliability assumptions, normal schedule variances, and the accuracy of bid specifications based on current project definitions.

The normal contingency was developed by segregating the base cost estimate into individual risk items and establishing variance ranges for each item. This data was statistically examined on a computerized risk analysis model.

In addition to these estimating uncertainties, Alaskan Northwest faces risks arising from abnormal or unexpected events that could affect project costs. Under the FERC approved IROR procedure, the risks posed by these abnormal events and the resulting potential costs are to be quantified to aid the FERC in establishing a target cost for the ANGTS for IROR purposes. This analysis was also performed to establish a target cost for financing purposes to determine the possible range of cost increases due to events not subject to Alaskan Northwest's control.

Alaskan Northwest carefully analyzed the potential cost impact arising from 36 abnormal or unexpected events, such as strikes and work slowdowns, abnormal weather, unanticipated pipeline mode changes, unanticipated changes in domestic and world markets for labor, materials, and services, unanticipated environmental conditions, contractor failure to perform, contractor bankruptcy, and others.

After the 36 abnormal events were identified, experts from Northwest Alaskan, Fluor, and selected outside consultants defined

the probability of occurrence of each event classified as abnormal.

The same experts also evaluated the range of potential cost impacts if the event did occur. The assumptions in the engineering estimate which related to the event were reviewed, and values were established to represent the incremental costs of each event.

The cost ranges and probabilities for the 36 events were then used to determine the total potential impact of abnormal events on project costs. A computer simulation was employed to determine the range, distribution, and expected value of costs resulting from abnormal events. This simulation consisted of 1000 random samplings of each event. The results of this analysis indicate that such events could increase project costs by as much as \$2.28 billion.

The Alaskan Northwest cost estimate, including the base estimate, contingency, and abnormal events, totals \$10.2 billion in 1980 dollars excluding certain revisions to be filed shortly with the FERC and excluding finance charges, and has been the subject of intensive and in-depth analysis by the FERC staff, the Office of the Federal Inspector, the State of Alaska, and the three North Slope producers over the past fifteen months. The Federal Inspector retained Williams Brothers Engineering Company to assist in this effort. A final report on such estimate has been issued jointly by the FERC's Alaskan Delegate and the Division Director of the Office of the Federal Inspector and noticed for comment by the FERC. All comments have now been filed with the FERC, and a decision is expected to be issued in the near future.

B. Prudhoe Bay Gas Conditioning Plant

1. Design

The gas conditioning plant is being designed and engineered by the Ralph M. Parsons Company of Pasadena, California, which is the Project Management Contractor for the conditioning plant. Parsons is eminently qualified to design and engineer the plant, having more engineering experience at Prudhoe Bay than any other firm. In this effort, Parsons works closely with and under the supervision of Northwest Alaskan, which has been designated the operator under the terms of the Cooperative Agreement between the sponsors and major North Slope producers and which, as such, has responsibility for the day-to-day activities necessary to engineer and design the plant.

The plant will receive gas from the Prudhoe Bay producing areas and will condition the gas to pipeline quality by removing impurities, carbon dioxide, and heavier hydrocarbons. Because the pipeline will be operated as a chilled, high pressure line and because the first compressor station is at about milepost 80 of the pipeline, the plant will also refrigerate the gas to 30° F. and compress the gas to 1260 psig. The plant design is based on the SELEXOL process, a patented process licensed by the Allied Corporation (formerly Allied Chemical Corporation), for removing carbon dioxide and heavy hydrocarbons.

In addition to the conditioning facility, the plant will consist of an operations center, a 288-bed residential facility, a crude cooling unit, a river water intake station, a reservoir

intake station, a flare and waste water lagoon area, construction pads, access roads, and miscellaneous pipelines.

Most of the plant conditioning facilities will be prefabricated as modules at construction sites on the West Coast and then shipped to Prudhoe Bay by ocean-going barges, where they will be assembled.

Parsons has performed a great deal of the design, engineering, planning, and cost estimating for the plant, having expended over 400,000 workhours to date in this regard.

The FERC environmental staff has prepared both a draft and a final environmental impact statement, which conclude that reconstruction and operation of the plant at the Prudhoe Bay site are environmentally acceptable. The environmental impact statement has fulfilled all the National Environmental Policy Act requirements.

2. Cost Estimate

The cost and schedule estimates for the plant are similar to those and patterned after those submitted to the FERC for the Alaska pipeline segment. The target cost for the plant is composed of a base engineering estimate and a contingency. The base engineering estimate has been cast into a work breakdown structure similar to that developed for the Alaska pipeline segment for cost control purposes. The contingency is also similar to that for the Alaska pipeline segment, except that it also covers cost impacts from abnormal events as well as normal estimating uncertainty.

Examples of abnormal events that could cause the plant cost to

overrun estimated costs are abnormally severe weather affecting fabrication sites, loss of a barge during the voyage to Prudhoe Bay, and a major fire at the plant construction camp. The total cost estimate for the plant, in 1980 dollars, is \$3.6 billion excluding financing charges, but including contingency for the events described above.

C. Construction Coordination and Logistics
for the Plant and Pipeline

Coordination of the design and engineering of the Alaska pipeline segment and the gas conditioning plant is performed by Northwest Alaskan as operator under the Alaskan Northwest partnership agreement and under the Cooperative Agreement. A Northwest Alaskan project team is located at the Irvine, California facilities of Fluor and works very closely with the PMC in connection with the design, engineering, and construction of the Alaska pipeline segment. A Northwest Alaskan project team is also located at the Pasadena, California facilities of Parsons where the plant is being designed and engineered.

The schedules for both the Alaska pipeline segment and plant are coordinated by Northwest Alaskan, with key dates and schedule requirements of the plant tied to the completion date for the Alaska pipeline segment. Meetings of the Technical Committee of the Design and Engineering Board, composed of representatives of the pipeline sponsors and producers, are held monthly. The Technical Committee receives progress reports on the Alaska pipeline segment and plant and makes recommendations to the Board on major issues affecting the pipeline and plant.

In addition, in order to eliminate or minimize delays or cost increases resulting from competition for resources between the Alaska pipeline segment and plant, a Resource and Logistics Committee was formed from members of the Northwest Alaskan pipeline and plant project management teams to identify areas where activities on one project could have an adverse impact on resources necessary for the other, such as craft labor availability, material acquisition, and transportation services.

To further reduce the potential for delays in the completion of the Alaska pipeline segment and plant, construction and material acquisition schedules have been planned to eliminate bottlenecks. The more difficult construction on the Alaska pipeline segment, such as laying pipe over Atigun Pass and major river crossings, will begin in advance of less difficult construction. For both the Alaska pipeline and plant segments, equipment with long lead times, such as compressors and refrigeration systems, must be ordered as soon as possible in order to avoid delay in the delivery of such equipment to the field. More particularly, plant equipment must be fabricated in the lower 48 states on a schedule that will assure it reaches Prudhoe Bay during the approximately six week period each summer that the Beaufort Sea is not ice bound. Additionally, 75 percent of the mainline pipe will be stockpiled in Alaska prior to the commencement of construction.

In the event that construction problems should arise, provisions have been made in the cost estimate for the Alaska pipeline segment, which is being reviewed by the FERC, and in the target

cost estimate for the plant, which will shortly be submitted to the Commission, for additional costs necessary to overcome the problems. Thus, even if problems arise, notwithstanding our efforts to minimize the likelihood of their occurrence, the project has been planned and engineered in such a manner that they should not cause serious or extended delays in project completion.

V. ANGTS CAPITAL COSTS

The ANGTS will be constructed in two phases. The first phase, which is referred to as the pre-build, has been partially constructed and will be completed in 1982. When completed, this phase will include 1,500 miles of pipeline or about 30 percent of the total pipeline system. However, it represents only about 8 percent of the total capital costs in 1980 dollars. The second phase involves completion of the remaining portions of the ANGTS by November 1986, assuming expeditious legislative and regulatory action by the second quarter of 1982.

Based upon this schedule, the total system is estimated to cost \$17.5 billion in 1980 dollars excluding contingencies and financing costs. Contingencies have been added for possible normal estimating errors and for abnormal events which may occur. These contingencies and allowances for abnormal events, which vary for the conditioning plant and each major pipeline segment, total \$5.5 billion in 1980 dollars and represent 31 percent of the base estimate. The 1980 dollar estimate of \$23.0 billion,

including contingencies, consists of \$3.6 billion for the conditioning plant, \$10.8 billion for the Alaska pipeline segment, \$5.8 (U.S.) for the Canadian segment, and \$2.8 billion for the Eastern and Western legs in the lower 48 states. Of the \$23.0 billion estimate, the pre-build phase of construction is estimated to cost \$1.7 billion and the second phase construction is estimated to cost \$21.3 billion.

Because these estimates are in 1980 dollars, it is necessary to add inflation and interest costs to estimate the amounts that must be financed. We have used a range of inflation and interest rates for this purpose from 7 percent to 11 percent and 10 percent to 14 percent respectively in the United States. The resulting range of cash requirements to construct the total system is \$38.7 billion to \$47.6 billion. The pre-build phase is estimated to be completed for \$2.4 to \$2.7 billion. Therefore, the net required amount to finance the remaining ANGTS facilities is \$36.3 to \$44.9 billion.

VI. MARKETABILITY

In order to determine the economic viability of the ANGTS, it is necessary to first estimate the delivered cost of the gas and then compare that to the cost of alternative fuels. The delivered cost of Alaskan gas will include all fixed and variable costs such as the wellhead cost of gas, depreciation, operating and maintenance costs, all taxes, return on equity and interest costs. These costs, when deflated to 1980 dollars, average from

\$4.65 to \$5.10 per million Btu's during the first twenty years of the project. Stated in constant dollars, this cost declines dramatically during the life of the project. For example, the delivered cost ranges from approximately \$9.20 to \$9.35 per million Btu's in the first year, and from approximately \$2.75 to \$3.20 per million Btu's in the twentieth year. This dramatic decline occurs because of the amortization of the investment over the project life. Therefore, in real dollars, the cost of delivering Alaskan gas to consumers will decline significantly over the project life. This declining real cost is the basis for the bargain that Alaskan gas represents for the nation and should insure its marketability over the life of the project.

The factors which will be most influential in continuing a market for Alaskan gas are increasing constant dollar world oil prices, the demand for and declining availability of natural gas supplies in 1986-87 and thereafter, and the method by which Alaskan gas is priced to compete with oil.

The long term outlook is for an increase in real world oil prices. In an environment of rising constant dollar prices for oil, Alaskan gas will become increasingly attractive compared both to oil and to alternative gas supplies whose prices escalate with oil. Rising oil prices tend to stimulate the demand for gas at the expense of oil. Since a major portion of existing industrial and power generation plant capacity is designed for both oil and gas firing, rising oil prices quickly shifts demand to gas. In addition, prices for most supplementary gas supplies -- such as

Mexican and Canadian gas -- are linked to oil prices. Thus, rising real prices for oil make Alaskan gas -- the price of which is not linked to oil prices -- increasingly attractive relative to oil and to most other supplemental gas supplies. Finally, Alaskan gas will become an increasingly better buy than imported oil because as the real price of oil increases the real price for Alaskan gas delivered to U.S. consumers will decrease. The cost of Alaskan gas will decrease as depreciation reduces the rate base upon which transportation charges and related income taxes are calculated, which costs comprise the largest components of the delivered price of Alaskan gas.

Some estimates of future natural gas demand have been steadily reduced as a result of the extent to which natural gas demand has been responsive to increasing prices established by the NGPA. Although demand forecasts are down, the long-term outlook for production is down even more. Increasing drilling rates will be unable to offset the steady decline in gas reserves added per unit of drilling effort. As a result, the production rates will continue to decline. By 1987, when Alaskan gas will be available, the decline of conventional lower 48 gas supplies will have created a strong demand for Alaskan gas.

This supply-demand imbalance is illustrated in Tables III-I and V-I of the marketability study prepared by Jensen Associates, Inc., which is attached as Appendix E to my statement. Table V-I illustrates the forecasted demand for natural gas by residential and commercial sectors, industrial sectors, electric power gen-

erators, and other users through 1990. Table III-I shows the gas supplies projected to be available during the same time period from conventional and unconventional production, imports, synthetic gas, and Alaskan gas. Table III-I and V-I reflect market clearing after deregulation of new gas volumes in 1985.

The economic benefit of Alaskan gas is illustrated by the graph that I have attached to this statement as Appendix F. This graph shows the delivered cost of Alaskan gas for a range of assumptions regarding inflation and interest rates. Also shown is the estimated market clearing price for natural gas prepared by Jensen Associates, Inc. Two market clearing price estimates are shown. One is based upon the oil cost which Jensen expects would occur under the type of price formation typical of the 1970s during which occasional market disruptions periodically drove prices sharply higher. The other is based upon a lower bound possibility for oil prices. This graph shows that if only one major disruption occurs in the Mid-East resulting in significant increases in oil prices in the decade of the 1980s, Alaskan gas will be marketable from the very beginning of its availability. If a more conservative increase in oil prices occurs, there will be about three years when the Alaskan gas cost is higher than other supplemental gas supplies. However, in addition to the rolled-in pricing capacity afforded by the NGPA, there are other methods available which can be used to levelize charges for Alaskan gas to avoid this early-year problem, if required. We are confident that through a combination of the

increasing real price of oil and, if necessary, such leveling methods Alaska gas can be marketed commencing in 1987.

Concerns also have been expressed about the marketability of Alaskan gas under complete natural gas deregulation. In a deregulated environment, the price of Alaskan gas will adjust to the marketplace and be saleable. As stated above, the price in the early years can be adjusted if necessary through tariff and/or contractual provisions to assure that Alaskan gas is marketable.

VII. NATIONAL BENEFITS

The benefits of completing the ANGTS are self-evident. This vital transportation link will connect the lower 48 states to 26 trillion cubic feet of proven natural gas reserves, or 13 percent of all domestic gas reserves, and over 100 trillion cubic feet of potential reserves in Alaska. Once the ANGTS is in place, gas exploration activities will increase in Alaska and Canada making additional reserves available for transport. The ANGTS will deliver two billion cubic feet of gas per day initially and can easily be expanded to deliver 3.2 billion cubic feet per day.

Construction of the ANGTS can displace between 400,000 and 600,000 barrels of foreign oil per day for the next twenty to thirty years. The resulting savings in foreign payments for oil is in excess of \$7 billion in the first year alone, assuming a conservative cost of oil of \$50 per barrel in 1987. An even

greater reduction in balance of payments will occur later as world oil prices rise, as Alaskan gas volumes increase, and as the delivered price decreases. These balance of payments savings will have a positive impact on the inflation rate.

The ANGTS will create jobs for U.S. workers and orders for U.S. businesses to provide materials, equipment, and services in connection with the construction and operation of the pipeline and related facilities. There will be a peak work force for the Alaska gas pipeline and gas conditioning plant of 16,000 workers.

As the Net National Economic Benefit Study prepared for the project shows, the present value of the Alaskan gas that the ANGTS will bring to the lower 48 states is likely to be between \$90 and \$140 billion. * The total present cost of delivering this gas (including the wellhead cost of the gas) is approximately \$50 billion over the 25-year project life. Accordingly, the present value of the net benefits of the ANGTS is between \$40 and \$90 billion for all U.S. parties associated with the project. For our base case, we use the median gas value of \$110 billion, which yields a median Net National Economic Benefit of \$60 billion. All of the above values are in January 1980 dollars, discounted in real terms at three percent to mid-1981.

In conclusion, the conservative direct net national economic benefit of the ANGTS -- economic benefits minus costs -- is in

* These values are the mode and expected value for the gas value, respectively. The NNEB study is attached as Appendix G to my statement.

excess of \$60 billion. This is simply the benefit derived from the market value of the gas and does not include the indirect benefits, such as increased energy independence, improved balance of payments, the creation of jobs, or the cost savings that would result if Alaskan gas prevents a repeat of the phenomenon experienced throughout the 1970s -- curtailments of industrial gas customers with resulting economic dislocations, including a loss of jobs, a reduction in taxes, and increases in unemployment compensation.

VIII. REMAINING GOVERNMENTAL AND REGULATORY APPROVALS

A. Alaskan Northwest

Alaskan Northwest must file with the Federal Energy Regulatory Commission a supplement to its prior filed application for a certificate to construct and operate the Alaska pipeline segment of the Alaska Natural Gas Transportation System. This supplement will include: (1) a plan for private financing and related materials including a cost of service study, a marketability study, and a net national economic benefit study which demonstrate the continued economic viability of the ANGTS; (2) amendments to its prior approved tariff which conform to the financing plan; (3) any necessary amendments to the prior approved partnership agreement to conform to the financing plan; and (4) minor adjustments to the cost estimates previously filed with the FERC in 1980.

Assuming the waiver proposed is enacted by Congress, Alaskan Northwest must also file an amendment to its prior filed appli-

cation seeking certification of the gas conditioning plant and approval of a tariff governing recovery from the shippers of the plant investment plus a reasonable rate of return on such investment.

Pursuant to Sections 4, 5, 7, and 16 of the Natural Gas Act, the FERC is empowered to issue a final certificate to Alaskan Northwest if it finds that Alaskan Northwest is able and willing to provide the transportation service and to conform to the provisions of the Natural Gas Act and the Commission's rules and regulations, that the rates and charges of Alaskan Northwest are "just and reasonable," and that the proposed service "is or will be required by the present or future public convenience and necessity."

The Commission must examine a number of factors in determining whether issuance of the certificate is in "the public convenience and necessity." For example, the Commission must find that the project is economically feasible, that the project can be financed under terms acceptable to the Commission, and that the proposed tariffs are just and reasonable and in the public interest. One important point must be emphasized. Congressional approval of the proposed waiver will not relieve the FERC of its responsibility to satisfy itself that these requirements have been met prior to issuance of a final certificate to Alaskan Northwest.

Additionally, Alaskan Northwest also must obtain from the State of Alaska appropriate land use authorizations for those portions of the pipeline and conditioning plant that will be on lands in which the State has an interest.

B. Northern Border and Pacific Gas Transmission

In addition to issuance of a final certificate to Alaskan Northwest, the Commission must also issue final certificates of public convenience and necessity to the Northern Border Pipeline Company and the Pacific Gas Transmission Company enabling them to complete the non-pre-built portions of the U.S. Eastern and Western Legs of the ANGTS. The Commission review process and the legal requirements described above are equally applicable to these applications, and Congressional approval of the proposed waiver will similarly not relieve the FERC of the ultimate responsibility to ensure that these requirements have been satisfied.

C. Shipper Tracking

The shippers of Alaskan gas must seek Commission approval of tariffs which permit them to flow through to their customers the sales price of Alaskan gas and the conditioning and transportation charges to be paid by them under the FERC or the Canadian National Energy Board approved tariffs. While the Commission has not yet reviewed such tariffs, it has addressed the need for what is referred to as "perfect tracking." In its Orders 31 and 31-B approving the Alaskan Northwest and Northern Border tariffs, the Commission noted that the financial and economic viability of the ANGTS is dependent not only upon tariffs which assure a constant stream of revenue from the shippers to the ANGTS, but also upon adequate "tracking" mechanisms in the shippers' tariffs which will permit sufficient revenues to flow, without interruption, to each shipper from its customers to reimburse each shipper for

payment of ANGTS costs. Specifically, in Order 31 the Commission stated at page 147 that it:

... shares the project sponsors' assessment of the importance and relevance of the tariffs. The tariffs are indeed the "economic lifeline" of the project. There must therefore be a degree of certainty for project sponsors and potential financiers adequate to ensure that there will be a flow of revenues sufficient to service debt and all other current expenses once billing has been allowed to commence.

With respect to shipper tracking, the Commission found at page 67 that:

In order to further assure that revenues are adequate to cover the cost of service of the project, the Commission's policy will be to allow automatic tracking of Alaska gas transportation costs in the tariffs of gas shippers who are interstate pipelines under our jurisdiction. (Emphasis added).

Again, as with the other FERC filings, once the shipper tariffs are filed with the FERC, the FERC must review such tariffs under the standards of the Natural Gas Act and the proposed waiver does not restrict that review.

IX. FINANCING

The framework of the negotiations now under way to establish financing for the project and the related financial bases for the proposed waiver can best be understood by reviewing their historical underpinnings and development. Before detailing the evolution of the financing, however, it should be pointed out that the President's Decision reflected an expected cost of the ANGTS, as then defined, of \$13 billion, and an expected date of

first deliveries of gas of January 1983. While all parties understood that many governmental approvals would have to be obtained and that many agreements among the parties would have to be negotiated before construction could begin, nonetheless in 1977 it was anticipated that regulatory and policy questions would be answered in one to two years. Thus the 1977 cost estimate and the accompanying financing requirements were based on long-term debt costs of ten percent, cost contingencies of five percent, and cost escalation due to inflation was anticipated to be five percent annually.

In hindsight, the uniformly agreed upon assumptions underlying the 1977 cost estimate and the then-scheduled in-service date were unrealistic. But capital market conditions were stable in 1977, at least in comparison with today's environment, and government policies were strongly supportive of energy projects.

Much that was anticipated by the project sponsors and the government agencies which reviewed and confirmed the reasonableness of the assumptions underlying the project have not materialized.

A. Financing Parameters Established by the Federal Government

The President's Decision set forth the determination that the project could be privately financed and the conditions under which a private financing was expected to occur. A plan was proposed to share the risks and benefits of the project among its several beneficiaries in accordance with the following principles:

1. The project should be privately financed.
2. The equity investment in the project should be at risk under all circumstances.
3. Direct and major beneficiaries of the project should participate in the financing either directly or in the form of debt guarantees.
4. The burden of cost overruns should be shared by equity holders and consumers upon completion through the application of a variable rate of return on common equity. This would provide a strong incentive for the project to be constructed at the lowest possible cost.
5. Tariff charges could not commence prior to completion and commissioning of the system.

The President's Decision also established other critical parameters for the financing plan: a prohibition of producer equity investment in the project; the exclusion of the conditioning plant from the ANGTS; and a prohibition of direct or indirect government financial support, including guarantees. Finally, the plan described in the Decision contemplated the "project financing" of all debt, i.e. the assets and cash flow of the project -- its economic viability -- would provide the principal source of credit to lenders. Sponsors were not expected to extend their corporate credit in support of the project's debt.

Following the Decision, the FERC undertook to clarify the provisions in the President's Decision regarding commencement of consumer billing. In Orders 31 and 31-B the FERC ruled that billing could begin after the Federal Inspector certified that all ANGTS pipeline segments were completed, tested, and proved capable of operating. "Tested for service," according to the FERC, did not require that the line be filled with gas or that actual deliveries of gas begin. Moreover, it is important to note at this juncture that there was not a requirement that the conditioning plant be completed and rendered capable of service as a prerequisite for billing commencement. Thus under current law billing can commence on all four pipeline segments even in the unlikely event that the conditioning plant is not completed, and even if actual gas deliveries have not begun.

B. Original Sponsor Financing Plan

The principal financing parameters having been established by the President's Decision, Alaskan Northwest and its financial advisors in early 1978 initiated the development of a definitive financing plan. The original plan contemplated the following key elements:

1. The construction capital for the Alaska pipeline segment would be raised on a project financing basis without corporate or government completion guarantees. Funding for the conditioning plant would not be the responsibility of Alaskan Northwest.

2. In the absence of completion guarantees, the risk of non-completion of the Alaskan pipeline would be reduced to an acceptable level as follows:

a. The project's final cost estimate would be subject to an independent risk analysis and an overrun probability assessment that would determine the amount of an Initial Pool of capital required to reduce to an acceptable confidence level the chance that the project would not be completed. Commitments for the equity portion of the Initial Pool would be provided by the project's gas transmission company sponsors. Debt commitments would come from U.S. and foreign commercial banks and U.S. insurance companies and equipment and material suppliers.

b. Commitments would also be obtained for a second capital pool, a Completion Assurance Pool, which would be available in the unlikely event that project costs exceed the Initial Pool. The Completion Assurance Pool would be drawn down based on periodic comparisons of actual to estimated construction costs to date. Commitments for the debt portion of the Completion Assurance Pool would be supplied by the Alaskan gas producers and the equity portion shared by the sponsors and the producers, in a manner consistent with the President's Decision.

c. Both capital pools would be irrevocably precommitted prior to the commencement of construction.

d. Whenever possible fixed price contracts for equipment and, perhaps, turn-key contracts for the construction of certain portions of the project would be negotiated.

Such contracts would remove significant parts of the project from the risk of overruns.

3. Once completion was achieved, credit support for the project's debt would be provided through the FERC approved minimum bill gas tariff which would assure the payment of the project's debt service under all circumstances. Based on the tariff and a perfect tracking mechanism, financing commitments would be secured from institutional lenders for a portion of the commercial bank financing. In addition, public debt markets could also be used to refinance construction loans.

In summary, the plan was (i) to remove a major portion of the project's cost estimate from the risk of overruns through fixed price contracts and turn-key construction contracts; (ii) to obtain firm commitments for equity capital and supplier credits; and (iii) to secure irrevocable commitments for a Completion Assurance Pool of sufficient size to complete the project under any and all foreseeable circumstances. Debt commitments would then be obtained from commercial banks and institutional lenders subject to satisfaction of an extensive list of conditions precedent.

C. Efforts to Arrange Financial Support from the State of Alaska and the North Slope Producers

1. State of Alaska

Alaskan Northwest and its financial advisors devoted much of 1978 and 1979 to seeking the financial support of the State of Alaska, support which was envisioned by the President's Decision, in an amount of approximately \$2 billion. The plan proposed to the State and supported by its Governor included the issuance by a state agency of \$1.5 billion in tax-exempt debt, the proceeds of which would be used to purchase project debt. The rationale and appeal of this measure from the project's standpoint was that the State's offering would tap an otherwise unavailable segment of the capital market. Alaskan Northwest, as an issuer of taxable securities, is unable to raise funds from tax-exempt investors, many of whom who control large pools of capital. The proposal also contemplated the issuance of \$500 million of equity securities to the State, the income of which would add substantially to the enormous economic, fiscal, employment, and social benefits that the State will realize from the project.

This specific plan was not approved by the State legislature, but a special committee was formed to analyze State financial participation. Alaskan Northwest would welcome the State's active participation in the financing.

2. North Slope Producers

Commencement of negotiations with producers was seriously delayed because of unsettled legislative and regulatory issues

completely out of the control of Alaskan Northwest. First, there was the uncertainty surrounding resolution of the Natural Gas Policy Act of 1978. The NGPA, among other things, established the wellhead pricing of Alaskan gas, the duration of its regulation, and the manner in which it will be priced by pipeline purchasers. Secondly, the development of the Incentive Rate of Return mechanism, including the key rate of return parameters, was not fully completed until September 1979 -- two years after the President's Decision. Finally, FERC approval of the project design specifications for pipe diameter and design pressure was not final until January 1980. Only after all of these critical issues were laid to rest was it possible to prepare a definitive cost estimate for regulatory and financing purposes. Not until that point could truly meaningful discussions setting the framework for the producers' financial involvement in the project begin.

In the fall of 1979, a month after settlement of the Incentive Rate of Return proceeding, a financing plan was presented to the Alaskan Northwest partners for their approval, thereby setting the stage for the commencement of negotiations with the North Slope producers. This financing plan was essentially the same as that described earlier as the original sponsor financing plan and was fully in compliance with all of the requirements of the President's Decision.

The first meaningful indication of specific producer willingness to support the financing of the project became evident in late 1979. From the outset, the producers' principal requirements

for involvement in the financing were (1) that the President's Decision be altered, by waiver or otherwise, to permit the producers to own equity with full and proportional rights and benefits of equity ownership, and (2) that the conditioning plant be included in the ANGTS with provision for inclusion of all gas conditioning and processing charges in the ANGTS gas tariff. Neither of these producer requirements were permitted by the President's Decision.

The Department of Energy, through the Secretary and the General Counsel, served as an intermediary between the sponsors and producers to assist in negotiations. By March 1980, after numerous meetings and lengthy discussions, an initial set of conceptual agreements between the sponsors and producers was reached.

The principal accomplishment of these efforts was a Cooperative Agreement adopted in April 1980 and signed in June 1980 providing for the joint funding by the producers and sponsors of design, engineering, and cost estimation work for the Alaska pipeline and the conditioning plant. A second agreement, a Letter of Intent (which is attached as Appendix H), was entered into by Alaskan Northwest and the producers committing all parties to work expeditiously towards arranging a private financing of the project.

By May 1981, Alaskan Northwest and the producers agreed to approach the financial community with a financing plan embodying the following concepts:

1. For purposes of financing, the "as spent" cost of the Alaska pipeline will be \$21 billion and of the plant

will be \$6 billion. In addition, a pre-committed completion assurance pool of \$3 billion will be formed.

2. The debt/equity ratio for all capital investment will be 75:25.
3. The investment limits of all participating companies will be defined from the outset. As a group, the transmission companies will provide equity in an amount not to exceed \$5.25 billion. As a group, the producer companies will provide equity in an amount not to exceed \$2.25 billion.
4. The Alaskan Northwest partners will own 70% of the pipeline and the plant, and the producing companies will own 30% of the pipeline and the plant. Equity commitments to the completion assurance pool will be made on the same 70:30 ratio.
5. Debt funds (pipeline and plant) will be sought on a project credit basis. The transmission group will be responsible for arranging for \$15.75 billion in project debt. The producer group has accepted responsibility for arranging for \$6.75 billion in additional project debt. The debt which the producers are responsible for arranging will be accorded terms and conditions equivalent to those accorded other project debt.
6. Each company's participation will be subject to satisfaction of conditions precedent, namely:
 - The conditioning plant will be included as part of the Alaska segment of the ANGTS.
 - Each company's investment will be limited to a sum certain defined in the financing plan.
 - All debt and equity participants will issue firm commitments, acceptable to all other participants, prior to construction of the pipeline or plant.
 - All necessary governmental approvals and authorizations will be issued and accepted by the participants.
 - All parties are assured that the project is economically viable.
 - All parties are assured that the Canadian segment will be financed and completed without U.S. company involvement.

-- Each financing layer will be afforded equal terms and conditions.

D. Comparison of Original Sponsor Financing Plan and Sponsor/Producer Agreement

The May 1981 plan deserves elaboration to be fully understood in relation to the original cost estimate and financing plan detailed in the President's Decision. The basic cost estimate in the plan reflects substantial cost additions over the \$13 billion estimate in the President's Decision. These cost additions are comprised primarily of (1) the \$6.0 billion conditioning plant not provided for in the 1977 plan, (2) costs resulting from the more extensive design features which evolved in the past four years in contrast to the cost of the design originally contemplated, (3) cost escalations resulting from the delay of four years in the anticipated completion date because regulatory proceedings took more time than had been anticipated in 1977, (4) the abnormally high rates of inflation experienced in the U.S. since 1977, and (5) the unusually high long-term interest rates prevailing in the last few years which now may be subsiding. To reiterate what was said earlier, the 1977 plan for the \$10 billion project was based on a 1975 dollar year estimate, escalated by five percent per annum to year of expenditure with a contingency of five percent and interest costs of 10 percent.

The May 1981 financing plan differs in material respect from the original sponsor plan also because of the requirements of the producers as conditions for their financial support for the project. Further, the funding assumptions reflect the absence

to date of State of Alaska support which had been contemplated by the President's Decision. And finally, the most recent plan, unlike that described in the President's Decision, utilizes supplier credits, and Eurodollar and foreign financing for the Alaskan facilities. This expansion of target capital sources provides an element of flexibility, and is necessary as a result of the growth of the financing requirements.

E. Position of U.S. Commercial Bank Lenders

On the basis of the agreement reached by Alaskan Northwest and the producers, the first formal presentation of an ANGSTS financing plan was made in May 1981 to four major U.S. commercial bank lenders--Bank of America, N.T.&S.A., The Chase Manhattan Bank, N.A., Citibank, N.A., and Morgan Guaranty Trust Company of New York.

On August 28, 1981 the four-bank coordinating group advised the partnership of the results of its preliminary assessment of the financing concepts, the general availability of debt support for the project, and suggested certain modifications to the approach to financing which the partnership and the producing companies might consider. A copy of this letter, together with its attachments, is appended for review by the Committee as Appendix I. Without re-stating the contents of the August 28 letter in detail, inasmuch as the letter must necessarily speak for itself, it is nonetheless noteworthy for us to underscore certain of the banks' preliminary conclusions, which are, of

course, subject to the various conditions and caveats expressed in the letter of August 28.

First, the banks believe that the project can be privately financed without government guarantees or participation.

Second, the banks believe that there will be funds available on a world-wide basis sufficient to provide debt support for the project, within the range of \$12-18 billion.

Third, the banks believe that after completion, and when the ANGTS is operational pursuant to satisfactory tariff and tracking arrangements, the credit of the project itself will provide adequate assurances of debt service to the extent that the sponsoring companies will not be obliged to a continuing pledge of corporate credit.

These are very positive results. But this encouragement was tempered by the banks' advice that credit support will be required of the participating companies during the construction phase of the project. In this connection, the banks concluded that the completion pool of funds concept advanced by us will not be perceived by lenders generally to be acceptable, in and of itself, as a basis for debt support during construction. Consequently, the banks have concluded that the bulk of the funds needed for the construction of the project cannot be raised on that basis. Thus, they have advised us, as noted in the letter of August 28, that a modification of our financing proposal should be considered which will permit some degree of debt repayment assurance during the pre-completion phase, involving a

combination of (1) acceptable debt assumption arrangements by the sponsors and producers and (2) acceptable commencement of billing provisions prior to completion of the overall system.

The reliance by the banks on corporate credit and limited consumer support during construction may permit a reduction in the external financing requirements for the project. Since there would be a source of repayment for the bulk of project debt, the need to provide pre-committed contingency financing (to assure project completion and/or debt repayment) can be reduced or eliminated and the hopeful mitigation of inflation and interest rates would result in further reduction. The amount of the latter reduction is, of course, subject to the completion of further definitive engineering and cost estimation work. The banks have concluded that "... if the required credit support can be arranged, the banks are of the opinion that a modified plan may well provide the basis for private sector financing of the project."

As to the waivers of law deemed to be necessary by the banks, they have advised, in their letter of August 28, that the level of credit support required to raise the extraordinary amounts of capital to finance the project necessitates that "... [t]he debt [of the project] be supported by repayment assurances involving [among other things] acceptable commencement of billing provisions prior to the completion of the overall system."

In short, the banks have advised me that the billing commencement provisions set forth in the proposed waiver are a critical

credit support--indeed, the absolute minimum--feature required to raise the necessary funds. Passage of the billing commencement features of the waiver package will increase the willingness of the banks and other lenders to participate in the financing in terms of the number of lenders participating and the amount of each lender's commitment to the financing.

In consideration of the circumstances described earlier which have resulted in the extraordinary amounts needed for this project, and the conditions that have developed in our financial markets since the President's Decision--none of which was anticipated in 1977--it is not unreasonable to understand the necessity for providing the limited credit support that lenders are seeking through a separation of the Alaskan pipeline and plant facilities, and the Canadian pipeline segment, for purposes of billing commencement for debt service charges.

F. Risk/Benefit Sharing Objectives of President's Decision Fundamentally Preserved

While the billing commencement waiver insisted upon by the banks would appear to represent a departure from the principles of risk sharing established in the President's Decision, the sponsors, as well as producers, would also be contributing more credit support -- with all its consequential costs and risks -- than was contemplated in the President's Decision. The concept of risk sharing is preserved: because of the greater financial requirements and the more difficult circumstances in which this project must be financed, it is incum-

bent that all project beneficiaries contribute more to realize the substantial benefits of the huge Alaska energy resource.

To reiterate an earlier point, the waiver provision providing for commencement of billing as each segment is completed is not unprecedented insofar as consumer exposure is concerned. Under current law, the consumer would incur a continuing and irrevocable obligation to pay certain ANGTS costs even if gas service did not commence. This would result if all four pipeline segments were completed and commissioned for service by the Federal Inspector but (1) gas was not delivered by the producers to the conditioning plant, or (2) the conditioning plant was not completed.

The proposed waivers represent a recognition of the current reality with respect to consumer risk; not a dramatic wholesale repudiation of the risk/benefit sharing concepts developed in the President's Decision. Consumers would commence paying only for completed segments; they would not incur an obligation for uncompleted facilities. From the standpoint of consumer cost, the payment for cost of service charges as permitted under the proposed waiver will result in lower charges for gas to consumers over the project life. This will result because carrying costs will not be capitalized and paid for by consumers over the project life in the absence of consumer payments.

Consumers will be the ultimate beneficiaries of this project, realizing the substantial benefits of a domestic

long-term premium source of energy, one of the few supplemental energy supply programs offering declining costs in real terms over the next generation.

G. Impact of the Waivers Upon Private Financing

While there is much that can and will be done while the Congress is considering the proposed waiver of law, it is inescapably true that constructing and implementing a financing plan for the project cannot be accomplished in the absence of an affirmative action by both Houses of the Congress on the waiver request. We can say to you categorically that if the waiver is not permitted, private financing is impossible.

Our views with respect to the proposed waiver are dictated by the stark realities of the world credit markets. It is not possible for the financing of this project to move forward so long as the producers of Prudhoe Bay gas are excluded from equity participation in the financing. The equity contributions of these companies, and their support of an appropriate portion of project debt during construction, is essential. The pipeline company sponsors do not have the individual or aggregate financial strength to shoulder the entire financing requirements of the project.

Similarly, it is not possible to construct financing for the project so long as the conditioning plant remains outside the system, subject to uncertainties of ownership, cost recovery, and integration of construction and operation. Gas cannot move

through the Alaska Natural Gas Transportation System without the conditioning plant, a fact readily apparent to any prospective lender. The plant must be integrated into the system and covered by the certificate and tariff ultimately determined to be appropriate by the Federal Energy Regulatory Commission for the Alaskan facilities.

With respect to the waiver dealing with regulatory constancy, we cannot overstate our belief that private financing in the world capital markets cannot be successfully arranged unless it can be demonstrated that funds advanced to the project under a FERC-approved tariff and tracking arrangement will not be subject to later change. We would emphasize that the lenders to whom we must appeal will be asked to commit funds on the basis of project credit after the system is operational; they will be asked to lend on the strength of a revenue flow which is derived through FERC tariff mechanisms. If they cannot be reasonably assured that the credit which they analyze and appraise before committing to the project is not subject to change in the future, they cannot, in all probability, lend to the project to the extent that will be required for successful implementation of a financing plan. Under the present state of the law, they have no such assurance. In this regard, we have been made aware of an opinion rendered by the General Counsel of the Federal Energy Regulatory Commission to Chairman Sharp and Congressman Brown dealing with the issue of regulatory constancy, and I have appended to my statement a copy of this

opinion for your review. (Appendix J). Given the views there expressed, and our own individual and collective experience in financing gas projects, we must advise you that it will be impossible for us to raise the billions of dollars of debt necessary to support the project if lenders are subject to a change in the rules of the game after their money has been committed and spent.

With respect to the impact on private financing of the waiver of law necessary to permit some flexibility in the commencement of billing for charges upon completion of the Alaskan facilities, we would offer these views. First, during the period of time when the ANGTS is under construction, the project has no revenue flow and essentially no credit in its own right to provide a basis for assurance to lenders that interest and principal will be paid. Thus, during the period of construction credit support must be arranged, and, in the banks' view, this support must come from the participating companies and, to a limited extent, from the consumer beneficiaries of the project. From our prior discussions with some of you and with your staffs, you are no doubt aware that we would have preferred a billing commencement waiver in terms which would permit maximum flexibility and maximum discretion within the FERC to approve, or disapprove, tariff provisions which would accommodate the details of the financing package which we are ultimately able to negotiate on a world-wide basis. But we understand that the degree of flexibility which we sought is not attainable, given the understandable

reluctance of the Administration and many of you to sanction a massive shift to the consumer of the risk of noncompletion of the project.

It is our view that the proposed billing commencement waiver is the absolute minimum that will permit us to carry forward our work. Without this waiver we cannot proceed, and with it we can proceed only on the basis that the sponsoring companies will be called upon to assume greater obligations during the period of construction than were originally envisioned by us. With the waiver we can proceed, and we will give our best effort to make the financing work within its constraints.

H. Present Status of Financing Negotiations

On the basis of the views which we have just expressed, we trust it is clear that further progress on the financing of the project is inextricably tied to favorable Congressional action on the proposed waiver of law.

Following the delivery of the banks' letter of August 28 to the partnership, intensive negotiations have taken place among the participants, dictated in large part by the expression of the banks' views that a modification of our financing concepts would be necessary. These negotiations continue, but in all probability cannot be concluded by unconditional commitments until the participants know the Congressional reaction to the proposed waiver of law. Certainly financing cannot be put together on the basis of producer participation if producer participation is unlawful. Certainly financing cannot be

put together if there remains uncertainty as to the status of the conditioning plant. Certainly financing cannot be arranged until the spectre of regulatory change is laid to rest. And certainly there can be no definitive financing until the billing commencement issue is resolved.

Progress on financing also hinges on favorable FERC action on our cost estimate. Agreement on capital requirements must be attained, and Commission approval of the cost estimates is not yet in hand.

Despite these major uncertainties, each of which must be resolved by the Congress and the Commission at this stage, the companies which have supported this project for the past years, and which collectively have already spent almost \$550 million, are prepared to continue in their strong support of the project. Billions of dollars will be committed by these companies in the form of direct equity contribution and in the form of debt support during construction.

At this juncture we remain optimistic that if the Congress permits the proposed waiver to become effective, and if the Commission reacts favorably to our cost estimate, the private party participants in the project can reach agreement upon the level and degree of equity and credit support which they can each contribute. The aggregate credit so committed, together with the tariff and tracking mechanisms necessary to provide a basis for project credit after the line is operational, will

permit us to continue in our determined efforts to meet the challenge of financing this project.

Before addressing the specifics of the waiver package, I would note one further point. A private financing plan can be assembled in a manner that reflects a proper allocation of risks between the principal beneficiaries of the ANGTS--the North Slope producers, the Alaskan Northwest partners, and the consumers dependent upon the Alaskan gas. The project sponsors and producers are willing to continue to accept the risks of non-completion imposed upon them by the President's 1977 Decision because they firmly believe the project can be constructed on time and within budget.

X. PROPOSED WAIVER OF LAW

On October 15, 1981 President Reagan, acting pursuant to Section 8(g) of the ANGTA, transmitted to Congress a proposed waiver of law (attached as Appendix K) which would accomplish four specific purposes, all of which are necessary predicates to private sector financing: (1) permit both debt and equity participation in the project by the Prudhoe Bay producers; (2) include the conditioning plant in the ANGTS and in the certificate to be issued for the Alaskan facilities; (3) permit the FERC to approve, at its discretion, tariffs which will provide lenders with sufficient assurances of debt and/or equity repayment, after individual completion of the gas conditioning plant, the Alaskan pipeline segment, and the Canadian pipeline segment, to warrant their advancing the enormous sums needed for private financing;

and (4) enable the FERC to expedite the issuance of the final certificates for the ANGTS.

I shall now address in detail the reasons why a waiver of each provision of law is required.

A. Public Law 95-158 and the President's Decision

1. Producer Equity Participation

The President proposes to waive Section 1, Paragraph 3, and Section 5, Conditions IV-4 and V-1 of the President's Decision, Pub. L. No. 95-158, to permit producer participation in the ownership of the Alaskan pipeline segment and gas conditioning plant of the approved transportation system.

Conditions IV-4 and V-1 of the President's Decision presently prohibit producer equity participation in the ANGTS, limiting producers to providing debt or debt guarantees. Specifically, Condition IV-4 requires the Alaskan Northwest partnership to be open to anyone, except producers of Alaskan gas. Condition V-1 prohibits such producers from having an equity interest in the ANGTS or having any role in the management, control, or operation of the project.

Waiver of this provision of law would permit the producers to own an equity interest in the project. Despite recognition in the Decision that producers should participate in the financing of the project, the restrictions imposed on the producers by the Decision are incompatible with a meaningful producer contribution to financing. It is not difficult to understand why the producers

are unwilling to make a considerable financial commitment to the project without participation in decisions relating to expenditure of funds. Without equity participation and its resulting voice in project management, the producers will not support the project with producer company funds. Without producer support private financing will be impossible.

Since the execution of the Cooperative Agreement and the formation of the Design and Engineering Board, the North Slope producers have been working with the Alaskan Northwest partnership in reviewing the pipeline and plant design, the cost estimates, and financing parameters. Their contribution has been valuable given their experience with the North Slope production facilities and the Alyeska oil line. Their continued participation, beyond that required for financing, is needed to help ensure a timely, cost effective completion of the ANGTS.

Concern has been expressed that producer participation in the ownership of the pipeline could lead to restrictions on pipeline capacity expansion or on access to the pipeline by non-owner shippers. Alaskan Northwest is confident that these problems will not develop. First, the producers' equity position will be limited to a minority interest. Second, Section 13 of the ANGTA requires that the FERC include a condition in Alaskan Northwest's certificate which provides that any one who wants to transport gas in the ANGTS must not be discriminated against in the terms and conditions of service on the basis of degree of ownership, or lack thereof. Third, the FERC has jurisdiction

under the Natural Gas Act to review any expansion of the capacity of the Alaska segment. Finally, the proposed waiver provides that the FERC, after consultation with the Attorney General, must find that producer participation will not create or maintain a situation inconsistent with the anti-trust laws or create restrictions on access to the ANGTS for non-owner shippers or restrictions on capacity expansions. Thus, the FERC will assure that the producers' involvement and participation is not inconsistent with the anti-trust laws.

2. Prudhoe Bay Gas Conditioning Plant

The President proposes waiver of Section 2, Paragraph 3 (the first sentence) of the President's Decision, Pub. L. No. 95-158, to include the gas conditioning plant in the approved transportation system and in the final FERC certificate to be issued under the Natural Gas Act, and the application of Section 5, Condition IV-2 of the Decision to such plant.

A Prudhoe Bay conditioning plant has been recognized as essential to permit the delivery of North Slope gas to markets in the lower 48 states. The ANGTS has special conditioning requirements for the gas to be transported through the system. Unlike existing gas pipelines, the Alaskan gas pipeline segment will be a high pressure pipeline transporting chilled gas. This requires extraordinary inlet compression and cooling and the removal of a greater than normal percentage of carbon dioxide, water and liquefiable hydrocarbons. Accordingly, gas processing costs for Alaskan gas are much greater than the processing costs that normally occur in the lower 48 states.

The producers' willingness to make a substantial financial commitment to the project also is predicated on the inclusion of the conditioning plant as a part of the ANGTS to permit a recovery of costs associated with constructing and operating the plant, plus a reasonable return on invested capital, pursuant to a FERC-approved tariff.

Inclusion of the conditioning plant within the ANGTS and the Alaskan certificate will require amendments to the pending Alaskan Northwest certificate application at the FERC and Commission review and approval of such application and the plant tariff. Inclusion of the plant in the system will give the FERC the opportunity and the authority to review the plant design and its estimated cost of construction and authority to review and approve the tariff provisions applicable to the plant governing recovery of the plant costs. Nothing in the proposed waiver restricts or modifies the Commission's responsibilities to review the application and tariff and to find that such tariff is "just and reasonable" and in the public interest prior to issuance of a final certificate.

Application of the incentive rate of return mechanism to the conditioning plant would substantially delay issuance of a final certificate. However, the actual construction costs will be reviewed by the Federal Inspector, and only prudently incurred plant costs will be recovered in rates.

3. Billing Commencement

The President proposes to waive Section 5, Condition IV-3 of the Decision, Pub. L. No. 95-158, to authorize the FERC to

approve tariffs that permit: (a) recovery of the full cost of service of the Canadian pipeline segment (i) upon completion and testing of the Canadian segment but (ii) not before a date certain, as established by the FERC, to be the most likely date for the entire approved transportation system to commence operation; and, (b) recovery of actual operation and maintenance expenses, current taxes, and amounts necessary to service debt, including interest and scheduled retirement of debt for both the Alaska pipeline segment and the gas conditioning plant (i) upon their individual completion and commissioning but (ii) not before a date certain, as established by the FERC, to be the most likely date for the entire approved transportation system to commence operation.

Condition IV-3 of the President's 1977 Decision prohibits any tariff which would require the purchaser or ultimate consumer to pay any charge with respect to the pipeline at any time prior to completion and commissioning of the entire pipeline system. In Orders 31 and 31-B the FERC approved a tariff for Alaskan Northwest which provides that upon completion and commissioning (a government agency declaration that the system is ready to operate) of the ANCTS, the risk of service interruption or project failure is assumed by consumers. Specifically, under Commission Orders 31 and 31-B the FERC approved tariff permits Alaskan Northwest to charge a rate which will recover actual operating and maintenance expenses, current taxes, and debt service, including interest and scheduled debt retirement (but not return of, or on, equity investment), upon completion and commissioning of the pipeline segments

of the ANGTS, before gas is actually transported or before completion of the gas conditioning plant.

The proposed waiver would permit the FERC to approve, at its discretion and only after a finding that the public convenience and necessity is served, a tariff permitting billing to commence for each individual segment of the ANGTS -- the gas conditioning plant, the Alaskan pipeline segment, and the Canadian segment of the ANGTS -- upon their separate completion and commissioning, but not before a target operation date established by the FERC.

It is important to note that the FERC in effect has already approved a tariff which permits billing to commence upon completion of the Alaskan Northwest, Foothills, and lower 48 segments, but prior to completion of the plant. The proposed waiver further divides the Alaskan Northwest and Foothills segments for billing commencement purposes. It is also important to note that the proposed waiver would not eliminate the authority of either the U.S. or Canadian government to certify that completion and commissioning of each individual segment has occurred.

a. Risk Of Non-Completion Of Any One Segment

It is extremely unlikely that any segment would be completed and commissioned but another not be completed and commissioned. First, the project sponsors and regulatory authorities will assure coordinated construction. FERC Order 31-B states that: "The Commission expects that U.S. and Canadian monitoring authorities will be doing everything in their power to ensure that all facilities associated with delivery of Prudhoe Bay are completed

simultaneously and that gas will begin to flow immediately upon their completion. The Commission expects to use its authority to facilitate attainment of that objective whenever possible". (Order 31-B at 69). In addition, "the various controls and oversight authority granted to the Federal Inspector encourage coordination and timely commencement of service." (Order 31 at 161); second, the most difficult portions of the project will be constructed first; third, the U.S. sponsors will not receive a return of or on equity until the entire system is completed and gas deliveries commence; fourth, anything but simultaneous construction would result in unnecessary carrying costs on money; and finally, no charges can be made before the target operation date, which will be established by the FERC as set forth in the President's proposed waiver.

b. Sponsor/Lender Risks

No charges can be assessed for any single one of the three segments until it is completed and commissioned. Thus, investors in such a segment would bear the loss associated with its non-completion. Consumers would pay the minimum bill for any completed and commissioned U.S. segment only after the target operation date and/or the full cost of service for the completed and commissioned Canadian segment, also only after such target operation date. If none of the three segments is completed and commissioned, the tariff does not operate, and consumers pay nothing.

Only when the entire system is completed and operating and consumers begin to receive Alaskan gas can Alaskan Northwest begin

to earn a return of and on the equity it invests in the project. Thus, Alaskan Northwest and the producers' equity will remain at risk until gas flows and thereafter depending on the cause and extent of any service interruptions.

c. Consumer Cost

While the proposed waiver could require consumers to pay some of the costs of a portion of the entire system pending the delivery of gas, the average residential consumer would pay only \$.32, \$.80, or \$.98 per month after the target operation date depending on which segment was not completed. The important point to remember, however, is that costs are being recovered currently thereby eliminating carrying charges that otherwise would be capitalized and paid for by consumers in rates over the life of the project. The FERC has recognized that this form of minimum bill actually reduces the finance charges to be borne by consumers when service commences. (Order 31 at 161).

d. Canadian Considerations

In May 1980, the National Energy Board of Canada, after extensive review and formal proceedings, found that a tariff would be needed in Canada which would allow the Canadian companies to charge their full cost of service when the Canadian segment was completed. The National Energy Board took this action before it approved the pre-build construction of a portion of the Canadian segment and related gas exports in order to ensure that the entire Canadian segment (500 miles of pre-build and 1500 miles of the remainder) could be financed and completed.

The U.S. government assured Canada that the entire project would be built and that the U.S. would permit the Canadian sponsors to charge for its segment when completed in exchange for the commitment by Canada to pre-build part of the system and deliver additional quantities of Canadian natural gas to the U.S. On July 18, 1980, President Carter sent a letter to Prime Minister Trudeau which said that the U.S. government remains committed to the project, that the U.S. government is satisfied the ANGTS will be completed, and that the administration would initiate action before the U.S. Congress to seek changes to laws that prohibit tariff payments from U.S. consumers to the Canadian sponsor upon completion of the Canadian segment of the ANGTS, but prior to the completion of the entire system. (See Appendix B).

e. Financing Considerations

A workable financing plan will require reducing the potential risks borne by the lenders to the maximum extent possible, given the magnitude of the capital required which, in turn, requires the greatest level of lender participation possible in terms of the number of lenders participating and the amount of debt provided by each lender. To attract such extensive participation mandates segmentation of the total system for purposes of billing commencement. For example, commercial banks and institutional lenders have legal and internal lending limits for any customer.

Additionally, lenders generally desire a varied portfolio to spread their risks among a variety of projects. The ANGTS sponsors are asking these lenders to commit an unusually large

amount of capital to a single undertaking. If the debt repayment is structured as though the ANGTS was three separate projects for debt repayment purposes, this should reduce the lenders' perception of risks to a level which may facilitate development of a private financing plan.

Finally, the recent volatile nature of both inflation and interest rates has changed drastically the approach taken by lenders in assessing the amount of loans that can be made to any project and the repayment schedules. Institutional lenders are now less willing to make long-term commitments than they were a few years ago given the present day market conditions.

f. Conclusion

The proposed waiver on billing commencement honors our commitment to Canada. Were it not for this commitment, Canada would not have proceeded with construction of the pre-build. Moreover, the consumer risk associated with this proposed waiver is minimal because it is so widely dispersed and because non-completion or delay in the simultaneous completion of the entire ANGTS is unlikely. The risk to be assumed by gas customers will be spread over literally millions of households and commercial and industrial establishments. Finally, consumers have more to lose if the ANGTS is not built. Over the next 25-30 years, U.S. consumers will pay more for their energy requirements if they have to use imported oil instead of Alaskan gas. The ANGTS will provide a reliable supply of energy to the lower 48 states which will not be subject to OPEC price increases or embargo.

B. Natural Gas Act

1. Evidentiary Hearing Requirements

The President proposes that Section 7(c)(1)(B) of the Natural Gas Act, Pub. L. No. 75-688, be waived to the extent it mandates the use of formal evidentiary hearings on ANGTS and related applications.

If Alaskan gas deliveries are to commence in late 1986, the process of obtaining a final certificate pursuant to Section 7 of the Natural Gas Act must not be unduly delayed.

This proposed waiver would remove any mandatory requirement that the FERC conduct any further formal evidentiary hearings on the ANGTS. However, the FERC would retain the discretion to order a formal evidentiary hearing if and when necessary.

No project in the Commission's history has been more closely scrutinized than the ANGTS. Three years of hearings were held before the Federal Power Commission prior to the President's 1977 Decision. One and one half years were spent in hearings, both in Canada and the U.S., before the final "prebuild" authorizations were issued. The rulemaking process that led to the development of the Incentive Rate of Return mechanism and the approval of the Alaskan Northwest tariff consumed two years. The FERC, the Office of the Federal Inspector, and their consultants have spent over one year reviewing the Alaskan pipeline cost estimate. In addition to this extensive regulatory review, the project received close scrutiny by a diverse group

of Federal agencies and the Congress pursuant to the Alaska Natural Gas Transportation Act of 1976. Every aspect of the project has been extensively examined.

Alaskan Northwest believes that the intense governmental review to date, the proven ability of the Commission to process effectively ANGTS matters through informal rulemaking procedures (notice and comment), and the inordinate delay that formal hearings would generate, support the grant of this waiver.

Approval of the proposed waiver would not relieve the FERC of its statutory responsibility under the Natural Gas Act to find that construction and operation of the remaining portions of the ANGTS would serve the public interest and is in the public convenience and necessity.

2. Regulatory Certainty

The President proposes that Sections 4, 5, 7, and 16 of the Natural Gas Act be waived to the extent that the FERC could otherwise change any rule or order to impair (i) recovery of actual operation or maintenance expenses, current taxes, and amounts necessary to service debt, including interest and scheduled retirement of debt, for the approved transportation system; or (ii) the recovery by purchasers of Alaskan gas of all costs related to the transportation of such gas pursuant to an approved tariff.

Sections 4, 5, 7, and 16 of the Natural Gas Act are the statutory authorities by which the Commission can suspend, investigate, establish, or modify the rates charged by Alaskan Northwest or the costs flowed through by the shippers to their customers.

The terms of Alaskan Northwest's cost recovery and that of the shippers will be finalized when the FERC issues its final certificates. Sections 4, 5, 7 and 16 of the Natural Gas Act could permit the Commission subsequently to modify the terms of the certificate in a manner which could impair the ability of Alaskan Northwest and/or the shippers to meet their financial obligations.

This proposed waiver would ensure the ability of the sponsors to maintain debt service and the shippers to pass-through their costs by limiting the authority of the FERC to change project and shipper tariffs after initial FERC approval in a manner that would impair the maintenance of debt service or preclude the recovery by shippers of any costs associated with the transportation of Alaskan gas. This does not mean that actual expenses would no longer be subject to continuing FERC review for prudence. Rather it only assures that there will be no impairment of debt service.

The cost recovery mechanisms for Alaskan Northwest and the shippers are the tariffs approved by the FERC and the Canadian National Energy Board pursuant to which the transportation companies charge the shippers for transportation service and the shippers, in turn, charge their customers for all ANGTS costs, including charges under the Foothills and lower 48 sponsor tariffs. As the Commission found in its Orders 31 and 31-B these tariffs are the "economic lifeline of the project." Because of the extraordinary risks attendant to the project and the enormous amount of financing needed, lenders will require satisfaction that, once approved by the FERC, the tariffs will not be subject

to future regulatory action which would impair the recovery of debt. This could occur if the FERC was to limit the payments to Alaskan Northwest by the shippers or to limit the passthrough of shipper costs associated with the project to their respective customers.

The FERC has attempted to provide as much regulatory certainty as possible by approving a tariff that, in the event of a service interruption, would in all events assure a stream of revenues sufficient to service debt and pay operation and maintenance expenses and taxes. However, the FERC recognizes that it could be legally possible for a future Commission to modify this tariff. In a letter dated August 18, 1981 to the Honorable Philip R. Sharp, Chairman of the Subcommittee on Fossil and Synthetic Fuels, Committee on Energy and Commerce, U.S. House of Representatives, and the Honorable Clarence J. Brown, Ranking Minority member, Subcommittee on Fossil and Synthetic Fuels, Committee on Energy and Commerce U.S. House of Representatives, the General Counsel of the FERC has written that both he and the FERC Chairman agree with the assessment that potential lenders to the ANGTS need greater assurances on the matter of regulatory certainty than they have been supplied to date and that, under present law, this assurance cannot be provided by the FERC.

This proposed waiver is limited in scope in order to preserve a balance between the assurance of pipeline revenue recovery vital to lenders and the statutory obligation of the FERC to assure just and reasonable rates. This waiver would only prevent changes to

the tariffs which would impair debt service for the ANGTS or preclude the recovery by shippers of costs associated with the transportation of Alaskan gas. Nothing in this waiver alters the nature and extent of the FERC responsibilities under the Natural Gas Act in reviewing the tariffs, as part of its certification process, to ensure that such tariffs are "just and reasonable" and in the public interest.

3. Status of Alaskan Northwest

The President has proposed a waiver of Sections 1(b) and 2(b) of the Natural Gas Act, Pub. L. No. 75-688, to the extent necessary to permit Alaskan Northwest and ANGTS shippers to be deemed natural gas companies within the meaning of the Act upon their acceptance of FERC certificates.

Section 1(b) of the Natural Gas Act states that "[t]he provisions of this act shall apply to the transportation of natural gas in interstate commerce . . . and to natural-gas companies engaged in such transportation" This section delineates the scope of activities which are subject to regulation under the Natural Gas Act. Section 2(6) defines a "natural gas company" as "a person engaged in the transportation of natural gas in interstate commerce"

Since neither Alaskan Northwest nor the shippers will physically transport Alaskan gas until completion and actual operation of the ANGTS, they may not be considered a "natural gas company" within the meaning of the Natural Gas Act, and therefore -- absent the waiver of these provisions of the Natural Gas Act --

would not qualify to collect charges under their FERC approved tariffs until gas actually begins to flow through the Alaskan Segment. To permit Alaskan Northwest to charge the minimum bill when the Alaskan pipeline segment or the conditioning facility is completed and commissioned, Sections 1(b) and 2(6) must be waived to the extent that they interpose a legal basis for any conclusion other than that Alaskan Northwest and the shippers will be natural gas companies upon acceptance of final certificates.

4. Export and Import Authorization

The President proposes to waive Section 3 of the Natural Gas Act, Pub. L. No. 75-688, to the extent any further authorization would be required for the export of Alaskan gas into Canada and the import of such gas into the lower 48 states.

Section 3 of the Natural Gas Act requires government approval prior to the import or export of natural gas to or from the U.S.

This waiver would permit the export and import of Alaskan gas without obtaining approval pursuant to Section 3 of the Natural Gas Act. Inasmuch as the President has already approved the export of Alaskan gas to Canada and the import of Alaskan and Canadian gas to the U.S. associated with the project, further governmental approvals should not be required.

C. Energy Policy and Conservation Act

The President proposes that Section 103 of the Energy Policy and Conservation Act, Pub. L. No. 94-163, be waived to the extent

it would require further authorization for the export of Alaska gas into Canada and the import of such gas into the lower 48 states. Section 103 of the Energy Policy and Conservation Act requires government approval prior to the export of natural gas from the U.S.

This waiver would permit the import and export of Alaskan gas without obtaining approval pursuant to Section 103 of EPCA. Inasmuch as the President has already approved the export of Alaskan gas to Canada and the import of Alaskan and Canadian gas to the U.S. associated with the project, further governmental approvals are not necessary.

Conclusion

The ANGTS sponsors have worked diligently and ceaselessly over the last seven years to provide a transportation system to bring much needed natural gas from Alaska to the lower 48 states. The ANGTS can be built in a timely and cost-effective manner. The need for this vital transportation link is without question and its benefits are substantial. But time is critical.

Since Congressional approval of the President's Decision in 1977, the ANGTS sponsors both in Canada and the U.S. have spent approximately three-fourths of \$1 billion - all of which is at risk - in the design and engineering of the ANGTS. Large additional capital expenditures and commitments must be made in the coming months to purchase the necessary supplies, materials, and equipment to keep the project on schedule. The

Alaskan Northwest partnership cannot justify risking additional substantial sums of money to keep the project on schedule absent the unqualified support of Congress expressed through the approval of the waiver transmitted by the President.

Additionally, the capital markets are not limitless. Project delay results in increased capital costs. The projected total completed cost of the ANGTS is approaching the capacity of the worldwide capital markets successfully to fund the project. If Congress does not act on the waiver this session, the capital costs of the project will escalate even further and our ability to secure adequate funds to complete the ANGTS will be severely jeopardized. Thus, the next step lies before you and the decisions that you make in the next several weeks will determine whether the project sponsors both in the U.S. and Canada can move forward to develop a private financing plan and complete this critically needed project.

THE END

APPENDIX A

PUBLIC LAW 95-158 [H.J.RES. 621]; NOV. 8, 1977

ALASKA NATURAL GAS TRANSPORTATION
SYSTEM—APPROVAL*For Legislative History of Act, see p. 3313*

Joint Resolution approving the Presidential decision on an Alaska natural gas transportation system, and for other purposes.

Alaska natural
gas
transportation
system.
Presidential
decision.
Congressional
approval.
15 USC 719f
note.
42 USC 4321
note.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the House of Representatives and Senate approve the Presidential decision on an Alaska natural gas transportation system submitted to the Congress on September 22, 1977, 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.

Approved November 8, 1977.

LEGISLATIVE HISTORY:

HOUSE REPORTS: No. 95-739, pt. I (Comm. on Interior and Insular Affairs) and No. 95-739, pt. II (Comm. on Interstate and Foreign Commerce).

SENATE REPORT No. 95-567 accompanying S.J. Res. 82 (Comm. on Energy and Natural Resources).

CONGRESSIONAL RECORD, Vol. 123 (1977):

Nov. 2, considered and passed House and Senate, in lieu of S.J. Res. 82.

WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 13, No. 46:

Nov. 8, Presidential statement.

APPENDIX B

EMBARGOED UNTIL AFTER THE BRIEFING

JULY 18, 1980

Office of the White House Press Secretary

THE WHITE HOUSETEXT OF A LETTER FROM THE
PRESIDENT TO THE
PRIME MINISTER OF CANADA

July 18, 1980

Dear Mr. Prime Minister:

Since you last wrote to me in March, the United States Government has taken a number of major steps to ensure that the Alaska Natural Gas Transportation System is completed expeditiously.

Most significantly, the Department of Energy has acted to expedite the Alaskan project. The North Slope Producers and Alaskan segment Sponsors have signed a joint statement of intention on financing and a cooperative agreement to manage and fund continued design and engineering of the pipeline and conditioning plant. The Federal Energy Regulatory Commission recently has certified the Eastern and Western legs of the System.

The United States also stands ready to take appropriate additional steps necessary for completion of the ANGTS. For example, I recognize the reasonable concern of Canadian project sponsors that they be assured recovery of their investment in a timely manner if, once project construction is commenced, they proceed in good faith with completion of the Canadian portions of the project and the Alaskan segment is delayed. In this respect, they have asked that they be given confidence that they will be able to recover their cost from U.S. shippers once Canadian regulatory certification that the entire pipeline in Canada is prepared to commence service is secured. I accept the view of your government that such assurances are materially important to insure the financing of the Canadian portion of the system.

Existing U.S. law and regulatory practices may cast doubt on this matter. For this reason, and because I remain steadfastly of the view that the expeditious construction of the project remains in the mutual interests of both our countries, I would be prepared at the appropriate time to initiate action before the U.S. Congress to remove any impediment as may exist under present law to providing that desired confidence for the Canadian portion of the line.

Our government also appreciates the timely way in which you and Canada have taken steps to advance your side of this vital energy project. In view of this progress, I can assure you that the U.S. government not only remains committed to the project; I am able to state with confidence that the U.S. government now is satisfied that the entire Alaska Natural Gas Transportation System will be completed. The United States' energy requirements and the current unacceptable level of dependence on oil imports require that the project be completed without delay. Accordingly, I will take appropriate action directed at meeting the objective of completing the project

more

(OVER)

by the end of 1985. I trust these recent actions on our part provide your government with the assurances you need from us to enable you to complete the procedures in Canada that are required before commencement of construction on the prebuild sections of the pipeline.

In this time of growing uncertainty over energy supplies, the U.S. must tap its substantial Alaska gas reserves as soon as possible. The 26 trillion cubic feet of natural gas in Prudhoe Bay represent more than ten percent of the United States total proven reserves of natural gas. Our governments agreed in 1977 that the Alaska Natural Gas Transportation System was the most environmentally sound and mutually beneficial means for moving this resource to market. Access to gas from the Arctic regions of both countries is even more critical today as a means of reducing our dependence on imported petroleum.

Successful completion of this project will underscore once again the special character of cooperation on a broad range of issues that highlights the U.S./Canadian relationship.

I look forward to continuing to work with you to make this vital energy system a reality.

Sincerely,

JIMMY CARTER

96TH CONGRESS
2D SESSION

S. CON. RES. 104

CONCURRENT RESOLUTION

Whereas, the Alaska Natural Gas Transportation System is a critically important energy project that will tap Alaska's North Slope natural gas reserves which constitute more than 10 percent of this Nation's entire proven natural gas reserves;

Whereas, the System, when complete will supply the United States with 5 percent of its annual natural gas demand, displacing over four hundred thousand barrels of oil, thereby greatly reducing this Nation's excessive dependence on foreign oil;

Whereas, the Congress has already expressed its overwhelming support for the System in approving by joint resolution the President's 1977 Decision on the Alaska Natural Gas Transportation System;

Whereas, a portion of the System known as prebuild can be constructed by the end of 1981 to bring Canadian gas to this Nation until the entire system is complete in 1985;

Whereas, prebuild will contribute to completion of the entire System by spreading demand for capital, labor and materials over several years, and will enable this Nation to obtain Canadian natural gas to displace two hundred thousand barrels of foreign oil a day;

Whereas, the Federal Energy Regulatory Commission has issued decisions granting certificates for the prebuild facilities in the United States;

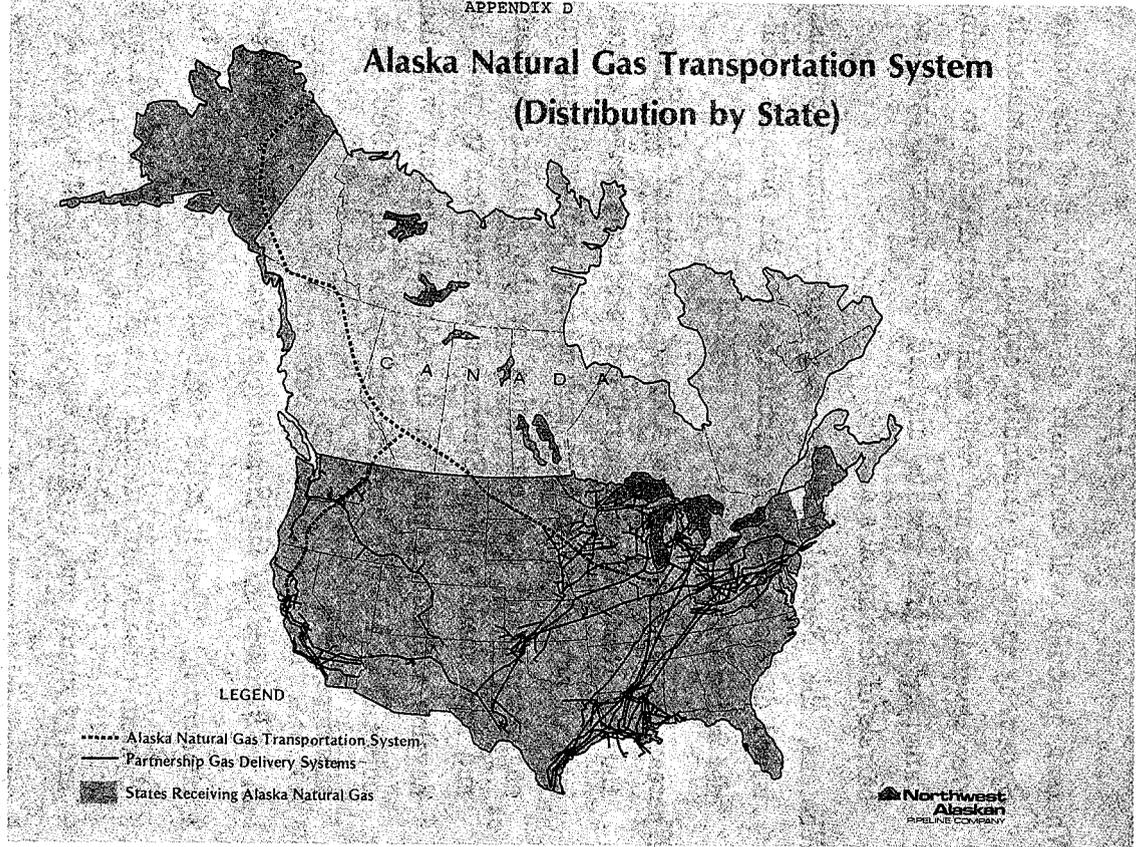
Whereas, the sponsors of the Alaskan segment of the System and the North Slope natural gas producers have entered into an agreement to fund and manage jointly the design, engineering and cost estimation for the Alaskan segment and have made a joint Statement of Intention to work to develop a financing plan for the Alaskan segment with the object of completing construction by the end of 1985: Now, therefore, be it

1 *Resolved by the Senate (the House of Representatives*
2 *concurring)*, That it is the sense of the Congress that the
3 System remains an essential part of securing this Nation's
4 energy future and, as such, enjoys the highest level of con-
5 gressional support for its expeditious construction and com-
6 pletion by the end of 1985.

Passed the Senate June 27 (legislative day, June 12),
1980.

Attest:

Alaska Natural Gas Transportation System (Distribution by State)



1071

APPENDIX E

**THE DEMAND FOR
ALASKAN NATURAL GAS**

JULY 1981

A Report to:

NORTHWEST ALASKAN PIPELINE COMPANY

Prepared by:

JENSEN ASSOCIATES, INC.
Boston Washington Geneva

84 State Street

Boston, Massachusetts 02109

Telephone: (617) 227-8115

Telex: 94-0057

TABLE OF CONTENTS

<u>Chapter</u>		<u>Page</u>
	<u>EXECUTIVE SUMMARY</u>	vii
	Introduction	vii
	Summary and Conclusions	vii
I	<u>THE MARKET ENVIRONMENT FOR ALASKAN NATURAL GAS</u>	1
	The Evolution of Oil and Gas Markets during the Seventies	2
	The Likely Natural Gas Market Environ- ment during the Eighties	6
II	<u>THE ROLE OF PRICE</u>	13
	The Outlook for Oil and Gas Prices	14
	International Oil Markets and OPEC	15
	The Crude Price Projections	22
	Oil Prices for the U.S.A.	23
	Product Prices	25
III	<u>FORECAST OF LOWER 48 STATES GAS SUPPLY</u>	27
	Summary Forecast	27
	Lower 48 States Production	27
	Canadian Gas Imports	42
	Mexican Gas Imports	43
	Liquefied Natural Gas (LNG) Imports	44

TABLE OF CONTENTS (Continued)

<u>Chapter</u>		<u>Page</u>
	Unconventional Production	44
	Synthetic Natural Gas (SNG)	45
	Alaskan Pipeline Gas	46
IV	<u>THE DEMAND FOR NATURAL GAS</u>	47
	Residential/Commercial Demand	47
	Industrial Demands for Natural Gas	54
	Gas Demand in the Electric Utility Sector	58
V	<u>SUPPLY/DEMAND BALANCE</u>	61
	The Impact of Early Deregulation	63

LIST OF TABLES

<u>Number</u>		<u>Page</u>
1	FORECASTS OF REFINERS' ACQUISITION COST OF CRUDE OIL	xi
2	SUPPLY AND DEMAND FOR U.S. NATURAL GAS	xi
III-1	LOWER 48 STATES TOTAL GAS SUPPLY FORECAST	28
III-2	NATURAL GAS PROVED RESERVES AND PRODUCTION, LOWER 48 STATES	29
III-3	NATURAL GAS RESERVES/PRODUCTION RATIOS, LOWER 48 STATES	32
III-4	GAS WELL COMPLETIONS BY TYPES, LOWER 48 STATES	33
III-5	CEILING PRICES FOR "NEW" VINTAGE NATURAL GAS	34
III-6	AVERAGE WELLHEAD PRICE FOR NATURAL GAS, UNITED STATES	35
III-7	GAS AND OIL WELL COMPLETION FOOTAGE, LOWER 48 STATES	36
IV-1	LOWER 48 STATES DEMAND FOR NATURAL GAS	48
IV-2	U.S. AVERAGE NATURAL GAS PRICES	50
IV-3	U.S. AVERAGE RESIDENTIAL ENERGY COSTS	52
IV-4	RESIDENTIAL AND COMMERCIAL GAS DEMAND	53
IV-5	TOTAL U.S. INDUSTRIAL FUEL SWITCHING	55
IV-6	INDUSTRIAL NATURAL GAS DEMAND	59
V-1	SUPPLY AND DEMAND FOR U.S. NATURAL GAS	62

LIST OF FIGURES

<u>Number</u>		<u>Page</u>
I	1987 ROLL-IN CAPACITY OF U.S. NATURAL GAS MARKETS	xiii
I-1	THE EVOLUTION OF GAS/OIL MARKETS	3
I-2	THE EVOLUTION OF GAS/OIL MARKETS DURING THE 1980s	9
II-1	GAS WELLHEAD PRICES COMPARED WITH REFINER'S CRUDE ACQUISITION COST	16
II-2	ACTUAL AND ALLOWABLE CRUDE OUTPUT AS % OF MAXIMUM SUSTAINABLE PHYSICAL CAPACITY	18
II-3	CRUDE PRICES VS OPEC CAPACITY OPERATION	20
II-4	PROJECTIONS OF THE DELIVERED PRICE OF OPEC'S MARKER CRUDE	24
III-1	NATURAL GAS PRODUCTION AND RESERVE ADDITIONS, LOWER 48 STATES	30
III-2	GAS AND OIL WELL COMPLETION FOOTAGE, LOWER 48 STATES	37
III-3	NATURAL GAS FINDING RATES, LOWER 48 STATES	39
III-4	NATURAL GAS RESERVES/PRODUCTION RATIO, LOWER 48 STATES	41
V-1	GAS SUPPLY/DEMAND BALANCES BY USER TYPES	64

EXECUTIVE SUMMARY

Introduction

In September 1979, Jensen Associates, Inc. completed a study of "The Market Outlook for Alaskan Natural Gas" for Northwest Alaskan Pipeline Company. We have been asked by Northwest Alaska to review the marketability of Alaskan natural gas in greater detail and to update our conclusions in the light of events which have transpired since the first report. This study--like the previous one--was commissioned to review the purely commercial outlook for Alaskan gas, rather than to deal with the many aspects of national energy policy which necessarily influenced the decision to proceed with the pipeline. In focusing on the commercial marketability, the emphasis has been upon the likely gas market environment during the construction and early operation of the pipeline. Thus, its time frame is the decade of the 1980s.

Summary and Conclusions

The market environment for natural gas in the United States continues to undergo profound changes as demand, supply, price and the prospects for competitive energy sources all respond to the upheavals in energy markets which were set in motion throughout the world during the 1970s. By 1987, when Alaskan gas will be available, we expect that the decline of conventional Lower 48 (L48) gas supplies will have created a strong demand for supplementary gas volumes, if gas is not to lose market share to imported oil. In an environment of rising real prices for oil--which we believe is the most likely expectation for long-term price trends--the price structure for Alaskan gas will look increasingly favorable compared both to oil and to those alternative gas supplies whose prices escalate with oil.

We believe that Alaskan gas is marketable, not only under the rising long-term price increase scenario--which we term our "least unlikely" forecast--but also under a more conservative price projection which we have utilized in this study to test market response.

The underlying driving force which will be most influential in creating increased demand for gas in general, and a market for Alaskan supplies in particular, is an increase in real prices for world oil. A major portion of existing U.S. industrial and power generation plant capacity is designed for oil and/or gas firing and is not readily convertible to coal or other fuels. Thus, rising oil prices quickly shift demand to gas. In addition, prices of most supplementary gas supplies--such as Canadian, Mexican or LNG--are being linked to oil. Rising real prices for oil thus make Alaskan gas--without such linkage--increasingly attractive relative to alternate supplies.

Our "least unlikely" crude price forecast calls for a 60 percent increase in real crude oil prices between early 1981 and 1987 when the

Alaskan gas is scheduled to flow. Under such an oil price scenario, Alaskan gas--priced in the middle of its expected range--would be cheaper than oil-indexed imports from Canada, Mexico and Algeria by 1989.

Early 1981 has seen a marked shift in the outlook for world oil supplies and prices. The successful weathering by world oil markets of the Iraq-Iran crisis, together with unexpectedly high reductions in world oil--and OPEC oil--demand has forced many oil economists to moderate their projections. Most forecasters have lowered their near-term oil price estimates and some have substantially lowered their long-term estimates as well. We at Jensen Associates have also reduced our price expectations for the near-term and adjusted our longer-term "lower-bound" price scenario. But we are not convinced that the conditions necessary for the lower-bound forecast--continuing overhang of surplus oil supply within OPEC, and an absence of disruptive military or political events in the Middle East--will persist throughout the 1980s. We thus continue to regard the lower-bound case as less probable. We view a continuation of the world oil pricing patterns which prevailed during the 1970s as more probable. These call for at least one disruptive event and subsequent price increase between now and the time the Alaskan gas flows.

Roughly two-thirds of the time since early 1973, world oil supply has been in balance or in surplus, with a tendency toward stable or declining real oil prices. Yet, 80 percent of the oil price increase during the period occurred during those times when events in the Middle East upset world oil balances. The majority of the time there may have been--as there may be now--a natural tendency to ignore the dominant "crisis" element in world oil price formation.

Our least unlikely price projection, together with our less probable lower-bound case, are shown in Table 1. The least unlikely forecast is, of necessity, illustrative since one cannot predict the timing of disruptive events; for purposes of this forecast, we have arbitrarily projected a disruption in 1984, with price formation before and after the event forecast by analogy to the 1973/1974 and 1979/1980 disruptions. Our less probable lower-bound case has weakening real prices until the end of 1982, followed by the operation of the OPEC long-range strategy formula thereafter.

Much of our marketability analysis has been focused on the interaction of upper-bound Alaskan gas price estimates with lower-bound world oil price projections, in order to test the market under the least favorable combination of circumstances. World oil prices have already risen substantially since the passage of the Natural Gas Policy Act (NGPA) in November 1978 and crude oil price deregulation in January 1981 placed further upward price pressures on competitive oil prices.

While oil prices have risen, gas pricing, under the terms of the Natural Gas Policy Act of 1978, is to be controlled until new gas deregulation in 1985, thus creating strong pressures to drive dual-fueled demand

to gas and create incentives for new customer growth and gas conversions. Thus, we see a growing demand for gas, despite major conservation-induced energy savings.

We do not see as easy an expansion of gas supply. Lower 48 production should continue to decline despite accelerated drilling activity. The addition of supplementary sources will be required to attempt to maintain supply levels. The supplements to maintain supply levels are apt to be costly, as increasingly, prices for gas imports from Canada, Mexico and LNG projects will be indexed to rising world oil prices.

The outlook for demand until 1985 is likely to be for a return of some of the excess demand conditions which first faced the gas industry from 1971-1977. New gas deregulation in 1985 will cause some price correction, and some loss of load, but a market will still remain for rolled-in Alaskan gas when it comes on line in 1987. Our estimates of gas demand together with supply (in the most severe, lower-bound oil price case) is shown in Table 2.

In the Natural Gas Policy Act, Congress granted Alaskan gas the right to rolled-in treatment for ratemaking purposes. This was designed to permit price-controlled old gas (which will continue long after 1985 new gas deregulation) to cross-subsidize any portion of the price of Alaskan gas over and above market clearing price levels. In a high oil price scenario, Alaskan gas quickly becomes competitive on the margin, as real oil prices overtake the initially higher-priced Alaskan gas. In our least unlikely combination of oil and gas prices, Alaskan gas requires little roll-in treatment during the early years to be marketable.

However, with projected Alaskan gas prices at the upper bound, and oil price expectations at the lower bound, Alaskan gas must rely--in the early years, at least--on the rolled-in treatment which Congress granted it in the NGPA. Assuming this relatively unfavorable combination of higher-bound Alaskan gas prices and lower-bound oil prices, we estimate that the 1987 market will have 25 percent of total U.S. gas supply still regulated below market clearing levels, amounting to a roll-in capacity of \$11.7 billion. This is illustrated in Figure 1. Other supplementary gas supplies, priced above clearing levels, will utilize a portion of this capacity, but most of it remains to accommodate the Alaskan gas and to provide a potential for "flyup"--the rapid market and contractual escalation of deregulated new gas prices in 1985.

It is possible that the gas pipeline industry, through its contracting practices between now and 1985, can lock in enough deregulated gas price escalation to absorb the roll-in capacity in this lower-bound case and make it difficult to accommodate the Alaskan gas. We sense a growing awareness of this problem in the industry with greater emphasis on supply planning and on market protection contract clauses. We therefore believe the problem is manageable if dealt with in time.

In summary, we believe that a commercial market for Alaskan gas will exist in 1987. In our least unlikely world oil price scenario, Alaskan gas will increasingly be competitive with alternate gas supplies, which will be largely linked to oil. A combination of upper-bound Alaskan gas prices and lower-bound oil prices will require reliance on roll-in capacity, but enough capacity should exist to accommodate it.

TABLE 1

FORECASTS OF REFINERS' ACQUISITION COST OF CRUDE OIL

(1980 \$/barrel)

	<u>1981</u>	<u>1985</u>	<u>1987</u>	<u>1990</u>
Least Unlikely Case ^a	\$35.21	\$59.30	\$57.60	\$66.42
Lower-Bound Case	\$35.21	\$36.19	\$38.43	\$42.01

^a Assumes a disruption in 1984 with a sharp price increase followed by a period of market weakness.

Source: Jensen Associates, Inc.

TABLE 2

SUPPLY AND DEMAND FOR U.S. NATURAL GAS

1980 - 1990

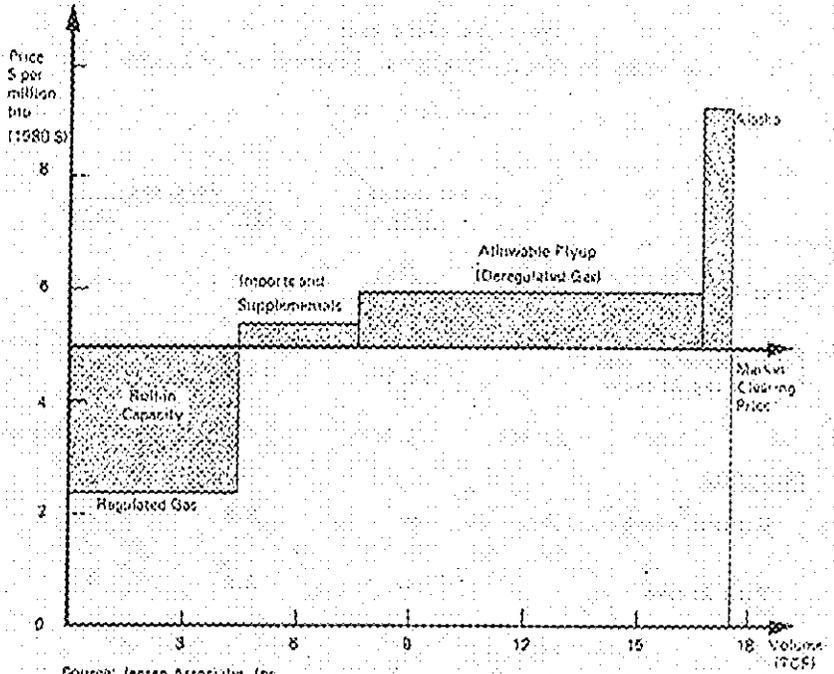
(Trillion cubic feet)

	Estimated <u>1980</u>	<u>Forecast</u>	
		<u>1985</u>	<u>1990*</u>
Total Demand	20.5	22.5	18.6
Total Expected Supply (Excluding Alaska)	20.5	18.8	17.7
<u>Shortfall</u>			
Without Alaska	--	3.8	0.7
With Alaska	--	3.8	0

* The 1990 demand forecast is based on a cleared market for natural gas.

Source: Jensen Associates, Inc.
U.S. Department of Energy

FIGURE 1
1987 ROLL-IN CAPACITY OF U.S. NATURAL GAS MARKETS
(Based on Lower Bound Ombre Price
and
Upper Bound Alaskan Price)



Source: Jensen Associates, Inc.

x111

JENSEN ASSOCIATES, INC.

I. THE MARKET ENVIRONMENT FOR ALASKAN NATURAL GAS

Energy markets have been changing rapidly during 1981. The natural gas shortages of 1976/1977 have been replaced by a persistent "gas bubble;" the chaotic 1979 world oil markets which followed the Iranian Revolution have been supplanted by an "oil glut" with visible evidence of strain within OPEC. Energy price signals now often point downward, rather than consistently upward as they have in the recent past. It is tempting to believe--as the popular and business press frequently observe--that world energy problems are on their way to solution and that cheaper and expensive energy supply options from nuclear power, to synfuels, to LNG, or to Alaskan gas may no longer be commercially justified.

We disagree with this hypothesis. The energy markets of 1987, when the Alaskan gas will be available to the Lower 48, are likely to be far different from the energy markets of 1981. The improvements in natural gas and oil balances have come predominantly from the demand side, partly through demonstrated levels of conservation which are much larger than most forecasts would have anticipated, but also through general weakness in economic activity both in the U.S. and the rest of the OECD. Improvements in energy supply for the most part have been disappointing, certainly, relative to expectations for supply five to ten years ago.

In the extent that portions of the U.S. natural gas and world oil surpluses are recession-induced, any pickup in economic activity threatens to restore some of the tighter energy market conditions which previously prevailed. This, in our view, is a much more likely expectation than a persistence of gas and oil surpluses through the latter part of the decade.

There are three critical elements determining the marketability of Alaskan natural gas. They are:

- the evolution of natural gas demand in the U.S. within the context of total U.S. energy market balances;
- the expectation for alternative gas supplies, both from traditional Lower 48 sources, as well as from imports and the gas supplements;
- and--since on the margin most gas competes with oil--the outlook for world oil price levels.

Our analysis suggests that gas demand will rise between now and 1985, so gas prices remain price-regulated under the NGPA and oil prices are deregulated. New gas deregulation after 1985, however, will diminish the competitive price advantage of gas. As a consequence, the price-sensitive demand for gas will shift to other fuels, thereby eliminating the excess demand for gas.

The outlook for gas supply, in our view, is for a continuing decline in Lower 48 production, with a resulting need for supplementary gas supplies to meet demand.

Rising real oil price levels have two interrelated effects. They increase the relative demand for gas compared to higher-priced oil, and they render most other supplementary supplies--which are for the most part price-indexed to oil--increasingly costly relative to Alaskan gas. Higher oil prices--as in our least unlikely oil price case--quickly make Alaskan gas competitive in its own right. In a more conservative lower-bound oil price projection, this competitive crossover point is delayed and Alaskan gas must resort in the early years to the roll-in treatment which Congress granted it in the NCPA.

The Evolution of Oil and Gas Markets during the Seventies

The commercial market for natural gas during the 1970s has been extremely complex. Projections and estimates made by normally knowledgeable observers have been frequently overtaken by events in a matter of months. We believe that the turmoil in natural gas markets is more likely to increase than to decrease during the 1980s, as the supply and price of both oil and gas are heavily affected by regulatory and political pressures, as well as the operation of the usual market forces.

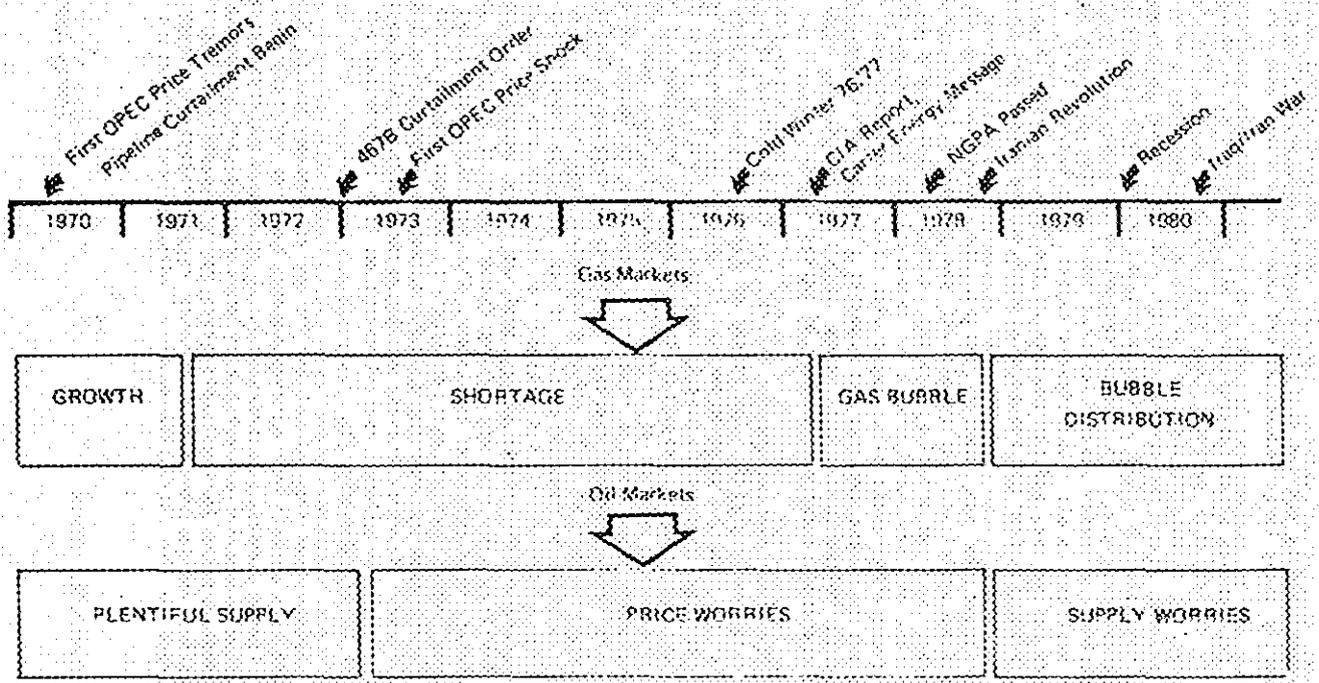
Jensen Associates identifies four major gas market environments during the seventies which we call the "growth," "shortage," "gas bubble," and "bubble distribution" periods. Figure 1-1 depicts the chronological evolution of these markets over the last decade.

From the end of World War II to 1971, natural gas was the fastest growing energy source in the United States. When the 1954 Phillips decision of the U.S. Supreme Court placed interstate gas wellhead prices under Federal Power Commission control, gas prices were no longer influenced by changes in unregulated coal and oil prices. As a result, gas--in a period when supply was not perceived as limiting--carved out substantial increases in market share at the expense of competitive fuels. By 1971, the major interstate natural gas pipelines were no longer able to satisfy the growing demand for natural gas and an era of interstate natural gas pipeline curtailments began.

The growth period for natural gas, which effectively ended with the first interstate pipeline curtailments in 1971, was a period when relatively little concern was expressed about the availability or pricing of oil. Indeed, there was often little recognition of the fact that most oil on the margin had to be imported.

The natural gas shortage period, from 1971-1977, was an era when regulation sought to restrain the demand for natural gas to its clearly limited supply. This was accomplished by moratoriums on the attachment of new

FIGURE I-1
THE EVOLUTION OF GAS/OIL MARKETS



3

1085

customers and by end-use curtailment mechanisms, which allocated shortages primarily among large industrial and power generating customers.

Perceptions about international oil supply and price changed substantially during this period. The Arab oil embargo of 1973/1974 led to a quadrupling of international oil prices by OPEC and public attention tended to focus on price rather than supply. It was common to characterize OPEC as a cartel which would ultimately break up and bring prices back down to "reasonable levels." A little recognized by-product of the natural gas curtailment priority system was that most of the curtailed gas demand in fact switched to oil. Our figures suggest that between 1974, the peak year of gas deliveries, and the passage of the NGPA in 1978, 76 percent of the fuel switching from gas was to oil, which on the margin had to be imported.

During the gas shortage period, the large overhang of excess gas demand at prices well below oil led gas suppliers to try to make up shortages with alternative supplies, almost without regard to price. The fact that any new supply--such as comparatively high-priced SNG made from oil feedstocks--could be averaged with price-controlled supplies and still keep prices to the customer below market clearing levels, led to the phenomenon of rolled-in pricing, where higher-cost gas could be averaged with price-controlled gas without loss of market share.

The logic surrounding the Natural Gas Policy Act of 1978 was born out of the shortage period. The winter of 1976/1977 had been abnormally cold, particularly in the upper Midwest. For a time it appeared that the worst gas shortage fears had finally materialized, with a cut-off of gas to industry and schools resulting from a seeming breakdown of supply. In retrospect, the winter of 1976/1977 appears to have been more a severe-winter peak-demand problem than the system was no longer able to handle, than the chronic annual shortage which was increasingly anticipated during the shortage period. To enhance domestic supply, the NGPA liberalized price controls on many categories of gas, pointing towards deregulation of new gas by 1985. It did attempt to eliminate the dual market between interstate and interstate gas by applying price controls to new interstate gas for the first time and making the movement of gas from interstate to interstate markets more flexible. The Act also introduced incremental pricing, which was in part designed to prevent undisciplined price behavior--through roll-in--in a tight market by threatening loss of industrial load. However, because of the desirability of Alaskan natural gas, that source was given a special exemption from incremental pricing, allowing it to be rolled-in.

By the time the Natural Gas Policy Act became law in November 1978, natural gas markets were already nearing balance, and talk of the "gas bubble" became common. In retrospect, it appears that conservation, principally by industrial users but also by residential and commercial customers, was much greater than most observers had anticipated. One of the major contributions to the bubble was the very substantial conservation which occurred in the intrastate market. Although gas production levels went

down, demand levels dropped even further, creating a surplus from the demand side which was potentially available for the interstate market.

Our analysis suggests that at the time of the passage of the NGPA, no more than 1 trillion cubic feet (tcf) of the 2.3 tcf drop in industrial demand had switched out of natural gas into alternate fuels over the 1972-1978 period. Conservation accounted for the remainder of the net demand effect. Furthermore, in late 1978, a surplus of comparable size existed in the interstate gas market as conservation had reduced demand below available supply and producers were reluctant to commit the surplus to regulated interstate pipelines.

Our analysis suggests that in late 1978, the market was near balance and might well have cleared quickly had the NGPA simply provided for flexibility in moving gas from interstate to interstate markets without all of the NGPA's complex pricing features. The simultaneous occurrence of the Iranian revolution and subsequent increase in world oil prices, however, has recreated a situation in which regulated gas prices fail to track competitive oil market prices.

The timing of the gas shortage and the emergence of the gas bubble coincided with growing concern about international oil. Oil concerns from 1973-1977 were largely about prices based on the view of OPEC as a price-fixing cartel which should be "broken up." President Carter's energy message in April 1977 publicly raised the possibility of oil shortages as well. It relied upon an analysis by the Central Intelligence Agency which argued that deteriorating Russian oil supplies would put the Russians in competition for Middle East oil by the early to mid 1980s and create the possibility of physical shortages. Thus, attention shifted over the period of 1973-1977 from cartel-oriented price worries to genuine concern about physical supply. Ironically enough, by the time the NGPA was passed, its implied concern about excess gas demand and the threatened use of oil competition to discipline gas prices had largely been replaced by concern over the management of oil imports.

Among the measures which the Department of Energy (DOE) initiated to deal with oil shortages was the Order 30 program. This was designed to put surpluses of natural gas--the gas bubble--under interstate boilers to back out imported oil. Thus, where oil had been used as an agent to control excess gas demand during the gas shortage period, the gas bubble was being used as a device to control oil imports.

During 1979, while the international oil spot market was rising rapidly and the official OPEC prices rose two-and-one-half fold, we at Jensen Associates believed that the U.S. was entering a fourth market period we called "oil crunch." We anticipated that the rapidly emerging disparity between oil and regulated gas prices would cause a surge of conversions to natural gas, absorb the bubble, and recreate the conditions for shortage. In our forecast of natural gas markets for Northwest Alaska in 1979, we described this "crunch" phenomenon as creating a substantial,

strong future outlook for gas demand, although the hard statistical information to demonstrate that it was occurring was not yet available.

From the vantage point of December 1980, it now appears that the gas surplus has remained with us and the "crunch" phenomenon anticipated by Jensen Associates in mid-1979 has not occurred as previously expected. A recap of the developments in the market from 1978-1980 suggests that the onset of the recession had a significant effect in holding demand below capacity levels. While the recession, as measured by changes in the Gross National Product, was slow to make its appearance during 1979, many energy-intensive industries such as cement, steel, and refining were selectively hit early. This caused a reduction in total industrial energy demand below what might have been expected on the basis of economic conditions alone. Thus, we have changed our designation of the period from 1978-1980 from "oil crunch" to "bubble distribution."

Examination of the figures for the period from 1978-1980 suggests that, indeed, a major shift in the bubble from the interstate to the interstate market took place. Since interstate markets were limiting production levels prior to the NGPA, gas which would normally have been produced for interstate customers was cut back. The passage of the NGPA permitted this gas, which previously would have gone interstate, to flow to interstate markets giving the appearance of a supply improvement. This production increase was due less to basic supply improvement than it was to the increased flexibility to move gas outside the producing state. We estimate that between 1978 and 1980, total gas demand actually supplied (on a weather-normalized basis) increased by slightly over 1.5 ref. Approximately a quarter of the increase occurred in residential, commercial and high-value industrial markets. More than half of this high-value gas demand increase occurred in the Northeast where the contrast between the prices of traditional oil fuels and price-controlled natural gas was the most dramatic. This increase, we believe, was truly a "crunch" effect. However, three-quarters of the increase in demand occurred in boiler fuel and power generation uses--principally in interstate markets--where environmental-induced fuel switching was concentrated. This was the "bubble distribution" effect made possible by the much flexible interstate/interstate gas transfer arrangements contained in the NGPA.

The Likely Natural Gas Market Environment during the Eighties

During the 1970s, the development of new natural gas market environments, which resulted from changing patterns of supply, demand, and pricing for oil and gas were sometimes surprising. Clearly, one cannot discount further surprises during the 1980s. Already, for example, 1981 has provided a largely unforeseen drop in world oil demand sufficient to reduce net requirements for OPEC oil to the lowest level since 1970, and to stimulate significant weakening of international oil prices. But many of the forces which will determine the market environment for Alaskan gas in 1987 are already in evidence. They suggest to us that energy markets in 1987

will be much different from energy markets of 1981, and that a commercial market will exist for Alaskan gas at that time.

Energy markets in mid 1981 are characterized by surplus--a persistent bubble in U.S. natural gas markets and a substantial international oil surplus. The oil surplus is the most recent development and one which has caught much of the industry by surprise. The world has weathered the Iraq-Iran war this past winter with no more than a minor flurry in the spot market in October/November, and emerged with evidence of a sizable market reaction to the price increases of 1979/1980. Free world oil demand this year might be no more than 46-47 million barrels per day, off about 1-4 million barrels per day from last year's levels. Net demand for OPEC oil could fall as low as 23 million barrels per day against an allowable OPEC capacity level of 30 million barrels per day. Total energy demand growth has fallen significantly below expectations and strong growth in both nuclear sources and in non-OPEC oil have resulted in the sizable OPEC reduction.

In our view, this sudden change is more a reaction to faltering economic performance throughout the OECD than it is evidence of a new trend of deeper and more lasting demand response to higher price levels. World energy demand, and net demand on OPEC, both reacted to the sharp oil price increases of 1973/1974 only to resume a lower level of upward growth with no improvement in world economies in 1976. The nature of new increments of coal or nuclear capacity is that they are apt to be utilized first--at lowest in running cost--when total demand falters, thus levering oil demand downward in a recessionary year. But oil demand can readily return again as the economy strengthens. This pattern is being intensified during 1982 by the emergence of inventory liquidation of the excessively high world oil stocks which were built up in the market panic of 1979/1980. We look for a turnaround in OECD economic performance and in world oil demand by the early part of 1983, with a return of some supply insecurity and rising prices beyond that point.

We believe that the gas bubble will also begin to disappear as the U.S. economy develops some strength by 1983. Thus, the pattern which we foresee for 1983 and 1984--a return to conditions of excess gas demand--will characterize the middle years of the gas market before Alaskan gas flows to the lower 48. The excess gas demand will be in response to the gas price controls retained under the NGPA, concurrent with domestic crude oil price deregulation (January 1981), which allowed prices to rise to international levels.

For gas, we have assumed that wellhead pricing will operate under the price constraints of the Natural Gas Policy Act through 1984. As presently envisioned, Section 102 gas--gas newly discovered since April 1977--will be deregulated, along with several other categories, and allowed to seek its own market level at that time. The original Congressional intent appears to have been to retain price controls on domestic natural gas while supply improvement was allowed to reduce the overhang of excess demand. The

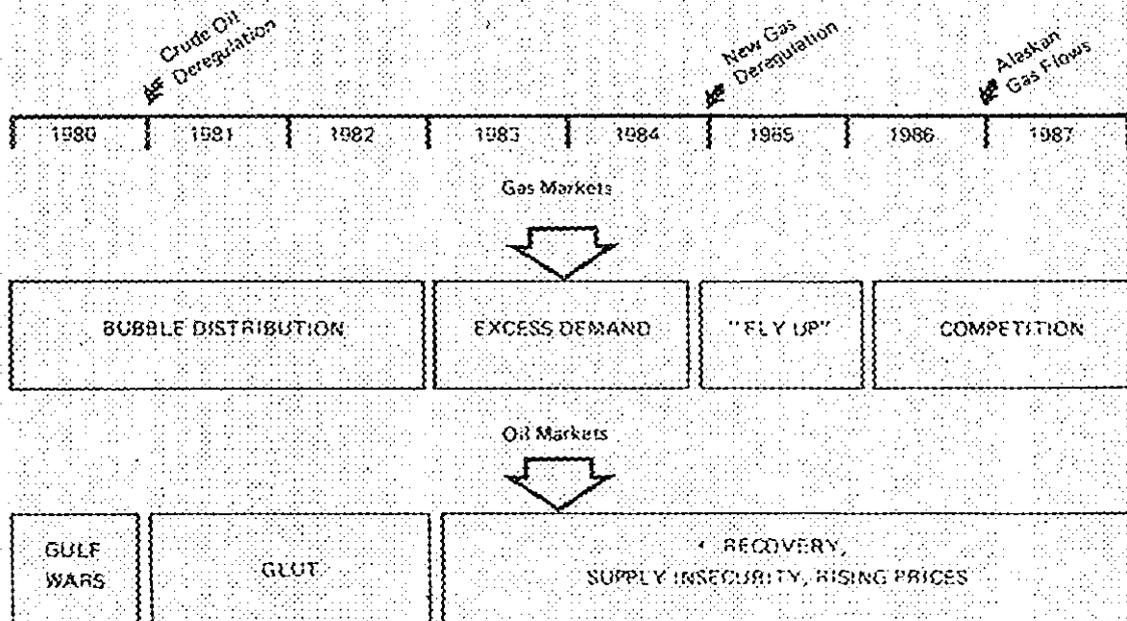
complex regulated gas price trajectories were to intersect with competitive fuel levels, so that an orderly transition to deregulation could occur in 1985. Clearly, the price levels, which Congress may have expected to provide an orderly transition in 1975, were totally unrealistic in 1981 after the oil price increases of 1979. While US gas prices rose during 1979 at an almost unprecedented average rate of 1.4 cents per million Btus per month, the refiners' acquisition cost of crude oil in the United States rose at 15.4 cents per million Btus per month. Even residual fuel oil, which suffered price weakness from gas competition in a number of sections of the country, rose an average of 6.1 cents per million Btus per month. Thus, the gas price trajectory in the NGPA clearly failed to track competitive fuel levels in 1979. In our view, it will continue to fail to track the likely price trajectory of refiner acquisition cost of crude oil during the early 1980s. That suggests a significant price readjustment may take place in 1985 upon new gas deregulation, unless the supply of gas was so large as to set its own internal market clearing price somewhere without regard to competition from oil. In our view, this is extremely unlikely.

In projecting the evolution of gas/oil markets through the energy decade, the first new market environment which we envision is the return of excess gas demand. This is illustrated in Figure 1-1. As the disparity between price-controlled natural gas and international oil prices continues, those customers with gas capability will increasingly prefer gas. In our view, this potential was beginning to emerge during the 1979 oil price run-up, but the creation of excess demand was blunted by the recession. But with a recovery from the recession, industrial demand should be restored. The economic driving force compelling dual-fuel demand towards gas will steadily mount.

Our detailed analysis of the demand potential suggests that gas demand would increase by 2 tcf between 1980 and 1985, if it were not constrained by supply. This is a demand level that the gas industry has not reached since 1973. Increasing conservation will limit the overall growth of residential and commercial demand. Growth in large boiler fuel and power generation uses will, we assume, continue to be restricted by federal regulation. Thus, the bulk of growth in demand would normally take place in high-valued industrial uses, primarily process gas. We estimate that about three-quarters of the overall demand increase will take place in the premium industrial fuel sector. The West South Central region, where most increases gas has been concentrated, has continually provided the largest increments of industrial demand growth and our projections assume that this will continue. One effect of the NGPA has been to control interstate gas prices below competing fuels where intrastate markets were previously free to clear. Thus, the NGPA has created a financial incentive in both intrastate and interstate markets for industrial gas demand to grow.

The argument has frequently been advanced that many industrial gas users are reluctant to commit new or expanded installations to gas because of the potential unreliability of supply. The extent to which this threatened behavior is actually being practiced is debatable in our view. But,

FIGURE 1-2
THE EVOLUTION OF GAS/OIL MARKETS DURING THE 1980's



6

the demand may not develop as we project unless the gas industry makes a credible statement about its supply potential during this period. Nevertheless, the disparity between regulated natural gas and alternate energy prices will provide an economic incentive for the high-valued industrial demand to utilize natural gas, whenever it is available.

Our projections for supply are not so optimistic. Lower 48 natural gas reserve additions have been less than production for twelve years. We do not expect reserve additions to rise to present production levels, despite accelerated drilling during the forecast period. For this reason we see a continuation of the steady decline of proved reserves.

The rate at which existing reserves are being depleted has been increasing in recent years. Part of this has been the result of intensive developmental drilling for higher producing rates. Some of it is also attributable to the concentration of discoveries in geological areas such as South Louisiana, where unconsolidated sands provide high permeability and extremely high well flow rates. Much of the newer reserves which will be added in other areas are not of such high permeability and therefore may not be subject to such rapid depletion. We anticipate that depletion rates will level out and, in fact, might well decline somewhat as the shift in exploration takes place. Thus, in our view, production from the Lower 48 States will continue to decline with declining reserves. The burden of maintaining supply will shift more and more to supplements such as imported gas, coal gasification or the Alaskan gas project under analysis here. Because of the lag times associated with many of these projects, their contribution will grow slowly, and in our view not fully offset the decline in the Lower 48 conventional production. Thus, we look for a slight decline in total supply between 1980 and 1990. The result of these demand and supply trends, we believe, will be a renewal of the excess demand which confronted the gas industry in the early 1970s.

It is important to recognize that this excess demand will tend to occur during the period when much of the industrial boiler and power generation load is fully convertible into alternate fuels and can be quite flexible in its shifting. Thus, we would expect to see increasing interruption of dual-fueled boiler and power generation customers to offset the limited gas supplies. The level of total interruption to be borne by these customers in 1985 would be as much as 3.7 ccf if all new loads actually grow as projected. Over 75 percent of the reductions in deliveries would be to large boiler fuel customers and power generating plants. Regionally, the reductions would be heavily concentrated in markets where boiler fuel and power generation are important.

As the NGPA is currently written, several of the gas categories will be deregulated in 1985. Congress clearly expected that gas markets would be in balance at that time and would permit an orderly transition to deregulation. However, since the price trajectory of regulated gas are so much lower than those of deregulated oil, one now could expect market

forces in 1985 to supply a significant gas price correction upon deregulation. This has been termed "flyup" in many discussions. One can picture a price correction for deregulated gas sufficient to bring the average value of all gas to market-clearing levels. We call this level "allowable flyup."

It is the existence of a quantity of gas remaining under regulation below market-clearing levels--a so-called "roll-in" capacity--which permits flyup to occur. We estimate that in 1987 some 4.4 tcf of gas will remain under regulation. It is in our lower-bound oil price case that gas is priced approximately \$2.50 below clearing levels, creating some \$11 billion of roll-in capacity. Alaskan gas in 1987 requires \$3.7 billion of roll-in in this lower-bound case. In our least unlikely price scenario, the roll-in capacity rises to \$24 billion in that year and Alaska requires less than \$1 billion.

The relatively small annual volume of totally new reserves being committed after 1985 will be free to select price and contract terms without constraint. One could anticipate that undisciplined bidding for these comparatively small volumes of new supplies in a tight market could lead to quite high individual contract prices from the roll-in effect. There will also be a much larger volume of Section 102 and other gas (committed from 1977 to 1985) under contract which will be free to move to whatever internal limits the contracts themselves dictate. Where these contracts have provided for indefinite pricing provisions, such terms could well be triggered in 1985 and drag up a much larger volume of deregulated gas to higher levels as well. The actual way in which such flyup might occur is dependent both on the nature of the Section 102 gas contracts as well as on the market psychology of the time and its effect on the discipline gas buyers show to 1985 supply contracting.

Flyup is also an individual pipeline--rather than a nationwide--phenomenon. Some purchasing pipelines will clearly have more roll-in capacity; some will have less as contracting develops over the next years.

A further complication is the existence in many contracts of buyer-escape clauses which enable the buyer to renegotiate his contracts downwards in the event of market pressures. One thus can envision a "flydown" effect as well, under certain circumstances.

The degree to which flyup will actually occur and absorb some roll-in capacity which could otherwise help to accommodate Alaskan gas is thus extremely difficult to estimate, particularly since much of the gas which will be subject to flyup is not yet under contract. We recognize that the gas industry could negotiate away much of its flexibility to absorb Alaskan gas, particularly in lower oil price cases. However, we sense a growing awareness of the problem among the pipelines, and see some evidence of attempts to address the issue through more careful supply planning. We thus believe it is manageable.

11. THE HOLE OF PRICE

Alaskan natural gas is expected to be delivered to the Lower 48 States in 1987 at a price which will range from \$7.70 to \$8.94 in constant 1980 dollars. This price range seems high when compared to the present price of \$4.94 for Canadian or Mexican gas at the border, or the \$2.81 presently permitted for new (Section 102) gas under the NGPA, let alone the average price of \$2.02 for oil gas industry supply. But in these days of volatile energy pricing, the critical price relationships are those which will prevail in 1987 when Alaskan gas comes on line, rather than those of today. We believe that the price relationships among Alaskan gas, other gas sources, and alternate fuels will have altered substantially by that time.

Perhaps the single most important element in competitive fuel price formation during the 1980s will be the outlook for international oil prices. Rising prices for OPEC oil supplies have two important effects on oil and gas competition. First, rising oil prices tend to stimulate the demand for gas at the expense of oil--particularly in the price-sensitive dual-fuel market. But since prices of most supplementary supplies, such as LNG or overland imports, will increasingly be tied to international oil price levels, rising oil prices make these sources relatively less attractive by comparison with Alaskan gas. Thus, a rising oil price environment makes Alaskan gas increasingly competitive, not only with oil, but with most other supplementary gas sources as well.

In 1973, at the time of the first oil price shock, interstate natural gas prices in the United States were price-regulated at levels which did not reflect competitive fuel values. Intrastate prices had been held below alternate fuel prices by price competition in a period of surplus interstate reserves. Imported Canadian gas was priced on a netback basis from the price-regulated U.S. market. After the rapid increase in oil prices in 1973/1974, reserve shortages in the intrastate market caused intrastate prices to break free of interstate pricing and move to alternate fuel parity based on residual fuel oil. The Canadians abandoned the policy of netback pricing to the regulated U.S. market and began tying their prices unilaterally to changes in international oil price levels.

The Canadian precedent of tying export gas prices to international oil prices has spread and become the general practice nearly everywhere. The past two years have seen negotiations between the U.S. and Mexico, the U.S. and Canada, Japan and Abu Dhabi, the Soviet Union and Iran, and both the U.S. and France with Algeria--all over the relationships between oil and gas pricing in international trade. While no uniform formula for linking such prices has yet been developed, it seems nearly certain that future increases in world gas prices will be directly linked to changes in world oil prices.

Since the passage of the NGPA, nearly all U.S. gas supply--intrastate as well as interstate--has been placed under price regulation in which price escalation is independent of changes in international oil prices. We estimate that the prime of only about nine percent of U.S. gas supply was affected by oil price changes in 1980. Somewhat less than seven percent of U.S. gas supply in 1980 was from supplementary sources, either oil-based SNG or imported gas, and less than three percent was deregulated conventional production.

But by 1985, with the deregulation of new gas and the growth of supplements, only 27 percent of gas supply will remain fully price-regulated. Supplements will account for 19 percent and deregulated gas for 54 percent of total supply. The role of price-regulated gas declines as it is depleted and as supplements constitute a growing share of the total.

In the 1980 environment, the rapidly rising price for oil made gas competitively attractive. But by 1990, a rapidly increasing price for oil will lead to a rapidly increasing price for gas as well, since much of the gas supply will be price-linked to oil. Gas supply sources which avoid this direct linkage--such as Alaskan gas with its 20-year average price range of \$4.22-\$5.67--will be relatively favored. In a 1990 environment of escalating world oil prices, Alaskan natural gas with its large capital costs, will increasingly look like a bargain as the facilities are depreciated and costs decline.

The Outlook for Oil and Gas Prices

The favorable market outlook for Alaskan natural gas is heavily influenced by the expected future course of competitive oil and gas prices. Because of the importance of these future price estimates to the conclusions of this study, we have laid our analysis out in some detail in this section.

In this report, we utilize two forecasts of oil prices. One of these--our least unlikely case--is based on the expectation that international oil price formation will operate very much during the 1980s as it has during the 1970s. The dominant feature of recent international oil price development has been a sporadic political or military crisis in the Middle East; this has generated panic buying in the marketplace and a rapid escalation in oil prices. These prices subsequently decline in real terms as the disruption passes and world economic activity reacts to the sharp dislocations in pricing. For our least unlikely case, we have arbitrarily assumed that a disruption will occur in 1984 and the pricing pattern both during and after the disruption will be similar to 1973/1974 and 1979/1980.

For purposes of this analysis, however, we have assumed that such a forecast, with its disruptive price pattern, would not present a credible test of the marketability of Alaskan gas. Therefore, we have utilized instead a "lower-bound" price case which represents the lowest level of prices that we think are plausible over the next decade.

It is this projection--one which assumes that political disruption will have no significant effect on oil prices throughout the decade--which we utilize in this report to test Alaskan gas marketability. The basic crude projection has been adjusted for transportation and other crude oil sources, and then converted into a price index for the refiners' acquisition cost of crude oil. This series has been used in turn to develop both distillate and residual fuel oil prices by region.

Our gas price projections are made individually for the many regulated pricing categories of gas under the NGPA, as well as for the various supplemental gas projects and import volumes. These prices are then modified for transmission costs and for distribution margins to arrive at regional estimates of retail gas prices by type of customer.

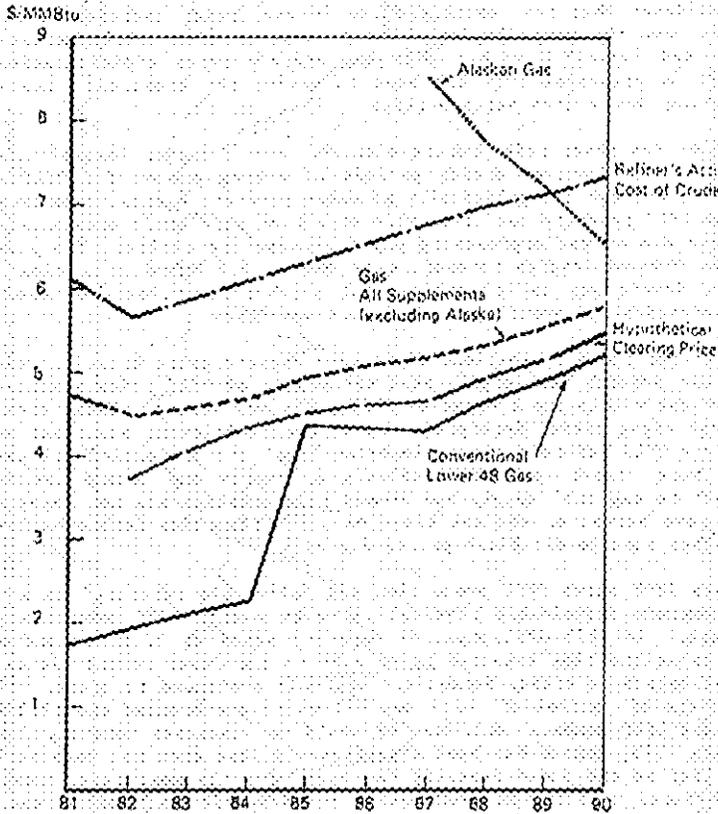
The period following new natural gas price deregulation in 1985 poses special analytical problems because of the uncertainties surrounding the price behavior of deregulated gas after that time. Since the middle 1970s, most contracts--interstate and intrastate--have been written with escalation clauses, in some cases indefinite escalation clauses, which continue to increase even though the current price itself may be limited by regulation. In 1985, when deregulation occurs, many of these contracts will move to the levels established by the contract terms. In those cases with indefinite price escalators which will be permitted to operate after 1985, the behavior of buyers and sellers in 1985 in setting new price levels will bring up the value of old contracts as well. This phenomenon of opened price pressure with deregulation in 1985 will finally be defined both by the nature of the contracts written between now and 1985, but also by the marketplace psychology in 1985, particularly as it influences the willingness of suppliers to bid competitively for short supplies. Our analysis suggests that there will be excess gas demand in 1985 from markets that would prefer cheaper gas to more expensive oil. We thus believe that some level of flyup is inevitable. Recent offers by gas pipeline companies as high as \$7-\$8/mcf for deep Tuscaloosa Trend gas in Louisiana indicates the potential for high prices in the early days of decontrol, while average gas costs remain low.

To illustrate the way in which flyup might operate, we have allowed the price increases for deregulated gas in 1985 to rise to a level high enough to bring average gas prices to estimated clearing levels. We call this "allowable flyup." Because of the disparity between gas and oil price levels at that time, the flyup price increases are comparatively large. Figure XI-1 shows our projections of conventional lower 48 prices (including "allowable flyup"), together with Alaskan gas, all other supplements, the hypothetical clearing price, and the refiners' acquisition cost for crude oil.

International Oil Markets and OPEC

From 1973 to 1981, prices of international oil to U.S. markets rose at an average rate of nearly 14 percent per year in real terms. This was not

FIGURE II-1
 GAS WELLHEAD PRICES COMPARED WITH REFINER'S CRUDE ACQUISITION COST
 (1980 Dollars per million-Btu)



Source: Jentzen Associates, Inc.

a classical steady growth curve, however, since virtually all of the increase has been confined to two comparatively short periods--October 1973 to February 1974 during the Arab oil embargo, and again from December 1978 to February 1980 precipitated by the Iranian revolution. There is thus compelling evidence that the dominant force to real price increases over the decade has been the panic buying which accompanied the crisis markets of 1973/1974 and 1978/1980 rather than any orderly price administration by OPEC. OPEC's principal role has been to resist the erosion of real oil prices during the periods between rises.

Such of the sharp price runups occurred when a sudden loss of production within OPEC occurred during periods of steady demand for OPEC oil. The embargo, through its politically mandated production cuts, took roughly 3 MMbpd of OPEC capacity out of service at a time when world economies were booming and demand was approaching physical capacity limits. The Iranian Revolution reduced Iranian production by over 3.3 MMbpd at a time when underlying demand was not so strong, but psychological fears of shortages caused unprecedented inventory accumulation worldwide.

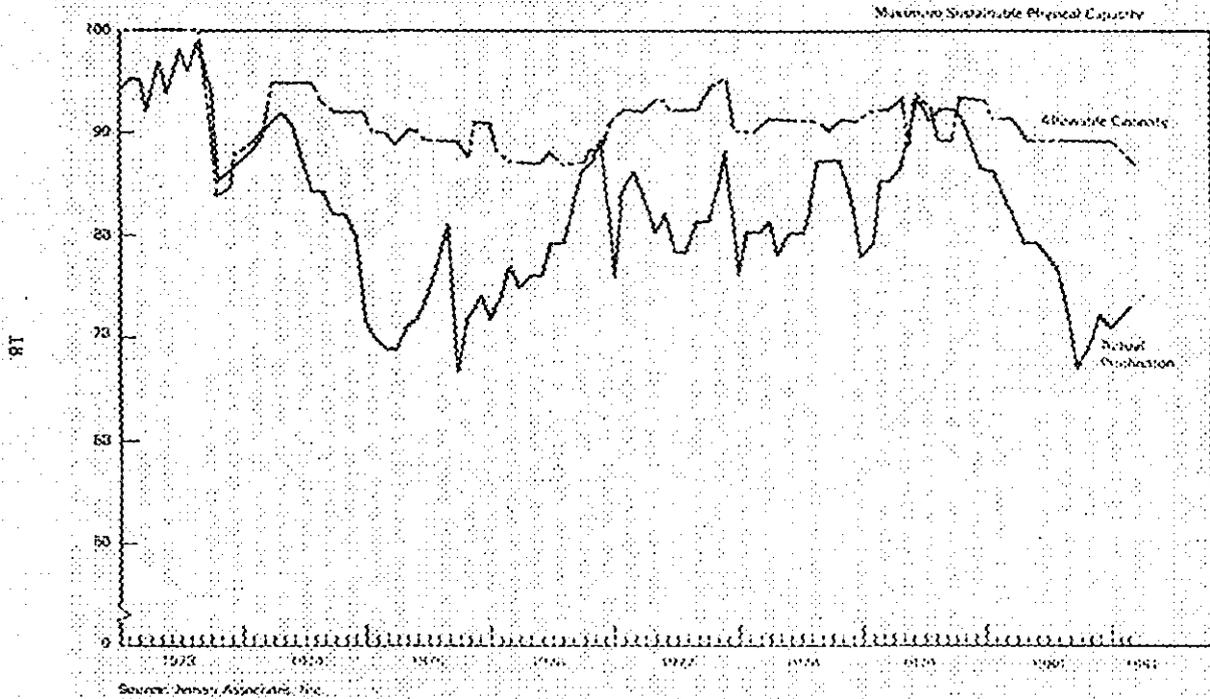
Except for these two periods of market-inspired price behavior, international oil pricing has largely been the result of OPEC price administration decisions within the context of OPEC political debates. Thus, for most of the past eight years, interpretation of the conflicting political pressures within OPEC has been a more important tool for projecting oil prices than the more classic economic analysis of supply and demand has been. This is not to say that supply and demand relationships are not important, but they have served to set the stage in which the price debate has taken place, rather than to establish prices directly.

Figure II-2 shows OPEC production and "allowable capacity" as a percent of maximum sustainable physical capacity within OPEC over the past eight years. In 1973 OPEC physical capacity stood at 32 MMbpd and most projections at the time expected it to rise to the lower to mid 40s by the end of the decade as steady demand for OPEC oil continued to mount. After the takeovers of control of their own oil which accompanied the 1973/1974 period, most OPEC members could not or would not increase capacity. However, since 1973, demand has been significantly lower than had been anticipated earlier on the added capacity has been, for the most part, unnecessary. Physical capacity in OPEC peaked in 1976/1977 at 38 MMbpd and has since declined to 34 MMbpd, in part as a result of the loss--perhaps permanently--of a portion of Iranian capacity.

The concept of "allowables" was first developed by Kuwait, which has consistently argued that keeping oil in the ground is a better way to protect surplus wealth than creating financial assets from higher production and revenue levels. Allowable limits have now been adopted by other surplus countries such as Saudi Arabia and Abu Dhabi. The argument of the surplus countries is that the world should not count on OPEC's deliveries more than its allowable capacity even though production in excess of allowables may occasionally be utilized for special purposes. Saudi Arabia, for

FIGURE II-2

ACTUAL AND ALLOWABLE DRIFT (DIP) AS % OF MAXIMUM SUSTAINABLE PHYSICAL CAPACITY



example, currently is producing 10.3 MMbpd against an allowable of 8.5 MMbpd as a part of its internal OPEC dispute over price reunification.

As is evident from Figure II-2, demand for OPEC oil was approaching physical limits in 1973 when the embargo sharply reduced OPEC's available production. While the price increases of October 1973 and January 1974 were OPEC-dictated, they were foreshadowed by a spot market which rose to even higher levels as a result of threatened shortages.

Figure II-3 shows the U.S. refiners' acquisition cost of imported crude oil in constant 1980 dollars compared to OPEC production as a percent of allowable capacity. In both the 1973/1974 and 1978/1979 price jumps, OPEC production exceeded allowable capacity. The only other time when that occurred was in the Winter of 1976/1977 when OPEC production reached an all time high of 34 MMbpd. An increase in the Saudi allowable capacity helped to avert a greater nominal price increase at that time.

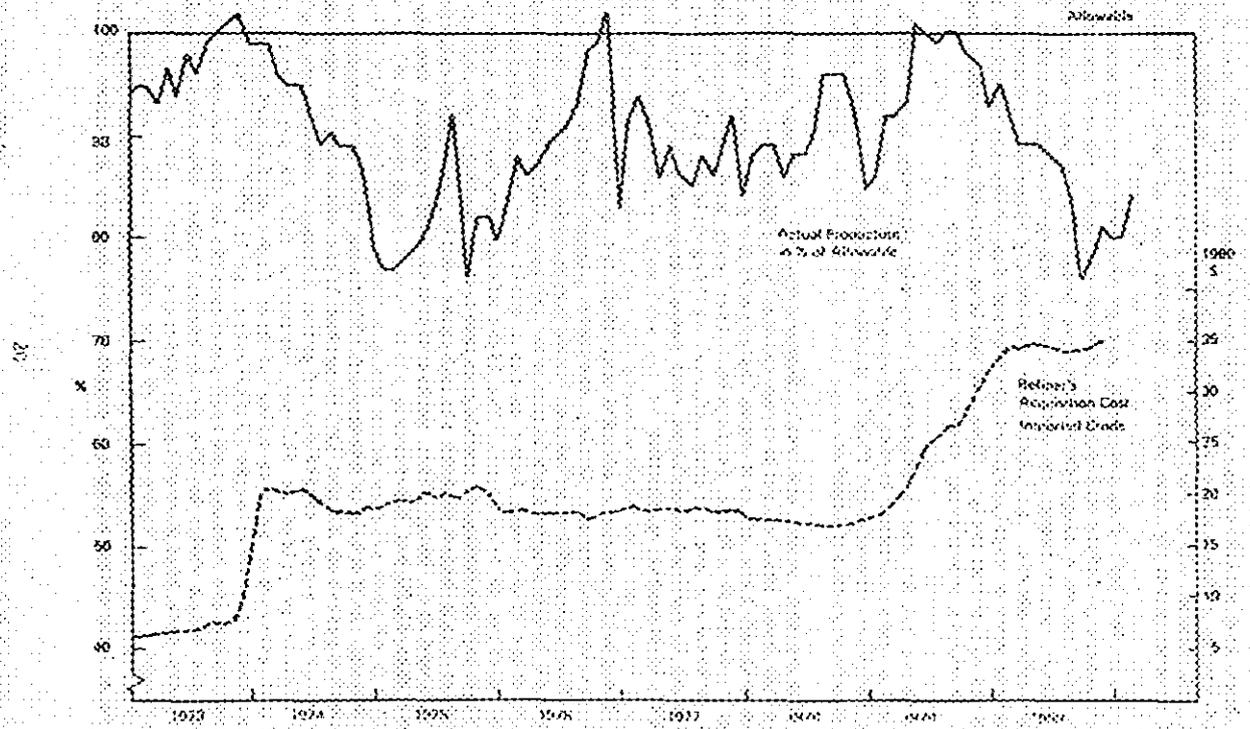
Many observers--including ourselves--expected another possible upward price spike during the Winter of 1980/1981 with the loss of capacity from the Iraq-Iran war. Indeed, there was a flurry of rising spot activity in October and November which subsequently subsided. In retrospect, it appears that the market had weakened sufficiently so that the panic psychology which dominated 1979 markets was fully dissipated.

We are now--as of June 1981--in a much softer oil market than most forecasters anticipated. Free world demand for oil may fall to 46-47 MMbpd this year and net demand for OPEC oil could be as low as 23 MMbpd--the lowest level since 1970. This would place the demand on OPEC at about 74 percent of allowable capacity, a level even lower than in the weak market of 1975. The question is naturally being raised as to whether this low demand represents a new long-term secular trend, and whether the assumption that OPEC can dictate price levels in all but tight and rising markets is still valid. Can OPEC, in fact, hold together and prevent further erosion of prices in a market such as this?

We at Jensen Associates believe that the underlying OPEC structure is not seriously threatened by present market conditions; despite an appearance of internal dissension within the organization. We view the present market downturn as more cyclical than long-term, although major long-term changes in demand are clearly taking place. The world oil surplus results largely from a reduction in energy demand--in part recession influenced--rather than an increase in alternate energy supply above expected levels. If anything, alternate energy supplies have consistently fallen below projected levels throughout the world.

There has been a tendency for OPEC oil to play a swing role in world energy demand. This tends to exaggerate the effect of short-term energy market changes on the demand for imported oil and suggests that a sharp 1981 downturn could be followed by a sharp rebound with improving world economic conditions. In a static world energy supply pattern, where OPEC

FIGURE II-3
CRUDE PRICES VS SPEC CAPACITY OPERATION



Source: Enron Associates, Inc.

101

oil bore the entire swing in total demand, a downturn of one percent in world energy demand would manifest itself as a four percent downturn in OPEC oil demand. This would result from the fact that oil represents about half of energy supply, and OPEC oil is about half of total oil supply.

While OPEC oil does not fully occupy the swing role--downturns in the steel industry reduce coking coal demand and U.S. natural gas demand has been affected by a sluggish economy--we believe that most of the downturn is indeed concentrated on OPEC. World energy supply is also dynamic, rather than static, so that when previously planned increments of new alternate energy supply exceed the demand for them, they tend to back out imported oil selectively. Thus, we believe much of the present decline in OPEC demand is short-term, rather than long-term.

We expect to see a measure of economic recovery in the OECD by 1981 and anticipate a strengthening of demand on OPEC at that time. Thus, we look for a continuation of OPEC's ability to establish floors on world market prices during soft markets.

During the Spring and early Summer of 1981, the popular and business press has been full of reports of falling oil prices, and frequent suggestions that OPEC may in fact have lost its ability to prevent price erosion in soft markets. While it is clear that spot markets are falling, that some governments are cutting official selling prices, and that prices are declining in nominal as well as real terms, this evidence of price weakness in OPEC is somewhat misleading.

The chaotic markets of 1979 and 1980 led to substantial disorder in OPEC pricing patterns. During the more placid markets between 1974 and 1978, OPEC operated on a "marker crude" system in which the price of the principal Saudi crude--Arab Light--was priced by OPEC agreement and values of all other crudes were based on their quality or transportation differentials relative to Arab Light. The light African crudes from Algeria, Libya and Nigeria, for example, usually enjoyed about a \$1.50 per barrel premium over Arab Light based on both their higher quality and their relative nearness to market. Today those market-dictated differentials are perhaps no higher than \$2.00 per barrel.

During the turbulent markets of 1979, some OPEC governments were able to command prices which had little market logic since buyers were desperate to have secure supply regardless of price. Some of the African crudes have been officially priced at \$41 per barrel--a full \$9 per barrel over the official government selling price of Arab Light at \$32 and therefore much higher than the normal market differential of \$1.50-\$2.00. The highly publicized oil price cutting has been concentrated in the abnormally high differentials being asked by the price hawks, rather than in the underlying price structure of the Arab light market.

Before the Iranian Revolution, OPEC, with strong Saudi support, established a long-range strategy committee to consider a number of long-term

problems facing OPEC. One major focus of the study was a desirable future course for world oil prices. The committee's recommendation was for a gradual but steady increase in real crude prices to replace the stop-start pattern of crude price increases which characterized the 1970s. The committee called for a formula to adjust the price to cover inflation, to adjust for changes in the value of the dollar, and to add a real price increment based on the growth of GNP within the industrialized countries. It has been quite clear that Saudi Arabia has been a major backer of this proposal within OPEC. However, the orderly pricing formula presumes a unified and orderly set of differentials about the market crude. The 1979 market conditions effectively destroyed the unified OPEC price structure which could serve as a base for the application of the long-range pricing formula.

The Saudi official price for Arab light has been \$32. Most other OPEC members have adopted a "desert market crude" which most commonly is based on the assumption that the market calls for \$36. "Special market premiums" over and above normal differentials have been adopted by some governments.

The present Saudi policy of producing at 10.5 MMbpd rather than on their 8.5 MMbpd allowable in the face of world oil surpluses seems designed to force market realignment of the heavy differentials about some orderly market crude structure.

Until recently were the many other oil market observers believed that the Saudis were sufficiently committed to the OPEC long-range planning formula that they were prepared to make price concessions on their \$32 in order to reunify the system. Indeed, the Saudis themselves had sold "war relief oil" - a special offering designed to assist those who had lost supply because of the Iranian war - at a price of \$36. This led many observers to conclude that this was the logical compromise price for a unified market system.

More recently, however, it appears that the Saudis have become concerned at the extent of the 1981 downturn in OPEC oil demand, questioning whether prices have gotten too high. They now appear to have shifted policies to future contracts nearer their previous \$32 official price, despite the ill-will which that effort appears to be earning them in some OPEC circles. Some of the widely publicized price cuts by the OPEC members are consistent with the \$36 or a \$34 market. The \$32 market is as yet not accepted as a compromise standard.

The Crude Price Projections

Our lower-bound crude oil price projection assumes that the unified price will be based on a real \$32 market (as of June 1981) which will hold through the end of 1982. With a pickup in world oil demand in 1983, the real price will again start to rise with the long-range planning formula at a rate of about three percent per year. The actual unification may not require that other OPEC members be forced to recognize and accept that \$32

price, since it would be possible for them to save face by freezing at some higher level until the inflation-dictated increase in the nominal market price rose to an appropriate level.

Our least unlikely case excludes surpluses persist through 1982, as well, and that the formula is applied in 1983. However, it also assumes that some disruptive market event will occur before 1987--we have arbitrarily placed it in 1984--with price behavior during and after the event similar to the 1973/1974 and 1979/1980 disruptions. The least unlikely case, with its disruption, results in an overall real price increase of eight percent per year to 1990. While this is significantly higher than many current oil price projections, it is considerably lower than the 14 percent per year actual real price increase from 1973 to 1981. The increase in the lower-bound case is 7.5 percent per year over the same period. These projections are shown in Figure 11-6.

Oil Prices for the U.S.A.

We have forecasted a basic crude oil price in the Arabian Gulf, f.o.b. the export terminal. Such crude has to be transported to the U.S.; it will form only part of a selection of crudes that American refiners import; and the oil with which Alaskan gas competes in regional global markets will be refined products, mainly No. 2 oil and No. 6 oil.

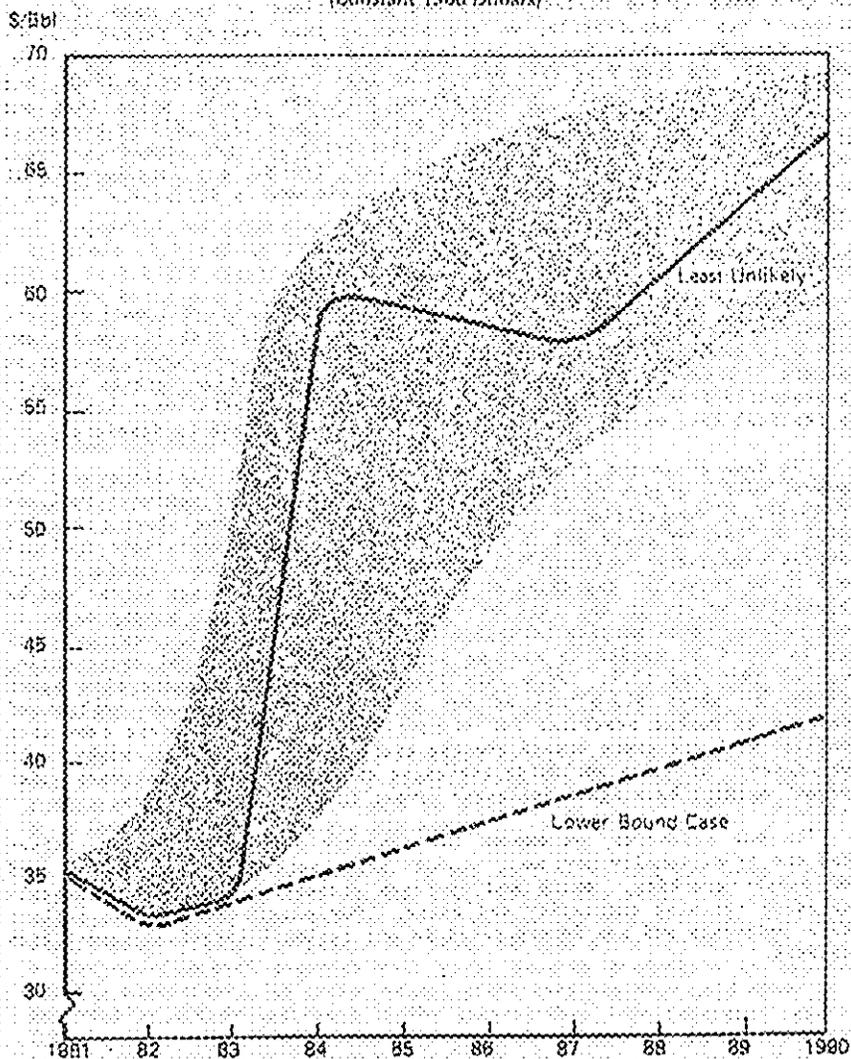
Even while a surplus of capacity overhangs the world tanker market, there continue to be quite sharp fluctuations in freight rates--partly because the surplus is not uniform for all sizes of vessels, and partly because unpredictable demands for tonnage (e.g. recently for Very Large Crude Carriers and Ultra Large Crude Carriers for use as floating storage) often occur. More generally, the shift of a growing proportion of crude oil exports from the integrated trading channels of the international major oil companies into non-integrated trading by OPEC national companies with smaller scale private buyers or governmental buyers downstream has reduced logistic efficiency in the whole international employment of tankers. Slow steaming to reduce fuel costs, again, involves more tankers for any given ton mileage of crude oil movement.

Those factors have raised oil transport costs during the last two years. High prices for oil fuels will continue to tilt the economics of tanker operation. Logistic inefficiencies arising from less integration in world oil trading may also persist. On the other hand, the deepening and widening of the Suez Canal that has now been completed, and the possibility of further increases in its capacity to handle large tankers by about 1985, point to some reduction in the average distances that oil will have to move by sea to markets. And recent forecasts by tanker experts that freight rates may resume an upward trend (no distinct from short-term fluctuations) by about 1983-1985 have generally assumed rather higher growth rates in the world economy for this decade than most analysts now seem inclined to count upon.

FIGURE II-4

PROJECTIONS OF THE DELIVERED PRICE OF OPEC'S MARKER CRUDE

(Constant 1980 Dollars)



Source: Jensen Associates, Inc.

Detailed predictions of tanker employment and freight rates thus remain as complex as ever. But for the projection of landed prices for crude, it has become less important. Freight costs now represent such a small proportion of c.i.f. prices that one's assumptions about the changes in them make little difference to the projections we have made of crude prices f.o.b. Arbitrarily, we are assuming that average tanker freight costs from the Arabian Gulf to the Texas Gulf remain constant in real terms until 1985, and then rise five percent in real terms annually to 1990. But freight is now so small in comparison with the f.o.b. price that our resultant projections of c.i.f. crude prices (Figure II-4) differ hardly at all in slope from the f.o.b. price trajectories we have already set out. (An alternative assumption raising this real freight cost increase to 10 percent annually, or starting it earlier, would make a difference of cents rather than dollars per barrel.)

Product Prices

Natural gas competes with distillate fuel oil in residential, some commercial, and high-value industrial markets. It is most likely to compete with residual fuel oil in industrial boiler fuel and power generation markets. Since the higher-valued, distillate-competitive markets tend to be protected from erosion by both price and priority curtailment status, it is residual fuel which incremental gas supplies must tend to displace.

We have estimated future refinery margins both for distillate and the several sulfur grades of residual fuel oil in making our regional analyses of interfuel competition. Typically, high-sulfur residual fuel oil sells below the cost of crude oil in the United States, while distillate fuel oil carries significant refining margin premiums. These product differentials tend to be volatile, depending on market conditions, and variations can be especially severe in the case of high-sulfur fuel oil in sloppy markets. Nonetheless, total margins between distillate and high-sulfur residual fuel oil in the U.S. tended to average out in the \$3.00-4.00/bbl range during much of 1976 and 1977. From late 1978 through 1979, margins blew apart (rising to above \$10.88/bbl at one point) as the worldwide problem of adapting to market pressures for lighter, sweeter product mixes came into conflict with the trend toward greater availability of heavier, higher-sulfur crudes. With the worldwide recession and product surpluses more widespread, margins have again collapsed closer to traditional levels.

In our estimates, we expect the tendency will be for wider, rather than the traditionally narrower, product price spreads as the growing need for deeper cracking, coking and hydrogen processing by refiners greatly increases refining complexity and costs. Our margin projections reflect these judgments and are incorporated in our regional interfuel competition analysis.

III. FORECAST OF LOWER 48 STATES GAS SUPPLY

Summary Forecast

An important part of analyzing the marketability of Alaskan North Slope natural gas is the overall gas supply forecast for the Lower 48 States (L48) against which gas demands can be compared. The Jensen Associates' forecast of gas availability to the L48 during the period 1980-1990 is provided as Table III-1. It includes both conventional L48 natural gas production and supplemental sources.

Overall, we expect supply to the L48 to decline from 20.5 tcf in 1980 to about 18.5 tcf in 1990, or by 10 percent during the decade. The net loss of 2.0 tcf results from an expected 5.1 tcf drop in conventional production being partially offset by a 3.1 tcf increase in annual supplemental supplies available by 1990. The supplemental supplies forecast includes unconventional production from low-permeability reservoirs, North Slope gas, Canadian and Mexican pipeline imports, LNG imports and high-Btu synthetic gas manufactured from light liquid hydrocarbons and coal.

Lower 48 States Production

Natural gas reserves and production statistics of the American Gas Association (AGA) show that conventional L48 production peaked at 22.5 tcf in 1973, then fell annually through 1978 to a level of 19.1 tcf. In 1979, this trend was reversed as production rose to 19.7 tcf, despite a continuing decline in proved reserves which started in 1969. The year 1979 also showed some improvement in L48 reserve additions--reaching nearly 14 tcf. This was considerably better than the 9.6 tcf annual average additions for the 1970s. Table III-2 summarizes natural gas reserves and production figures for the period 1966-1979. Figure III-1 highlights the erosion of the proved reserves base which has occurred as production annually exceeded reserve additions between 1968 and 1979.

Although the AGA no longer develops or publishes gas reserves and production estimates, preliminary figures from the U.S. Department of Energy indicate that L48 production will be down by 0.3 tcf in 1980 from 1979, or at a level of 19.4 tcf on the AGA scale.

Despite this recent slowing in the decline of L48 gas production, we believe that the pace will quicken again during the 1980s. We expect average annual natural gas reserve additions for the L48 will remain substantially below production levels and that, at some point, production rates as a percent of proved reserves will peak, causing production to fall more rapidly thereafter. In recent years, production has been held above 19 tcf per year by steady increases in the take-of-rate from remaining reserves. This has occurred as a result of increased emphasis on infill and other relatively low-risk developmental drilling activity. This type of drilling

TABLE III-1

LOWER 48 STATES TOTAL GAS SUPPLY FORECAST

1980 - 1990

(Trillion cubic feet)

<u>Source</u>	<u>1980^a</u>	<u>1985</u>	<u>1990</u>
Conventional Production	19.4	16.1	14.3
Unconventional Production	0	0.1	0.3
Alaskan Gas	0	0	0.7
Canadian Imports	0.8	1.0	1.4
Mexican Imports	0.1	0.4	0.7
LNG Imports	0.1	0.5	0.7
SMG - Oil Feed	0.1	0.1-0.4	0.1-0.4
- Coal Feed ^b	<u>0</u>	<u>oil</u>	<u>0.2</u>
Total Supply	20.5	18.8-19.1	18.4-18.7

^a Preliminary.

^b Excludes low and medium Btu gas.

Source: Jensen Associates, Inc.

TABLE III-2

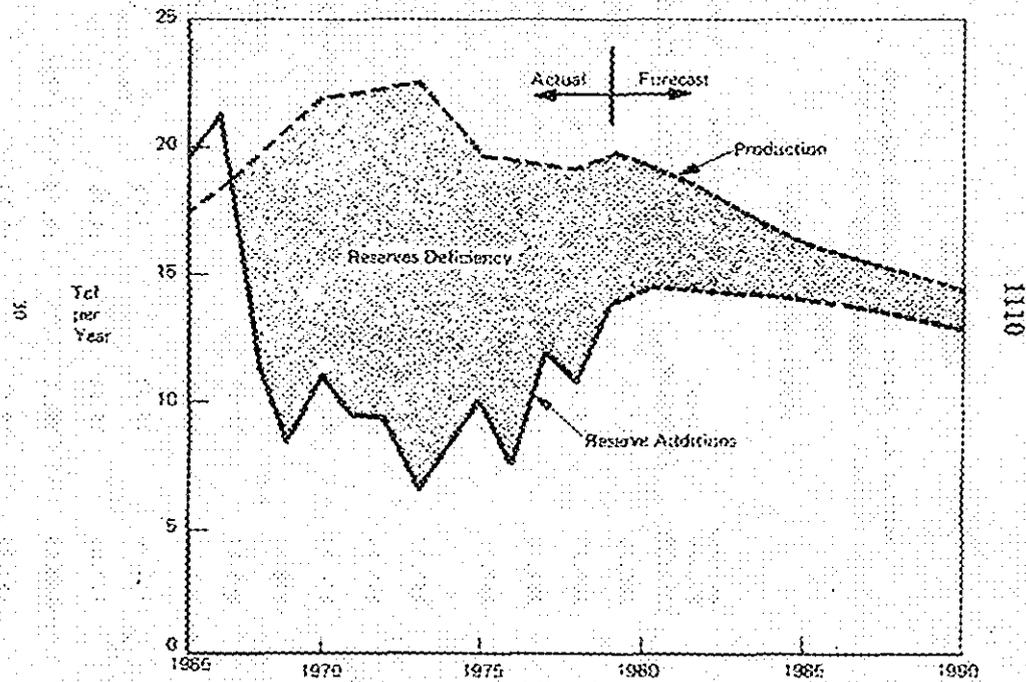
NATURAL GAS PROVED RESERVE AND PRODUCTION
 LOWER 48 STATES
 1966-1979
 (Trillion cubic feet)

<u>Year</u>	<u>Year-end Proved Reserves</u>	<u>Annual Production</u>	<u>Annual Additions to Proved Reserves</u>	<u>Annual Decline in Proved Reserves*</u>
1966	286.39	17.48	19.25	(1.91)
1967	289.27	18.36	21.09	(2.88)
1968	282.10	19.33	12.04	7.11
1969	269.91	20.64	8.34	12.19
1970	259.62	21.82	11.17	10.29
1971	247.44	21.92	9.44	12.18
1972	234.63	22.37	9.40	12.81
1973	218.31	22.47	6.51	18.32
1974	205.27	21.17	8.31	13.04
1975	196.15	19.56	10.14	9.12
1976	184.10	19.32	7.45	12.05
1977	177.05	19.26	11.76	7.05
1978	166.69	19.10	10.99	8.36
1979	162.98	19.69	13.73	5.71

* Includes changes in volume of gas in underground storage.

Source: Jensen Associates, Inc., American Gas Association, American Petroleum Institute, "Reserves of Crude Oil, Natural Gas Liquids and Natural Gas in the U.S. and Canada"

FIGURE III-1
 NATURAL GAS PRODUCTION AND RESERVE ADDITIONS
 LOWER 48 STATES 1966-1990
 (trillion cubic feet per year)



Sources: Jensen Associates, Inc.
 American Gas Association

was stimulated by the large increases in coal prices for interstate gas made available in 1976 by FPC Opinions 770 and 770-A.

The relationship between actual gas reserves and production rates, expressed as a reserves-to-production (R/P) ratio for the years 1966-1978, is shown in Table III-3. After appearing to fluctuate not at a value of about 10 in the mid 1970s, the R/P ratio continued to fall through 1978. In 1977 when the R/P ratio first dropped below 10, there was a significant increase in the developmental gas well share of total gas wells completed and this increased emphasis on developmental wells has been maintained through 1980 as shown in Table III-4. The higher gas prices which we believe caused this shift in developmental drilling activity can be seen in Table III-5. In 1976, FPC Opinions 770 and 770-A increased the National Rate by 91 cents per MCF for wells drilled after January 1, 1975. The effect of these higher prices for gas from new wells had on average wellhead prices are shown in Table III-6, in both current dollars and constant 1980 dollars.

Our gas production forecast is based on analyses of historic trends in both proved reserve additions and production from proved reserves. For reserve additions, this means that we evaluate drilling activity in the major gas-producing areas of the country. We analyze those market forces which have affected the level of gas and oil well drilling and then forecast a level of activity for the 1980-1990 period. Reserve additions, however, do not automatically flow from additional drilling. Some measure of the success of drilling must be applied. Past finding rates (the amount of gas found per foot of well drilled) are studied and projected. When finding rates for a given period are combined with forecast drilling, the product is an estimate of future reserve additions.

American Petroleum Institute (API) drilling data show that gas well drilling activity has been increasing each year since 1971. The most dramatic increase occurred in 1977 when footage exceeded the previous year by over 12 million feet. Table III-7 shows both gas and oil well drilling statistics for the 1968-1980 period. Examination of the figures in Table III-7 shows that although healthy gas well footage increases have continued through the period, there has been a definite decrease in the rate of growth in absolute and percentage terms since 1977. In 1978 and 1979, this slackening may have been caused by drilling activity having caught up with the available rigs, manpower, and other supporting systems necessary for a major drilling increase. However, by 1980, it appears that lead times for a buildup have been met as evidenced by the recordbreaking increases in gas plus oil well footage.

From Table III-7 and Figure III-1, it can be seen that in 1980 oil well drilling had taken preference over gas. Oil well footage climbed 30 million feet in 1980 versus seven million feet for gas. In all but one other year during the 1970s, gas well footage increases have exceeded oil well footage increases. The attractiveness of rising oil prices and the promise of crude oil price deregulation in 1981 had cut deeply into the gas

TABLE III-3

NATURAL GAS RESERVES/PRODUCTION RATIOS*
 LOWER 48 STATES
 1966-1979

<u>Year</u>	<u>R/P</u>
1966	16.3
1967	15.6
1968	15.0
1969	13.7
1970	12.4
1971	11.8
1972	11.1
1973	10.4
1974	10.3
1975	10.5
1976	10.2
1977	9.6
1978	9.3
1979	8.6

* * Previous Year Reserves
 Current Year Production

Sources: Jensen Associates, Inc.
 American Gas Association/American Petroleum Institute, "Reserves
 of Crude Oil, Natural Gas Liquids and Natural Gas in the U.S. and
 Canada"

TABLE III-6

GAS WELL COMPLETIONS BY TYPE
LOWER 48 STATES
1967-1980

Year	Gas Wells Completed	Percent of Gas Completions		Widening
		Developmental	Exploratory	
1967	1,655	85.3	14.5	5.1
1968	1,449	85.9	14.1	3.7
1969	4,072	84.9	13.1	3.7
1970	3,831	87.5	12.3	4.9
1971	3,879	86.6	11.4	5.1
1972	4,926	87.8	12.2	5.5
1973	6,382	85.9	14.1	6.5
1974	7,236	83.5	16.3	6.2
1975	7,576	84.6	13.4	5.9
1976	9,084	84.6	13.4	6.0
1977	11,374	87.0	13.0	6.6
1978	13,060	87.7	12.3	6.1
1979	14,677	87.9	12.1	6.5
1980	13,727	87.5	12.3	6.4

Source: Jensen Associates, Inc.
American Petroleum Institute, "Quarterly Review of Drilling
Statistics"

TABLE III-5

CEILING PRICES FOR "NEW" VINTAGE NATURAL GAS^a
(Current dollars)

Year		Ceiling Price
1970	Hugoton-Anadarko Area (FPC Opinion 368)	19.0¢-20.3¢/mcf
1971	Southern Louisiana Area (FPC Opinion 598)	26¢/mcf
1973	Permian Basin Area (FPC Opinion 662)	35¢/mcf
1974	National Rate (FPC Opinion 699)	42¢/mcf (+ 1¢/annum)
1974	National Rate (FPC Opinion 699-H)	50¢/mcf (+ 1¢/annum)
1976	National Rate (FPC Opinions 770, 770-A)	\$1.42/mcf (+ 1¢/quarter)
1978 (December)	Natural Gas Policy Act	\$1.97/mcf ^b Section 103 gas \$2.08/mcf ^b Section 102 gas
1981 (March)	Natural Gas Policy Act	\$2.41/mcf ^b Section 103 gas \$2.73/mcf ^b Section 102 gas

^a The definition of "new" is not uniform, and at times depends upon contract date, well commencement date, and other criteria.

^b Includes escalation adjustments to the indicated month.

Source: Jensen Associates, Inc.

TABLE 111-6

AVERAGE WELLHEAD PRICE FOR NATURAL GAS
 UNITED STATES
 1966-1980
 (Dollars/mcf)

<u>Year</u>	<u>Current Dollars</u>	<u>1980 Dollars</u>
1966	0.157	0.36
1967	0.160	0.38
1968	0.164	0.33
1969	0.167	0.34
1970	0.171	0.33
1971	0.182	0.34
1972	0.186	0.33
1973	0.216	0.36
1974	0.304	0.46
1975	0.445	0.62
1976	0.580	0.77
1977	0.790	0.99
1978	0.905	1.06
1979	1.144	1.25
1980	1.47 estimated	1.67

Source: Jensen Associates, Inc.
 Department of Energy, "Monthly Energy Review"

TABLE III-2

GAS AND OIL WELL COMPLETION FOOTAGE
 LOWER 48 STATES
 1966-1980
 (Million feet)

Year	Gas Well Completions			Oil Well Completions			Gas Share of Completion Footage
	Footage	Annual Increase	% Increase	Footage	Annual Increase	% Increase	
1966	25.91	--	--	87.07	--	--	27.9%
1967	21.53	(4.38)	(16.90%)	58.74	(9.10)	(13.51%)	27.0%
1968	20.67	(0.86)	(3.92%)	58.67	0.63	0.73%	26.1%
1969	24.06	3.39	16.40%	61.13	2.46	4.19%	28.1%
1970	22.85	(1.21)	(5.02%)	56.39	(4.74)	(7.75%)	26.8%
1971	22.61	(0.24)	(1.05%)	48.21	(8.18)	(14.40%)	11.9%
1972	26.75	4.14	18.31%	58.51	0.30	--	35.6%
1973	35.59	8.84	33.05%	44.61	(13.90)	(31.22%)	64.5%
1974	38.98	3.39	8.53%	50.01	5.40	12.56%	43.8%
1975	41.80	2.82	7.45%	64.09	14.08	28.15%	39.5%
1976	47.49	5.69	13.36%	66.70	2.61	3.29%	61.8%
1977	59.51	12.02	25.31%	54.85	8.15	13.02%	44.3%
1978	70.18	10.67	17.93%	72.06	(2.79)	(3.73%)	49.3%
1979	77.72	7.54	10.74%	78.15	6.09	6.45%	49.9%
1980	85.03	7.31	8.41%	108.17	30.02	39.67%	44.0%

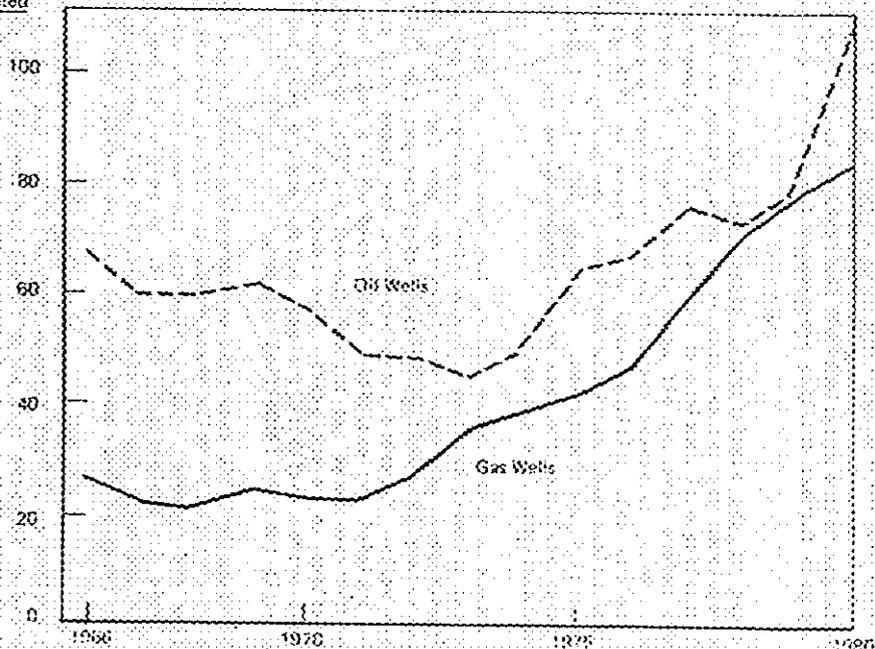
Source: Jensen Associates, Inc.
 American Petroleum Institute, "Quarterly Review of Drilling Statistics"

FIGURE III-2
GAS AND OIL WELL COMPLETION FOOTAGE

LOWER 48 STATES 1966-1980

(million feet)

Million
Feet
Completed



Source: Jensen Associates, Inc.
American Gas Association

27

1117

share of drilling activity in 1980. API reports that through March 1981, oil well completions are running 15 percent ahead of the same period in 1980, while gas well completions are five percent behind last year's rate, indicating some further drilling preferences for oil over gas may be occurring.

Because of the significantly higher real prices available for many types of regulated gas and the promise of deregulation in 1983, we believe gas well drilling will continue to increase, but at a slower rate, into the late 1980s before leveling off at a plateau nearly 45 percent above the 1979 pace. Thus, we expect the NGPA price incentives to cause a continuation of the gas well drilling surge which began in 1976 as a result of higher real prices made available for interstate gas by the National Rates of the Federal Power Commission. Increases in oil well drilling should support associated/dissolved gas production approximating 10 percent of the gas volume available from gas wells.

We expect a continuation of the long declines in gas finding rates from gas and oil well drilling. Figure III-3 presents actual finding rates for non-associated and associated/dissolved gas for 1969 through 1979. Units are in mcf of annual gas reserve additions per foot drilled as completed gas wells. Separate rates are shown for cases with annual reserve revisions included and excluded. Both cases show a rapid fall in finding rates for non-associated gas through the early 1970s, moderating to a more gradual decline in recent years. The cause of this trend change is the higher real prices available for gas, which tend to push once previously marginal wells into the commercial category.

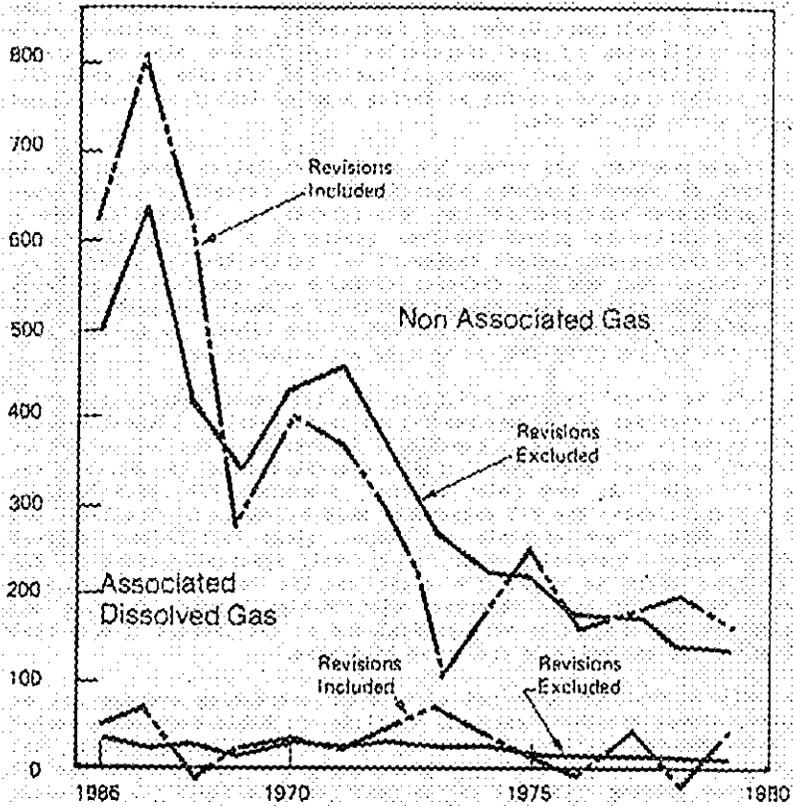
Statistics for 1980 show that an increasing share of gas well drilling has gone to exploratory wells where risks are higher, but chances of major discoveries are improved. This, plus any increase in the availability of Federal lands for exploration, could also be helpful in improving finding rates. Finding rates for associated/dissolved gas from oil wells are also expected to continue their more gradual decline through 1990 and beyond.

We forecast non-associated gas finding rates to decline from 150 mcf per foot drilled to 102 mcf between 1980 and 1990. Gas well drilling rates are expected to increase from about 85 million feet in 1980 to 117 million by the late 1980s. The product of these two factors results in non-associated gas reserve additions of 12.8 tcf in 1980, dropping to 11.5 tcf by 1990. Separately, associated/dissolved reserve additions increase from 1.1 to 1.2 tcf during the 1980s. Thus, total gas additions are forecast at 13.9 tcf in 1980, and gradually fall to 12.7 tcf by 1990. These reserve addition levels are well below the production rates of 19 to 20 tcf per year experienced in the late 1970s. A continuing decline in proved reserves will result if production rates remain higher than future reserve additions.

The present administration is more likely to push for accelerated Federal leasing programs--particularly offshore--than was the Carter

FIGURE III-3
 NATURAL GAS FINDING RATES
 LOWER 48 STATES

Mcf per Foot Completed
 1968-1979
 (mcf/foot)



Source: Jensen Associates, Inc.
 American Gas Association/American Petroleum Institute,
 "Reserve of Crude Oil, Natural Gas Liquids and Natural
 Gas in the U.S. and Canada"
 American Petroleum Institute, "Quarterly Review of Drilling Statistics"

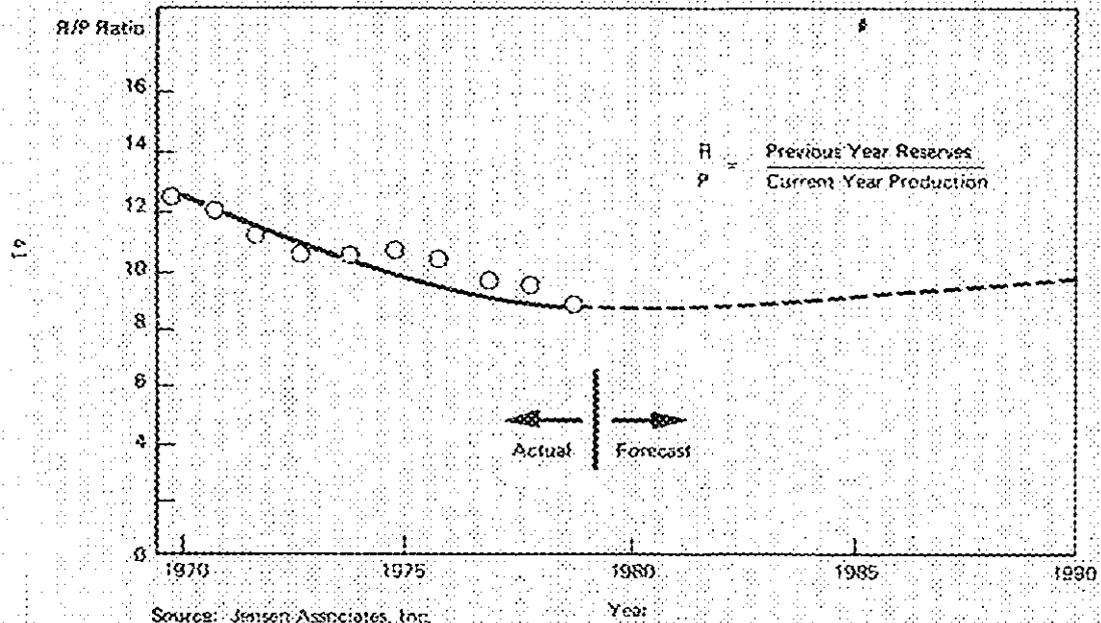
Administration. Much has been said about the positive effects on discovery rates, particularly for oil, which such an accelerated program could provide. It is important to recognize, however, that the potential positive effect on gas during the 1980s is likely to be much less than for oil. The relatively higher costs of gas pipeline transportation with its necessary emphasis on scale economies means that gas finds in new offshore areas will tend to be commercial only if they are large and/or relatively near existing transport systems. The limited near-term commercial prospects of the small East Coast Baltimore Canyon gas discoveries, or the unlikely early commercial utilization of gas discoveries in offshore Alaskan waters, illustrate the likely slower commercialization of offshore gas than oil. We do not see accelerated leasing as having a major impact on conventional gas supply during this decade.

As stated earlier, gas production would have fallen more rapidly in recent years as proved reserves plunged, if the percentage of reserves taken as production each year had not been increasing. Increasing production rates relative to proved reserves generates a falling R/P ratio. Table III-3 provides an historic series of R/P ratios for U.S. natural gas, using the annual year-end AOG reserves estimate and the following year's annual production rate. With the exception of a small increase in 1975, the R/P ratio has declined steadily throughout the 1970s. We believe this decline in the R/P ratio is near an end, as explained below.

So long as annual reserve additions are less than annual production rates, the average age of U.S. gas reservoirs is increasing. Since pressure decline reservoirs are typically capable of delivering a smaller percentage of remaining reserves each year, older reservoirs tend to increase the average R/P ratio. At some point in time, a minimum R/P ratio (maximum average depletion rate) for all reservoirs must be reached. Its level and timing will depend upon economic and technological factors that control field development. Increasing reservoir age will eventually cause the R/P ratio to rise again as production rates decline relative to remaining reserves. Changes in these observed relationships between reserves and production are expected to be very gradual due to the inertia of more than 100,000 producing gas wells in the Lower 48 States.

We believe that the combined effects of increasing average age of reservoirs, slower growth in gas well drilling, probable decreasing emphasis on developmental drilling, increasing interest in tight gas sands, and extended gas well life provided by higher real prices will prevent the U.S. R/P ratio from falling below 8.4 in the near term and cause the R/P ratio to increase very slowly in later years, as shown in Figure III-4. If the R/P ratio should move to lower levels as a result of near-term increases in production above our forecasts, the U.S. will experience a more rapid, proved-reserves drawdown (for a given amount of reserve additions) and, consequently, in later years, production rates will drop to levels lower than we have forecast.

FIGURE III-4
 NATURAL GAS RESERVES/PRODUCTION RATIO
 LOWER 48 STATES



Examples which support our assumption that the past trend of falling R/P ratios will be reversed are found in two of the more prolific new gas plays in the Lower 48--the deep Tocaluona Tectol and the Rocky Mountain Overthrust Belt. Both are expected to have R/P ratios considerably higher than the national average figure. In both areas, field development and/or production facility investment are too costly to justify close spacing of wells and high rates-of-take. Low permeabilities are an additional factor in the Overthrust Belt area. This means that more reserves will have to be proved up to obtain a given production rate than is currently necessary in the balance of the Lower 48.

Using the methodology and projections described above, we have forecast gas supply from Lower 48 conventional production to decline from the 1979 level of 19.7 tcf to 16.1 tcf in 1985 and 14.3 tcf in 1990. These figures are nearly identical to the National Research Council's Enhanced Supply scenario published in 1979¹ (after adjusting for inclusion of Alaskan gas by NRC) and are nearly six percent lower than the Department of Energy National Energy Plan II forecast which is endorsed by the American Gas Association. Our forecasts are 1.0 tcf higher than the Middle Oil Price Scenario (Medium Geology) supply case published in the Department of Energy 1980 Annual Report to Congress by the Energy Information Administration.

Canadian Gas Imports

Canada's present gas situation may be characterized as one of over-supply relative to that country's internal needs. From 1972-1979, Canada increased its proved natural gas reserves base 45 percent from 51 tcf to 89 tcf. During this same period, internal Canadian gas sales grew less rapidly (34 percent) than the reserves base and a restrictive export policy was designed to reduce the long-term flow of gas to the U.S. This period of "reserves building" resulted in a recognized surplus of available gas by the late 1970s.

In December 1979, Canada's National Energy Board, which approves all gas exports, reversed then existing policies designed to reduce gas exports and allowed the first significant increases in Canada's export levels since the early 1970s. Much of the newly-approved export volume will move through the "pre-build" western and eastern legs of the Alaskan natural gas pipeline system, commencing in late 1981 and late 1982, respectively. The volumes of Canadian gas available to the L48 are projected to be 1.6 tcf by 1985 and then to decline slightly to 1.4 tcf by 1990 as development of markets in eastern Canada occurs, siphoning off the exportable gas surplus.

¹ National Research Council, U.S. Energy Supply Prospects to 2010, 1979.

Despite the existing availability of surplus gas in Canada, 1980 gas exports to the U.S. plummeted 17 percent from 1979 levels, or from 1,001 bcf to 833 bcf. This decline was due to a number of interrelated factors, including economic recession effects in regions traditionally dependent on Canadian gas, an abundance of residual fuel oil and increased availability of L48 pipeline gas in those regions and, most importantly, an increase in the Canadian gas export price from \$3.45/mcf at the beginning of 1980 to \$4.47/mcf by April 1, 1980. Canada has announced a gas export pricing policy based on "value substitution" or price linkage with imported Canadian crude oil. However, the decline in Canadian gas export demand has ameliorated the implementation of this policy (i.e., a planned October 1980 export gas price increase was delayed until April 1, 1981, and was then posted at \$4.94/mcf--below the possible crude oil-linked formula price). Over the long-term, and as traditional U.S. markets for Canadian gas strengthen, we expect Canadian gas export prices to escalate in step with world oil prices.

Mexican Gas Imports

Mexico's successes in gas and oil exploration in the past decade have resulted in that country's recent re-emergence as a major energy exporter. Mexican export gas began flowing in January 1980, at the rate of 300 million cubic feet per day (0.1 tcf/year) under a contract with a six-company U.S. consortium called Border Gas, Inc. Moreover, Jensen Associates projects U.S. imports of Mexican gas to increase to 0.4 tcf in 1985 and to reach 0.7 tcf by 1990.

Mexico's proved gas reserves are now estimated at over 80 tcf, with an additional 72 tcf of probable reserves. Most of Mexico's gas production is associated or co-produced with crude oil; hence, as Mexico has increased its crude production levels, gas production has similarly increased. For example, between 1978 and 1979, gas production increased 14 percent as a result of Mexico's attainment of crude oil production goals. And while Mexico is engaged in major efforts to reduce gas flaring through reinjection of gas into reservoirs and through utilization of gas domestically, we expect that the overall availability of gas coupled with the favorable economics of pipeline gas flows will mean increased gas exports to the U.S. by the mid 1980s. Existing pipeline facilities linking Mexico's gas producing areas to U.S. markets will need to be expanded to accommodate higher export levels; however, a large-diameter branch pipeline to the U.S. was originally envisioned as part of Mexico's developing gas grid network and we would anticipate construction of such a pipeline by the mid 1980s.

Although Mexico has announced an energy policy limiting gas exports to present levels, we expect that this posture will be ameliorated over the long-term by general gas availability, gas export revenue considerations and physical limitations on utilizing the gas internally.

Mexico's current gas export price is tied directly to the prices of five key world export crudes with a contract provision permitting price

parity with the Canadian export gas prices, should the latter be higher. In our forecast, we have assumed price parity with Canadian gas.

Liquefied Natural Gas (LNG) Imports

The optimistic outlook of the mid 1970s for large-scale movements of LNG to the U.S. by the early 1980s has gradually succumbed to the realities of major obstacles to such projects. Public concerns about the safety of LNG shipments, local objections to proposed terminal sites, government fears of gas over-dependence on foreign sources, doubts about the pipelines' needs for LNG supplemental gas, and U.S. government policy preferences for other supplemental gas sources have all played a part in reducing many LNG import proposals to little more than hollow possibilities. Of some 14 often-cited "probable and possible" U.S. LNG projects of the mid 1970s only two reached operational status (an expanded Distrigas project using facilities already in operation by 1972 and El Paso I), with a third project (Trunkline LNG) scheduled for start-up in August of 1981. All are based on Algerian-source gas.

The pricing of LNG has always been a difficult issue to resolve because of the massive investments required of both exporter and importer and the disparate government perspectives of LNG producing and consuming countries on the value of the gas to the user. Recent producing country pressure for f.o.b. gas pricing parity with crude oil has added to the difficulty of negotiating an LNG price acceptable to all parties.

LNG deliveries under the El Paso I project have been disrupted since April 1980 because of the gas pricing issue, although volumes under the much smaller Distrigas project have continued to flow. Despite the announced financial write-off by El Paso LNG of some \$375 million of its LNG investment (after termination of U.S.-Algerian government pricing talks in February 1981), we believe there is a reasonable likelihood that deliveries--possibly at reduced levels--under this project will resume. The U.S. pipeline purchasers of El Paso I LNG are making efforts to negotiate directly with Algeria on the gas pricing issue and, in addition, the LNG tankers dedicated to this project have not yet been committed elsewhere. Thus, our 1985 supply forecast includes a contribution of 0.5 tcf from the El Paso, Distrigas and Trunkline projects.

Currently, four other LNG projects--Pac Indonesia, Pac Alaska, Nigeria Bonny, and Trinidad/Tobago--are in varying stages of planning or regulatory approval. In our estimates, we have assumed that additional LNG volumes of 0.2 tcf will come on stream in the latter half of the 1980s. We assume that any additional volumes, from these or other projects, will probably not be operational until after 1990.

Unconventional Production

Unconventional sources such as Devonian shales, coal seams, and tight formations are expected to make a small but measurable contribution to

total gas supplies over the forecast period. The incentive of deregulation (as of November 1, 1979) for Devonian shale gas and coal-seam gas, along with allowable higher prices for tight gas, should stimulate production from these sources.

Devonian shales extend geographically over one-fourth of the North American continent, with significant deposits in the eastern United States. Miniscule production from this source occurs presently and improvements in exploration technology, allowing better definition of the shale areas and economically producible gas zones within Devonian shales, are expected to increase gas from this source in the latter half of the 1980s.

At least one proposal to tap coal-seam methane on a commercial basis has already been submitted to the Federal Energy Regulatory Commission and gas from this source is expected to make a small contribution to total unconventional production by 1985 and thereafter.

Interest in tight formation gas has been stimulated by the establishment of a special, high-cost incentive price in the NGPA. Some 150 different areas in the U.S. are under consideration for designation as tight gas producing areas. Hydraulic fracturing techniques are currently available to tap tight gas, but according to the National Petroleum Council¹, the technological improvements required to provide their widespread routine application will possibly take 9 to 17 years of intensive research and development effort. Thus, tight gas production from massive, relatively unproductive formations of the West is not expected to become substantial until after the 1980s. Forecasts of natural gas from currently producing tight sands areas are included in the conventional production figures of Table III-1.

Gas supplies from unconventional production are expected to reach a total of 0.1 tcf per year by 1985, and 0.3 tcf by 1990. Most of this will be tight formation gas from newly developing plays.

Another unconventional gas source is geopressed brine, but apparent production costs relative to other unconventional sources suggest that measurable production from this source is unlikely before the late 1990s.

Synthetic Natural Gas (SNG)

1. Liquid feedstocks

During the past two years, the greater availability of less expensive domestically-produced and pipeline imported natural gas has greatly reduced

¹ "Tight Gas Reservoirs-Part I," Unconventional Gas Sources, NPC, December 1980.

the demand for SNG reformed from naphthas and natural gas liquid products. In 1980, SNG supply dropped to 123 bcf. The 13 SNG plants in the U.S. are capable of producing over 300 bcf per year, indicating substantial idle capacity. We expect these plants to operate primarily as peak-shaving facilities until such time that all other less expensive baseload supplies are inadequate to meet demand. Consequently, our forecasts for the years 1985 and 1990 range from a peaking use level of about 0.1 tcf per year to an all-out rate approaching 0.4 tcf per year if demand exceeds supply of all other gas supplements, including Alaskan gas and LNG imports.

2. Coal gasification

The United States is poised on the threshold of developing high-Btu coalgas as a commercial gas supplement. Although the optimism of the mid 1970s, which envisioned production from five, large, pipeline-quality coal gasification projects by 1980 and an additional eleven plants by 1985, is considerably more guarded now, start-up in this decade of the nation's first commercial coalgas plant seems likely.

Several high-Btu synthetic-natural-gas-from-coal projects are under consideration. The Great Plains Gasification Associates proposal for an initial plant output in 1984 of 125 MMcfd of coalgas is most advanced and has received conditional Federal approval of plant financing loan guarantees. At least four other coalgas projects have sought loan guarantees through the Federal Synthetic Fuels Corporation, but the overall level of government financial support for coal gasification is uncertain at this time. Without such assistance, the substantial impediments of plant financing seem certain to further delay most coal gasification projects.

Our forecast for supplemental high-Btu coalgas includes a negligible contribution in 1985 and 0.2 tcf in 1990. This latter amount is equivalent to the output from two plants, each producing 250 MMcfd. In actuality, we expect several smaller-sized plants to be in place by the end of the 1980s.

Alaskan Pipeline Gas

Initial deliveries of natural gas from Prudhoe Bay through the Alaskan Natural Gas Transportation System are scheduled to occur in 1987. The forecast of 0.7 tcf in 1990 represents gas deliveries to the L48 States. It excludes deliveries to Alaskan users and transmission fuel.

IV. THE DEMAND FOR NATURAL GAS

Energy prices have been a major political and economic issue during much of the last decade. Policymakers have debated whether energy prices should be allowed to increase, who should reap the benefits of any price increases, and how the burden of any increases should be distributed. Proponents of a free market system have compromised their preferences to accommodate the social welfare concerns of the market regulators. As a consequence, our current energy pricing policies may be characterized as a complex system of partially regulated prices attempting to selectively emulate a market system, while still keeping consumer prices below market clearing levels. In the course of the decade, however, energy prices have risen substantially due to the changes in international petroleum markets.

These higher prices, in conjunction with both projected and realized fuel shortages, have altered the market for all energy. This is particularly true for natural gas. Conservation has reduced the requirements for all energy, while the gas shortages of the mid 1970s--which required the expansion of alternate fuel capabilities--have increased the fuel choice options of many commercial and industrial firms. In the next decade, continued conservation and intensified interfuel competition following deregulation of natural gas will have substantial influences on the demands for natural gas.

Our demand forecast is summarized in Table IV-1. Residential and commercial demands are expected to be relatively stable over the next decade as demand from new customers is offset by conservation from existing customers. Industrial demand is expected to increase substantially as the gap between gas and oil prices widens between now and 1985, when price controls end for a large part of gas supply. This growth is strongest in the premium process and smaller boiler fuel markets in the major natural gas producing areas where the imposition of Federal price controls has re-established natural gas as the preferred industrial fuel. Subsequent to deregulation, however, the industrial market for gas is expected to contract substantially as alternate fuels become more attractive. The electric power generation demand for gas is not expected to experience the same level of growth as the industrial sector prior to 1985, but will shrink similarly following the rapid escalation in prices expected in 1985.

Residential/Commercial Demand

The rapid growth in new gas customers that prevailed in the 1960s declined appreciably in the 1970s with the advent of interstate pipeline curtailments. The restrictions on new customer additions, particularly widespread in the East, effectively removed many gas utilities as a competitive force in the new construction market. At the same time, existing residential gas customers were adjusting their consumption downward in response to the real increases in their cost of natural gas.

The effect of conservation on residential gas demand has been less pronounced than in the commercial and industrial sectors, however, because the incentives to conserve have not been as strong. Subsequent to the OPEC oil price increases in 1973, the price of all energy began to rise. Higher wellhead prices allowed by the Federal Power Commission, rapid increases in unregulated intrastate wellhead prices, the addition of relatively expensive supplemental gases and lower interstate sales volumes all contributed to the increased city gate prices for gas. These price increases were not allocated evenly among all customer classes, as shown in Table IV-2. During this period, residential gas prices actually increased less than the average city gate price, while industrial prices increased substantially more than the average city gate cost. In effect, the increases in petroleum prices elevated the threshold price at which industrial users would begin to shift to alternate fuels--principally oil--thereby allowing them to bear a greater burden of gas costs. With continued increases in natural gas costs against a background of deteriorating real petroleum prices, the ability of regulatory agencies to augment this effective subsidization of residential consumers diminished. By 1978, further wellhead gas cost increases were necessarily reflected in residential prices, although the implicit city gate cost to residential customers remained lower than that for the industrial sector. The 48 percent real increase in residential gas prices did prompt residential consumers to reduce their average normalized consumption by 12.5 percent, but both commercial and industrial conservation levels were substantially higher.

Three subsequent events have re-established the potential for further subsidization of the residential sector: the passage of the incremental pricing provision in the Natural Gas Policy Act; the rapid escalation of world oil prices following the Iranian Revolution; and the decontrol of U.S. crude prices. The collective effect of these events has been to again raise the fuel switching threshold for industrial gas customers. However, while residential natural gas prices are not expected to increase to the same degree as will other sectors, the real cost of space heating will continue to rise, prompting further residential conservation. By 1985, we project residential conservation to reach 22 percent (on a per customer basis relative to 1972) and rise to 27 percent by 1990.

Implicit in this analysis is the expectation that a substantial number of new customers will be added to the gas distribution network. Although some of these new customers will be conversions from other fuels in existing structures, new construction represents the majority of these new attachments. Because these new units are much more efficient than the average existing house--not only in the space heating requirements of the building but also in the efficiency of the heating system--their addition reduces the average usage-per-customer.

With the removal of the state moratoriums on new customer additions, the gas market share in new construction is expected to rebound from the low levels of the 1970s. In the areas of the country where electricity is the principal competitor, however, gas is not expected to always return to

TABLE IV-2

U.S. AVERAGE NATURAL GAS PRICES

1972 - 1979

(1980 dollars per million Btu)

	1972	1979	1972-1979 Increase	1972-1979 % Increase
U.S. Average Wellhead Price (\$ per mcf)	\$0.34	\$1.25	\$0.91	272%
U.S. Average City Gate Price	0.78	1.98	1.20	154%
U.S. Average Residential Price	2.15	3.19	1.04	48%
U.S. Average Industrial Price	0.81	2.45	1.64	202%

Source: Jensen Associates, Inc.
U.S. Department of Energy
American Gas Association

its pre-shortage market share. Between 1972 and 1979, when residential gas prices rose 48 percent in real terms, residential electricity prices only increased 14 percent in real terms. The price of electricity relative to natural gas had actually fallen by 23 percent as illustrated in Table IV-3. This trend is expected to continue throughout the forecast period. Although gas prices remain well below electricity prices, the effective heating cost of gas approaches that of electricity by the end of the decade. As a consequence, although the number of new, gas space heating customers will increase annually, the gas market share in new construction is expected to decline.

The Northeast region, where oil is the principal competing space heating fuel, is an exception. The natural gas price advantage over distillate oil that developed with the Iranian revolution is expected to be maintained throughout the decade. Following deregulation in 1985, this competitive advantage is diminished so the high level of conversions from oil to gas in existing homes tapers off, but gas does continue to capture a higher share in the new construction market.

Despite the consumer preferences for natural gas, however, natural gas distributors may become somewhat cautious about new residential connections. As gas costs continue to rise, new homes will become increasingly efficient. With very low consumption levels, the rate of return on the investment in new mains required to attach new customers may decline sufficiently to make the investment unattractive. This could be accentuated with an inverted marginal cost rate structure where negative rates of return on the residential rate base are possible. Under these circumstances, while natural gas demands would be lower than shown in Table IV-4, the effect would likely be small due to the low consumption levels in these new units.

The commercial sector's consumption patterns are more varied than those in the residential sector, but the basic changes are quite similar. Commercial conservation has been slightly higher because the incentives were greater. Absent the subsidies reaped by the residential sector, and frequently facing higher rates of return on conservation investments, the commercial sector responded more quickly to rising gas prices. However, the ultimate potential conservation in this sector is lower than the potential in the residential sector--due largely to the smaller surface areas per unit of volume in commercial buildings. For this reason, commercial consumption-per-customer is forecast to decline at a lower rate than projected for the residential sector.

The net effect of the residential and commercial customer growth and conservation are shown in Table IV-4. Overall, residential demand is projected to increase (due in large part to a substantial number of oil to gas conversions) through 1985, and then decline as conservation more than offsets the demand of new customers. For the commercial sector, demand is expected to be relatively stable throughout the forecast period.

TABLE IV-3

U.S. AVERAGE RESIDENTIAL ENERGY COSTS
(1980 dollars per million Btu)

	<u>1972</u>	<u>1979</u>	<u>Percent Change</u>
Gas	\$ 2.15	\$ 3.19	48%
Electricity	\$12.15	\$13.88	14%
Relative Prices (Ratio of Electricity to Gas Price)	5.65	4.35	(23%)

Source: Jensen Associates, Inc.

American Gas Association

Edison Electric Institute

U.S. Bureau of Labor Statistics

TABLE IV-4

RESIDENTIAL AND COMMERCIAL GAS DEMAND

1979 - 1990

(Trillion Btu)

	1979		Forecast		
	<u>Actual</u>	<u>Normalized</u>	<u>1984</u>	<u>1987</u>	<u>1990</u>
Residential	5,131	4,834	4,987	4,963	4,904
Commercial	<u>2,760</u>	<u>2,606</u>	<u>2,679</u>	<u>2,686</u>	<u>2,682</u>
Total	7,891	7,440	7,666	7,166	7,586

Source: Jensen Associates, Inc.
Gas Requirements Agency

Industrial Demands for Natural Gas

The increase in delivered price of industrial natural gas during the latter half of the 1970s (see Table IV-2) had two major effects on the markets for gas--it provided an incentive for industrial firms to conserve by improving their energy efficiency, and it reduced the industrial demand for gas in selected applications when other fuels became the lowest cost source of heat. The net effect of these two changes was to substantially shrink the overall demand for gas, so that the chronically short market of 1976 became a relatively balanced market by 1978.

The measurement of conservation is a complex exercise, in part because it has more than one definition. From an engineering viewpoint, conservation is the reduction in fuel use required to produce a particular product --either because of improved operating procedures or technological change. This is basically what the U.S. Department of Energy compiles in its voluntary industrial conservation program for which conservation (relative to 1972) is estimated at 14 percent as of 1978. However, viewed from the broader perspective of total industrial output, conservation (measured as the reduction in fuel use per unit of output) had reached 24 percent by 1978. This significantly larger estimate suggests a shift in the types of products produced, with energy intensive products declining and other products increasing.

In addition to this shrinkage of the industrial market due to conservation, the actual and anticipated gas shortages, which began with the interstate pipeline curtailments in 1971, created a more price-sensitive fuel market as alternate fuel capability was added and expanded. The large segment of the industrial fuel market that is now dual-fueled only needs to examine operating cost differentials and product quality premiums when choosing fuels. An examination of the fuel switching and market share adjustments that occurred between 1972 and 1978 shows that oil captured three-quarters of the shift (see Table IV-5). Coal usage declined despite the Federal efforts to shift industrial boilers to coal. Although the purchase price of coal is generally less than oil, the higher investment and operating costs for coal (as well as the environmental difficulties associated with coal) appear to more than offset this initial advantage. Most increases in coal use by industry are expected to be associated with new facilities because conversion of gas-fired equipment to coal is generally impractical.

The Powerplant and Industrial Fuel Use Act (FUA), passed as part of the National Energy Act in 1978, represents an effort to shift industrial and electric utility boilers from gas and oil to coal by legislative fiat rather than through the creation of economic incentives. The industrial portion of the Act is summarized below.

New Major Fuel Burning Installations (MFBI)

New MFBI boilers would be prohibited from burning oil or natural gas. Non-boiler usage at new MFBI's would be subject

TABLE IV-5

TOTAL U.S. INDUSTRIAL FUEL SWITCHING

1978

(Billion cubic feet gas equivalents)

Base Year 1972

<u>Fuel</u>	<u>Volumes</u>	<u>Percent</u>
Residual Oil	+498	+47%
Distillate Oil	+305	+29%
Refinery Gas	+209	+20%
Other	+ 59	+ 6%
Coal	- 21	- 2%
Subtotal	+1050	+100%
Natural Gas	-1050	-100%
Net Fuel Switching Between Fuels	0	0

Source: Jensen Associates, Inc.
Gas Requirements Agency
U.S. Department of Energy

to a case-by-case prohibition. Exemptions would be allowed for process use, cogeneration facilities, and for compliance with environmental laws.

Existing MFBI's

Existing MFBI's using more than 300 mcf per day must switch from oil and natural gas if they are economically and technically capable.

In our analysis we have assumed that the FUA will be strictly applied to new boilers and no new MFBI boilers will be permitted to burn natural gas. The actual effect of the legislation on the existing industrial market hinges upon the executive interpretations of the rules for exemption, which include economic, technical and environmental criteria. In the near term, the impact of the legislation is expected to be limited by the small number of gas-coal fired boilers.

The incremental pricing provisions of the NGPA attempted to provide the economic incentives for industrial boiler conversions that were lacking in the coal conversion program. However, in order to limit load shifting to petroleum products, the FERC regulations set a ceiling on industrial gas prices equivalent to the prevailing high-sulfur residual fuel oil price. The effect of the ceiling is to limit the economic penalty incurred by industrial gas users who choose not to convert their existing facilities to coal.

The competitive position of natural gas has changed several times in the last decade. Industrial gas was delivered to users at near parity with residual fuel oil in the stable pre 1970s period. It was thus priced well below distillate. The first pipeline curtailments began in 1971. In late 1973 and early 1974, OPEC initiated the dramatic increases in international oil prices, thereby creating a significant competitive price advantage for natural gas. Between 1974 and 1978, however, oil prices declined in real terms while industrial gas prices continued a steady rise. In an effort to protect residential consumers from higher gas costs, utilities and regulatory commissions passed on a disproportionate share of the higher gas costs to industrial customers (as was shown in Table IV-2). By 1978, the price of industrial gas and residual fuel oil again approached parity.

The NGPA has institutionalized this practice of rate tilts for industrial boiler fuel customers. In fact, the industrial boiler fuel customer shifts from paying the lowest price for natural gas to paying prices occasionally above even the residential consumer. The disproportionate share of gas costs paid by industrial firms subject to incremental pricing effectively subsidizes other gas users. This subsidy is in addition to the subsidy inherent in the maintenance of wellhead price controls until 1985. As a consequence, natural gas regains the price advantage that prevailed from 1974 to 1978, particularly for the non-boiler fuel users of gas exempt from incremental pricing.

This competitive price advantage creates a substantial increase in demand for natural gas through 1984. In 1979 and 1980, the principal growth in gas demand was in the power generation sector for two reasons. Being exempt from incremental pricing, electric utilities found it quite attractive to substitute natural gas for oil. Secondly, the sluggish market for industrial gas (due to the slowly emerging recession) freed up volumes that could easily be absorbed into the electric utility market. For the balance of the period, the principal growth sector is expected to be industrial process gas users, particularly in the West South Central region (Texas, Louisiana, Oklahoma and Arkansas). With the NGPA-imposed price controls on intrastate gas (which previously had been unregulated), natural gas again becomes a very attractive fuel in the producing states.

Whether or not this demand actually materializes will depend on a number of non-price influences. Industrial users may be reluctant to attach new plants to natural gas systems without strong assurances of supply that may not be forthcoming. Secondly, following the substantial wellhead price increases expected to occur with deregulation in 1985, some industrial customers may choose to forego the price benefits in the short term. In any event, the rapid increase in deregulated gas prices in 1985 will have several effects. The subsidy effects of wellhead price controls will be largely eliminated, causing the industrial gas markets in the producing states to deteriorate. Secondly, the industrial gas customers that are exempt from incremental pricing will find their "subsidy" substantially diminished, thereby reducing the interstate industrial gas demand.

The Federal efforts to expand industrial utilization of coal have been largely resisted, not only because of the enormous capital costs of the conversion from gas or oil, but also because of local and Federal air quality standards. It is frequently suggested that an easing of the Clean Air Act would result in expanded use of coal at the expense of other fuels. A relaxation of environmental regulations would not affect our estimated gas demands from new boilers since we have already assumed a strict interpretation of the Fuel Use Act restrictions precluding gas consumption in new MFBI's. In existing facilities, a moderation of Federal environmental policy would be expected to increase industrial coal consumption. However, such a policy shift would not have a substantial impact on our industrial gas forecast.

There are two major causes for this apparent insensitivity to policy changes. The barriers to increased coal usage go beyond environmental regulations. Since converting existing gas and oil fired facilities to burn coal is largely technically infeasible, expanded coal use typically requires replacement of current equipment--an expensive proposition made more difficult by high capital costs, the competition for internal corporate funds and such mundane problems as inadequate land in many old industrial sites. In addition, because of the higher gas prices subsequent to deregulation, a large share of the industrial boiler market is already forecast to shift to alternate fuels. Since the boiler market is where additional coal use is expected to have its greatest impact--and our

projections already reflect significantly diminished use of gas under boilers--our industrial gas demand forecasts are not particularly sensitive to changes in environmental regulations. Coal consumption does expand, but at the expense of non-gaseous fuels.

Our industrial forecast is summarized in Table IV-6. Total stationary industrial energy demand is expected to increase three percent per year to 1990, with most of the increase occurring by 1985. Industrial conservation will continue to temper industrial demand, particularly after 1985 with its large increases in industrial energy costs. Industrial demand for natural gas will peak in 1985 and then decline as the most price-sensitive markets switch to other fuels. As a consequence, industrial gas markets in 1990 will not be substantially different than those that existed in 1979.

Gas Demand in the Electric Utility Sector

The demand for gas for the generation of electricity in the 1980s will be characterized by the following general conditions:

- overall, use of gas as a fuel in electricity generation will generally decline vis-a-vis other fuels;
- the greatest potential demand for gas in electricity generation will occur in the near term, with total potential demand generally declining annually through 1990;
- the demand for gas by electric utilities will, however, be constrained by the volumes of gas available for large boiler fuel uses--hence, unsatisfied gas demand will exist among electric utilities prior to deregulation;
- unsatisfied gas demand in the electric utility sector will be met primarily by oil, since generating facilities based on other fuels such as coal, uranium, and hydropower will already be operating at or near their functional upper limits.

In the 1970s, many electric utilities accustomed to using gas for power generation were forced by the onset of gas curtailments to turn to alternative generating fuels. In 1970, gas demand by electric utilities was 3.9 tcf and by 1977 had dropped to 3.2 tcf. With the return of gas availability to the large boiler fuel market, gas consumption for electricity generation had increased and in 1979, electric utilities consumed 3.3 tcf of gas. For 1980, we expect that gas demand from electric utilities (unconstrained by supply) will have risen even more--to approximately 3.7 tcf--and then begin declining over the rest of the decade.

TABLE IV-6

INDUSTRIAL NATURAL GAS DEMAND

1979 - 1990

(Trillion Btu)

	Actual	Forecast		
	1979	1984	1987 ^a	1990
Demand	6,973	9,410	7,166	6,949
Expected Deliveries	6,973	7,068	7,166	6,949 ^b
Deliveries as a Percent of Demand	100%	75%	100%	100%

^a The 1987 and 1990 demand forecast is based on a cleared market for natural gas.

^b Includes Alaskan volumes.

Source: Jensen Associates, Inc.
Gas Requirements Agency

The reason for the longer-term decline in the role of gas as an electricity generating fuel is that gas (and oil) is increasingly being relegated to a peakload generating status from its previous role as a baseload generating fuel. In effect, generating facilities designed to burn gas and/or oil are being used less than facilities based on other fuels--namely, coal and uranium. Thus, the share that gas and oil together hold of the generating fuels market is declining. However, within this joint gas/oil share of the generating fuels market, gas has recently been gaining share vis-a-vis oil. In 1977, gas and oil accounted for 31 percent of the 2,115 billion kilowatt hours generated in the Lower 48 States. In 1979, this share dropped to 28 percent. Looking only at gas versus oil generation, gas accounted in 1977 for 46 percent of the 655 billion kilowatt hours generated by oil and gas together. By 1979, gas and oil were together utilized to generate only 624 billion kilowatt hours of electricity, but gas accounted for 53 percent and oil the remainder--a reversal of their position in 1977.

Over the 1980-1990 forecast period, we expect that oil will continue to be regarded as a fuel of last resort in the power generation sector. Similarly, gas will tend to share this characteristic, but the effects of rolled-in pricing on the gas side along with the existence of some low-priced, fixed gas contracts between some electric utilities and their gas suppliers, will make gas considerably more attractive than oil in those locales where it is available for power generation markets.

V. SUPPLY/DEMAND BALANCE

The increase in natural gas demand between now and 1985, prompted by the competitive price advantage of natural gas prior to deregulation, is not matched by an improvement in natural gas availability. As a consequence, a not inconsiderable gas shortfall is expected to develop, as shown in Table V-1. Since this shortfall is not due to a sudden decline in supply--as occurred in the interstate markets in the early 1970s with the advent of curtailments--but rather is due to a surge in demand, the gas industry can effectively manage the shortfall by carefully planning new load additions.

This excess demand collapses following the deregulation of wellhead prices when prices are free to rise to market clearing levels. In the post deregulation period, gas may be priced above the value of other fuels in some regions of the U.S., causing large users to switch away from gas and thereby reducing overall demand for gas. During the 1980-1984 period, there will be buyers who are willing to pay the regulated prices for gas, but cannot obtain it because supply is unable to keep up with demand.

The magnitude of the post January 1, 1985 adjustment in gas prices is dependent on the price of alternate fuels that will determine a market clearing price for gas. Based on our lower-bound oil scenario, the roll-in capacity (resulting from continued price controls on selected gas categories) in 1986 is estimated at approximately \$13 billion. Supplemental gas premiums above the market clearing price absorb \$2 billion and the balance represents the potential for flyup.

One of the key elements in establishing the level of flyup will be the price of residual oil because natural gas competes with residual oil in important marginal markets. High-priority markets typically develop rather slowly. Large increments of new supply can generally be quickly absorbed only in boiler fuel markets, and Alaskan gas is no exception. Thus, the initial deliveries of Alaskan gas are principally in low-priority uses--either directly or by displacement--where their major impact is to displace foreign oil. Gradually, the availability of the Alaskan natural gas allows high-valued process markets to expand their utilization of gas.

Since we expect petroleum product price spreads to be wider in the future, it would appear that refiners would have incentives to expand their yields of light products. Typically, such refinery upgrading would lead to reduced supplies of residual oil with attendant strengthening of residual oil prices--a scenario that would improve the market for natural gas. However, our analyses suggests that a substantial level of refinery investment will be necessary to keep residual oil yields no higher than they are presently due to the deteriorating crude slate available to U.S. refiners. Because of a petroleum product slate biased toward light products such as

TABLE V-1

SUPPLY AND DEMAND FOR U.S. NATURAL GAS

1980 - 1990

(Trillion cubic feet)

<u>Potential Gas Demand</u>	Estimated 1980	Forecast		
		1984	1987	1990
Residential	4.8	4.9	4.9	4.8
Commercial	2.6	2.6	2.6	2.6
Industrial	6.8	9.2	7.0	6.8
Power Generation	3.7	3.4	2.4	2.2
Other	<u>2.6</u>	<u>2.3</u>	<u>2.1</u>	<u>2.0</u>
Total Potential Demand	20.5	22.4	19.0	18.4
<u>Expected Gas Supply</u>				
Total Supply (Excluding Alaska)	20.5	19.2	18.3	17.7
<u>Shortfall</u>				
Without Alaska	--	3.2	0.7	0.7
With Alaska	--	3.2	0	0

Source: Jensen Associates, Inc.
Gas Requirements Agency

gasoline, U.S. refiners generally prefer the light African crudes from Nigeria, Algeria or Libya--crudes that are not substantially different from domestic crudes.

These light crudes typically have very low residual fuel oil yields. However, world reserves of crude oil are increasingly biased toward heavy crudes that yield significantly higher outputs of residual oil. If residual fuel oil supplies remain high relative to the market, it tempers the degree of flyup. The essentially by-product residual oil produced will be priced as low as necessary to dispose of it, thereby softening natural gas prices. The 1979-1980 collapse of the residual fuel oil market in the Midwest is a good example. Excess supply of residual oil caused the price to drop substantially at a time when crude oil prices were rising. As a consequence, natural gas prices in some industrial markets relaxed in order to maintain market share in the face of a shrinking overall demand for energy due to the economic downturn that affected the Midwest so strongly. Such events are likely to occur again subsequent to 1985. Although our forecast suggests an essentially balanced market, sporadic market disorder (created by abrupt changes in economic activity, large increases in supply, etc.) may occasionally cause spot surpluses and shortages.

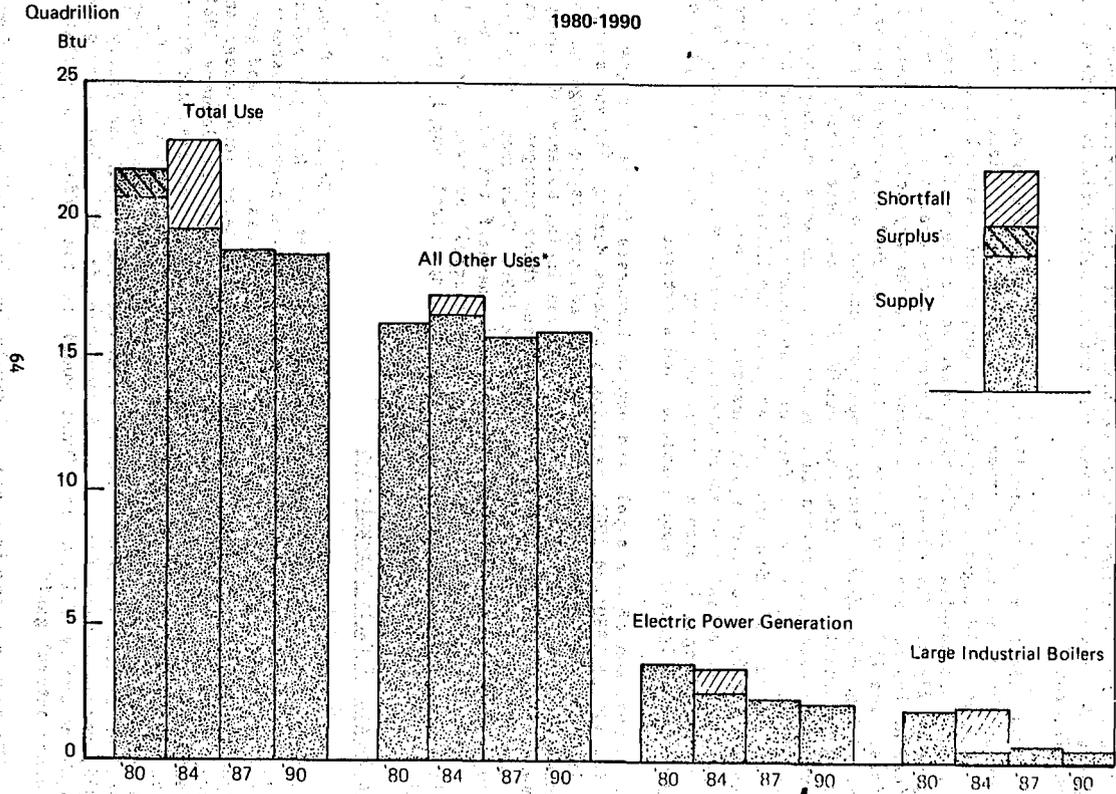
Comparison of our supply and demand forecasts indicates a gas surplus during all of 1980 and 1981, reaching a balance during 1982 and shortfalls in 1983 and 1984. Then, following market adjustments to large gas price increases which occur in 1985, we find a continuing balance of supply and demand through 1990. Figure V-1 summarizes these changes in gas market balances for the years 1980, 1984, 1987 and 1990. This graph shows that in 1980, a total gas supply surplus of about one-half tcf existed and that this situation is expected to change to a shortfall of over 3 tcf by 1984. Following the 1985 gas price increases from decontrol, supply and demand will be essentially in balance.

The Impact of Early Deregulation

The election of Ronald Reagan, together with a Republican Senate in November 1980, has signalled a conservative shift in American politics. Reagan's economic advisers strongly support private sector investment and economic activity under the stimulus of market forces. In oil and gas, the emphasis on supply-side economics quickly translates into deregulation. Deregulation of crude oil was quickly accomplished in January 1981 by Presidential order; an accelerated timetable for new natural gas deregulation or full deregulation would require Congressional action, but may well be proposed by the Administration. The analysis in this report is largely based on an assumption of the continuation of the Natural Gas Policy Act of 1978, which provides for new gas deregulation in 1985. The major question which naturally follows is, "What would be the effect on markets for Alaskan natural gas?"

We have not examined early deregulation in detail and therefore can only speculate about its possible effects on Alaskan gas markets. We do

FIGURE V-1
GAS SUPPLY/DEMAND BALANCES BY USER TYPES



*Includes residential, commercial, industrial (except large boilers) and other.

Source: Jensen Associates, Inc.

not share the view that immediate gas price deregulation would so stimulate the supply side that it would obviate the need for supplementary sources such as Alaska. We are persuaded that the impact of early deregulation would be much greater on market ordering and on demand than it would be on supply.

Higher oil and gas prices and the prospects for scheduled deregulation have already provided a powerful incentive for drilling activity. Both oil and gas well completion footage have increased by more than 40 percent in the past three years, gas footage nearly quadrupling and oil footage nearly doubling over the decade. The limitations imposed by leasing rates, geophysical crews, drilling rigs, and most importantly, evolving ideas for new drilling prospects serve to restrict the rate at which acceleration of the drilling incentive can produce concrete discovery results. Experience suggests that as drilling activity rises too rapidly, the yield--mcf discovered per foot drilled--may fall to offset the activity increase. Thus, although we would expect to see some supply improvement from immediate deregulation, we would not expect it to be large.

On the other hand, our projection of excess demand for gas is largely dependent on maintaining the disparity between price-controlled gas and international oil prices. Clearly, deregulation would permit gas, oil and coal markets to balance themselves more evenly over the 1981-1985 period, providing a more orderly market in the process. This would, presumably, eliminate much of the excess gas demand. The greatest concern about early new or full gas deregulation is its potential effect on roll-in capacity and the ability to subsidize the early entry of Alaskan gas into Lower 48 markets. In our lower-bound oil price forecast case, Alaskan gas is priced above market clearing levels in the early years and requires roll-in to enable it to compete in the marketplace. An acceleration of new gas deregulation would not significantly alter the relationship between clearing prices and the average price of old regulated gas, and thus--in our view--would not substantially change the extent of roll-in. It would clearly have an effect on the way in which flyup occurs.

Full deregulation, however, would permit all gas to rise to contractually-determined--as distinct from regulatory-determined--price levels. To the extent that indefinite pricing provisions exist in old gas contracts--and much of the old gas in 1987 will be produced from reserves discovered since 1973 where such clauses are common--prices could rise to eliminate a substantial portion of roll-in capacity. There is no guarantee that roll-in capacity would disappear entirely since many contracts have pricing provisions which would prevent their tracking deregulated prices directly. But to the extent that the roll-in capacity which would otherwise serve to cross-subsidize the Alaskan gas is substantially diminished by full deregulation, other means of accommodating the Alaskan price might be utilized. These could include such things as variations in rate design, greater use of market risk clauses or netback pricing approaches. Netback pricing, which is common in a deregulated market economy, sets the delivered price equal to the market clearing level and permits the wellhead price to vary as necessary within the terms of the contract. For crude prices higher than the lower-bound case--such as, for example, our least unlikely case--the issue disappears since Alaskan gas quickly becomes competitive in its own right without the need for roll-in.

THE MARKETABILITY OF ALASKAN NATURAL GAS

A Summary for Congressional Hearings
by Jensen Associates, Inc.

In our studies of the marketability of Alaskan natural gas, we at Jensen Associates, Inc. have concluded that commercial markets will exist for gas from this project throughout the project's lifetime. Despite an acceleration of drilling activity, the long-term prospect is for a decline in natural gas production from traditional Lower 48 sources. As a result, supplements--such as Alaskan gas from this project, imports, and unconventional sources--will be required if the gas industry is to avoid a substantial loss in its traditional contribution to U.S. energy supply. Efforts to diversify energy sources in the U.S. away from oil are continuing, but we believe that on the margin imported oil will remain the chief competitor for natural gas well into the 1990s. We believe that world crude oil prices will inevitably rise in real terms over the course of the project, although the timing and extent of individual price increases will almost inevitably be erratic. For the next year or so prices, indeed, are more likely to fall than to rise. There is thus a likelihood that the initial price of Alaskan gas will be above the price at which gas markets will clear against oil, requiring some price accommodation for Alaskan gas to assure that it can compete. Congress provided just such a transitional pricing approach in allowing roll-in treatment for Alaskan gas under the Natural Gas Policy Act of 1978.

But if for some reason roll-in is not available, changes in the "front end loading" pricing pattern for Alaskan gas, such as netback pricing at the wellhead and levelized rate design, provide similar price accommodation. We thus believe that a market does exist, and that some mechanism can be utilized to assure that prices can be competitive in the early years.

The year 1981 has proved to be a year of extraordinary upheaval in U.S. and world energy markets. The natural gas shortage which plagued the U.S. in the early and mid-1970s has given way to a "gas bubble" which has persisted for so long that many now call it simply a "gas glut." World petroleum markets are in even greater turmoil; the oil price increases which were set in motion by the Iranian revolution in late 1978 have had a major impact on world oil demand. Only a few years ago, many wondered whether OPEC would be willing or able to produce an expected requirement of more than 40 million barrels per day by the mid-1980s. Two years ago, at this time, demand for OPEC oil exceeded 31 million barrels per day and was threatening OPEC's allowable production capacity; at the moment, net demand for OPEC production has dropped to 20 million barrels per day. World oil prices, which rose more than two and one-half times in the chaotic markets of 1978 to 1980, are now falling--not only in real terms, but in current dollar prices, as well--as OPEC price hawks are forced to discount to retain some semblance of an oil market share. The changes have been sudden. Even the formal report submitted with this testimony, and which is dated only three months ago, foresaw a drop in OPEC demand this year to 23 million barrels per day from the then statistical base of 25

million barrels per day; it is now 3 million barrels per day lower than that. In this kind of market, it is tempting to conclude that there is enough natural gas, enough oil, and that the energy problem is almost a thing of the past.

The gas from Alaska, however, is not expected to flow until the winter of 1986/1987, so that the markets which concern us are not those of October 1981, but those of 1987 and the years following. A simple observation can illustrate the rapidity with which energy markets can change and place marketability issues in a new context. South Louisiana is a major contributor to today's gas bubble because of the prolific production rates possible with its reserves. If one were to make the simplifying assumptions that depletion rates in the area could be maintained at current levels and that no new discoveries would be made, the gas from South Louisiana would be virtually all gone by the time the Alaskan gas comes on line. South Louisiana is the largest gas producing area in the U.S., representing 26 percent of Lower 48 reserves and 35 percent of Lower 48 production. We do not mean to suggest that these assumptions are realistic, but only to show how greatly energy markets will have changed by that time.

Our evaluation places the marketability question in three broad contexts--the outlook for natural gas demand, the outlook for supply, and the role of price. Estimates of future natural gas requirements have been steadily reduced as observers have become aware of the extent to which natural gas demand is responsive to price. But although target requirements are down, we believe the long-term outlook for Lower 48 production

is also down despite current optimistic trends in gas well drilling activity. Thus supplements will increasingly be needed to satisfy the projected requirements.

The underlying driving force which will be most influential in creating increased demand for gas in general, and a market for Alaskan supplies in particular, is an increase in real prices for world oil. A major portion of existing U.S. industrial and power generation plant capacity is designed for oil and/or gas firing and is not readily convertible to coal or other fuels. Thus, rising oil prices quickly shift demand to gas. In addition, prices of most supplementary gas supplies--such as Canadian, Mexican or LNG--are being linked to oil. Rising real prices for oil thus make Alaskan gas--without such linkage--increasingly attractive relative to alternate supplies.

The Outlook For Natural Gas Demand

If the NGPA were to go to term in its present form, we foresee two distinct periods of gas demand behavior during the 1980s. Prior to new gas price decontrol in 1985, gas demand will grow in the price-sensitive industrial and power generation sectors as the price gap between gas and fuel oils remains. By 1983 this increasing demand will have absorbed the current gas supply surplus and exceeded available supply, creating an imbalance period lasting until decontrol of new gas prices in 1985. Following decontrol, gas prices will rise rapidly relative to other fuels causing some loss of demand by industrial and electric utility users. Price will then bring supply and demand into balance for the rest of the decade and beyond.

During the entire decade, residential and commercial demands will remain essentially constant. Industrial and power generation demands will increase significantly through 1984. Following gas price decontrol, the latter two price-sensitive demands will drop sharply as they switch to cheaper fuels.

Our demand estimates are shown in Table I. If the deregulation provisions of NGPA are modified by Congress through some form of accelerated deregulation, the impact on the market would be to clear it earlier, eliminating the excess demand we foresee prior to 1985. The volume effects would tend to be concentrated in those same markets which would not be served under conditions of excess demand--industrial boiler requirements and dual-fueled power generation demand.

The Outlook For Gas Supply

Natural gas reserve additions in the Lower 48 States last exceeded production in 1967 and, as a result, proved reserve levels in the U.S. have steadily declined. The industry has been able to effect a partial offset to this sharp decline in proved reserves by steady increases in the rate-of-take from remaining reserves. This has occurred both as a result of increased emphasis on in-fill and other relatively low-risk development drilling activity, as well as from the fact that the major Gulf Coast producing region is geologically capable of quite rapid depletion rates.

We do not believe that the increased drilling rates which we foresee will be sufficient to offset the steady decline in gas reserves added per foot of drilling effort. Therefore, we expect a continued decline in Lower 48 proved reserves. In addition, because of the changes in regional

Table I

LOWER 48 STATE GAS DEMAND FORECAST SUMMARY
(Quadrillion Btu)

Sector	Estimated Consumption	Forecast Demand		
	1980	1984	1987	1990
Residential & Commercial	7.5	7.7	7.7	7.6
Industrial	7.1	9.4	7.2	6.9
Power Generation	3.6	3.5	2.5	2.2
Other	2.8	2.3	2.1	2.0
Total Demand	21.0	22.9	19.5	18.7

Source: Jensen Associates, Inc.
Gas Requirements Agency

patterns of discoveries and in the nature of drilling activity, we foresee that at some point, production rates as a percent of proved reserves will peak, causing production to fall more rapidly thereafter. Thus, supplementary sources of gas supply will increasingly be needed to compensate for declining Lower 48 production. We do not share the view that early price deregulation would so stimulate the supply side that it would obviate the need for supplementary sources such as Alaska. We believe the effects of early deregulation would be much greater on market ordering and on demand than it would be on supply.

Our forecast of Lower 48 State conventional production declines by 28 percent between 1980 and 1990. This is partially offset by an increase in supplemental supplies such as pipeline imports from Canada and Mexico, LNG imports, synthetics, Alaskan gas and unconventional production. The result is that total supply declines 11 percent during the decade, from 21.0 quads in 1980 to about 18.7 quads in 1990. Details of our supply forecasts are provided in Table II. Our gas supply/demand balance--under the assumption of continuation of NGPA as it stands--are shown in Figure I.

The Role of Price

Perhaps the single most important element in competitive fuel price formation during the 1980s will be the outlook for international oil prices. Rising real prices for OPEC oil supplies have two important effects on oil and gas competition. First, rising oil prices tend to stimulate the demand for gas at the expense of oil--particularly in the price-sensitive dual-fuel market. But since prices of most supplementary

Table II

LOWER 48 STATES GAS SUPPLY FORECAST SUMMARY
(Quadrillion Btu)

Source	Estimated 1980	Forecast		
		1984	1987	1990
Conventional Production	19.9	16.8	15.5	14.4
Unconventional Production	--	0.1	0.1	0.3
Imports	1.0	2.6	2.9	2.9
Alaskan North Slope	0	0	0.8	0.8
Synthetics	0.1	0.1	0.2	0.3
Total Supply	21.0	19.6	19.5	18.7

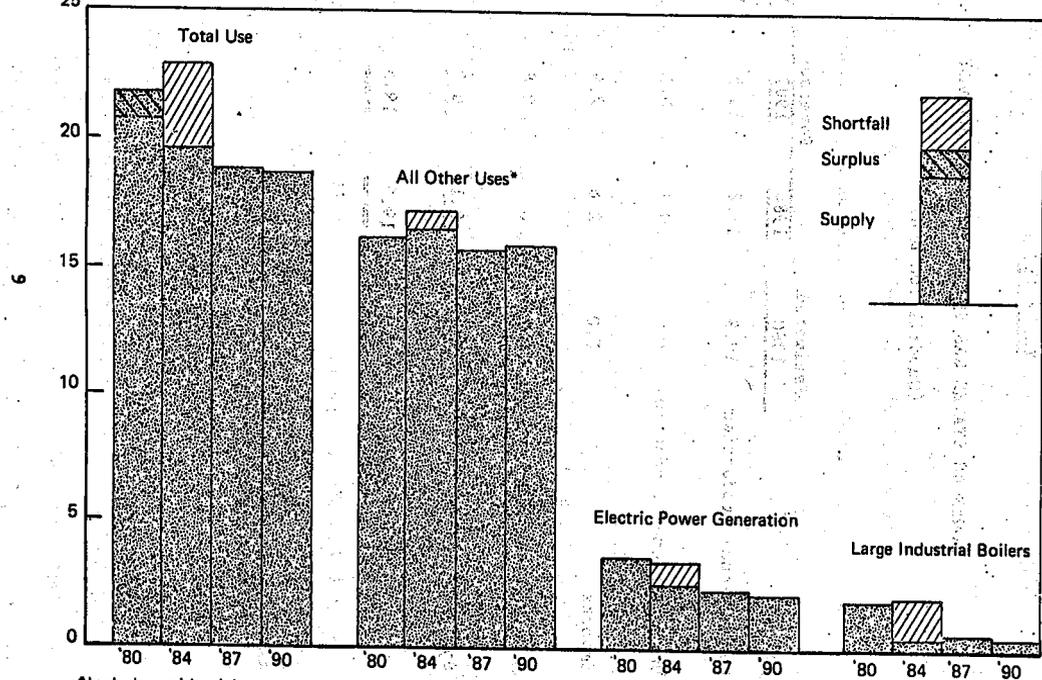
Source: Jensen Associates, Inc.
Department of Energy

Figure 1

GAS SUPPLY/DEMAND BALANCES BY USER TYPES

1980-1990

Quadrillion
Btu



*Includes residential, commercial, industrial (except large boilers) and other.

Source: Jensen Associates, Inc.

supplies, such as LNG or overland imports, will increasingly be tied to international oil price levels, rising oil prices make these sources relatively less attractive by comparison with Alaskan gas. Thus, a rising oil price environment makes Alaskan gas increasingly competitive, not only with oil, but with most other supplementary gas sources as well.

The year 1981 has seen a marked shift in the outlook for world oil supplies and prices. The successful weathering by world oil markets of the Iraq-Iran crisis, together with unexpectedly high reductions in world oil--and OPEC oil--demand has forced most oil economists to moderate their projections. In our formal report we utilize a "lower bound" oil price projection to test the marketability of Alaskan gas. We believed at the time the report was written--and believe now--that the "lower bound" price projection is a conservative statement of oil price behavior over the decade. But with the events in world markets of the summer and fall of 1981, it is probably no longer appropriate to describe it as a "lower bound" case in the early years before Alaskan gas flows, since the turnaround in world oil demand may be extended beyond 1983. Our forecasts of long-term crude prices continue to reflect the expectation that price behavior during crisis will be a major element of future oil price formation.

From 1973 to 1981, prices of international oil to U.S. markets rose at an average rate of nearly 14 percent per year in real terms. This was not a classical steady growth curve, however, since virtually all of the increase was confined to two comparatively short periods--October 1973 to February 1974 during the Arab oil embargo, and again from December 1978 to

February 1980 precipitated by the Iranian revolution. There is thus compelling evidence that the dominant force in real price increases over the decade has been the panic buying which accompanied the crisis markets of 1973/1974 and 1978/1980 rather than any orderly price administration by OPEC. OPEC's principal role has been to resist the erosion of real oil prices during the periods between rises. A forecaster who ignored the crisis element would have been right nearly seventy percent of the time, but might have missed the action of markets during which nearly eighty percent of the price increase occurred. The crisis element in price formation arises when political disruption coincides with a high level of net demand on OPEC. The coincidence was there in 1973 and again in late 1978. Prices weathered one tight market in late 1976 without taking off since the element of political disruption was missing. Conversely, the onset of the Iraq-Iran war occurred while markets were softening and the assassination of Anwar Sadat occurred at the lowest level of net demand for OPEC oil in the last thirteen years.

The magnitude of the present drop in OPEC demand, and the anticipated return of Iraq and Iran to the market, have convinced many observers that tests of OPEC's willingness or ability to produce are a thing of the past. But current production levels are misleading in a world in which OPEC tends to absorb much of the energy downswing, and a combination of worldwide economic downturn and contraseasonal inventory liquidation has pushed OPEC demand to abnormally low levels. For example, current estimates of worldwide inventory liquidation range as high as two million barrels per day during a season when inventories are normally expected to

increase by two million barrels per day--a four million barrel per day swing. In our view, net demand on OPEC oil will increase again after the completion of the current inventory liquidation, and a resumption in growth of economic activity in the OECD, perhaps during 1983. With the limited prospects for any significant increase in OPEC's available capacity over the decade, we believe that capacity--and price--will be tested again even without a new major disruption in the Middle East.

In our formal report, we have utilized two forecasts of oil prices. One of these--our least unlikely case--was based on the expectation that international oil price formation would operate very much during the 1980s as it has during the 1970s. The dominant feature of recent international oil price development has been a sporadic political or military crisis in the Middle East; this has generated panic buying in the marketplace and a rapid escalation in oil prices. These prices subsequently decline in real terms as the disruption passes and world economic activity reacts to the sharp dislocations in pricing. For our least unlikely case, we arbitrarily assumed that a disruption would occur in 1984 and the pricing pattern both during and after the disruption would be similar to 1973/1974 and 1979/1980.

For purposes of our market analysis, however, we have assumed that such a forecast, with its disruptive price pattern, would not present a credible test of the marketability of Alaskan gas. Therefore, we have utilized instead a "lower-bound" price case which assumes declining real prices through the end of 1982 with a turnaround thereafter. From the low point starting in 1983, we anticipate a three percent per year

increase, the rate at which we believe the OPEC long-term strategy pricing formula would operate if it is adopted by the end of 1982. The net effect of this price forecast is a real price increase of 1.8 percent per year from 1980 to 1987.

It is this projection which we have utilized in this report to test Alaskan gas marketability. The basic crude projection has been adjusted for transportation and other crude oil sources, and then converted into a price series for the refiners' acquisition cost of crude oil. This series has been used in turn to develop both distillate and residual fuel oil prices by region.

In the Natural Gas Policy Act, Congress granted Alaskan gas the right to rolled-in treatment for ratemaking purposes. This was designed to permit price-controlled old gas (which will continue long after 1985 new gas deregulation) to cross-subsidize any portion of the price of Alaskan gas over and above market clearing price levels. In a high oil price scenario, Alaskan gas quickly becomes competitive on the margin, as real oil prices overtake the initially higher-priced Alaskan gas. In our least unlikely combination of oil and gas prices, Alaskan gas requires little roll-in treatment during the early years to be marketable.

However, in our lower bound case, Alaskan gas must rely--in the early years, at least--on some form of price accommodation such as the rolled-in treatment which Congress granted it in the NGPA. We estimate that if the NGPA goes to term, the 1987 market will have 25 percent of total U.S. gas supply still regulated below the market clearing levels, amounting to a roll-in capacity of \$11.7 billion. Other supplementary gas supplies,

priced above clearing levels, will utilize a portion of this capacity, but most of it remains to accommodate the Alaskan gas and to provide a potential for "flyup"--the rapid market and contractual escalation of deregulated new gas prices in 1985. Figure II illustrates the roll-in capacity numbers for 1987 when the relative prices of Alaskan gas and oil are least favorable.

The extent to which this roll-in capacity will actually be available depends on world oil price levels, the nature of gas price regulation between now and 1985, and the extent to which the gas pipeline industry, through its contracting practices, may lock in enough deregulated gas price escalation to absorb part of this capacity. We have assumed that the individual reselling pipelines would be in the best position to coordinate their gas contracting practices, their markets, and the rolled-in accommodation of Alaskan gas. Indeed, we have seen evidence of just this sort of integrated supply/market planning taking place, and as a result our report concludes that the roll-in capacity will be there for the lower bound case.

The recent debate over early gas deregulation, the turbulence in world oil markets and the response of OPEC, raise legitimate questions as to what would happen to the markets for Alaskan gas if the roll-in capacity is not available as Congress intended. It is important to recognize that the Alaskan price projections utilized throughout our report and illustrated in Figure II are "front-end loaded." The cost-of-service ratemaking approach utilized by U.S. utilities attempts to recover operating costs and a return on undepreciated plant investment in the rates

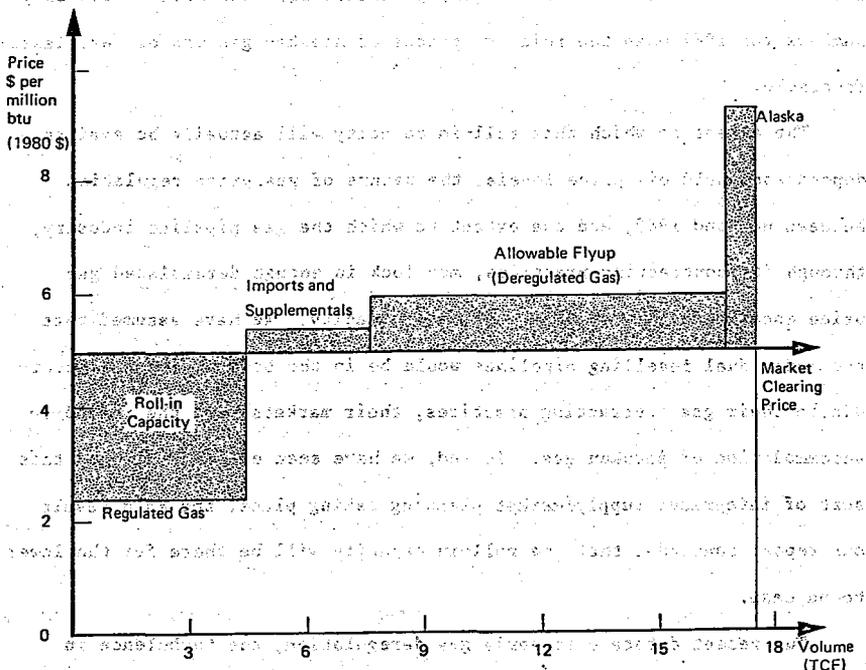
Figure 11

1987 ROLL-IN CAPACITY OF U.S. NATURAL GAS MARKETS

(Based on Lower Bound Crude Price

and

Upper Bound Alaskan Price)



Source: Jensen Associates, Inc.

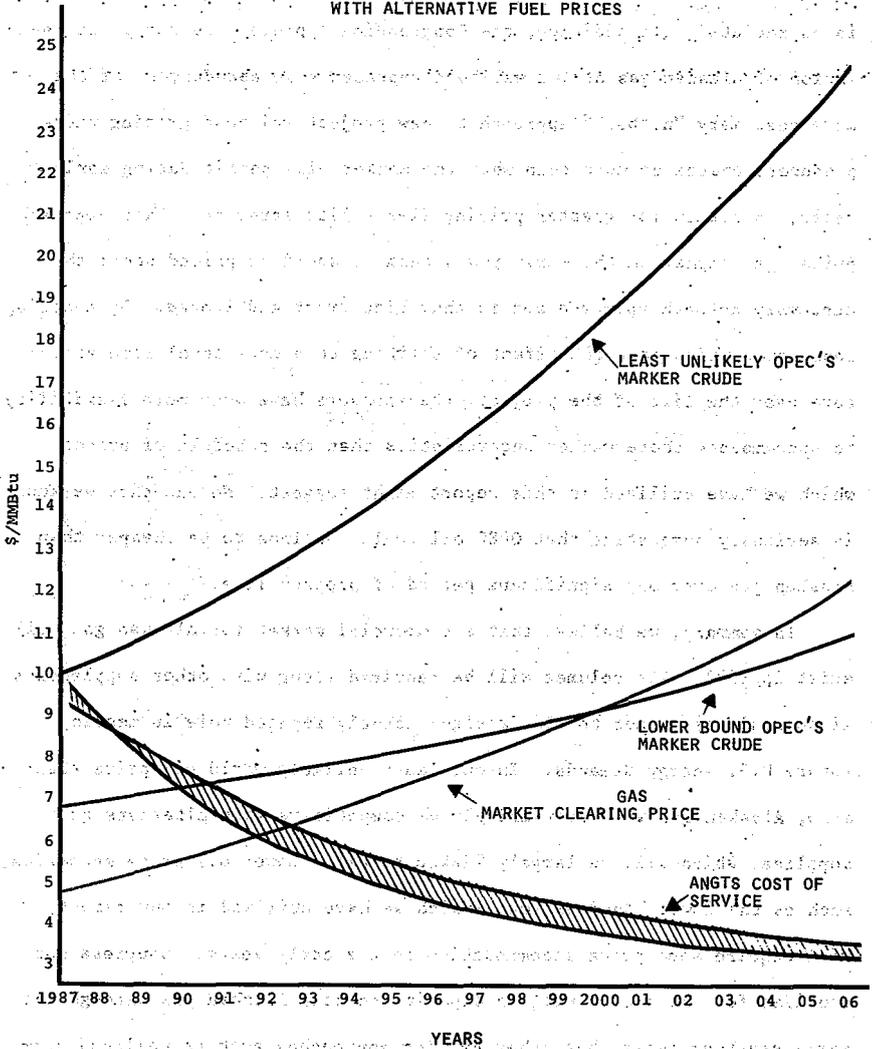
JENSEN ASSOCIATES, INC.

charged to customers. This makes rates, for a major project such as this one, highest at start-up and declining thereafter as the plant investment is depreciated. In addition, the Congressional preference for price regulation of Alaskan gas at the wellhead represents an abandonment of the more customary "netback" approach to new project wellhead pricing where producers charge no more than what the market will permit during early years; in return for greater pricing flexibility later on. This approach prices gas higher in the early years than it would be priced under the customary netback approach and is thus also front-end loaded. By adopting approaches which have the effect of shifting to a more level rate structure over the life of the project, the sponsors have much more flexibility to accommodate those market uncertainties than the schedule of prices which we have utilized in this report might suggest. No one that we know is seriously suggesting that OPEC oil could continue to be cheaper than Alaskan gas over any significant period of project life.

In summary, we believe that a commercial market for Alaskan gas will exist in 1987. Its volumes will be required along with other supplements if natural gas is not to play a significantly reduced role in meeting future U.S. energy demands. In our least unlikely world oil price scenario, Alaskan gas will increasingly be competitive with alternate gas supplies, which will be largely linked to oil. Lower oil price scenarios, such as the lower bound estimate which we have utilized in our report, will require some price accommodation in the early years. Congress has provided for the use of roll-in capacity to help Alaskan gas through the early start-up years, but other pricing approaches such as wellhead netback pricing and changes in pipeline rate design can also be utilized to accommodate the market.

APPENDIX F

COMPARISON OF ANGTS COST OF SERVICE
WITH ALTERNATIVE FUEL PRICES



APPENDIX G

**Net National Economic Benefits
of the Alaska Natural Gas
Transportation System**

Value of gas to Alaska	1.1	10.5
Value of gas to other states	1.1	10.5
Value of gas to foreign countries	1.1	10.5
Value of gas to Canada	1.1	10.5
Value of gas to Mexico	1.1	10.5
Value of gas to Europe	1.1	10.5
Value of gas to Japan	1.1	10.5
Value of gas to Korea	1.1	10.5
Value of gas to Taiwan	1.1	10.5
Value of gas to Hong Kong	1.1	10.5
Value of gas to Singapore	1.1	10.5
Value of gas to Thailand	1.1	10.5
Value of gas to Malaysia	1.1	10.5
Value of gas to Indonesia	1.1	10.5
Value of gas to Philippines	1.1	10.5
Value of gas to Australia	1.1	10.5
Value of gas to New Zealand	1.1	10.5
Value of gas to South Africa	1.1	10.5
Value of gas to India	1.1	10.5
Value of gas to Pakistan	1.1	10.5
Value of gas to Bangladesh	1.1	10.5
Value of gas to Sri Lanka	1.1	10.5
Value of gas to Ceylon	1.1	10.5
Value of gas to Maldives	1.1	10.5
Value of gas to Brunei	1.1	10.5
Value of gas to Timor	1.1	10.5
Value of gas to East Timor	1.1	10.5
Value of gas to Cambodia	1.1	10.5
Value of gas to Laos	1.1	10.5
Value of gas to Vietnam	1.1	10.5
Value of gas to North Vietnam	1.1	10.5
Value of gas to South Vietnam	1.1	10.5
Value of gas to Laos	1.1	10.5
Value of gas to Cambodia	1.1	10.5
Value of gas to Thailand	1.1	10.5
Value of gas to Malaysia	1.1	10.5
Value of gas to Indonesia	1.1	10.5
Value of gas to Philippines	1.1	10.5
Value of gas to Singapore	1.1	10.5
Value of gas to Hong Kong	1.1	10.5
Value of gas to Taiwan	1.1	10.5
Value of gas to Korea	1.1	10.5
Value of gas to Japan	1.1	10.5
Value of gas to Europe	1.1	10.5
Value of gas to Canada	1.1	10.5
Value of gas to Mexico	1.1	10.5
Value of gas to other states	1.1	10.5
Value of gas to Alaska	1.1	10.5

Prepared for:
Northwest Alaskan Pipeline Company
 1120 20th Street, N.W.
 Suite S-700
 Washington, D.C. 20036

Prepared by:
Resource Planning Associates, Inc.
 3000 Sand Hill Road
 Menlo Park, CA. 94025

July 1981

Contents

CHAPTER	PAGE	TITLE
INTRODUCTION		
	ii	Definition of Net National Economic Benefits
	iii	Report Organization
CHAPTER 1		THE VALUE OF ANGTS GAS
Step 1:	1.2	Develop Scenarios
Step 2:	1.3	Estimate World Oil Price in the Year 2000
Step 3:	1.4	Assess World Oil Price Patterns
Step 4:	1.5	Estimate Gas Value Scenarios
Step 5:	1.6	Develop Probability Distribution on Gas Value
CHAPTER 2		ANGTS COSTS
	2.1	Capital Costs
	2.2	Gas-Conditioning Facility
	2.2	Alaskan Pipeline Segment
	2.2	Canadian Pipeline Segments
	2.3	Lower-48 Pipeline Segments

CONTENTS

2.3 Annual Costs

2.3 Natural Gas Costs

2.4 Operating and Maintenance Costs

2.4 Canadian Annual Costs

CHAPTER 3 NET NATIONAL ECONOMIC BENEFITS OF ANGTS

3.1 The Base Case

3.3 Sensitivity Analysis of the Base Case



Exhibits

CHAPTER	NO.	TITLE
INTRODUCTION	1	NNEB Overview
CHAPTER 1	1.a	Participants in Analysis of the Value of Alaskan Gas
	1.b	Composite Distribution on the Annuity Equivalent Value of Natural Gas
	1.c	Five-Step Approach to Estimating Value of Alaskan Natural Gas
	1.d	Example of One Expert's Distribution on the Price of World Oil in the Year 2000
	1.e	Individual Experts' and Composite Distributions on the Price of World Oil in the Year 2000
	1.f	Example of One Expert's 30-Year World Oil Price Pattern
	1.g	Relationship Between Gas Value Patterns and the Annuity Equivalent Value of Gas
	1.h	Individual Experts' and Composite Distributions on the Annuity Equivalent Value of Natural Gas
CHAPTER 2	2.a	Components of the Total Cost of Delivered Gas

EXHIBITS

CHAPTER 3

- 3.a Relationship Between NNEB Estimate and Value of Alaskan Natural Gas**
- 3.b NNEB for Different Project Costs and Gas Values**
- 3.c NNEB Over Extreme Ranges of Project Costs and Gas Value**
- 3.d Sensitivity of NNEB to Changes in Major Assumptions**
- 3.e Sensitivity of NNEB to Real Discount Rate**

Introduction

The Alaska Natural Gas Transportation System (ANGTS) is the largest privately financed project ever to be considered. Its completion will generate enormous net national benefits. The present value of the Alaskan gas that ANGTS will bring to the United States is likely to be between \$90 and \$140 billion.* The total present cost of delivering this gas (including the wellhead cost of the gas) is approximately \$50 billion over the 25-year project life. Accordingly, the present value of the net benefits of ANGTS is between \$40 and \$90 billion for all U.S. parties associated with the project. For our base case, we use the median gas value of \$110 billion, which yields a median NNEB of \$60 billion. All of the above values are in January 1980 dollars, discounted in real terms at 3 percent to mid-1981.

The parties associated with ANGTS include the consumers, the state and federal governments, and the project investors. The benefits will provide the project investors with returns sufficient to attract their respective investments. Additionally, the governments will receive benefits in the form of tax receipts.

In September 1977, President Carter rendered a decision that the Northwest Alaskan Pipeline Company be designated to construct and operate those portions of the ANGTS within the State of Alaska.** Because project

* These values are the mode and expected value for the gas value, respectively.

** Executive Office of the President, Energy Policy and Planning, Decision and Report to Congress on the Alaska Natural Gas Transportation System (September 1977). Hereinafter cited as the Decision. Northwest Alaskan Pipeline Company is the operating partner for the consortium (Alaskan Northwest Natural Gas Transportation Company) presently sponsoring the Alaskan segment of ANGTS.

INTRODUCTION

ii

cost estimates have changed substantially since the Decision, the project sponsors must demonstrate that the project is still in the public interest.*

Accordingly, Northwest Alaskan Pipeline Company asked Resource Planning Associates, Inc. (RPA), to independently assess the net national economic benefits (NNEB) of ANGTS. Northwest Alaskan Pipeline Company provided the project cost assumptions for the analysis. RPA conducted the analysis of the NNEB and we present our findings in this report. First, however, we define the NNEB and explain the report organization.

DEFINITION OF NET NATIONAL ECONOMIC BENEFITS

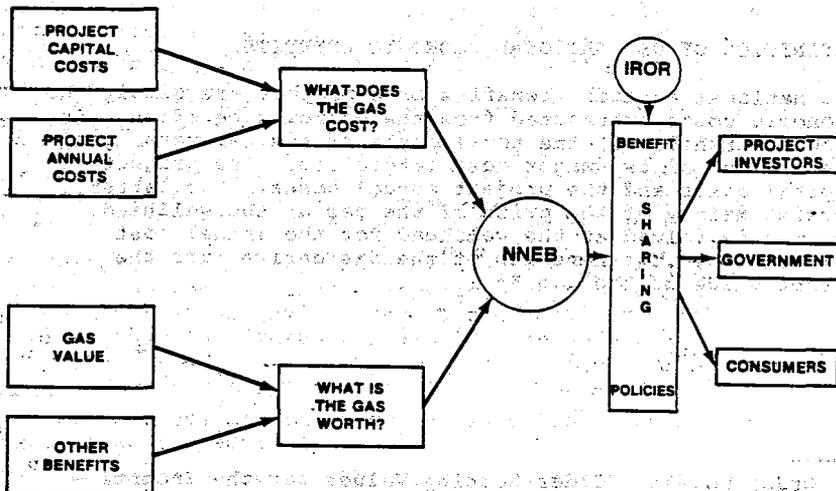
Net national economic benefits of a project are simply the economic costs subtracted from the economic benefits. As shown in Exhibit 1, the total costs of the delivered gas are the sum of two major cost categories: the project capital costs and the project annual costs. The latter consist mainly of the price of the gas at the wellhead. The gas is valued at the wellhead for the annual cost calculation. The benefits of the gas derive from the market value of the gas.**

* Order No. 31, "Order Setting Values for the Incentive Rate of Return, Establishing Inflation Adjustment and Change in Scope Procedures, and Determining Applicable Tariff Provisions," Docket No. RM78-12 (June 8, 1979), p. 53.

** Our evaluation excludes indirect benefits, such as increased energy independence, improved balance of payments, and more jobs. Consequently, our estimate of the value of the gas is conservative.

Exhibit 1

NNEB OVERVIEW



The time patterns for the costs and benefits of ANGTS are significantly different. The capital costs are incurred prior to gas flow, whereas the benefits accrue over a minimum 25-year project life. Therefore, the NNEB is largely a matter of society's time value of capital. In our analysis, we used a 3 percent real discount rate for the base case assumption. With an inflation rate assumption of 11 percent, the annual discount rate is 14 percent.

As shown in Exhibit 1, the NNEB is the total value available for sharing among project investors, government, participants, and consumers. The relative shares are determined by project costs, market factors, laws and regulations (such as the Federal Energy Regulatory Commission's incentive rate of return mechanism), and tax policies.

REPORT ORGANIZATION

This report is divided into three parts. In Chapter 1, we present the value of the gas to be delivered by ANGTS. We used an approach that combines the judgment of 28 nationally recognized energy experts to show that the value of the gas is large under all reasonable circumstances. Chapter 2 presents the capital and annual costs for the project, as provided by Northwest Alaskan Pipeline Company. Chapter 3 combines the results of Chapters 1 and 2; in it we elaborate on our definition of NNEB and examine the sensitivity of the base case to changes in several major assumptions. We also demonstrate that the NNEB is large under all reasonable circumstances.

1

THE VALUE
OF ANGTS GAS

The value of the delivered Alaskan gas is a major determinant of the NNEB. It is also the most difficult factor to predict, due to its heavy dependence on highly uncertain future energy prices. Consequently, we devoted a major effort in the NNEB analysis to this area. This effort involved utilizing the judgments of a broad cross-section of nationally recognized energy experts.

We define the value of delivered Alaskan gas as the wholesale revenue it could command at the pipeline termini -- that is, at the Chicago and San Francisco region gateways* -- in an unregulated environment. This is equivalent to the wholesale cost of fuels that would be consumed in the absence of Alaskan gas, approximately adjusted for differences in the costs of local distribution and end-use utilization. In Chapter 3, we explain the use of gas value, thus defined, in calculating the NNEB.

To account for the high degree of uncertainty in the future value of Alaskan gas, we interviewed 28 nationally recognized experts on future energy prices. These interviews were conducted during the first quarter of 1981. These experts and their affiliations are listed in Exhibit 1.a. The combined results of our interviews are summarized as a probability distribution in Exhibit 1.b. On a levelized basis, the median gas value is \$9.17 per million Btu in 1980 dollars. The expected value is \$11.79 and the mode (most likely) is \$7.50. The probability of a value less than \$4.94 is 10 percent, as is the probability of a value greater than \$18.32.

* A small amount of Alaskan gas is also delivered within the State of Alaska. This is included in our definition of the value of ANGTS gas.

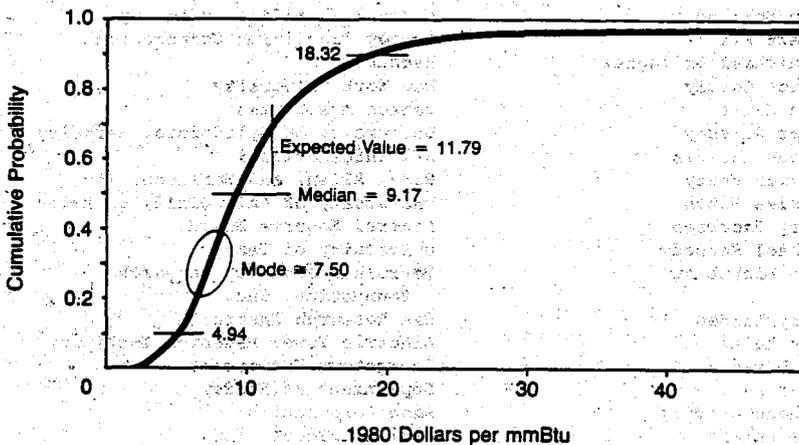
Exhibit 1.a

PARTICIPANTS IN ANALYSIS OF THE VALUE OF ALASKAN GAS

Expert	Affiliation
Alvin Alm	Harvard University
Michael Barron	Department of Energy
Kenneth Darrow	Gas Research Institute
John Ecklund	Central Intelligence Agency
Robert Fri	Energy Transition Corporation
J. Michael Gallagher	Bechtel
Dermot Gately	New York University
John Gault	Jensen Associates
Roger Glassey	University of California, Berkeley
Eugene Harless	SRI International
Patrick Henry	Booz, Allen, and Hamilton, Inc.
Charles Hitch	University of California, Berkeley
Larry Jacobsen	Federal Reserve Board
Michael Kennedy	University of Texas
John Lichtblau	Petroleum Industry Research Foundation, Inc.
Henry Linden	Gas Research Institute
Rene Males	Electric Power Research Institute
Ted Moran	Georgetown University
Roger Naill	Department of Energy
Richard Nehring	Rand Corporation
Dale Nesbitt	Decision Focus, Inc.
David Nissen	Chase Manhattan Bank
Warner North	Decision Focus, Inc.
James Plummer	Electric Power Research Institute
James Reddington	Department of State
Benjamin Schlesinger	American Gas Association
John Stanley-Miller	Department of Energy
James Sweeney	Stanford University

Exhibit 1.b

COMPOSITE DISTRIBUTION ON THE ANNUITY BASIS OF THE EQUIVALENT VALUE OF NATURAL GAS



For our base case, we assume the delivered volume of gas to be approximately 2 billion cubic feet per day, beginning in late 1986 and continuing for 25 years. This is the flow rate already authorized by the State of Alaska, and sufficient gas reserves have been proven to assure its feasibility.

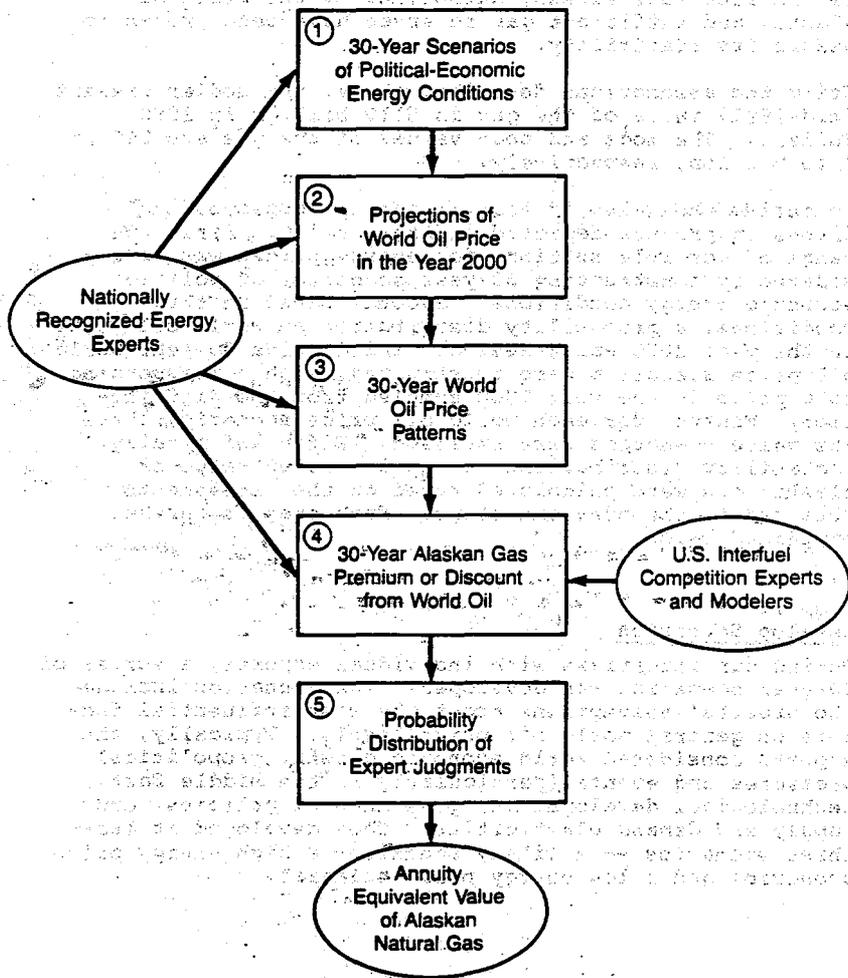
Using the assumptions described above, the median present (mid-1981) value of the gas is \$110 billion in 1980 dollars. The mode and mean values of the gas are \$90 and \$140 billion, respectively.

To derive the value of Alaskan gas, we employed the five-step process depicted in Exhibit 1.c. First, the range of possible settings for energy prices was considered by constructing 30-year scenarios of political-economic energy conditions. Second, based on these conditions, a probability distribution on world oil price in the year 2000 was assessed. Third, five 30-year world oil price scenarios were constructed, each corresponding to a price in the year 2000 sampled from the distribution. Fourth, for each world oil price scenario, three gas value scenarios were assessed. Fifth and finally, probability distributions on the levelized value of Alaskan gas were calculated based on the assessments obtained in the previous steps. Each step is further explained below.

Step 1: Develop Scenarios

During our interviews with individual experts, a series of 30-year scenarios was developed. The scenarios included the experts' assumptions about the most influential factors on general world oil price levels. Typically, the experts considered world economic growth, geopolitical pressures and events (particularly in the Middle East), technological developments, governmental policies, and supply and demand elasticities. They developed at least three scenarios -- a likely scenario, a high energy price scenario, and a low energy price scenario.

Exhibit 1.c

FIVE-STEP APPROACH TO ESTIMATING
VALUE OF ALASKAN NATURAL GAS

To illustrate, low-price scenarios were characterized by many experts as involving a stable Middle East and rapid technological development and/or depression in most industrialized countries and high elasticity of demand. High-price scenarios were generally characterized by international strife, slow technological progress, and environmental barriers to resource development.

Step 2:

Estimate World Oil

Price in the Year 2000

For each of the scenarios defined in Step 1, the experts then developed estimates of world oil price in the year 2000. These estimates for each scenario were made as probability statements to capture the experts' degree of confidence. For example, one expert stated: "Given the low-price scenario, we have one chance in ten that no real growth in oil price will take place."

Using these results, and also considering implicitly the multitude of other scenarios that could unfold, the experts then developed an overall probability distribution on world oil price in the year 2000. Exhibit 1.d shows the result for an expert who believes there is a 10 percent chance that the price will exceed \$114 per barrel in 1980 dollars and a 10 percent chance that it will be less than \$53 per barrel. This expert also considers it equally likely that the price will be above or below \$75 per barrel.

The distributions for all 28 experts are overlaid in Exhibit 1.e. Not surprisingly, a great divergence of opinion exists among these experts. One said the price will not be less than \$150 per barrel, while another contended that it will not be greater than \$70 per barrel. This divergence is due to differing opinions about events in the Middle East, oil discoveries, technological progress, synfuels production, coal development, and future societal values.

Exhibit 1.d

EXAMPLE OF ONE EXPERT'S DISTRIBUTION ON THE PRICE OF WORLD OIL IN THE YEAR 2000

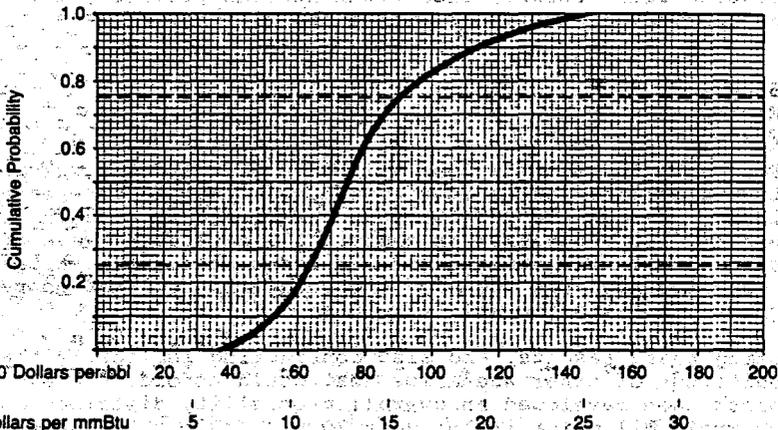
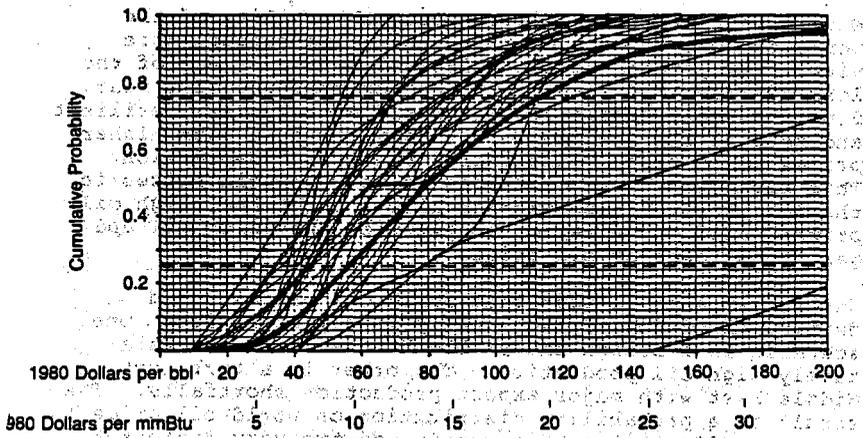


Exhibit 1.e

INDIVIDUAL EXPERTS' AND COMPOSITE DISTRIBUTIONS ON THE PRICE OF WORLD OIL IN THE YEAR 2000

Individual experts' and composite distributions on the price of world oil in the year 2000. The graph shows cumulative probability curves for various experts and a composite distribution. The x-axis represents price in 1980 Dollars per barrel (top) and 1980 Dollars per million Btu (bottom). The y-axis represents cumulative probability from 0.0 to 1.0.



Individual experts' and composite distributions on the price of world oil in the year 2000. The graph shows cumulative probability curves for various experts and a composite distribution. The x-axis represents price in 1980 Dollars per barrel (top) and 1980 Dollars per million Btu (bottom). The y-axis represents cumulative probability from 0.0 to 1.0.



The collective judgment of all experts, giving equal weight to each opinion, results in a price ranging from \$22 to more than \$200 per barrel, with an expected value of \$96 per barrel. We can safely say that the experts consider long-term energy prices extremely uncertain. Consequently, any single point estimate is of questionable worth to decision makers.

Most experts were optimistic about the ability of the world economy to cope with less oil. To support this view, they pointed to the relatively minor effect of the loss of Iraqi and Iranian production over the last year. Some, however, considered the world economy less resilient and thought that reduced oil supply combined with higher prices would cause a deep, prolonged world depression. This economic chaos could lead to very low oil prices in the long term. These experts also thought that high oil prices would cause rapid substitution away from oil and gas, thus lowering oil prices.

Several experts believe that world oil prices would develop along one of two equally likely scenarios. One scenario is a benign and stable Middle East with relatively high oil production. The other is a turbulent Middle East with major export production shortfalls. The result is a probability distribution on world oil price in the year 2000 that is a composite of two very different distributions; one for each scenario.

Step 3:

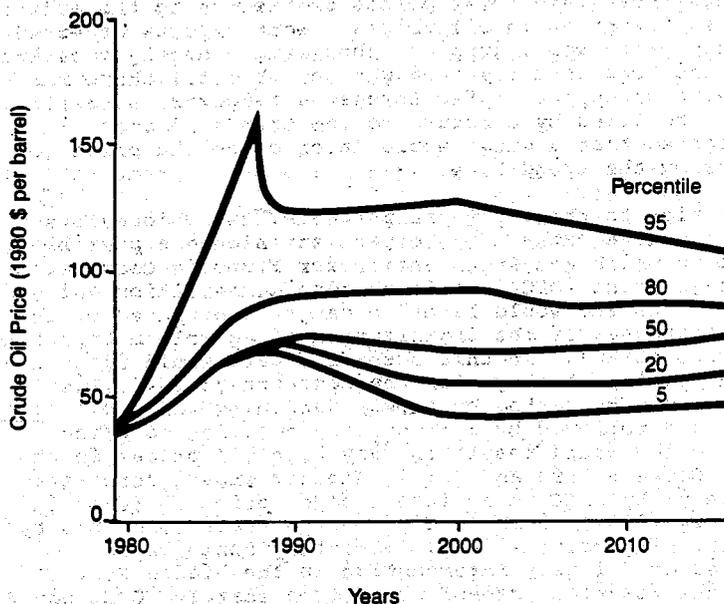
Assess World

Oil Price Patterns

In this step, we extended the results of the previous step to cover the entire period between 1980 and 2010. First, we chose five representative prices from the distribution on world oil price in the year 2000. Then, the experts developed a 30-year time pattern of oil prices consistent with each of these prices. If experts felt that significantly different patterns could be consistent with a single price, they were asked to assess a "weighted average pattern." An example of an expert's price patterns is presented in Exhibit 1.f.

Exhibit 1.f

EXAMPLE OF ONE EXPERT'S
30-YEAR WORLD OIL PRICE PATTERNS



Opinions about time patterns for world oil prices also varied considerably. However, most experts felt that prices would increase substantially and that most of this increase would occur between now and the year 2000, with a slow increase or decline beyond the year 2000. This pattern was explained in several ways. First, experts anticipated that new and more efficient energy production and utilization technologies would emerge by the year 2000, thus halting the rise in oil prices. Second, many experts believed that at least one major disruption in the world oil market would occur before the year 2000. However, there were three points of view as to the effect of this disruption on oil prices. Most experts expected that the price would jump and then remain nearly constant until the long term trend caught up, or until there was another disruption. A few foresaw a temporary surge in prices, followed by a return to the trend. And one anticipated that a surge would later cause the price to fall below the trend line.

In addition to these general patterns, two unique forecasts are noteworthy. One expert envisioned a possible future in which the Organization for Economic Cooperation and Development (OECD) would abandon conservation and new technologies and would later be caught unprepared by the price increases of the Organization of Petroleum Exporting Countries (OPEC). In this scenario, OPEC would adopt a benign pricing strategy for the next ten years. This period would be marked by slowly declining world oil prices and followed by aggressively coordinated price hikes, which would result in very high oil prices in the period between 1990 and 2010. Another expert forecasted an attempt by OPEC to achieve a major price increase in the early 1980s, which would prompt extreme reactions by the consuming nations (e.g., mandatory conservation measures or military intervention in the Middle East). After the reaction, demand would drop sharply, OPEC would collapse, and world oil prices would fall accordingly.

Step 4:

Estimate Gas Value Scenarios

For each of the world oil price patterns developed in Step 3, the experts were asked to consider the premium or discount that gas could command in the unregulated U.S. energy markets. The experts considered the factors that

may cause gas to be valued above or below oil on an equivalent-Btu basis. These factors include the cost of fuel conversion, long-term supply and demand situations, air quality standards, and other regulations affecting energy use.

Each expert developed three gas value estimates (10 percentile, 50 percentile, and 90 percentile estimates) for each of the five oil price patterns, leading to 15 gas-value patterns. Again, the experts' opinions about the gas value relative to oil price levels varied considerably over the 30-year period. Generally, the different views hinged on the weight given to the premiums for liquids in the transportation sector and the premiums given to cleanliness and efficiency for the gas. Most experts also took into account the future conversion costs from one fuel to the other.

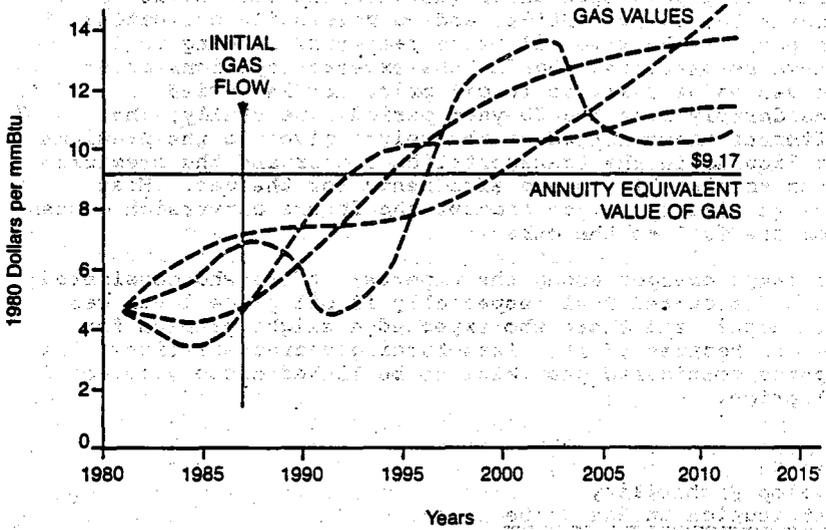
Two camps emerged among the experts: those who considered gas a discounted fuel (especially if oil price level was very high), and those who expected a slight premium for the gas because of its clean-burning characteristics. All experts considered gas value to be linked closely to world oil price.

Step 5:
Develop Probability
Distribution on Gas Value

In the final step, we calculated a probability distribution for each expert on the levelized value of Alaskan gas, as well as a composite distribution. The levelized gas value is a single-number summary of a pattern of values over time. It is a uniform annuity equivalent (i.e., a constant annual value whose present value is the same as a changing pattern). As shown in Exhibit 1.g, a single levelized value may correspond to widely different patterns of values. We chose levelized value as the measure of the value of Alaskan gas for three reasons. First, it can be more readily compared to other energy prices. Second, it can be used to calculate the absolute present value of the gas. Third, it can be represented graphically by a probability distribution.

Exhibit 1.g

RELATIONSHIP BETWEEN GAS-VALUE PATTERNS
AND THE ANNUITY EQUIVALENT VALUE OF GAS



The results obtained in this step are displayed in Exhibit 1.h. The heavy curve is the composite distribution that was obtained by giving each expert equal weight; it is the same as the curve in Exhibit 1.b.

For each expert, the probability distribution on levelized gas value was calculated as follows:

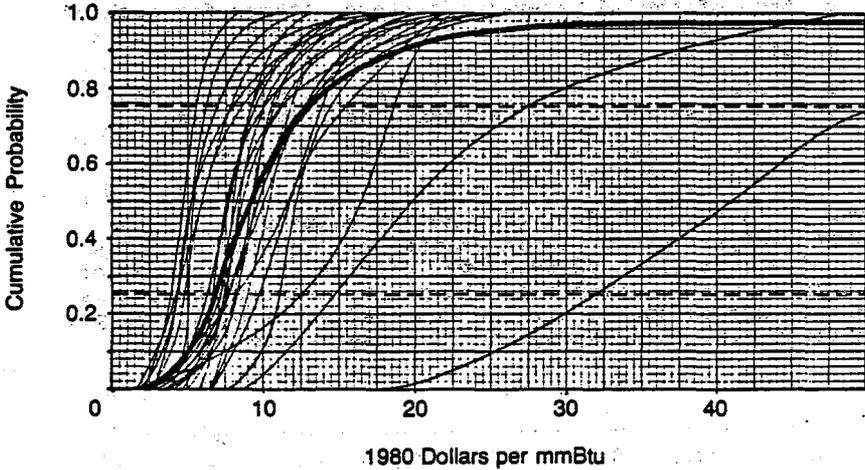
- Each of the 15 gas-value patterns (three for each of the five world oil price patterns) was converted to a levelized value.
- Probabilities were approximated for each of these values, based on the assessments of Steps 2 and 4.
- The distribution was constructed from the probability-value pairs.

The collective judgment was the gas value used for the NNEB analysis presented in Chapter 3. The median value annuity equivalent of \$9.17 per million Btu was used for the base case. Given that the gas value distribution is highly skewed upward with an expected value of \$11.79 per million Btu, this assumption is conservative.

Exhibit 1.h

AND SPECIALTY ENERGY UNIT

INDIVIDUAL EXPERTS' AND COMPOSITE
DISTRIBUTIONS ON THE ANNUITY EQUIVALENT
VALUE OF NATURAL GAS



2

ANGTS COSTS

ANGTS is composed of a gas-conditioning facility at Prudhoe Bay and several major pipeline segments that ultimately deliver gas near Chicago and San Francisco. The total cost of delivering the gas to the U.S. consumers is \$73 billion in 1980 dollars. This includes the cost of the natural gas at the wellhead, the capital costs of facilities to condition and transport Alaskan gas, the operating and maintenance costs, and Canadian annual costs. It does not include inflation, financing charges, or the incentive rate of return rate base adjustment. Discounted at a 3 percent real discount rate, the total mid-1981 present value cost is approximately \$50 billion in 1980 dollars. The components of this cost are illustrated in Exhibit 2.a. In this chapter, we present the estimates of the capital and annual costs of ANGTS as provided to RPA by the Northwest Alaskan Pipeline Company.

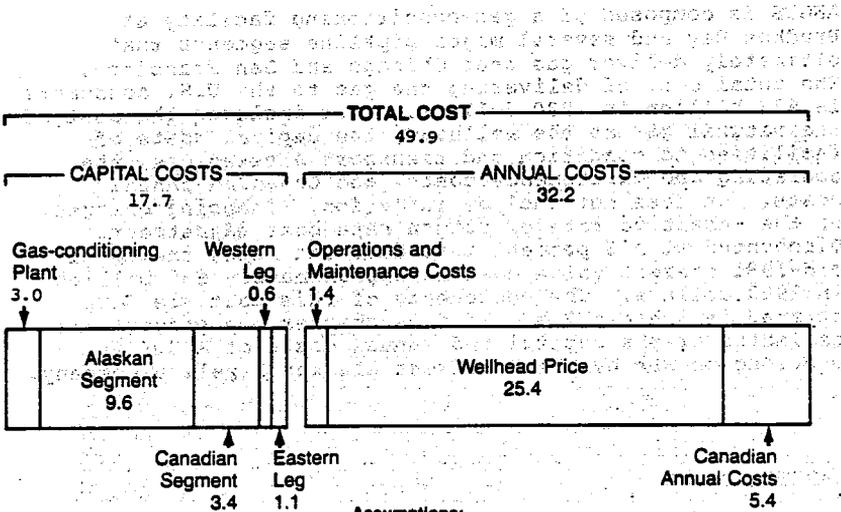
CAPITAL COSTS

The gas-conditioning facility, the Alaskan segment of the pipeline, and the northern portion of the Canadian segment must be built solely to prepare and transport the natural gas produced at Prudhoe Bay. The southern portion of the Canadian segment and the U.S. Eastern and Western segments of the pipeline will transport both Alaskan and Canadian gas. The combined capital costs attributable to conditioning and delivering Alaskan gas add up to \$19.5 billion in 1980 dollars. Discounted at 3 percent, the present value of these costs is \$17.7 billion. Capital costs represent 34 percent of the total cost to be borne by the United States. They are explained individually below.

RPA

Exhibit 2.a

COMPONENTS OF THE TOTAL COST OF DELIVERED GAS (1980 \$ billions present value)



Assumptions:

- NGPA Wellhead Price (including 10% Alaskan severance tax).
- No Design and Scope Changes.
- No Regulatory Delays.
- Incremental Capital Costs of Transportation System for Alaskan Gas Only.
- Real Discount Rate of 3%.

Gas-Conditioning Facility

A \$3.3 billion cost is assumed for the gas-conditioning facility in 1980 dollars. The present value cost is \$3.0 billion in 1980 dollars, using a 3 percent real discount rate. This cost represents 17 percent of the capital costs and 6 percent of the total cost of ANGTS.

Alaskan Pipeline Segment

From the gas-conditioning facility at Prudhoe Bay, the Alaskan segment of the pipeline system takes the gas south to Fairbanks and then southeast to the Canadian border. Second to the cost of the gas itself, this segment has the largest cost associated with the project. The capital cost for the Alaskan pipeline segment is \$10.6 billion in 1980 dollars. Using a 3 percent real discount rate, the present value of this cost is \$9.6 billion. The Alaskan pipeline segment accounts for 54 percent of the ANGTS capital costs and 19 percent of the total cost to be paid by the United States for Alaskan gas deliveries.

Canadian Pipeline Segments

From the Alaskan border, the gas is transported southeast through Canada to the United States. The cost of the Canadian pipeline segments is approximately \$5.8 billion in 1980 dollars. However, some of the pipeline capacity will be devoted to carrying Canadian gas. Of the 1179.9 trillion cubic feet per year to be delivered through ANGTS in the Lower-48 states, 406.4 trillion cubic feet (or 34 percent) will be Canadian gas. Accordingly, approximately 34 percent of the Canadian portion of ANGTS is devoted to Canadian gas transportation. The capital cost attributable to Alaskan gas is therefore \$3.8 billion in 1980 dollars. Discounted at 3 percent, the present value of the Canadian capital cost required to transport Alaskan gas is \$3.4 billion in 1980 dollars. The cost of the Canadian pipeline segments is 19 percent of the capital costs and 7 percent of the total cost to the United States.

Lower-48 Pipeline Segments

Near Caroline, Alberta, the Canadian pipeline bifurcates. One segment travels southeast to the Chicago area and the other travels southwest to the San Francisco area. Both of these pipelines will be carrying Canadian gas before the Alaskan flow begins in late 1986. Once Alaskan flow begins, the Eastern and Western segments will carry approximately 64 and 70 percent Alaskan gas, respectively. Of the \$1.8 billion total cost in 1980 dollars of the U.S. Eastern segment, \$1.2 billion is attributable to Alaskan gas. Of the \$0.8 billion total cost in 1980 dollars of the U.S. Western segment, \$0.6 billion is attributable to Alaskan gas. Taken together and discounted with a 3 percent real discount rate, the present value of the cost of these segments is \$1.7 billion in 1980 dollars. The Lower-48 pipeline segments account for 10 percent of the capital costs and only 3.4 percent of the total cost to be borne by the United States.

ANNUAL COSTS

The annual costs include the cost of the natural gas itself, ANGTS operating and maintenance costs, and the Canadian cost of service. These costs amount to \$57.3 billion in 1980 dollars. Discounted at a 3 percent real rate, the present value of these costs is \$32.2 billion. Annual costs represent 65 percent of the total cost for delivered Alaskan gas. They are discussed separately below.

Natural Gas Cost

The natural gas cost at the wellhead is the largest single cost associated with the project. The gas cost is determined by Alaskan severance tax policy, the Natural Gas Policy Act of 1978 (NGPA), and the flow rate into the gas-conditioning facility. Alaska is likely to charge a 10 percent severance tax on the wellhead price of the gas. The NGPA specifically omits Prudhoe Bay gas from deregulation and allows the maximum price of the gas to

ANGTS COST

rise only with inflation. Consequently, the real cost of the gas will not rise as long as the NGPA is in effect. Finally, the assumed input flow rate is 2.1 billion cubic feet per day beginning in late 1986. The natural gas cost amounts to \$42.1 billion in 1980 dollars, \$22.6 billion greater than all capital costs combined. Using a 3 percent real discount rate, the present value of the natural gas cost at mid-1981 is \$25.4 billion in 1980 dollars. At this discount rate, the cost of the gas represents 51 percent of the total cost.

Operating and Maintenance Costs

Operating and maintenance costs for ANGTS, excluding Canada, are \$2.4 billion in 1980 dollars. These costs were estimated by weighting the costs for each segment by the proportion of Alaskan gas flowing through the segment. They do not include the cost of the pipeline gas used by compressors at compressor stations, which is recognized only by increasing the cost of gas leaving each segment above the cost of the gas as it entered the segment. The present value of the operating and maintenance costs is \$1.4 billion in 1980 dollars, using a 3 percent real discount rate. Using this same discount rate, operating and maintenance costs outside of Canada account for 3 percent of the total cost.

Canadian Annual Costs

Finally, the Canadian annual costs going to the Canadian government and the sponsors of the Canadian segments is approximately \$9 billion in 1980 dollars. These costs represent the difference between the Canadian cost of service (\$12.8 billion) and the Canadian capital costs (\$3.8 billion) and includes Canadian segment operating and maintenance costs (approximately \$0.6 billion). Using a 3 percent real discount rate, the present value of the Canadian cost of service is \$8.8 and of capital costs is \$3.4 billion. Thus, the present value of Canadian annual costs is \$5.4 billion in 1980 dollars. These annual costs must be subtracted from NNEB because they are costs paid by U.S. parties.

3 NET NATIONAL ECONOMIC BENEFITS OF ANGTS

1980-1984

In the two preceding chapters, we presented estimates of the value of the Alaskan gas and the cost of the gas and transportation system. In this chapter, we combine value and cost to derive the NNEB of ANGTS. We begin by reviewing the underlying assumptions in the NNEB estimate, including the use of a 3 percent real discount rate. Finally, we examine the sensitivity of the base case to several important assumptions about the project.

Briefly, the base case present value of the NNEB of ANGTS is approximately \$60 billion in 1980 dollars, assuming a real discount rate of 3 percent. Although this figure is sensitive to several important variables, none of these variables, within a reasonable range, causes it to be negative. Furthermore, the risks of a lower NNEB are outweighed by the potential of a significantly higher NNEB.

THE BASE CASE

Several government agencies, energy companies, and consultants have estimated the NNEB of ANGTS. All of these studies have used similar methodologies. The most recent study concludes that "the ANGTS project would generate overwhelming net benefits to the nation and to each major project participant, including producers, pipelines, consumers, and government."*

* Douglas B. Fried and William F. Hederman, Jr., "Benefits of an Alaskan Natural Gas Pipeline," The Energy Journal, Vol. 2, No. 1, pp. 19-36, 1981. The NNEB estimate in this study was \$22 billion in mid-1980 dollars, using a 6 percent real discount rate and somewhat lower gas values.

The NNEB is derived by subtracting the costs presented in Chapter 2 from the value of the gas presented in Chapter 1. This procedure yields a combined estimate of cost savings to energy wholesalers and consumers, of government tax receipts, and of returns to project investors.

The \$60 billion estimate of the NNEB for the base case is derived as follows:

Components of NNEB	Value (\$ billions)
Value of Delivered Gas	110.0
Capital Costs	17.7
Operating and Maintenance Costs	1.4
Wellhead Price	25.4
Canadian Annual Costs	5.4
Total Cost of Gas	49.9
Net National Economic Benefits	60.1

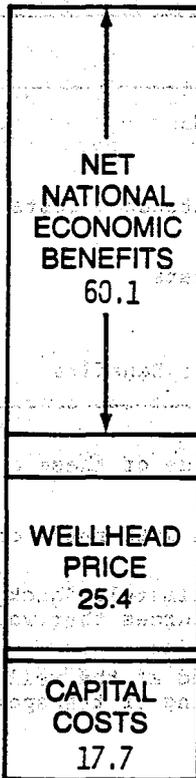
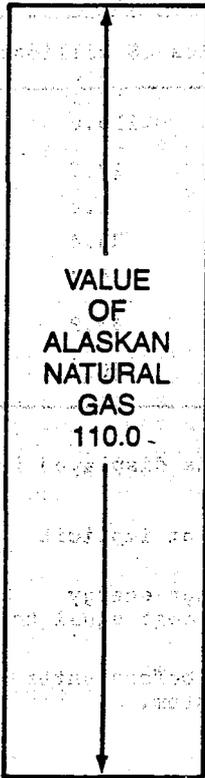
The relative magnitude of these components is displayed in Exhibit 3.a.

This estimate of the NNEB rests on a number of implicit assumptions:

- The gas will ultimately "back out" foreign energy sources or U.S. sources that would have a cost equal to the gas value.
- The gas is valued at the wellhead price before entering the conditioning or transportation system.

Exhibit 3.a

RELATIONSHIP BETWEEN NNEB ESTIMATE
AND VALUE OF ALASKAN NATURAL GAS
(1980 \$ Billions)



- The availability of the gas does not have a significant impact on overall world energy prices or supply and demand relationships.
- The additional benefits of improved balance of payments and increased energy independence are not included.
- Benefits to contractors and vendors for the construction of the system are ignored.

SENSITIVITY ANALYSIS OF THE BASE CASE

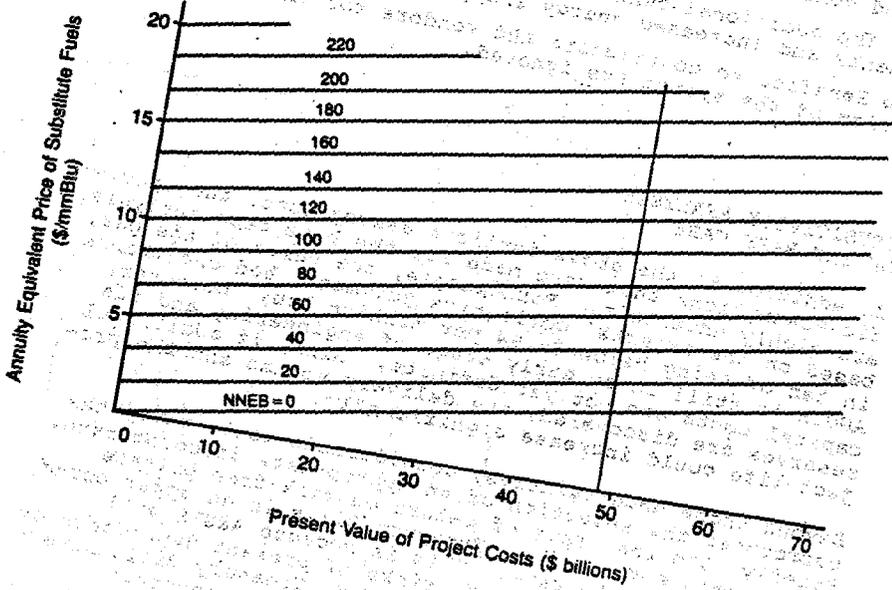
In addition to the above implicit assumptions, the specific assumptions that were made for the base case analysis are highly uncertain. For example, the value of the gas, based on the experts' collective judgment, had one chance in ten of being below \$4.94 per million Btu. Moreover, ANGTS is still in an early stage of engineering and its capital costs are not yet definite. Also, if additional reserves are discovered, the delivery volume and the project life could increase significantly.

Beyond these uncertainties, considerable controversy has surrounded the selection of an appropriate discount rate. Briefly, the real rate of return on risk-free private investments such as U.S. Treasury Bills is an upper bound on the appropriate rate. This is because ANGTS will provide a hedge against the risks of present dependence on imported energy. Historically, U.S. Treasury Bills have yielded less than a 3 percent real rate of return.

In Exhibit 3.b, we present the relationship of the NNEB estimate to changes in project cost and gas values. The base case is identified on the graph. Note that a \$10 billion increase in project costs could be completely offset by a \$0.83 per million Btu increase in gas value. This relationship explains why ANGTS is so attractive today -- even though cost estimates have grown significantly. The doubling of oil prices in late 1979 more than made up for the increase in project cost estimates.

Exhibit 3.b

NNEB FOR DIFFERENT PROJECT COSTS AND GAS VALUES



NET NATIONAL ECONOMIC BENEFITS OF ANGTS

3.4

The degree of uncertainty in gas value and project cost is demonstrated in Exhibit 3.c. As shown, uncertainty in the NNEB ranges from a high of \$170 billion to a low of \$5 billion. The NNEB corresponding to the modal value of the gas is \$40 billion. For the expected gas value, the NNEB is \$90 billion.

The other key sensitivities are given in Exhibit 3.d. As evident in this table, the value of the gas is by far the single most important factor. It can increase the NNEB by \$110 billion or decrease it by \$51 billion. Changes in the U.S. project cost have a dollar for dollar effect on the NNEB. However, even major changes in costs claim only a small fraction of the NNEB.

Although a higher discount rate does not seem justified, the NNEB is clearly sensitive to the discount rate assumption. A higher discount rate decreases the value of future energy cost savings and therefore reduces the NNEB significantly. The present value of project costs also drops, but less since the capital costs are expended much earlier. This relationship is presented in Exhibit 3.e. Even at the most extreme assumption of a 10 percent real discount rate (above inflation), the NNEB exceeds \$13 billion.

The NNEB analysis was performed in real 1980 dollars. Changes in inflation rate assumptions would have no effect on the NNEB value.

RPA

Exhibit 3.c

NNEB OVER EXTREME RANGES OF PROJECT COSTS AND GAS VALUE

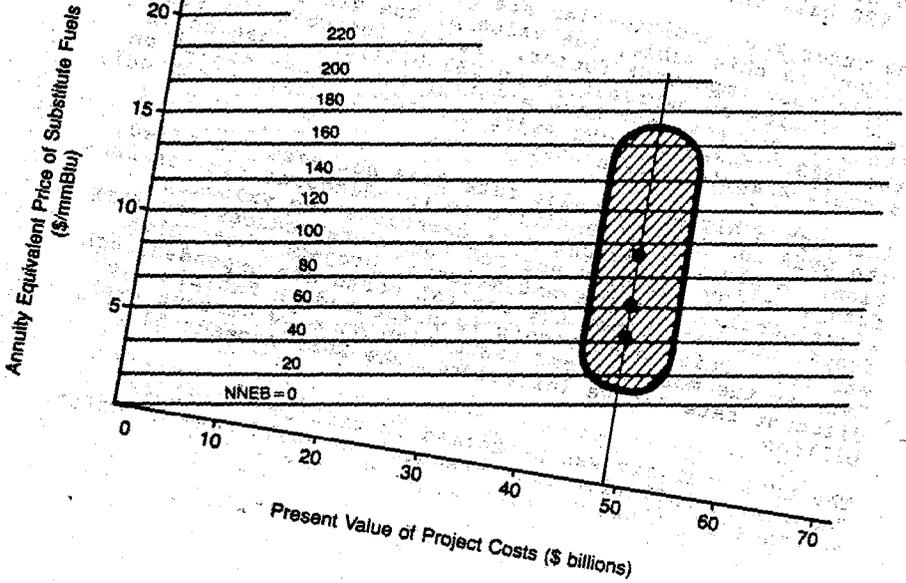


Exhibit 3.d

SENSITIVITY OF NNEB TO
CHANGES IN MAJOR ASSUMPTIONS

OF CANADA TO INVESTMENT
IN OIL AND GAS
INDUSTRY

Assumption	Sensitivity Scenario			Change in NNEB From Base Scenarios (1980 \$ billions)	
	Low	Base ^a	High	Low	High
Value of Gas (\$/mmBtu)	4.94	9.17	18.32	-51	+110
Project Cost ^b (1980 \$ billions)	55	50	-	-5	-
Real Discount Rate (%)	6	3	-	-29	+54
Project Life (years)		25	50	-	+39

a. Median NNEB of \$60 billion.

b. Assumes a 30 percent capital cost increase. Also assumes no increase in Canadian annual costs or taxes as a result of a cost increase.

Exhibit 3.e

SENSITIVITY OF NNEB TO
 REAL DISCOUNT RATE
 (1980 \$ billions)

	Real Discount Rate (%)			
	0	3	6	10
Value of Gas	187.2	110.0	67.9	39.0
Project Costs	-73.0	-49.9	-36.4	-25.9
NNEB	114.2	60.1	31.5	13.1

* Based on median estimate of gas value (\$9.17 per mmBtu).

APPENDIX H

JOINT STATEMENT OF INTENTION

Atlantic Richfield Company, Exxon Corporation, and The Standard Oil Company (Ohio) (the Producers), and Alaskan Northwest Natural Gas Transportation Company, a partnership (Alaskan Northwest), enter into this Joint Statement of Intention at the request of the United States Department of Energy.

Preliminary Recitals

The Producers and Alaskan Northwest have a common interest in the efficient and cost-effective construction and operation of the Alaska Natural Gas Transportation System (ANGTS) including the conditioning plant at the earliest practicable date. Alaskan Northwest has developed a construction schedule for the ANGTS which would result in completion of the system in 1985.

The facilities to be constructed in the State of Alaska which are necessary to placing the ANGTS in service require immense capital investment, and private sector lenders who will be asked to advance funds for the construction of Alaskan facilities will require reasonable assurance that the facilities will be completed and placed in service, and their debt serviced.

The President's Decision and Report to Congress describes the plan for private financing of the ANGTS to be implemented by Alaskan Northwest. Alaskan Northwest has indicated that the Alaskan segment of ANGTS can be financed in the private sector, if there is meaningful participation by the Producers in the financing structure. The Producers have indicated willingness to participate in a substantial way with Alaskan Northwest in the financing of the Alaskan pipeline and conditioning plant upon reasonable terms and conditions, provided they are not placed in the position of becoming, in effect, the ultimate guarantors of completion of the ANGTS and provided that their financial exposure is effectively limited.

In an effort to move forward in surmounting the acknowledged difficulties presented by this project, the parties have entered into a Cooperative Agreement for continued design and engineering of the Alaskan gas pipeline and the conditioning plant which will prepare natural gas produced from the Prudhoe Bay unit of Alaska for transmission through ANGTS.

Statement of Intention

It is the mutual objective of the Producers and Alaskan Northwest that the ANGTS be completed and placed in service at the earliest practicable date and, accordingly, the Producers and Alaskan Northwest intend to use their best efforts, on a joint and cooperative basis, to expedite design, engineering and cost estimation.

The Producers, together with their advisers, will work with Alaskan Northwest in an effort to develop its financing plan in such time and manner so that necessary governmental approvals may be obtained and construction commenced and completed as scheduled by Alaskan Northwest.

It is recognized that in order for the financing plan to be acceptable to the financial community the project must be economically sound and the financing plan must accommodate reasonably desired protections for the interests of potential lenders. If the parties, or any of them, conclude that alternate approaches in financing, or waivers of law under the Alaskan Natural Gas Transportation Act are necessary to effectuate a feasible and effective plan of financing, such party or parties may develop alternatives and advise appropriate authorities of their conclusions.

This Statement of Intention shall be signed after approval hereof by the Department of Energy.

IN WITNESS WHEREOF, the parties have executed this 19th day of June, 1980.

Alaskan Northwest Natural Gas Transportation Company,
Acting By and Through its "Operator", Northwest Alaskan
Pipeline Company

By J. L. McMillan

Atlantic Richfield Company

By Eric Bussard

Exxon Corporation

By D. C. Adams

The Standard Oil Company (Ohio)

By G. P. Daily

APPENDIX I

August 28, 1981

Mr. John G. McMillian
Chairman & Chief Executive Officer
Northwest Alaskan Pipeline Company
P. O. Box 1526
Salt Lake City, UT 84111

Dear Mr. McMillian:

In our letter of June 18, 1981, submitting our proposal to assist you in structuring financing for the Alaska Segment of the Alaska Natural Gas Transportation System (ANGTS) (the "Project"), we (the "Banks") indicated that, in the first phase of our work, we would complete a preliminary review of capital markets and funding sources for the Project and present to you our initial assessment, not only of the amounts, but also of the basic terms on which we believe funds from these sources might be available. We also undertook to develop an approach to reviewing the technical and marketing aspects of the Project and to determine how we could obtain satisfactory access to a financial model to assist us in analyzing the financing plan.

On August 6, 1981 we wrote to you to report on the first phase of our work. In subsequent conversations you asked for certain clarifications and amplifications of statements in that letter. In response, we are submitting this letter which replaces and supercedes our earlier letter.

We have conducted our investigations and analysis on the basis of information furnished by you, contained in the presentations you gave to each of the Banks in late May, the Project Overview you supplied to each of the Banks at that time, your letter to Exxon, Sohio, and Arco (the "Producers") dated May 21, 1981 outlining the terms of the pipeline sponsors' (the "Sponsors") agreement with the Producers, a number of financial cases prepared by the Sponsors, and information you provided in connection with certain legislative waivers in order to facilitate financing and construction of the Project.

Concurrently with this phase of our work we have been considering the legislative waivers. We wrote to you on this subject on June 3, 1981, and on July 14, 1981 we made available to you a memorandum which was distributed to a number of Administration officials and Congressional staff. We continue to support the views expressed in those communications, and would emphasize the need for a flexible approach to "billing commencement" until a more definite financing plan is developed.

Mr. John G. McMillian
 August 28, 1981
 Page 2

The principal focus of our efforts to date has been to address the funding availability and related credit aspects of the Project, and this letter deals almost entirely with these subjects. However, a few brief comments are also included on the work of our task forces which have been addressing the issues of Gas Marketability, Engineering, and Financial Modeling. These groups have been developing approaches to their respective aspects of the Project to be pursued in detail in subsequent phases of our work. While the scope of their work is more appropriately covered in a later proposal dealing with parameters and premises that should govern the next phase of our work, several of their conclusions are relevant to this report and form Appendix A.

Inter-Relationship of ANGTS Segments

We were asked to focus our analysis of the Project on the Sponsors' share of the financing for the Alaska Segment. However, upon reflection, it became apparent to us that it would be necessary to broaden our consideration to take into account the impact on the capital markets of the aggregate financing requirements of both the Sponsors and Producers in Alaska as well as the financing requirements for the overall ANGTS project, including Canada and the "lower 48".

- a) We understand that it is the intent of both the Sponsors and Producers that, after completion, all financing for the Alaska Segment is to rely on a common source of repayment, i.e. the tariff arrangements. Therefore, we could not ignore the Producers' share of the Financing for the Alaska Segment and did not attempt to consider separate and discrete financings for the Sponsors and Producers.
- b) Since, to the best of our knowledge, the post-completion sources of repayment for the Alaska Segment, the financing of the expansion of the "lower 48" facilities and the refinancing of the prebuilt segments will rely on common payment arrangements through the tariffs, we expect that lenders would consider those financings one credit for risk and funding allocation purposes.
- c) While the Canadian segment will have available to it additional Canadian loan sources, there is a substantial overlap both in the available funding sources and in the risks, given that all segments rely on related tariffs.

Funding Availability Study

Appendix B contains our initial assessment of funds availability, together with preliminary indications of the basic terms on which funds might be made available for the Project. Although our

Mr. John G. McMillian
 August 28, 1981
 Page 3

estimates are based on conversations with a relatively small number of potential lenders, the results conform with our own views and we believe are an accurate reflection of availability of funds in world capital markets under current market conditions.

For reasons described below, the review was undertaken on the basis that the loans would be the risk equivalent of debt with an A/Baa credit rating. Given the equivalent of an A/Baa credit, the maximum amount of Project credit available for the Alaska segment is estimated to be between \$12 billion and \$18 billion. For reasons described above, this amount will be affected by the funding strategies for the Canadian segment and for the expansion of the "lower 48" gas facilities. This total amount includes loans from domestic and foreign banks, foreign export credit agencies, and institutional lenders, all of whom are assumed to commit in early 1982. This assumes the satisfactory negotiation of acceptable terms with foreign export credit agencies, i.e. their willingness to accept the same credit support as the banks and longer than usual maturities, and the current reluctance of insurance companies to make forward commitments. We expect, however, that insurance companies might be willing to lend additional amounts beyond those contemplated in the funding study as the Project progresses.

We anticipate that the typical final maturity for the financing would be ten years with a grace period of five years and an average life of 7.5 years. There would, of course, be tranches with final maturities of 5-7 years from the smaller U.S. and European banks and of 12-15 years from certain larger banks and institutional lenders. The bulk of the bank financing would, however, have a ten year final maturity and a 7-8 year average life.

Without a dramatic improvement in credit quality, neither the availability of funds nor the average life of the financing would increase significantly. A reduction in credit quality below the equivalent of an A/Baa would, however, have a material adverse impact on both the amount and average life of the financing.

Basic Financing Conditions

The Banks have given considerable thought to the question of the basic financing conditions for the Project based on the assumptions you have provided:

1. Capital costs on an "as spent" basis of \$21 billion for the pipeline and \$6 billion for the conditioning plant, with a completion assurance pool of an additional \$3 billion.

Mr. John G. McMillian
 August 28, 1981
 Page 4

2. A debt equity ratio of 75%/25%, and an equity split of 70%/30% between Sponsors and Producers.
3. Your request that the Banks consider a completion pool of funds concept, i.e., irrevocable commitments from lenders and no formal undertakings from creditworthy parties to assure debt repayment in the event of non-completion by a date certain and/or pre-completion abandonment.

While we used these basic premises in our Phase I review and have drawn certain conclusions regarding their acceptability we suggest that any premises to be used in Phase II will need to be thoroughly tested as the Project's financial structure is developed.

Given the results of our funding study, and our review and consideration of the Project information forwarded to us, we have come to the following conclusions:

1. Our funding study clearly indicates that the overwhelming bulk of the financing will be available only if lenders perceive the credit structure to be the risk equivalent of debt of A/Baa quality.

We believe that for the Project to be considered of this credit quality and, therefore, for commitments in the necessary amounts to be arranged prior to commencement of construction, the following basic criteria would have to be met:

- a) The ANGTS project must be economically and technically feasible.
- b) The debt must be supported by repayment assurances involving
 - (i) during the pre-completion phase, a combination of
 - acceptable debt assumption arrangements by Sponsors, Producers and possibly other beneficiaries, and
 - acceptable commencement of billing provisions prior to the completion of the overall System;
 - (ii) acceptable post-completion, cost of service transportation tariffs providing for debt service in all events;
 - (iii) acceptable tracking provisions; and
 - (iv) all tariff arrangements relating to debt service to have assurance of regulatory certainty mandated by law.

Mr. John C. McMillian
 August 28, 1981
 Page 5

- c) Sufficient funding must be considered by lenders to be available to meet potential overrun requirements.
- d) The cash flow from the Project for debt repayment must be sufficient so that a substantial refinancing risk would not be present, particularly if the economics of the Project are potentially marginal in early years (see later discussion on refinancing risk).

It is our judgment that loans based on the completion pool of funds concept as presented will not be perceived by lenders generally to be of A/Baa quality. Consequently the bulk of the funds needed for the construction of the Project cannot be raised on that basis. Only a relatively small number of banks are capable of assessing and prepared to assume engineering-based risks as required under a completion pool of funds concept. We cannot ascertain the exact amount, if any, which might be raised for this Project on a completion pool of funds basis without having further developed the credit structure for all the financing. However, we strongly believe that: (i) the small number of banks prepared to provide financing on this basis would commit only a small part of their lending limits to such a credit and in the aggregate that amount would be a relatively small part of the total debt required, and (ii) such banks would require substantial inducements and difficult-to-achieve conditions precedent to any drawings under their commitments.

2. Although we have focused our analysis principally on the problem of funding availability and on basic conditions of the initial debt financing, several points relating to post-completion financing problems should be noted:

- a) There could be substantial refinancing requirements in the early years of operation and perhaps in the later years of construction.
- b) Once completed, the Project, assuming a properly functioning FERC-approved tariff, regulatory certainty, and demonstrated gas marketability, may command an investment grade rating for private placements and public issues.
- c) On these assumptions, and with the understanding that not all refinancing requirements will have to be satisfied at one moment after completion, we believe that it should be possible to raise the amounts needed to refinance maturing loans.

Mr. John G. McMillian
August 28, 1981
Page 6

3. We have not had an opportunity to review the bases on which the capital cost estimates are calculated, and therefore, are not in a position to comment on their appropriateness under modified debt financing concepts. Thus, we do not know the exact level of required funding for the Project and the overall ANCTS. To the extent that the debt requirements at the outset exceed the amount considered available for one credit, funds will have to be raised as entirely separate and discrete credits, under the full financial responsibility of creditworthy parties. Such commitments would be additional to any credit responsibility assumed by such parties in connection with debt repayment assurances for financings in the pre-completion phase of the Project.

Based on our conclusions and rather than pursuing the "completion pool of funds" concept as the primary method of raising debt financing (and it is our judgment that it cannot be relied upon) we suggest consideration of the following:

- a) primary reliance on conventional project completion/debt assumption arrangements providing for an assured source of repayment by the equity owners in the event of non-completion and/or abandonment;
- b) to the extent available, debt, which while not supported by debt assumption arrangements from equity owners in the event of non-completion, would be subject to conditions precedent to usage; these conditions would provide assurance that completion will occur and that the Project remains economically feasible;
- c) debt support and/or debt from other beneficiaries of the Project; and
- d) to the extent required, commencement of billing prior to completion of the overall system.

Given the capital cost estimates we have reviewed and based on the relevant financing parameters you have provided us, it is our considered opinion that all the debt support mechanisms outlined above in a), b), c), and d) will have to be aggressively pursued. We would strongly suggest that at this time the Sponsors place primary emphasis on the project completion/debt assumption arrangements.

In view of the Banks' conclusion that "the bulk of the funds needed for the construction of the project cannot be raised on a completion pool of funds basis" it may be desirable for the Sponsors to review the contingency provision in the capital cost estimates premised on the "completion assurance pool of funds" concept. This would yield a

Mr. John C. McMillian
 August 28, 1981
 Page 7

reduction of at least \$3 billion in the \$30 billion financing requirements as presented to us. Further reductions are, of course, dependent on the level of contingencies thought to be necessary including the rates of inflation and interest that are selected. We would encourage your review of the capital cost estimate to develop a base case for lender review of the total funding requirements under modified project financing concepts.

In summary, if the required credit support can be arranged, the Banks are of the opinion that a modified plan may well provide the basis for private sector financing of the Project. The nature of the modifications required are essentially, although not completely, covered in the suggestions we have recommended for your consideration. The way in which these suggestions are implemented will, of course, be instrumental, along with other conditions we have noted in this letter, in actually achieving the funding commitments that will be required.

We recognize that there are practical limits to the resources the Sponsors and Producers can and will commit to the Project, as well as limits to the extent of pre-completion consumer participation. We have not attempted to determine these limits, believing as we do, that these limits are best determined by negotiations within the partnership and by the regulatory and political process. The early determination of the relative interests of each equity participant will be a necessary precondition to the timely development of a financing plan.

While we have tried to provide you in this letter with our considered opinions on certain fundamental aspects important to the development of the financing, we feel that a forum for discussion of our views would be extremely helpful. We appreciate that the magnitude and complexity of the Project will necessitate a great deal of thought and discussion by all parties to arrive at a mutually agreeable financing plan. We would like to assure you of our enthusiastic support for and readiness to participate in such a discussion.

Sincerely,

BANK OF AMERICA NATIONAL TRUST
 & SAVINGS ASSOCIATION

By *J. P. [Signature]*
 Vice President

THE CHASE MANHATTAN BANK
 (NATIONAL ASSOCIATION)

By *[Signature]*
 Vice President

CITIBANK, N.A.

By *Lance C. Gaiswold*
 Vice President

MORGAN GUARANTY TRUST COMPANY
 OF NEW YORK

By *[Signature]*
 Vice President

APPENDIX B

ANGTS PROJECT
FUNDING SUMMARY

The Funding Committee has been requested to assess the availability of funds from all significant sources for the Alaskan portion of the Alaska Natural Gas Transportation System (ANGTS). Given the size of the capital requirements and the complexity of the project the study has been divided into the geographic areas of the United States, Canada, Middle East, Europe, Asia, and Latin America. Assessing the overall appetite of the worldwide capital markets involved an in-depth study of the legal and policy limits of the banking community in each geographic area, the potential interest of non-bank institutional lenders, and the historical lending policies of the suppliers and export credit agencies in each country based on the potential equipment sources submitted by the Company.

In order to insure consistency in the findings of each of the studies and to maximize the amount of credit which could be raised from each market, it was necessary to establish certain common assumptions. In assessing the available credit within each country several major financial institutions were contacted. They were informed that their names would not be revealed in order to avoid a feeling of moral commitment and thus an overly conservative response. The fundamental assumptions utilized in conducting the survey were as follows:

- (1) The borrower would be the risk equivalent of debt with a medium grade investment rating (A/Baa). If the project is not equivalent to this credit the amount of funds available to the project will drop significantly.
- (2) The pricing would be fully commensurate with the risk involved.

- (3) Within each country it is important to coordinate and segregate the individual financings with each category of financial institution in order to provide high visibility and thus motivation for strong participation. The coordination must not only extend to each individual financing for the Alaskan segment of ANGTIS, but to the financing plans for the other segments of the pipeline system.
- (4) Each financial institution must be approached correctly and at the appropriate level.
- (5) It is important to give the financial institutions adequate time to analyze the material submitted in order to conduct their own assessments of the viability of the project. In this regard, presentations should be organized for the various countries.
- (6) Specific presentations should be organized for the U.S. institutional market by the commercial bank advisory group due to their involvement in the project through an advisory role and as direct lenders. This would supply further credibility and maximize the funds available from this source.

Although the survey had been initially structured to segment the market in terms of the amounts available for 5 year commitments, 5-10 year commitments and 10-15 year commitments, the final conclusion reached was that 10 years (an in a few instances 12 years) would be the maximum overall term available except for the U.S. institutional market, but that within each individual financing one may need to offer a variety of commitment tenors and average lives in order to obtain the largest amounts. Therefore, the

amounts listed for each geographic area take this into consideration. Two columns have been included for conservative and relatively aggressive estimates. These numbers are based on the optimal blend between local currency and U.S. dollars for each geographic area although the local currency content would relate principally to export facilities. The incremental sums from institutional lenders which could be raised in later construction phases have not been assessed in detail. To the extent that the sponsors are successful in maintaining the construction program on a timely basis within cost parameters it is certainly probable that additional funds from these sources would be available. Also to the extent that an investment grade rating were obtained, the incremental sums which could be obtained from the public markets in the U.S. and abroad could be substantial. The preliminary estimates for the amounts which could be raised under the above assumptions are as follows:

FUNDING ESTIMATE SUMMARY
IN THOUSANDS OF U.S. DOLLARS

<u>U.S.</u>		
Commercial banks	\$3,000,000	\$3,500,000
Institutional lenders	1,500,000	2,500,000
<u>Canada</u>		
Commercial banks	2,500,000	3,000,000
<u>Europe</u>		
Commercial banks	3,500,000	4,000,000
<u>Middle East</u>		
Commercial banks	500,000	500,000
<u>Asia</u>		
Commercial banks	1,800,000	2,400,000
<u>Latin America</u>		
Commercial banks	150,000	250,000
	<u>\$12,950,000</u>	<u>\$16,150,000</u>
Export Credit Facilities	<u>1,700,000</u>	<u>1,700,000</u>
	<u>\$14,650,000</u>	<u>\$17,850,000</u>

APPENDIX J

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D. C. 20426

August 18, 1981

MEMORANDUM TO: Honorable Philip R. Sharp
Chairman
Subcommittee on Fossil & Synthetic Fuels
Committee on Energy and Commerce
House of Representatives

Honorable Clarence J. Brown
Ranking Minority Member
Subcommittee on Fossil & Synthetic Fuels
Committee on Energy and Commerce
House of Representatives

FROM : Charles A. Moore
General Counsel
Federal Energy Regulatory Commission

RE: Proposal by Sponsors of the Alaskan
Natural Gas Transportation System (ANGTS)
for Congressional Waiver of Sections 4,
5, 7 and 16 of the Natural Gas Act in
Certain Respects Pursuant to Section 8g
of the Alaskan Natural Gas Transportation
Act of 1978

Questions Presented

By letter of July 24, 1981, to C. M. Butler III, Chairman, Federal Energy Regulatory Commission, 1/ you requested a legal memorandum addressing the following questions:

1/ Hereinafter, the term "Commission" refers to the Federal Power Commission at all times before October 1, 1977, and the Federal Energy Regulatory Commission at all times thereafter.

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 2 -

(a) The full implications of the proposed waiver quoted hereinbelow, (b) whether there have been past Commission actions which justify the desires of the sponsors to have Congress provide the waiver, (c) hypothetical situations which would work to the injury of the pipeline sponsors of ANGTS or other participants in the project should no such waiver be provided by Congress, (d) hypothetical situations which might work to the injury of resale customers and consumers should such a waiver be provided by Congress, and (e) the reasonable likelihood of the hypothetical situations actually occurring.

The text of the waiver request, as set forth in your letter, is as follows:

Authority to Modify or Rescind Orders

Waive Sections 4, 5, 7, and 16 of the Natural Gas Act to the extent that such sections would allow the Commission to change the provisions of any final rule or order approving (a) any tariff in any manner that would impair the recovery of the actual operation and maintenance expenses, actual current taxes, and amounts necessary to service debt, including interest and scheduled retirement of debt, for the approved transportation system; or (b) the recovery by shippers of Alaska gas of (1) all costs related to the purchase of such gas at just and reasonable rates, and (2) transportation of such gas pursuant to an approved tariff.

We are advised that this text is currently a topic of discussion at staff levels in the Administration and the Congress, and that the text may be revised in one or more respects. Accordingly, the memorandum is expressly limited to the preceding text, although I will be pleased to respond as expeditiously as possible to any questions you might have in connection with material changes in such text.

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 3 -

Discussion

I. Background

As you know, the ANGTS is an international project created to transport natural gas from the North Slope of Alaska, through Canada, to the lower 48 states. The United States portion of the system consists of three segments: (1) the Alaska segment, running from Prudhoe Bay on the North Slope to the Yukon border; (2) the Western Leg, running from the British Columbia border to California; and (3) and the Northern Border pipeline, running from a point on the Canadian border near Monchy, Saskatchewan, to Dwight, Illinois.

The ANGTS is unlike any other gas pipeline in the United States in that it is governed by a unique legal framework. The Alaska Natural Gas Transportation Act (ANGTA), 15 U.S.C. section 719, et seq., enacted by Congress in 1976, supplements (but does not replace) the Natural Gas Act: certificates are issued under the Natural Gas Act pursuant to procedures mandated by ANGTA.

Pursuant to Section 7 of ANGTA, the President, in September of 1977, submitted his Decision and Report to Congress on the Alaska Natural Gas Transportation System (Executive Office of the President, Energy Policy and Planning) which designated both the project sponsors and the route for the ANGTS as well as many conditions for its construction. Congress approved the President's Decision by Joint Resolution, which became law on November 8, 1977. H.R.J. Res. 621, Pub. L. No. 95-158, 91 Stat. 1268, 95th Cong., 1st Sess. (1977).

The ANGTS is also governed by two international agreements with Canada, both of which have the force and effect of law. The "Agreement Between the Government of the United States of America and the Government of Canada Concerning Transit Pipelines," entered in force October 1, 1977 after ratification by the Senate, applies to all pipelines in both countries whenever one country's pipeline carries the other country's gas or oil. The treaty mandates nondiscriminatory treatment.

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 4 -

The "Agreement Between the United States of America and Canada on Principles Applicable to a Northern Natural Gas Pipeline," signed by representatives of the two governments on September 20, 1977, is an executive agreement that was made part of the President's Decision (pages 47-83). Inasmuch as the Decision was approved by Congress, it (including the Agreement) has the legal status of a statute. The Agreement specifies the route of the ANGTS, and contains numerous conditions. Pursuant to the Agreement, our Commission has consulted with the National Energy Board of Canada in coordinating respective certification of the various ANGTS segments in the U. S. and Canada, including related imports of Canadian gas to support the "prebuilding" of the lower half of the system.

One other relevant item of legislation is Reorganization Plan No. 1 of 1979, which was submitted by the President to the Congress and not disapproved by the Congress. The Plan establishes the Office of the Federal Inspector, which reports directly to the President. The Inspector is responsible for monitoring the construction of the pipeline, and for coordinating all federal permitting and certification of it. The Plan transfers to the Inspector the Commission's Natural Gas Act Sections 3 and 7 jurisdiction to enforce the Commission's certificates and import authorizations issued to the ANGTS project sponsors.

Two categories of tariffs are involved. The project sponsors will own and operate the various segments of the ANGTS, but will not buy or sell the gas transported through it. The shippers will buy the gas at the Prudhoe Bay Field, ship it through the sponsors' facilities, and sell it somewhere at the other end of the pipeline. The sponsors will have tariffs authorizing charges to the shippers. The shippers will in turn have tariff provisions authorizing charges to their customers for the sale of the gas, which charges will include in some form reimbursement of the shippers for the transportation charges paid by the shippers to the sponsors, as well as reimbursement for the costs of purchasing the Prudhoe Bay Field gas.

Thus, for example, if a shipper buys gas at Prudhoe Bay for sale in Detroit, the shipper would incur separate transportation charges billed by the respective sponsors of the Alaska segment, the Canadian segment, and the Northern Border segment of the system. That shipper would request

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

- 5 -

a tariff authorizing "flow through" to its customers of the full amount of transportation charges paid to the sponsors of each of the three pipeline segments through which the gas was transported, as well as the full cost of the gas itself.

The "flow through" issue is often referred to as "tracking" of charges. Tracking of gas purchase costs is authorized by the Commission's regulations, through purchased gas adjustment clauses. (See 18 C.F.R. 154.38.) Tracking of transportation charges has been authorized in certain instances on a case by case basis.

In Order Nos. 31 and 31-B, 2/ the Commission approved in principle the tracking by ANGTS shippers of transportation charges billed by U. S. certificated ANGTS project sponsors (i.e., the sponsors of the Alaska, Northern Border and Western Leg segments), but reserved for later resolution the issue of tracking the charges of Foothills Pipe Lines (Yukon) Ltd. (Foothills), the sponsor of the Canadian segment. The unresolved tracking issues (including tracking of Foothills' charges that have been approved by the National Energy Board of Canada) are currently under study by the Commission's Alaskan Delegate, who is preparing a report to the Commission.

The sponsors' and shippers' initial tariffs are approved by the Commission pursuant to Section 7 of the Natural Gas Act upon issuance of the certificates. Alaskan Northwest's pro forma tariff was approved in Order Nos. 31 and 31-B. Section 7 provides a "public convenience and necessity" standard. While the Commission may establish initial rates that meet the mere rigorous "just and reasonable" standard in sections 4 and 5 of the Act, it is not required by law to do so. The Commission must only find that the initial rates are in the "public convenience and necessity" and may reserve for later determination what the "just and reasonable" rate should be. *

2/ Order No. 31, "Order Setting Values for Incentive Rate of Return, Establishing Inflation Adjustment and Change in Scope Procedures, and Determining Applicable Tariff Provisions," issued June 8, 1979 in Docket No. RM78-12; Order No. 31-B on rehearing, issued September 6, 1979, in the same docket.

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

- 6 -

Section 7(e) of the Natural Gas Act gives the Commission authority to attach conditions to certificates. The courts have construed broadly the Commission's responsibility under the Natural Gas Act to condition certificates with respect to rate terms and other matters affecting the public convenience and necessity. See, e.g., Atlantic Refining Co. v. Public Service Commission of New York, 360 U.S. 378 (1959); FPC v. Hunt, 376 U.S. 515 (1964). But see Panhandle Eastern Pipe Line Co. v. P.E.R.C., 613 F.2d 1120 (D.C. Cir. 1979), cert. denied, 101 S. Ct. 247 (1980).

Section 4 of the Act requires that all rates and charges be "just and reasonable." After certification, all changes in the initially approved tariffs and rates must be filed with the Commission pursuant to Section 4. The Commission, pursuant to prescribed standards and procedures, may "suspend" such changes for up to five months pending a hearing. If the changes are suspended, the prior approved tariffs and rates remain in effect during the period of suspension. The changes may take effect after the suspension period but subject to refund (with interest) depending on the outcome of the hearing process on contested issues or other disposition by the Commission.

Section 5(a) of the Act authorizes the Commission to institute a proceeding on its own initiative, to consider the justness and reasonableness of a certificate holder's rates and tariffs, and to determine new rates or tariff provisions if the existing ones are determined to be "unjust, unreasonable, unduly discriminatory, or preferential." Such changes can only be prospective; in a Section 5 proceeding the Commission cannot suspend rates or order refunds.

Section 16 of the Natural Gas Act authorizes the Commission to modify or rescind its orders after they have been issued. This authority, under appropriate circumstances, may be utilized for a variety of purposes, ranging from correction of mistakes to modification of certificate terms and conditions in light of changed circumstances.

2. Nature of the Financing

The subject waiver is sought from Congress by the project sponsors of ANGTS in connection with the financing of the project. The financing mechanism selected by the sponsors

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

7 -

has been referred to as "project financing." The propriety of project financing has been addressed by the Commission on a number of occasions, most recently in Ozark Gas Transmission System, FERC Opinion No. 125, Docket No. CP78-532 (July 28, 1981). In that opinion, the Commission described project financing generally as follows:

Project financing differs from conventional financing mainly in connection with loan security. Security generally takes one of two forms in a conventional financing. First, the project sponsor, or borrower, has sufficient unencumbered assets that the lender feels secure in making a loan on the basis of the borrower's general credit. The loan agreement, in such cases, may require any of a number of different undertakings on the part of the borrower to maintain his creditworthiness. Secondly, if the borrower does not have unencumbered assets sufficient to secure the borrowing, the lender may require the pledge of specific assets to be funded by the borrowing as collateral for the loan. As Judge Litt pointed out in his initial decision on the Alaskan Natural Gas Transportation System, this is itself a kind of project financing. In this case the lender is secure in the knowledge that the borrower has put enough money into the project that the economic value of the project, less equity and liquidation costs, will yield sufficient funds for the lender to recover the principal value of the loan and accrued interest. A convenient example of this kind of financing is the mortgage of a building.

A project financing, as it has come to be known in energy projects before the Commission, is a financing in which the general creditworthiness of the borrower is either insufficient or allegedly unavailable to secure the borrowing, and the underlying economic value of the assets to be financed are also insufficient to assure the lender that he will not lose his money. The latter inadequacy will presumptively obtain in the case of any pipeline financing, since the salvage value of the pipeline to be built should, in all cases,

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

- 8 -

be less than the loan obligation. 21/ In this case, an optional financing vehicle is the stream of income to be generated by the project. However, that vehicle is only available in the event that the income stream can be assured whether or not the project should fail. Such assurance is sought in this case in the form of the so-called minimum bill. The minimum bill has been structured in a fashion which will yield sufficient revenues to cover debt service (both principal and interest payments), whether the project is successful or not. In the event the project were to fail, the minimum bill would be levied on the customers of the shippers in the form of a surcharge for gas they do not receive.

21/ In this regard Ozark's witness, Gary, states, 'Today we all recognize a mortgage on a pipeline is virtually worthless, except for one aspect, in making a legal investment.' Tr. 12/1064

Slip opinion, at 10-11 (footnotes omitted in part).

As the Commission pointed out in the Ozark case, substantial policy justification should be found in certificate applications before the Commission pursuant to which project financing is sought. In the case of the ANGTS, such justifications have already been considered by both the Executive and Legislative Branches of the Federal Government, as well as the Commission, and have been found sufficient to permit the project financing of the ANGTS. 3/

Some of the justifications have included the substantial amount of natural gas to be delivered by the project, the potential for displacement of large quantities of foreign oil, reduction of pressure on the U. S. balance of payments, net national benefits to both the U. S. and Canada, and the anticipated average cost of gas over the project life.

3/ See, generally, Federal Power Commission, Recommendation to the President, Alaska Natural Gas Transportation Systems (May 1, 1977).

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 9 -

3. Reason for the Proposed Waiver

The waiver has a rather singular purpose. It is intended to assure lenders for the project that the income stream which serves as security for their loans will not be reduced below the level necessary to retire the principal of the loan and to pay the interest thereon. It would accomplish this purpose by precluding the Commission from changing the rules of the game, so to speak, in a manner which would undercut the security for the loan. This objective would be achieved by withdrawing from the Commission its authority under the Natural Gas Act to change the project tariffs in such a manner as to reduce project revenues below the level necessary to service project debt. The request for the waiver evidences that certainty of the security is essential, i.e., in this instance that the lenders will rely heavily and to their detriment on the orders of the Commission granting the certificate and establishing the tariffs as preconditions to the sponsors' take down of the construction loans.

All of the foregoing has been explicitly recognized by the Commission in FERC Order No. 31. 4/ In that order the Commission stated:

The project sponsors have earnestly sought that this Order, especially as it relates to the tariff structure, provide assurance to prospective equity investors and lenders. The concern of the sponsors is wellfounded. The Commission fully recognizes that equity investors and lenders will make critical decisions respecting the financing of the construction of ANGTS in reliance on this Order.

The Commission has articulated in great detail its rationale for this Order. Where reasoned alternatives were available, we have provided a thorough analysis of the issues and the basis for our conclusions. This thoroughness provides the investor's best security in relying on this Order.

4/ Supra, note 2, at 4 (mimeo).

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 10 -

The fact of the request for a waiver suggests that the project sponsors and the lenders feel that they need greater assurance than has been provided to date. The Chairman and I feel compelled to agree with that assessment. As the subsequent discussion and legal analysis shows, with the objective of "security" in mind, a waiver is clearly a far better assurance than an order of the Commission. For example, previous efforts by sponsors to secure additional certainty for lenders by attempting to obtain estoppel findings in Commission orders have been unsuccessful. 5/

5/ Applicants in the Great Plains case asked the Commission to make a very explicit estoppel case against itself by including certain statements in its order. Great Plains Gasification Associates, et al., FERC Opinion No. 69 (November 21, 1979) (reversed on other grounds, Office of Consumers' Counsel v. F.E.R.C., F.2d ____ (D.C. Cir. 1980), Case No. 80-1303, decided December 8, 1980). The estoppel option will be discussed in the text, *infra*. In its initial brief to the Presiding Administrative Law Judge, Great Plains claimed the following:

" . . . The lenders have indicated that they will require that the authorizations obtained [from the Commission] by the project companies contain [as a condition to take down of the loan for the project]:

(1) A statement of the Commission's intention not to revoke or modify the tariff provisions approved by it for this project during the term of the bank loan;

(2) A statement of the Commission's understanding that the lenders would not commit funds for this project without assurances that these provisions would continue in effect without modification during the term of the bank loan;

(3) A statement of the Commission's intent to suspend the application as to this project of any future rule, order, or decision of general applicability which might affect the approved tariff provisions until after the conclusion of a full evidentiary hearing to determine the propriety and

(Footnote 5 continued on next page)

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

- 11 -

Important in the context of ANGTS financing is that a waiver would provide clear assurances and signals to foreign, as well as domestic, lenders. We are advised that a sizeable portion of the borrowing must be acquired from foreign investors because of legal lending limits and other institutional obstacles faced by domestic lenders.

4. Regulatory Risk

The regulatory risk perceived by lenders consists of two separate, but not unrelated, sets of events. They are: (1) that the Commission would change the tariffs initially approved on a claim of changed circumstances, and (2) that a subsequent Commission, composed of a majority with a different view of the public interest than the collective view of the Commission originally approving the tariffs, would change the tariffs to the detriment of the lenders in order to reflect their different views. The Commission's ability to change the tariffs in either of these events is not clear as a matter of law. It is not unlimited, but our analysis indicates that it is fairly broad. The effect of the proposed waiver would be to eliminate in material part the Commission's options -- to the extent they exist -- to change the tariffs in either of these cases.

5/ Footnote continued from prior page

lawfulness of such Commission action as it affects the tariff provisions on which the financing is based. . . . Initial Brief of Great Plains Gasification Associates and the Customer Pipeline Companies, Docket Nos. CP78-391, et al., January 29, 1979, at 70-71.

Five other admissions were sought from the Commission, but those quoted are exemplary of what the lenders sought. Both the law judge and the Commission refused to provide them. See Opinion No. 69, at 63.

Similar estoppel findings were requested by the ANGTS sponsors in the proceeding that culminated in Order No. 31; however, they were refused in favor of the language quote at page 10, supra. As discussed hereafter, it is questionable whether such findings would achieve the desired or intended result.

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

- 12 -

5. Constitutional Question

Implicit in the questions articulated in your letter is the issue of whether the waiver is a reasonably necessary mechanism to provide the lenders with the certainty they seek. The threshold issue, in this respect, is whether there is any constitutional bar to the Commission taking the kind of action described in the subsequent paragraphs. If such a bar exists, the waiver would not be necessary. Our research indicates that this question has not been authoritatively answered by the courts. That is, there are no clear constitutional limits regarding the Commission's power to change tariffs, where parties have substantially changed position in reliance on such tariffs, and the Commission had prior, actual knowledge of such reliance. The Chairman and I believe that a respectable case could be made that it would violate basic constitutional principles of due process for the Commission to change tariffs not explicitly conditioned to permit change, when the Commission is fully aware that the tariffs form the basis of project financing, and the changes will in one way or another undercut that basis. However, there is an absence of authority to support such a proposition. 6/

6/ The question whether legislative or quasi-legislative action with retroactive effect works to deprive an owner of property without due process is somewhat analogous. Unfortunately, there are no clear principles, and the cases go both ways. See generally, text and cases collected in Cong. Research Service of Library of Congress, The Constitution of the United States of America: Analysis and Interpretation (1972), at 1165, et seq.

A case strongly suggestive that the principles of estoppel do not apply to federal agencies is Federal Crop Insurance Corp. v. Merrill, 332 U.S. 380 (1947). In that case, certain farmers were assured by a local agent of the federal corporation that a certain type of crop could be insured. In fact, rules of the corporation provided that such crops could not be insured, although neither the agent nor the farmers had actual knowledge of the regulations. Relying on the agent's advice, the crops were planted and subsequently destroyed.

(Footnote 6 continued on next page)

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

- 13 -

6/ Footnote continued from prior page

In holding that the farmers could not collect insurance for the crops despite the payment of premiums therefor and the inducement of the local agent's assurances, the Court indicated that knowledge of the rules contrary to the agent's advice would be imputed to the farmers because the rules were published in the Federal Register. Despite the difference of the facts in the Merrill case (farmers had relied on apparent rather than actual authority), the Court used strong language to suggest in dicta that the government corporation would be treated as an agency of the United States and would be immune from doctrines like estoppel. Id. at 384-85.

These dicta have led one commentator to take the following position:

Merrill indicates that estoppel will not be used to protect an individual who has changed his position in reliance on administrative advice: 'It is settled law that no estoppel can arise against the government.' [Citing, Chapman v. Santa Fe Pac. R., 198 F.2d 498, 519 (D.C. Cir. 1951) (dissenting opinion), cert. denied, 343 U.S. 964 (1952).] B. Schwartz, Administrative Law (1976), at 133, et seq.

Professor Schwartz agrees with the Merrill-type result when the agency has acted in excess of its statutory authority. However, he goes on to say:

... Both reason and policy argue that prejudicial reliance warrants invoking the doctrine of estoppel against the government in other cases: 'when the sovereign becomes an actor in a court of justice, its rights must be determined upon those fixed principles of justice which govern between man and man in like situations.' Id., at 135 (footnote omitted), citing Ritter v. United States, 28 F.2d 265, 267 (3d Cir. 1928).

(Footnote 6 continued on next page)

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 14 -

6/ Footnote continued from prior page

The following cases support Professor Schwartz's policy proposal: Brandt v. Hickel, 427 F.2d 53, 56-57 (9th Cir. 1970); Chapman v. El Paso Natural Gas Co., 204 F.2d 46, 53-54 (D.C. Cir. 1953); United States v. Lazy FC Ranch, 481 F.2d 985, 988-989 (9th Cir. 1973); Oil Shale Corp. v. Morton, 370 F. Supp. 108, 124-127 (D. Colo. 1973).

The decision in the Lazy FC Ranch case, supra, indicates that a line of federal estoppel cases may be emerging, and that such is required by elementary notions of fairness. 481 F.2d at 989. The Chairman advises that his view is consistent with that of Professor Schwartz and the Court in Lazy FC Ranch. However, absent an authoritative pronouncement on the matter by the United States Supreme Court, or specific federal legislation, I cannot render an opinion as General Counsel of the Commission that the Commission would in all or substantially all cases be estopped by its orders from changing the ANGTS tariffs in such manner as to impair the underlying security for the financing of the ANGTS. In my judgment, the best opinion that could be rendered would simply agree that the Commission is constitutionally prohibited from setting a confiscatory rate of return. As stated by the Supreme Court in Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia, 262 U.S. 679, 690 (1923):

Rates which are not sufficient to yield a reasonable return on the value of the property used at the time it is being used to render the service are unjust, unreasonable and confiscatory, and their enforcement deprives the public utility company of its property in violation of the Fourteenth Amendment.

See also, F.P.C. v. Hope Natural Gas Co., 320 U.S. 591, 503 (1943). As the subsequent discussion reveals, short

(Footnote 6 continued on next page)

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

Supreme Court of the United States
 Volume - 15 -

6. Statutory Question

The foregoing is not to suggest that there are no Supreme Court cases dealing with regulatory estoppel. To the contrary, there are two cases of considerable relevance; however, both are based on interpretations of the enabling legislation of other agencies. In the first of these, United States v. Seatrain Lines, 329 U.S. 424 (1946), the Court held that the Interstate Commerce Commission lacked the authority to alter the certificate of a water carrier on its own motion. The holding was based on the express statutory language which permitted such action with respect to motor carriers, and the absence of correlative statutory authority in the case of water carriers, in the Interstate Commerce Act.

6/ Footnote continued from prior page

of this constitutional limitation, the Commission has considerable latitude in the exercise of its jurisdiction under Sections 4, 5, 7 and 16 of the Natural Gas Act.

The fact that the lenders have induced the project sponsors to ask for the waiver may well indicate that an unqualified legal opinion cannot be obtained from lenders' counsel to the effect that a constitutional bar exists to provide an estoppel defense. A similar conclusion may be deduced from the request for estoppel admissions in the Great Plains case, supra, note 5.

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

- 16 -

In Civil Aeronautics Board v. Delta Air Lines, Inc., 367 U.S. 316 (1961), the Supreme Court considered a similar question. The Court determined that Section 401(g) of the Federal Aviation Act prohibited the CAB from altering a certificate of public convenience and necessity, even where the certificating order purported to reserve jurisdiction prior to certification to make summary modifications pursuant to petitions for reconsideration. Reaching this result, the Court's analysis was founded on the plain meaning of the language in the enabling statute and its legislative history.

The Delta case is of particular importance to the subject of this memorandum for two reasons. First, the Court clearly explained the nature of the problem with the following statement:

Whenever a question concerning administrative, or judicial, reconsideration arises, two opposing policies immediately demand recognition: the desirability of finality, on the one hand, and the public interest in reaching what, ultimately, appears to be the right result on the other [footnote omitted]. Since these policies are in tension, it is necessary to reach a compromise in each case Id. at 321.

The second key element of the Delta case is the recognition by the Court that the limitations placed on the CAB under the Federal Aviation Act resulted from Congressional concern during the passage of its predecessor, the Civil Aeronautics Act of 1938, over the reliance on, and consequent expenditure by airlines of large sums of money on the basis of the CAB's certificate (route) decisions. In this connection, the Court stated:

In short, our conclusion is that Congress wanted certificated carriers to enjoy 'security of route' so that they might invest the considerable sums required to support their operations; and, to this end, Congress provided certain minimum protections before a certificated operation could be cancelled. We do not think it too much to ask that the Board furnish these minimum protections as a matter of course, whether or not the Board in a given case might think them meaningless. It

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown - 17 -

might be added that some authorities have felt strongly enough about the practical significance of these protections to suggest that their presence may be required by the Fifth Amendment. See Seatrains Lines v. United States, 64 F. Supp. 156, 161; Handlon v. Town of Belleville, 4 N.J. 99, 71 A. 2d 624; see also 63 Harv. L. Rev. 1437, 1439. Id., at 331-332.

7. The Natural Gas Act

The Seatrains and Delta cases teach that the starting point in determining the practical necessity of the waiver as a security device is the language of the relevant enabling statute, the Natural Gas Act. Sections 4 and 7 are relevant, but the key provisions are Sections 5(a) and 16. Section 16 reads in pertinent part:

The Commission shall have power to ... prescribe, issue, make, amend, and rescind such orders, rules or regulations as it may find necessary or appropriate to carry out the provisions of this act.

Section 5(a) provides, in pertinent part, that if the Commission:

... [S]hall find that any rate, charge, or classification demanded, observed, charged, or collected by any natural gas company in connection with any transportation or sale of natural gas, subject to the jurisdiction of the Commission, or that any rule, regulation, practice or contract affecting such rate, charge, or classification is unjust, unreasonable, unduly discriminatory, or preferential, the Commission shall determine the just and reasonable rate, charge, or classification rule, regulation, practice, or contract to be thereafter observed and in force, and shall fix the same by order. [emphasis supplied]

These statutory pronouncements are mandatory as opposed to precatory. The broad language of Section 16, when employed in conjunction with Section 5, has permitted the Commission to alter and amend conditions to certificated service with full approval by the

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 18 -

courts. Section 5(a) has been interpreted as giving the Commission authority to alter the terms and conditions of certificated service even though the affected parties, acting alone, could not have changed them. F.P.C. v. Louisiana Power and Light Co., 406 U.S. 621, 646-647 (1972). In Opinion No. 754-A, Docket No. RE71-119, issued August 17, 1976, aff'd on other grounds, Hercules, Inc. v. F.P.C., 559 F.2d 1208 (3rd Cir. 1977), the F.P.C. concluded, with court approval, that it could exercise its Section 5 authority to promulgate new terms and conditions attached to certificates authorizing initial service.

The combined effect of Sections 5(a) and 16 is to require the Commission to amend terms and conditions of a certificate if those terms and conditions prescribe tariff provisions subsequently found to result in rates or charges which are not just and reasonable. As the United States Court of Appeals for the District of Columbia Circuit stated in American Smelting and Refining Company v. F.P.C., 494 F.2d 925, 940-941 (1974), cert. denied sub nom., Southern California Gas Co., et al., v. F.P.C., 419 U.S. 882 (1974), once the Commission finds that an existing rate or charge is unjust or discriminatory, 7/ it "must prescribe the remedy for that condition." 8/ If the existing illegal rate or charge is the result of the operation of a certificate condition, the remedy clearly will lie in the revocation or alteration of the order prescribing that condition, and thus the certificate itself.

7/ The Commission's authority to find that a tariff (previously determined to be just and reasonable) no longer functions in a reasonable manner has been upheld by the U.S. Court of Appeals for the District of Columbia Circuit in Pacific Gas Transmission Co. v. F.P.C., 536 F.2d 393 (1976).

8/ The D.C. Circuit has also taken this position in Pacific Gas Transmission Co. v. F.P.C., supra., where it stated at page 396 that "[a]fter such a finding, the Commission had not only the power but a solemn duty to take immediate action."

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

- 19 -

Furthermore, the unique nature of the Alaskan Northwest tariff provisions may subject them to amendment on another basis. Because they were developed in a rule-making, the provisions of Order No. 31 arguably are not the result of the Commission acting in a judicial capacity, but in a legislative one, formulating and applying policy. The distinction is important because where the Commission acts in the former capacity, applying law or policy to past facts, a decision on the merits as to a disputed, and litigated issue of fact becomes final. United States v. Utah Construction and Mining Co., 384 U.S. 354, 421-422 (1966); Davis, Administrative Law Treatise, §18.09 (1970 Supp.). In the latter case, the Commission is free to take appropriate steps without being bound by its prior actions. Permian Basin Area Rates Cases, 390 U.S. 747, 789 (1968); Public Service Commission, State of New York v. F.P.C., 511 F.2d 338, 353 (D.C. Cir. 1975). The policy determination in this case has been that the public convenience and necessity required the assurances to investors in the ANGTS provided for by the tariff provisions of Order No. 31. Arguably, the Commission has determined that as a matter of policy, at least under present circumstances, a tariff designed to meet the conditions of Order No. 31 will be just and reasonable. The same reasoning might also apply to the shipper tracking provisions in the event that such provisions are adopted by the Commission through rule-making procedures. Although it is questionable whether the rulemaking-adjudication distinction would be given great weight in the context of the facts at hand, it might be enough to convince a future Commission that it could, within the law, conclude that a different policy determination better serves the public interest.

From the foregoing it is clear that there is a plausible case for Commission authority to subsequently alter the tariff conditions of Alaskan Northwest's certificate, relying on Sections 16 and 5(a) of the Natural Gas Act and judicial pronouncements authorizing agencies to make changes in policy. The foundation for that case is the general principle that a policy determination made by a present Commission cannot preclude a future Commission from making a policy determination to the contrary, provided that in doing so it adequately explains the reasons for its new position, Consolidated Gas Supply Corp. v. F.P.C., 520 F.2d 1176 (D.C. Cir. 1975), whether or not there has been a change of circum-

Honorable Philip R. Sharp and
Honorable Clarence J. Brown - 20 -

stances. Greater Boston Television Corp. v. F.P.C., 444 F.2d 852 (D.C. Cir. 1970). A corollary to that principle is that a present Commission cannot bind a future Commission so as to preclude the prospective operation of Section 5. Optional Procedure for Certifying New Producer Sales of Natural Gas, 48 F.P.C. 218, 223 (1972); Pacific Gas Transmission Co. v. F.P.C., supra. These rules are analogous to those applicable to the legislature: namely, this Congress cannot preclude legislation, or amendments to legislation, by the next Congress.

8. Reasonableness of the Waiver Request

This line of analysis suggests several important conclusions, which bear ultimately on the recommendation of this memorandum. First, the presence or absence of a constitutional ban to the impairment by this or a future Commission of the tariffs upon which the lenders will rely is unclear. Second, there appears to be no statutory bar, such as was found to exist in the Seatrain and Delta cases, which would preclude the Commission from changing the tariffs. Even though it is clear that commentators, the Courts, at least by way of dictum, and the past and probably current Commissions accept the principle that elementary notions of justice should allow the project lenders to rely in good faith on the decisions of the Commission in making their loans, the request of the project sponsors indicating their "desires . . . to have these provisions waived" appears to be based on a concern as to the certainty of the federal-estoppel doctrine under the Natural Gas Act. The questions that remain are those that are directly raised by your letter. They ask in essence whether there are either historical or predictable future facts which support or impugn the legislative request. That is, assuming that the waiver request is not patently unreasonable, is there a historical legal perspective from which the Congress could judge the future and find sound public reasons to grant or deny the waiver.

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

9. Past Commission Actions

For the moment I will defer to subsequent paragraphs the question of "the full implications of the waiver" and turn to your second specific question: whether there have been past Commission actions which justify the desires of the sponsors to have the subject sections of the Natural Gas Act waived. In this connection, the following contains a summary of recent cases, representative of past Commission actions, which involved issues of claimed detrimental reliance. Having done so I will leave it to the Subcommittee to conclude from these decisions whether or not the project sponsors' request is justified.

- A. Jurisdiction: Distrigas Corporation, et al. v. F.P.C., et al., 495 F.2d 1057 (D.C. Cir. 1974), cert. denied, 419 U.S. 834 (1974).

This proceeding involved, in pertinent part, a filing by Distrigas Corporation and its affiliates, Distrigas of New York Corporation and Distrigas of Massachusetts, (Distrigas) which requested the Federal Power Commission to grant Distrigas the authority under Section 3 of the Natural Gas Act to import liquefied natural gas (LNG) from Algeria. 9/ The filing also contained a request by Distrigas for the FPC to issue a disclaimer of the Commission's jurisdiction under Section 7 of the Natural Gas Act. 10/

9/ Following regasification, more than 80 percent of the gas was to be sold in the state of importation to distributors and direct customers and the remainder to distributors in neighboring states.

10/ The imported LNG was to be delivered and regasified at facilities at Staten Island, New York and Everett, Massachusetts.

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

- 22 -

The Commission in a three to two vote granted the requested Section 3 authorization without condition but, noting that this was a novel situation, reserved the right to add conditions in the future if circumstances should change. The Commission noted that Section 3 of the Natural Gas Act specifically provided for such future amendments. However, the Commission did not find Section 7 jurisdiction over the regasification facilities and service nor over the facilities and services involved in the sale of the regasified LNG in the state of importation. ^{11/} The result of the decision was that there was no jurisdiction under Section 7 or Section 3 (by way of conditions to the import authorization) over the regasification facilities and service nor over the intrastate facilities and service. The Commission indicated its hope that this disclaimer of jurisdiction would make the project more attractive to private investors and "lead to more gas at a lower price to the consumer than if [the Commission] controlled every detail and decision related thereto." Two Commissioners dissented, arguing that the Commission should take jurisdiction under Sections 3 and 7 of the Natural Gas Act over the regasification facilities and the "intrastate" facilities.

Following the Commission's decision, Distrigas "assertedly in reliance on the Commission's limited jurisdictional disclaimer, . . . proceeded to construction of its Everett and Staten Island facilities, expending very substantial sums on each." In a new filing, Distrigas also applied for Section 3 authorization to import significant additional quantities of natural gas and for Section 7 authorization to sell these additional volumes, as well as certain of the originally authorized volumes, in interstate commerce.

^{11/} The Commission did take jurisdiction under Section 7 of the Natural Gas Act over the sales of gas which was ultimately destined for resale in interstate commerce. However, it found that jurisdiction over such sales attached only at the tailgate of the regasification plant.

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

- 23 -

Meanwhile, at the Commission two of the original three person majority had left and had not been replaced. Therefore, the two dissenting Commissioners were now a majority. In response to Distrigas' applications, they found that circumstances had changed since Distrigas' original application had been acted upon by the Commission. Specifically, they stated that the original Distrigas application proposed new and increased sales for resale in interstate commerce. Therefore, the Commission held that Section 7 certification was mandated for all of Distrigas' facilities.

On appeal, Distrigas argued, among other things, that once the Commission's previous decision on the jurisdictional issue was final and Distrigas had subsequently acted in reliance on that decision by (1) contracting with its customers and (2) constructing its facilities, the Commission was foreclosed from changing its mind and asserting jurisdiction where it had previously declined to do so. Distrigas cited the Seatrain case, ^{12/} where the Supreme Court had overturned the Interstate Commerce Commission's attempt to revoke a certificate previously granted to a water carrier.

The Court found that the Commission had the authority to issue the order it had issued under Section 3 of the Natural Gas Act but remanded for additional proceedings before imposition of any requirements to certification under Section 7. The Court distinguished Seatrain on the basis of lack of statutory authority in that case, and noted that both Section 3 of the Natural Gas Act as well as the Commission's previous order specifically contemplated changes and amendments. The Court further found that if Distrigas had relied on an interpretation of the original Commission order to the contrary (i.e., that the original Commission order granted Distrigas a permanent immunity from regulation), Distrigas' reliance was misplaced.

^{12/} Supra, at 15.

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 24 -

As part of its basis for rejecting the estoppel argument, the Court concluded that Distrigas' claim of injury was at that point hypothetical in nature since Distrigas had not demonstrated that the Commission would not ultimately authorize Distrigas' proposal.

On remand, the Commission granted Distrigas' application subject to certain conditions.

The Distrigas case is one where the Court approved a changed Commission's reversal of a previous Commission's ruling upon which the company and its lenders had arguably relied to their detriment. As a basis for that approval the Court stated, "any 'right' to non-regulation that the Commission's previous decision can be supposed to have vested in Distrigas was entirely contingent on the Commission's continuing to view such non-regulation as in the public interest." However, two facts tend to distinguish Distrigas from the ANGTS. One is the conditions cited by the Court in the original Section 3 authorization, which arguably placed Distrigas and its lenders on notice that the rule could change. The other distinguishing fact was that the Court found that the Commission's decision had not yet injured Distrigas and that it might not in the future. Presumptively, the matter was resolved at the Commission level in a way which did not adversely affect Distrigas or its lenders. Nonetheless, one could conclude that the uncertainty caused by the Commission's reversal is the type of action the ANGTS lenders seek to protect themselves against.

B. Cost of Service Tariff: Pacific Gas Transmission Co. v. F.P.C., et al., 536 F.2d 393 (D.C. Cir. 1976), cert. denied, 429 U.S. 999 (1976).

This case involved a Commission order which, pursuant to Section 5(a) of the Natural Gas Act, changed in

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 25 -

part Pacific Gas Transmission Company's (PGT) cost-of-service tariff after a full hearing. Prior to the Commission decision, PGT had been permitted to adjust its rates automatically on a monthly basis to reflect all changes in its costs, including amounts for gas purchased from Canadian producers for resale in the United States. This tariff had been in effect since PGT was first authorized to import gas from Canada in 1960. 13/

In 1974 and 1975, after a hearing under Section 5(a) of the Natural Gas Act, the Commission modified PGT's cost-of-service tariff to provide that changes in the cost of gas purchased by PGT from Canadian suppliers could be passed on to PGT's customers only after PGT had applied for the rate increase pursuant to Section 4 of the Natural Gas Act, and after any suspension period imposed by the Commission thereunder. The Commission revised the tariff to provide that such filings would be subject to suspension by the Commission pursuant to Section 4 of the Natural Gas Act and, if suspended, subject to refund and possible reduction as provided in Section 4 of the Natural Gas Act. The Commission justified the revised tariff by stating that Canadian authorities had recently begun to require that significantly increased prices be charged for Canadian gas sold for resale in the United States. Furthermore, Canadian authorities had changed their pricing policy by referencing it to prices for alternate energy sources (primarily oil products) in markets served by Canadian gas. This formula change signaled further significant increases in the cost of gas purchased by PGT from Canadian producers (as much as four times higher than prior to the Section 5 proceeding). The Commission found that these changed circumstances rendered PGT's existing tariff "unjust and unreasonable" and required prior Commission review of rate increases for Canadian gas before they could be passed on to consumers in the United States.

13/ See Pacific Gas Transmission Company, 24 FPC 134 (1960).

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

- 26 -

On appeal, PGT argued in part that the Commission-ordered modification of its tariff could result in delay or outright denial of its recovery of increased Canadian purchased gas costs which, in turn, would financially destroy PGT. PGT also argued that the Commission was without power to modify the cost-of-service tariff which a previous Commission had approved in 1960 when PGT was originally authorized to commence the importation of Canadian natural gas.

The Court denied all of PGT's claims and affirmed the Commission order and its action revising the tariff under Section 5(a). In support of its holding, the majority noted that the Commission had granted prompt authorization under Section 4 for Canadian gas rate increases which took effect after the disputed tariff change. The majority opinion indicated that failure of the Commission to include such increases might well be to "abdicate" its responsibilities under Section 4. However, Judge Bazelon in a dissenting opinion directed considerable criticism towards the Commission for injecting uncertainty into PGT's financial position. As the dissent stated: ". . . the FPC concedes that had PGT been required to absorb even the initial 32 cent price increase for a short period of time it would have been driven out of business, and 2,000,000 consumers would have been deprived of 40% of their gas supply." (536 F.2d at 397.)

- C. Advance Payments (30 day rule): Tennessee Gas Pipeline Co., et al. v. F.E.R.C., et al., 606 F.2d 1094 (D.C. Cir. 1979), cert. denied, 447 U.S. 922 (1980); Natural Gas Pipeline Co. v. F.E.R.C., 590 F.2d 664 (7th Cir. 1979); United Gas Pipe Line Co. v. F.E.R.C., 597 F.2d 581 (5th Cir. 1979); Trunkline Gas Co. v. F.E.R.C., 608 F.2d 582 (5th Cir. 1979).

These cases involve interstate natural gas pipelines which, pursuant to a series of Commission rulemakings, including most notably Order Nos. 465 and 499, made interest-free loans (advance payments) to natural gas

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 27 -

producers as exploration and development investments which were to be repaid by future delivery of gas. Pursuant to these Commission Orders the pipelines were allowed to include such advances in their rate bases, for rate of return purposes, as exploration and development investments. This policy was advanced by the Commission as an incentive for the addition of gas supplies. The Commission's rulemaking orders spelled out in detail the requirements for inclusion of advance payments in Account 166. However, insofar as the "timing" of the expenditures by the producers versus the date of the pipelines investment, the Commission was silent, except to the extent the orders stated that amounts included in Account 166 could receive favorable rate base treatment where they were found to be "reasonable and appropriate." Subsequent to these Orders, pipelines invested at least \$5.5 billion in "advance payments" with producers. However, after these investments had been made, the Commission, acting under FPC Order No. 465, pursuant to the "reasonable and appropriate" language, disallowed rate base treatment for certain advances because they were made to the producers and included in the pipelines' rates more than "thirty days" before they were spent by the producers. As a result large amounts of advance payments were retroactively disallowed on a deferral basis for inclusion in pipeline companies' rate bases.

On appeal to three different Circuit Courts, the pipelines claimed serious injury and voiced loud complaints that the general language of Order Nos. 465 and 499 had offered no notice of the new specific timing rule imposed by the Commission. As acknowledged by the D.C. Circuit Court, ". . . substantial sums were involved and deferral has resulted in considerable losses for the pipelines' stockholders." (606 F.2d at 1108.)

The pipelines argued that, at the invitation of the Commission rulemaking orders, pipelines were encouraged to make advance payments to promote exploration and development of natural gas reserves for the interstate market. Pursuant to those orders, the pipelines argued, they had invested substantial sums of money in the advance payment program. Thus, they argued that it was unfair and illegal for the Com-

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 28 -

mission, pursuant to the reasonable and appropriate standard, to establish in individual pipeline rate cases decided after the rulemaking orders had issued and after the advance payments contracts had been executed, that rate base treatment of advance payments would not be allowed more than thirty days in advance of when they were spent by the producers.

The three separate circuit courts reversed the Commission orders decided on this basis. However, the D.C. Circuit in Tennessee rejected the pipelines' claims of retroactive ratemaking and detrimental reliance and directed the Commission on remand to develop a timing relationship supported by substantial evidence. The Fifth Circuit in the United and Trunkline cases and the Seventh Circuit in the Natural case found that it was impermissible retroactive ratemaking to impose a timing requirement on Order No. 465 advances and that the pipelines had relied to their detriment on the absence of a timing requirement in the Order when they made advances to producers. Therefore, they reversed the Commission decision on the Order No. 465 advances and directed inclusion of the designated amounts in the respective pipelines' rate bases. Since Order No. 499 contained at least an ambiguously general reference to a timing relationship, those portions of the Commission decision were remanded because of a lack of substantial evidence supporting that portion of the Commission orders. Although the Commission was reversed in these cases, language from the Court's opinion in Tennessee is illustrative of the "regulatory risk" inherent to an industry subject to the Commission's jurisdiction.

We find that petitioners' arguments in support of their interpretation (of estoppel facts) are undercut by consideration of the character of the advance payment program as an experimental departure from well accepted and understood regulatory law. (606 F.2d at 1108.)

* * *

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown - 29 -

One of the risks incurred by the pipelines has been the 'regulatory risk' that an experimental program such as advance payments might miscarry, and that administrative readjustment would not prevent substantial adverse impact. (606 F.2d at 1120.)

D. Dedication of Gas Reserves: Air Products & Chemicals, Inc. v. F.E.R.C., F.2d (5th Cir. 1981), Case No. 78-2011, decided July 16, 1981.

This case involves a Commission order which ended a prior Commission policy under the "Chandeleur incentive doctrine" (of approximately seven years duration) which allowed offshore natural gas producers to reserve for their own use a portion of gas reserves which otherwise would have been dedicated to the interstate market. The prior policy had allowed these reservations as an incentive to producers to expedite the exploration and development of offshore reserves of natural gas. The Commission, in its final order, found that the reservation incentive was no longer needed because, among other things, the interstate market was suffering severe curtailments and thus the gas which would be reserved by the producers was needed to serve the interstate market.

On appeal the producers argued, among other things, that they relied to their detriment on the prior FPC policy allowing reservations and that it was unfair and illegal for the Commission to reverse its policy in an adjudicated case instead of a rulemaking proceeding to be applied prospectively.

The Court remanded the case to the Commission because of the improper way in which the Commission relied on extra-record evidence to support its decision, but it rejected the producers' arguments of detrimental reliance on the prior Commission policy. The Court noted that the old Commission policy was continually attacked by consumer groups in various cases and that it was, at its inception, described by the FPC as experimental. In sum, the Court found that the policy was

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 30 -

never "well established" enough to have caused detrimental reliance thereon by producers or anyone else. The Court noted further that the producers were not precluded from selling the gas in interstate commerce for a fair price but rather were prohibited from reserving the gas for their own use.

E. Unsuccessful Project Costs: Tennessee, et al. v. F.E.R.C., 606 F.2d 1094 (D.C. Cir. 1979); cert. denied, 447 U.S. 922 (1980).

This proceeding involved, among other things, an attempt by Transcontinental Gas Pipe Line Corporation (Transco) to recover costs associated with four unsuccessful projects related to the production of synthetic natural gas (SNG). The Commission denied recovery of these costs because they were not "used and useful" in providing service and could not be charged to rate-payers. 14/

On appeal, Transco argued that it had spent \$22 million on these ultimately unsuccessful projects in purported reliance on a Commission policy allowing recovery of the costs of the projects if they proved to be unsuccessful. The Court found that the Commission had no policy allowing recovery of these costs and then affirmed the Commission's decision.

14/ A possible concern of the lenders is that a dogmatic application of the "used and useful" maxim would result in similar treatment of the ANGTS if the project were to suspend operation after completion or, through no fault of the sponsors they were unable to commence operation after completion. The need for assurances to the contrary (the minimum bill) provides a major impetus for project financing as opposed to conventional financing.

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

- 31 -

Other cases in which the Commission is currently under criticism for assertedly changing policies to the detriment of jurisdictional companies include (i) applications for rehearing of Commission Opinion No. 90 15/ and Order No. 94, 16/ and (ii) the oil pipeline cases where revision of the ratemaking methodology formerly employed by the Interstate Commerce Commission is under consideration. 17/

However, these cases should not be taken as a suggestion that the Commission never accords finality to its orders. In Texaco, et al., Docket No. CI77-329, et al., 13 FERC ¶ 61,222 (1980), for instance, a United States Senator filed a pleading on July 21, 1980, seeking to reopen a case settled on February 10, 1978. Part of the Senator's argument was that changed circumstances justified reopening the case, but the Commission refused to grant the intervention and declined to disturb its earlier order.

Arguably, cases such as those described above represent a possible "justification" or reason why the sponsors have now sought the waiver from Congress. At the same time, however, these decisions and others of a similar nature have generated some sympathy in the courts and have begun to establish the proposition that estoppel is available as a defense against the government if the government's wrongful conduct threatens to work a serious injustice and if the public's interest would not be unduly damaged by the imposition of estoppel. Lazy FC Ranch, supra, 481 F.2d at 989. Nevertheless, because the estoppel doctrine has not been fully developed under the Natural Gas Act, it is fair to state that only a waiver would provide the lenders with the same sense of legal certainty that a firmly established "regulatory estoppel doctrine" would afford these investors. Whether this legal uncertainty "justifies" the requested waiver is a value judgment best left to Congress. With this in mind, it is appropriate to consider your questions as to hypothetical situations creating injury to project participants.

15/ 12 FERC ¶ 61,080 (1980).

16/ 12 FERC ¶ 61,080 (1980); FERC Statutes and Regulations, ¶ 30,178 (1980).

17/ Trans Alaska Pipeline System (TAPS) (Phase I), Docket Nos. OR78-1, et al.; Williams Pipe Line Company (Phase I), Docket Nos. OR79-1, et al.

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 32. -

10. Hypothetical Injuries to Project Participants

Our analysis has produced four general sets of hypothetical circumstances which might induce a Commission response changing the tariff provisions related to the project, absent the waiver. They are:

- (1) a changed economic environment resulting in materially different costs of capital (i.e., interest rates and return on equity) from those extant at the time of initial approval;
- (2) changed amounts of natural gas available to be transported resulting in a materially different economic life for the transportation system;
- (3) changed economics of the gas to be delivered by the system, relative to other sources of energy supplies, warranting an altered revenue pattern in order to avoid more serious economic dislocations; and
- (4) premature project failure.

As a consequence of these general events, the following hypothetical Commission actions might take place:

(a) Upon a finding of changed circumstances the Commission could determine, pursuant to Sections 5, 7 and 16 of the Natural Gas Act, that the cost-of-service tariff (which provides that Alaskan Northwest's rates will be adjusted twice a year by a formula that requires Alaskan Northwest to change its rates to reflect actual costs in its charges to shippers) was no longer appropriate. The Commission could then require Alaskan Northwest to charge a stated rate, such as a flat rate per MMBtu of natural gas transported, and require a filing pursuant to Section 4 of the Natural Gas Act to be made prior to the effectuation of any increase in that stated rate. The rate increase filing could be suspended for up to five months, and the proposed rates thereafter collected could be subject to possible reduction and refund with interest.

The risks to Alaskan Northwest in the event of a Commission-ordered change to a stated rate form of tariff involve the adverse economic impacts resulting from the regulatory lag attendant to putting into effect a proposed

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

- 33 -

rate increase under Section 4 of the Natural Gas Act. The regulatory lag consists of the sum of: (1) the time necessary to prepare a Section 4 rate filing plus (2) the one-month notice requirements between the time the filing is made and the earliest possible effective date (absent a waiver of the notice requirements) plus (3) a suspension period of up to 5 months beyond the proposed effective date. During the lag period, Alaskan Northwest sponsors would not be able to recover all of the costs previously covered by operation of the cost-of-service tariff.

As noted previously, the FPC modified in part the cost-of-service tariff of Pacific Gas Transmission Company to require Section 4 filings to recover increased Canadian purchased gas costs. However, the Court concluded that the result was justified inasmuch as the Commission had, pursuant to Section 4, allowed a "non-niggardly" flow-through by the company of increased gas costs, notwithstanding the dissent's concern that delay would have resulted in adverse consequences.

(b) Alternatively, the Commission could decide at a future time to leave the cost-of-service tariff intact but remove the minimum bill (which guarantees recovery of actual operation and maintenance expenses, actual current taxes and debt costs). 18/ The consequence of this action could

18/ The minimum bill provides for the recovery of actual operation and maintenance expenses, actual current taxes, and all amounts necessary to service debt including interest and scheduled retirement of debt. Under no circumstances would debt service be impaired.

Recovery of equity investment and return on equity investment is, however, treated differently. The "90 percent billing adjustment ratchet" reduces charges to eliminate return on equity investment and associated taxes for any service diminution below 90 percent of tendered gas. This tariff provision would be applicable in instances when the reduction in service for any one month was greater than 10 percent. The reduction in charges to reduce the return on equity and

(Footnote 18 continued on next page)

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 34 -

be that during periods of interruption exceeding thirty days Alaskan Northwest would bear all of the financial consequences of the interruption because it would not be able to charge the shippers for any costs incurred during the period of interruption. 19/

(c) Another hypothetical involves a situation wherein the ANGTS project fails some time after the date construction had commenced. Assume further that upon review of

18/ Footnote continued from prior page

associated taxes would be proportional to the percentage of volumes tendered but not transported. The pipeline would be permitted to recoup any such billing adjustments by transporting volumes in excess of the contract level in subsequent months. The charge for such "Billing Adjustment Gas" transportation would be computed by using the same billing adjustment (i.e., the same dollar per Dekatherm). Any service reduction below 100% but more than 90% would be accounted for as "No Billing Adjustment Gas." As such, this gas would be transported in subsequent months at no added charge to the shipper.

The "90 percent billing adjustment ratchet" also operates during periods of interruption of service. It ceases to be operative, however, for any period of total cessation of service for more than 30 days. Beginning with the thirty-first day of any total cessation of service, the portion of the charges attributable to "equity costs" would be collected subject to refund pending a showing by Alaskan Northwest that it should be permitted to retain equity costs collected during the period of cessation of service. Equity costs, in this context, are defined to be "that portion of depreciation expense not necessary for debt service and associated taxes." (Order No. 31, at 181-182.)

The above discussed ANGTS tariff provisions differ substantially from lower-48 pipeline tariff provisions in a number of important respects. It is fair to state that the ANGTS tariff contains unique, "first-of-a-kind", provisions which have not been previously granted by the Commission.

19/ This assumes that in eliminating the minimum bill the Commission would also eliminate the opportunity to collect equity costs subject to refund and to make a showing pursuant to the provisions...

Honorable Philip R. Sharp and
 Honorable Clarence J. Brown

- 35 -

the circumstances surrounding the project failure, a future Commission decided, pursuant to Sections 5, 7 and 16 of the Natural Gas Act, to reverse a previous decision in principle to require consumers to pay all debt costs regardless of the circumstances once final certification had been granted and debt servicing obligations had commenced. Thus, the partners of Alaskan Northwest (including sponsor-shippers) would be required to absorb all Alaskan Northwest debt costs as well as other (such as equity) Alaskan Northwest costs. Such a Commission decision would have an immediate severe financial impact on Alaskan Northwest, with the degree of severity being a function of the financial health of its partners.

(d) The Commission could decide several years in the future, pursuant to Section 5 of the Natural Gas Act, to direct the shippers of the gas to remove from their respective tariffs the rate adjustment (tracking) provisions which permit the shippers to flow through increases in transportation costs without the necessity of making a full filing under Section 4 of the Natural Gas Act (reflecting all current costs and revenues, not merely the increased costs of transportation). 20/ In these

20/ While the Commission has decided in principle to allow the shippers to track in a timely manner amounts reflecting transportation costs paid to the ANGTS sponsors under tariffs approved by the Commission, the Commission has not yet decided what kind of tracking of these costs by the shippers would be permitted. For example, the tracking provision could require a periodic rate filing under Section 4 reflecting only the change in transportation cost, similar to the shipper's current purchased gas cost adjustment clauses. Or the provision could permit the shippers to adjust their rates automatically on a simultaneous basis to reflect changes in ANGTS transportation costs. Such a provision would be similar to fuel cost adjustment clauses permitted in rate schedules and tariffs of electric utilities for transactions which are subject to this Commission's jurisdiction.

It should also be noted that no decision has yet been made by the Commission governing pass-through by the shippers of transportation costs incurred under tariffs subject to the jurisdiction of Canadian authorities.

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 36 -

circumstances, the shippers could be subject to under recovery of the Alaskan Northwest transportation costs because of the same regulatory lag discussed above.

(e) If additional reserves of natural gas were found in Alaska sufficient to lengthen the economic life of the ANGTS beyond the 25-year life now inherent in the proposed depreciation rate, the Commission might at some future time reduce the depreciation rate so as to more accurately spread the recovery of the plant investment over the useful life of the project. 21/ Alaskan Northwest might oppose such a change on the ground that the resultant reduced amount of depreciation expense recovered on an annual basis would impair their ability to service debt having a shorter term.

(f) In the event of a premature end to the viability of the project after it had commenced operation (because of physical, market or other forces), the Commission might find that a faster write-off of debt was appropriate, rather than continued operation of the minimum bill provisions. This could cause financial harm to Alaskan Northwest if the debtholder refused to allow Alaskan Northwest to accelerate repayment of its debt, particularly if the interest rate to be paid to the lenders on the debt is higher than the general level of interest rates being paid for comparable investments. Alternatively, absent a waiver, a future Commission could determine, based on either a change in policy perception or based on facts attributing fault to the sponsors for the project failure, that the sponsor-investors (as opposed to the consumers) should bear some part, or all, of the risk of loss of recovery of debt, and then appropriately adjust the tariff or minimum bill provisions.

(g) In the event that Alaskan Northwest transportation costs and the costs of Prudhoe Bay and other natural gas, increase significantly, a shipper's resale rate could be increased so as to adversely affect the marketability of a shipper's gas. Under this scenario, the shippers (particularly the non-sponsor shippers) might argue for a reduction in the Alaskan Northwest transportation charges so that the shippers could continue to market their gas. Absent a waiver the Commission would have the power to

21/ See, Memphis, Light, Gas and Water Division v. FPC,
504 F.2d 225 (D.C. Cir. 1974).

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 37 -

order some sort of temporary or indefinite reduction to Alaskan Northwest's charges. In response, Alaskan Northwest, or some other party, might argue that the reduction in Alaskan Northwest's charges (regardless of the reason therefor) impaired the recovery of Alaskan Northwest's "minimum bill" costs and thus jeopardized the financial health of the project.

(h) Another hypothetical involves the pipeline-shippers' current purchased gas cost adjustment (PGA) clauses, which, as now written, would permit the shippers to pass through Alaskan purchased gas costs to their customers. If the Commission should decide to revoke or modify the PGA clauses, the shippers would be subject to regulatory lag in recovering Alaskan and possibly other purchased gas cost increases. To the extent that such a lag caused a financial strain on the shippers, it could affect the cash flow to the ANGTS.

(i) In Order No. 31, the Commission stated its intention to periodically review Alaskan Northwest's rate of return on common equity. Absent the waiver, the Commission's authority to conduct such periodic reviews would provide a basis to adjust the return on common equity downward to reflect any lowering of the cost of common equity to Alaskan Northwest. Such a lowering of common equity costs would most likely result from a general overall improvement in the economy resulting in an improvement in the financial markets, leading to a reduction in the return on equity needed by Alaskan Northwest to continue to render adequate service in the public interest. The argument that a reduction in equity return could impair collection of all debt costs in violation of the proposed waiver language would presumably be an argument by lenders and others that the interest coverage must be greater than one (i.e., 1.5, 2.0, etc.) in order to ensure that Alaskan Northwest's ability to pay debt is not impaired.

11. Hypothetical Injuries to Consumers

You have asked "what hypothetical situations there might be which would work to the injury of resale customers and consumers should the waiver be granted." At bottom the most injurious risk that could be borne by the consumer is that the project might be abandoned either before or after completion, and that the consumer, through the resale customer, would be surcharged for the investment in the project

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 38 -

but would not receive gas from it. Next most injurious is the risk that the consumer will have to pay for gas not received during sustained periods in which the pipeline is out of service. Arguably, for each risk which would exist to the sponsors and/or shippers in the absence of a waiver, there would exist a concomitant risk to the resale customers and/or consumers in the event a waiver is granted. However, in fairness these risks should be properly placed in the context of the facts of the proceeding and the legal status of the ANGTS project to date.

President Carter in his formal Decision, the Congress in its approval of the President's Decision and international agreements, and the Commission in its Recommendation to the President and in existing orders, have each concluded that this project is in the public interest. These approvals have led to the existing tariff, minimum bill and other provisions applicable to the ANGTS as described above. The project sponsors and lenders have nonetheless responded by seeking further assurance that the unique features of these determinations, as well as the Commission's final orders and rules, will not be altered or modified after adoption. Relevant here are the existing decisions of various authorities that the ANGTS may be project financed and that certain portions of the investment should be recoverable from consumers in events, including project interruption, where consumers do not receive the benefit of delivered gas. Thus, decisions have been made that impose risk on the consumers regardless of the waiver. Further, the Commission's ultimate orders and rules will allocate the remaining risks among the parties after consideration of all factors consistent with or affecting the public interest. Accordingly, an argument can be made that once the legal foundation for the ANGTS places the risks, the waiver would impose no substantial additional risk on the consumers, but only provide a method for assuring implementation of the federal decisions made. The extent to which a waiver would place additional onus on the consumers would include the implications of removing the "regulatory risk" from the sponsors. In other words, the consumers would then face the risk that a future Commission could not, based on changed circumstances or different policy perception, modify the ultimate ANGTS orders or rules within the parameters of their final issuance.

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 39 -

12. Reasonable Likelihood of These Events Occurring

From a legal standpoint, the likelihood that a future Commission would take or decline to take action of the type inquired about in your letter would appear to depend upon (a) whether a reconsideration of past policy determination occurs, and/or (b) the future existence of facts which would produce a policy response by the Commission. The likelihood of such facts occurring is a prediction or assessment that, presumably, has been made in connection with all federal determinations to date. In issuing the final orders and rules, the Commission is legally charged with the responsibility of weighing the risks, to both the sponsors and consumers, attendant to investing the sums necessary to complete the project. The risks are exceptionally difficult to quantify because of the infinite set of variables that exist, and in the end the question is one of judgment. Either the risks are too great for the consumers to be asked to bear (i.e., the project is not in the public interest), or they are not. The Commission may well be required to make that determination as part of its final certification of the project. 22/ Appropriately, the Congress must decide, through adoption or rejection of the waiver, whether to eliminate the "regulatory risk" inherent in continued Commission jurisdiction after final certification.

I am advised by the Chairman that he will support passage of a waiver designed to assure project financing of the ANGTS consistent with the positions expressed in this memorandum. 23/

22/ See President's Decision, Finance Condition No. 2, at pages 36-37.

23/ In this connection, the text of the ultimate waiver language, if any, is a matter of continuing interest to the Chairman, myself and the Office of the General Counsel. Without addressing any of the complexities involved with the final language, please be advised that we would welcome the opportunity to provide your Committee and other interested persons with any technical assistance or advice that may be requested.

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

- 39 -

12. Reasonable Likelihood of These Events Occurring

From a legal standpoint, the likelihood that a future Commission would take or decline to take action of the type inquired about in your letter would appear to depend upon (a) whether a reconsideration of past policy determination occurs, and/or (b) the future existence of facts which would produce a policy response by the Commission. The likelihood of such facts occurring is a prediction or assessment that, presumably, has been made in connection with all federal determinations to date. In issuing the final orders and rules, the Commission is legally charged with the responsibility of weighing the risks, to both the sponsors and consumers, attendant to investing the sums necessary to complete the project. The risks are exceptionally difficult to quantify because of the infinite set of variables that exist, and in the end the question is one of judgment. Either the risks are too great for the consumers to be asked to bear (i.e., the project is not in the public interest), or they are not. The Commission may well be required to make that determination as part of its final certification of the project. 22/ Appropriately, the Congress must decide, through adoption or rejection of the waiver, whether to eliminate the "regulatory risk" inherent in continued Commission jurisdiction after final certification.

I am advised by the Chairman that he will support passage of a waiver designed to assure project financing of the ANGTS consistent with the positions expressed in this memorandum. 23/

22/ See President's Decision, Finance Condition No. 2, at pages 36-37.

23/ In this connection, the text of the ultimate waiver language, if any, is a matter of continuing interest to the Chairman, myself and the Office of the General Counsel. Without addressing any of the complexities involved with the final language, please be advised that we would welcome the opportunity to provide your Committee and other interested persons with any technical assistance or advice that may be requested.

Honorable Philip R. Sharp and
Honorable Clarence J. Brown

MEMORANDUM FOR THE SENATE
DATE: 4-10-54

Hopefully the foregoing provides you with an adequate response to your inquiry given the length of time taken and the resources available to prepare this memorandum. Please understand that this response is not intended, nor should it be taken, as an official Commission position. Rather, this memorandum represents the combined efforts of the Office of the General Counsel and other Commission staff members, as well as opinions of the Chairman and myself.

1255
APPENDIX K

TO THE CONGRESS OF THE UNITED STATES:

The Alaska Highway Pipeline route for the Alaska Natural Gas Transportation System was chosen by President Carter and approved by Congress in 1977. There was a strong Congressional endorsement that the pipeline should be built if it could be privately financed. That has been my consistent position since becoming President, as communicated on numerous occasions to our good neighbors in Canada and I am now submitting my formal findings and proposed waiver of law.

As I stated in my message to Prime Minister Trudeau informing him of my decision to submit this waiver:

My Administration supports the completion of this project through private financing, and it is our hope that this action will clear the way to moving ahead with it. I believe that this project is important not only in terms of its contribution to the energy security of North America. It is also a symbol of U.S.-Canadian ability to work together cooperatively in the energy area for the benefit of both countries and peoples. This same spirit can be very important in resolving the other problems we face in the energy area.

This waiver of law, submitted to the Congress under Section 8(g) of the Alaska Natural Gas Transportation Act, is designed to clear away governmental obstacles to proceeding with private financing of this important project. It is critical to the energy security of this country that the Federal Government not obstruct development of energy resources on the North Slope of Alaska. For this reason, it is important that the Congress begin expeditiously to consider and adopt a waiver of those laws that impede private financing of the project.

Ronald Reagan

THE WHITE HOUSE,

October 15, 1981.

FINDINGS AND PROPOSED WAIVER OF LAW

Pursuant to the provisions of the Alaska Natural Gas Transportation Act of 1976 (ANGTA) 15 U.S.C. § 719, et seq., a transportation system to transport Alaska natural gas to consumers in the continental United States was selected and approved by Congress in 1977.

I find that certain provisions of law applicable to the federal actions to be taken under Subsections (a) and (c) of Section 9 of ANGTA require waiver in order to permit expeditious construction and initial operation of the approved transportation system. Accordingly, under the provisions of Section 8(g)(1) of ANGTA, I hereby propose to both Houses of Congress a waiver of the following provisions of law, such waiver to become effective upon approval of a joint resolution under the procedures set forth in Section 8(g)(2), 8(g)(3), and 8(g)(4) of ANGTA.

Waive P.L. 95-158 [Joint Resolution of approval,* pursuant to Section 8(a) of ANGTA, incorporating the President's Decision] in the following particulars:

Section 1, Paragraph 3, and Section 5, Conditions IV-4 and V-1, of the President's Decision, in order to permit producers of Alaska natural gas to participate in the ownership of the Alaska pipeline segment and the gas conditioning plant segment of the approved transportation system; provided, however, that any agreement on producer participation may be approved by the Federal Energy Regulatory Commission only after consideration of advice from the Attorney General and upon a finding by the Federal Energy Regulatory Commission that the agreement will not (a) create or maintain a situation inconsistent with the antitrust laws, or (b) in and of itself create restrictions on access to the Alaska segment of the approved transportation system for nonowner shippers or restrictions on capacity expansion; and

Section 2, Paragraph 3, First Sentence, of the President's Decision, to include the gas conditioning plant in the approved transportation system and in the final certificate to be issued for the system; and the

* See: Executive Office of the President, Energy Policy and Planning, Decision and Report to Congress on the Alaska Natural Gas Transportation System (September 1977) (hereinafter referred to as President's Decision); and see H. J. Res. 621, Pub. L. No. 95-158 (1977), wherein the President's Decision was incorporated and ratified by Congress pursuant to Section 8(a) of ANGTA.

* 15 U.S.C. § 719, et seq.

15 U.S.C. § 719, et seq.

[Handwritten signature]

application of Section 5, Condition IV-2 of the President's Decision to the gas conditioning plant; and

Section 5, Condition IV-3, of the President's Decision; provided, however, that such waiver shall not authorize the Federal Energy Regulatory Commission to approve tariffs except as provided herein. The Federal Energy Regulatory Commission may approve a tariff that will permit billing to commence and collection of rates and charges to begin and that will authorize recovery of all costs paid by purchasers of Alaska natural gas for transportation through the system pursuant to such tariffs prior to the flow of Alaska natural gas through the approved transportation system --

- (a) to permit recovery of the full cost of service for the pipeline in Canada to commence --
 - (1) upon completion and testing, so that it is proved capable of operation; and
 - (2) not before a date certain, as determined (in consultation with the Federal Inspector) by the Federal Energy Regulatory Commission in issuing a final certificate for the approved transportation system, to be the most likely date for the approved transportation system to begin operation; and
- (b) to permit recovery of the actual operation and maintenance expenses, actual current taxes and amounts necessary to service debt, including interest and scheduled retirement of debt, to commence --
 - (1) for the Alaska pipeline segment --
 - (A) upon completion and testing of the Alaska pipeline segment so that it is proved capable of operation; and
 - (B) not before a date certain, as determined (in consultation with the Federal Inspector) by the Federal Energy Regulatory Commission in issuing a final certificate for the approved transportation system, to be the most likely date for the approved transportation system to begin operation; and
 - (2) for the gas conditioning plant segment --
 - (A) upon completion and testing of the gas conditioning plant segment so that it is proved capable of operation; and
 - (B) not before a date certain, as determined (in consultation with the Federal Inspector) by the Federal Energy Regulatory Commission in issuing a final certificate for the approved transportation system, to be the most likely date for the approved transportation system to begin operation.

Waive Pub. L. No. 688, 75th Cong., 2nd Sess. [Natural Gas Act] in the following particulars:

Section 7(c)(1)(B) of the Natural Gas Act to the extent that section can be construed to require the use of formal evidentiary hearings in proceedings related to applications for certificates of public convenience and necessity authorizing the construction or operation of any segment of the approved transportation system; provided, however, that such waiver shall not preclude the use of formal evidentiary hearing(s) whenever the Federal Energy Regulatory Commission determines, in its discretion, that such a hearing is necessary; and

Sections 4, 5, 7, and 16 of the Natural Gas Act to the extent that such sections would allow the Federal Energy Regulatory Commission to change the provisions of any final rule or order approving (a) any tariff in any manner that would impair the recovery of the actual operation and maintenance expenses, actual current taxes, and amounts necessary to service debt, including interest and scheduled retirement of debt, for the approved transportation system; or (b) the recovery by purchasers of Alaska natural gas of all costs related to transportation of such gas pursuant to an approved tariff; and

Sections 1(b) and 2(6) of the Natural Gas Act to the extent necessary to permit the Alaskan Northwest Natural Gas Transportation Company or its successor and any shipper of Alaska natural gas through the Alaska pipeline segment of the approved transportation system to be deemed to be a "natural gas company" within the meaning of the Act at such time as it accepts a final certificate of public convenience and necessity authorizing it to construct or operate the Alaska pipeline segment and the gas conditioning plant segment of the approved transportation system or to ship or sell gas that is to be transported through the approved transportation system; and

Section 3 of the Natural Gas Act as it would apply to Alaska natural gas transported through the Alaska pipeline segment of the approved transportation system to the extent that any authorization would otherwise be required for ---

- (1) the exportation of Alaska natural gas to Canada (to the extent that such natural gas is replaced by Canada downstream from the export); and
- (2) the importation of natural gas from Canada (to the extent that such natural gas replaced Alaska natural gas exported to Canada); and
- (3) the exportation from Alaska into Canada and the importation from Canada into the lower 48 states of the United States of Alaska natural gas.

Waive P.L. 94-163* [Energy Policy and Conservation Act] in the following particulars:

Section 103 as it would apply to Alaska natural gas transported through the Alaska pipeline segment of the approved transportation system to the extent that any authorization would otherwise be required for --

- (1) the exportation of Alaska natural gas to Canada (to the extent that such natural gas is replaced by Canada downstream from the export); and
- (2) the importation of natural gas from Canada (to the extent that such natural gas replaced Alaska natural gas exported to Canada); and
- (3) the exportation from Alaska into Canada and the importation from Canada into the lower 48 states of the United States of Alaska natural gas.

* 42 U.S.C. § 6201, et seq.

○