ALASKA NATURAL GAS TRANSPORTATION SYSTEM

OVERSIGHT HEARINGS

BEFORE THE

SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS

OF THE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS HOUSE OF REPRESENTATIVES

NINETY-SIXTH CONGRESS

FIRST SESSION

ON

ALASKA NATURAL GAS TRANSPORTATION SYSTEM

HEARINGS HELD IN WASHINGTON, D.C.
OCTOBER 15 AND 16, 1979

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ALASKA NATURAL GAS TRANSPORTATION SYSTEM

MONDAY, OCTOBER 15, 1979

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9:47 a.m., in room 1324, Longworth House Office Building, Hon. Harold Runnels (chairman of the subcommittee) presiding.

Mr. RUNNELS. The subcommittee will come to order.

Today the Oversight and Investigations Subcommittee will begin hearings on the Alaska Natural Gas Transportation System. This subcommittee has been assigned legislative jurisdiction over this project by the House Committee on Interior and Insular Affairs, a responsibility conferred upon the committee under rule X of the rules of the House of Representatives through assignment of jurisdiction over public lands.

I have called these hearings because I feel it is essential for all Members of Congress and the public to be kept informed of the progress toward construction of what will likely be the largest privately financed international business venture of all time. Because the pipeline will transport a domestically produced energy resource from the North Slope of Alaska, through Canada, to critical markets in the Midwest and the west coast, it is unique in an otherwise complicated and uncertain national energy picture.

Two factors, the pipeline's impact on our domestic energy supply picture and the reorganization of Government to accomplish a specific energy goal, underscore my interest in holding these hearings. Today, we will hear from the four project sponsors who will be building the pipeline. We hope to find out how much it will cost and when it is expected to be completed.

Tomorrow we will hear testimony from the new Federal inspector, Mr. John Rhett, who will function as the "one window" contact point with the project sponsors and will carry with him all Federal authority on matters pertaining to preconstruction, construction and initial operation of the system. I believe that Mr. Rhett fully appreciates that the success of this approach will depend on his ability to achieve prompt, coordinated decisionmaking.

There are questions about the pipeline which cannot yet be answered. We want to learn about these issues, whether they are environmental, technical, or financial, and about the issues which have already been resolved through the diligent efforts of the sponsors and the Federal agencies. This subcommittee intends to keep an open minded and supportive position in the process of identifying and resolving conflicting interests. In any project of this magnitude and complexity those interests are serious and can have long-range impacts. It is our intention to continue to bring significant issues to light through further hearings in the months ahead.

When the transcripts of these hearings are printed, a staff report on the status of this project will also be printed as part of the hearing record. I hope all of you will have a chance to read it.

I would at this time like to thank the witnesses for coming today. Many have had long distances to travel and are taking time away from busy schedules, and we appreciate the effort which they have made. We intend to make their complete testimony available for full distribution to our congressional colleagues and the public. I would ask that all witnesses summarize their statements in about 10 minutes, if that is possible. We will then follow with questions.

Mr. Clausen.

Mr. CLAUSEN. Thank you, Mr. Chairman.

I want to commend you for scheduling these oversight hearings on the proposed Alaska Natural Gas Transportation System and to join with you in welcoming the witnesses to the committee. I am hopeful we can develop the kind of hearing and the data in this hearing process that you have articulated in your opening statement.

Today, we in the Congress realize the urgent national need for establishing energy distribution systems to various regions of our Nation. Hopefully, these hearings will reflect congressional concern in seeing that such systems are actually established.

It seems only yesterday that we as members of the Subcommittee on Public Lands reported a bill entitled Alaska Natural Gas Transportation Act for the full Interior Committee to consider. The primary purpose of this legislation was to expedite a decision on the delivery of the Alaska natural gas to U. S. markets. As you will recall, while this legislation was being considered I expressed three main areas of interest:

One, a provision for new facilities to assure direct gas deliveries to the western and eastern regions of the United States; and second, a need for one department, entity, or administrator to be responsible for approving preconstruction, construction, and initial operation of the gas system; and third, to recognize a need for coordination and cooperation toward achieving energy self-sufficiency here in this Western Hemisphere.

Fortunately, in 1976 Congress enacted the Alaska Natural Gas Transportation Act and mandated that new facilities must be included within the particular route selection by the President. Later, in September 1977, Congress received and approved the President's route decision. In a short period of time afterward, an executive policy board came into existence and later a Federal inspector position was created.

We are now in a position to receive through this subcommittee's oversight and investigative authority an update on the progress toward achieving construction of an Alaska natural gas transportation system.

Mr. Chairman, I am hopeful the subcommittee members and staff will exhibit as much vigor and determination in addressing the proposed transportation system as we have in addressing the equitable distribution of Alaska North Slope crude oil. Again, Mr. Chairman, we, the members of the committee, are grateful and deeply in your debt for moving quickly in taking the initiative to permit us to develop the kind of a hearing record that is in our area of jurisdiction and responsibility. So I commend you, sir.

Mr. RUNNELS. Do any other members of the subcommittee have an opening statement?

Mr. LAGOMARSINO. Mr. Chairman, just a few words.

I want to join my colleague Mr. Clausen, in commending you and in commending him for holding these hearings. I think while perhaps other oversight committees of the Congress get more press and while they do things that might be more dramatic, the record will show that the work of this subcommittee has been very constructive and has already resulted in some very important legislation and some important issues being discussed and brought to the attention of the public. We made some changes; we have not just made headlines. So I compliment the gentleman.

Mr. RUNNELS. Any other opening statement? If not, I thank each one of you for being here this morning.

Before proceeding to our first witness, we will have inserted as part of the hearing record the staff report previously mentioned, including the appendixes to that report; plus a prepared statement submitted by the General Accounting Office.

Hearing no objection, so ordered.

[The report referred to above entitled, "Alaska Natural Gas Transportation System: Status Report"; and the prepared statement from the General Accounting Office may be found in the appendix. See table of contents for page number.]

Mr. RUNNELS. Our first witness will be Mr. Robert L. Pierce, president and chief executive officer of the Foothills Pipe Lines (Yukon) Ltd.

Is Mr. Pierce here?

Mr. MCMILLIAN. We requested a change in schedule.

Mr. RUNNELS. I know but we are going to try to keep to our schedule and call witnesses as we had them on the witness list.

Is Mr. Pierce in the room?

Mr. PIERCE. Yes.

Mr. RUNNELS. You may proceed.

[Prepared statement of Robert L. Pierce may be found in the appendix.]

STATEMENT OF ROBERT L. PIERCE, PRESIDENT AND CHIEF EXECUTIVE OFFICER, FOOTHILLS PIPE LINES (YUKON) LTD.; ACCOMPANIED BY MURRAY STEWART, EXECUTIVE VICE PRESIDENT; BRUCE SIMPSON, AND RICK COOKE, EXECUTIVE ASSISTANTS

Mr. PIERCE. Mr. Chairman, members of the committee, my name is Robert L. Pierce, president and chief executive officer of Foothills Pipe Lines, Yukon, the company essentially responsible for the construction of the Alaska Highway System in Canada. With me is Mr. Murray Stewart, executive vice president, sitting behind us are Mr. Bruce Simpson and my executive assistant, Mr. Rick Cooke.

During the time available, Mr. Chairman and members of the committee, we would like to provide the committee with a brief summary of the progress made in Canada since the fall of 1977. In that context we will comment upon significant Canadian legislative developments, progress of technical work which has been carried out by the Canadian sponsors, the status of pertinent NEB proceedings, and the outlook for private financing of the Canadian segment of the system.

We would also like to discuss shortly with you as well the proposal to prebuild the substantial portion of the system in order to export an additional 1.04 billion cubic feet of Alberta natural gas to the United States.

The Canadian portion of the system will have an initial capacity to transport approximately 2 to 2.4 billion cubic feet per day of Alaska gas and 1.2 billion feet per day of Canadian gas, with the addition of looping and compression, however. The system could ultimately transport as much as 3.2 billion feet of Alaska gas per day.

Our NEB 1979 capital cost estimate for the Canadian portion of the system was $5.768 billion for a late 1984 startup as compared with the original antitarget of 4.235 billion for a January 1983 start. The increase has been caused primarily for the regulatory and legislative delays occurring in the United States.

We are doing everything possible to minimize our expenses without jeopardizing the current construction schedule. Fortunately, however, the principal cause of cost increases today is delay. Continuing delay makes any project more costly, particularly now, given the current inflation rate in North America and the spiraling cost of capital.

Notwithstanding that we are hopeful, a significant portion of the Canadian-United States segments can be prebuilt within the next 2 years. If this proposal is approved in a timely fashion by the appropriate Canadian and American regulatory bodies, we would believe it would accomplish the following:

One, it would reduce the capital cost of a significant portion of the system;

Two, it would spread out the total construction period;

Three, it would serve to reduce the ultimate total cost of service for Alaska gas;

Four, it would improve the earnings and the cash flow of the project sponsors, thereby strengthening their financial position as they continue their work to complete the total system; and

Five, it would demonstrate that the large diameter high-pressure pipeline can be installed and safely operated without major cost overruns and schedule delays.

To achieve these benefits we have advised the Northwest Alaska that in our view there must be complete dedication of all concerned parties to assure completion of all the components of the prebuilt, including the northern border section, by November 1981.

Further, the Canadian participants in the project believe that not only is such a schedule achievable, but are prepared to join with Northwest to achieve such completion of the northern border pipeline.

In Canada over the past 2 years, we believe there has been significant progress. In April of 1976, approximately 5 months after congressional ratification of the presidential decision, our Parliament passed the Northern Pipeline Act, which gave full force and effect to the agreement reached between our two countries.

Among other things, that act granted certificates of public convenience and they are authorizing the five Foothills subsidiaries to construct and operate the Canadian portion of the system, establish procedures and standards for the filing and review of Foothills tariffs, and limited judicial review of the decisions issued by the National Energy Board in connection with the pipeline.

The act also established the Northern Pipeline Agency, something very much akin to your Federal inspector, and vested it both with the responsibility and the authority to oversee the construction of the pipeline in Canada.

The agency has already issued final terms and conditions on technical requirements for the system and its final terms and conditions on socio-economic and environmental matters are expected to be issued in the near future.

National Energy Board has also worked hard to expedite the Canadian process. It has issued a proposed approach to the incentive rate of return mechanism which was envisioned by the agreement in principal between our two countries; it has issued orders on the proposed mainline and prebuild tariffs of Foothills, as well as the method for regulation of the cost of service contracts, and it has completed hearings on the application of Pan-Alberta to export in excess 1 billion cubic feet of gas per day to the United States through the prebuilt portions of the systems.

The indications are that a decision should be forthcoming on that hearing within the next month and a half.

The board has also established and expedited schedules for all remaining matters affecting the system in Canada, including proof of financing, and the finalization of its approach to the incentive rate of return.

At the company level, Foothills had made a substantial amount of progress in the technical work which must be completed prior to the commencement of construction. Detailed location work is essentially complete for the entire system; design work is in an advanced stage for the entire system, and almost complete for the prebuild portions; geotechnical and geothermal studies are continuing in the Yukon at a high level; frost heave studies are continuing at our facilities in Calgary, and additional pipe burst tests are scheduled for next month.

We are trying to do everything that we set out to do 5 years ago. We can assure you if there is further delay in the project it will not be caused by anything within the reasonable control of our companies.

We remain optimistic about the Alaska natural gas transmission system. We are convinced today as we were before that the project is in the best economic interests of both our countries. We are also convinced that the project should be privately finished without any form of direct governmental participation. Notwithstanding our optimism, we are concerned not only with those delays which have already ensued, but with those which, if the past is an indicator, may occur in the future.

As private companies, we have the financial strength to continue reasonable expenditures on the project, to make a substantial investment in the project's equity, and to attract the debt financing which is required for its completion, provided that we have satisfactory contractual arrangements with shippers of substance which are perceived as such by the investment community, and which essentially means that there must be a well recognized and accepted tracking system in place.

We cannot, however, be placed in the continuing position of flowing millions upon millions into this project year-after-year without assurance that the project will commence construction on a timely basis and be completed, and that on completion we will be allowed a fair and reasonable return on our investment. We now believe that at least two things should occur soon, if we are to continue funding the project at the present rate.

First, we must be assured that the money which we invest will be recouped in the event the project is not completed because of problems occurring in the United States.

Second, we must be satisfied that once the system is completed we will be allowed to earn a fair and reasonable return on our investment, and there are ongoing proceedings before the National Energy Board in which we will be appearing towards this end within this month.

We would assure you that the Canadian companies involved in this project remain fully committed to the private financing and early completion of the project. As of December 31, 1979, we estimate we will have spent $125 million in the project and, although we intend to continue our financial support, we can only do so for as long as it appears reasonable.

We thank you, Mr. Chairman, and your colleagues for the opportunity to appear before you.

If there are questions we may attempt to answer, we would be pleased to be at your disposal.

Mr. RUNNELS. Thank you very much, Mr. Pierce. I would like to just ask a few brief questions.

In your statement you say the cost escalated from $4.3 billion to $5.6 billion. This is a $1.3 billion increase. I believe you stated that it is due to delays. What kind of delays caused this much escalation?

Mr. PIERCE. Essentially, Mr. Chairman, the agreement between our two countries called for the system to be in being, be completed, and combine delivering gas in January 1973. Subsequently, we were advised by our American colleagues that this date could not be achieved because of certain matters which had to be done in the United States, and we thereupon agreed that the date should be delayed until the fall of 1984.

Now that 1984 date of course was also dependent upon certain things falling into place before that time. I am concerned by some of the evidence that I have read last night that is going before this committee that the 1984 date is beginning to look pretty shaky. Essentially these are dollars as spent, and the longer your project stretches out, the more dollars you have to spend just on basic inflation which relates to the longer period of time; the more dollars you also have to spend in keeping an operation in place that you expected to start working full out on a particular date and now find you have to keep them for another two years before you can get them working full out.

The chairman is well aware, in private business you soon get to the point that you either lay the people off or you find something else for them to do.

Mr. RUNNELS. Your statement says that it is estimated that at the end of December 31, 1979 you and your other sponsors will have already spent $125 million.

Mr. PIERCE. That is our present estimate.

Mr. RUNNELS. You say you will continue to support it financially as long as it is reasonable. Do you have any estimate as to what you think is reasonable at this point?

Mr. PIERCE. Mr. Chairman, my idea of what has been reasonable has varied almost all of my life. The older I get, the more I find unreasonable; there are more and more things I find unreasonable. I would not have thought the short-term money interest rate of 13-plus percent was reasonable, but we got it. I do not know how much longer it will be reasonable, but I can say this, Mr. Chairman: we are heartened by what we have seen recently—we are heartened by the fact that there is a Federal inspector there. We had originally hoped to see him 2 years ago. We really thought he would have been there before our Parliament, who have appointed the commissioner under the Northern Pipeline. So that is positive.

I think essentially what it boils down to is this: that if we have to fund this project and pay 14 and 15 percent prime rate on money, what is reasonable is a little less than it would have been if we were paying 9 percent on our money. So the delays are very important.

The other side of it is our experience with capital projects is that what causes costs to escalate out of control are delays, because when you estimate something in 1975 or 1976 and say you are going to complete it by a particular date, you are expecting, in the 2 years normally you can control, that you are going to get an awful lot in the ground. When you get past those two years, inflation tends to take off on you. What causes more concern than anything else is your ability to really estimate what it is going to be. What is reasonable?

I would think, Mr. Chairman, we have, this year, cut our expenditures from what we had originally planned to spend. If there is not a continued improvement as we have seen in the last few months, we will cut our expenditures further next year and really just go into a holding pattern.

Mr. RUNNELS. Thank you.

You state that you think that under the free enterprise system that you should be allowed to earn a fair and reasonble rate of return on your investment. Do you have an off-the-cuff estimate of what you think is a fair and reasonable return on your stockholders' investment?

Mr. PIERCE. Before anybody ever thought of the incentive rate of return, Mr. Chairman, we had agreed with Northwest Alaska that we would build the pipeline if we got a 16 percent rate of return to equity, or the same return, the highest return as was earned by any other pipeline in Canada in similar circumstancess. Now there are not any other pipelines in Canada in similar circumstances.

The evidence before you shows that this will be a very unique thing. But I think I can assure you, Mr. Chairman, that we would expect to earn a higher return on this system with the risks involved than we do on the normal systems that we have been running for the last 20 years, and that are in place with all kinds of loop. And I should say this as well, historically in Canada the rate of return to equity has been higher than it has been in the United States, essentially because money in Canada costs more.

We will be appearing before the National Energy Board again this week and we will be saying to the National Energy Board through professional witnesses, one of whom is well-respected in the United States, that if we were to be compensated on a comparable basis to the other pipelines in Canada, the minimum rate of return we would earn on this project would be 16 percent to equity.

Mr. RUNNELS. Thank you.

Mr. Clausen.

Mr. CLAUSEN. Mr. Chairman, I ask unanimous consent that all members of the subcommittee be permitted to submit questions to the witness because I am sure there will be follow-on questions that will help us develop the kind of record we would like to have.

Mr. RUNNELS. Hearing no objection, it is so ordered.

Some of you people who are standing around the room might like to come up and sit next to us. Feel free to do so.

Mr. CLAUSEN. Yes.

Off the record.

[Discussion off the record.]

Mr. CLAUSEN. It is interesting to note the line of questioning that our chairman has directed to you because I made some similar notes on your testimony that I was going to ask. I wonder if you would elaborate a little more specifically on the point that you made that this increase has been caused primarily by regulatory and legislative delays in the United States? Could you be a little bit more specific on the kind of regulatory and legislative delays that you are talking about?

Mr. PIERCE. Congressman, a great deal of this is set out in other material that will be before you. But for instance, the incentive rate of return system is something that people have been grappling with for the last 14 or 16 months. We are still grappling with it in Canada. Until you know the basis upon which you are going to earn a return, you can hardly go to somebody and say invest, because as we all realize, pipelines being regulated, you do not invest for speculative purposes. The day of the capital gain on a pipeline stock tended to disappear when it was regulated because regulations are not put there to give you more but to give you less. So that is a situation that has been setting for a very long time.

One of the other situations has been the design of the system. Although our system design has been approved and the certificates essentially given, subject to the final engineering, the Northwest Alaska System has just been in the last month, last 2 months that there has been a decision as to the size of the pipeline and the pressure.

I understand, for instance, that the question of the alinement of the system is yet to be determined. Our system is basically alined in Canada. We know we are going to have to change the alinement but that happens in the normal pipeline construction. I understand the question of exactly where the pipeline is going to be in Alaska still remains to be determined, generally. But you cannot complete your designs or do those things until they are in place.

The question of congressional passing, someone told me the other day it is almost a year now since the Natural Gas Pricing Act was passed, whatever it is called down there; it was a matter that was causing substantial concern in respect once again of financing because we did not know whether or not the gas was rolled in. We did not know what the price of the gas was. Now it may well have been that those things could not have been achieved any sooner. But if they had been achieved sooner, if all of them were achieved, including tracking things like that, we would be a lot further ahead than we are today.

Mr. CLAUSEN. I think this is an extremely important question and, under the unanimous consent that has been granted to us, I would like to have you, if you could, prepare for the record a more specific list of the kinds of regulatory and/or legislative inhibiting factors that have had an impact on your efforts.

Quite frankly, it would be interesting, to have a list that applies to the United States, and also a comparative list that would apply to the Canadian legislative and/or regulatory requirements. If we have that on the record it will set the stage for us to follow through and see whether some of these regulatory requirements are indeed nuisance or necessary.

Mr. PIERCE. I would be pleased to do that.

Mr. CLAUSEN. It would be very helpful.

Mr. PIERCE. I take it our counsel could work with the committee's counsel.

Mr. CLAUSEN. Right. It will take some time but I think it is important for us to have this on the record for us to peruse and evaluate.

Mr. PIERCE. Fine. In this respect, I might mention one of the concerns we have is that under the Canadian-United States agreement we are not responsible, when it comes to what our return will be on an incentive basis, for delays that relate to the U.S. Government, its agencies or U.S. shippers.

The problem we have under the agreement, Mr. Chairman, is that those are matters which will be negotiated without us present between both levels of government following the completion of the system, and if they do not agree it will go to international arbitration.

I am afraid if you are going to invest substantial dollars in 1980 that you are not really prepared to sit back until 1984 to find out what your return is going to be.

Mr. CLAUSEN. Along those lines, I have one more question: To your knowledge, is there anything in the way of a line of communication between the United States Federal Energy Regulatory Commission and the Canadian National Energy Board?

Mr. PIERCE. A lack of communication or a line of communication?

Mr. CLAUSEN. Is there a line of communication or is there a lack of communication?

Mr. PIERCE. I do not know whether there is a lack of communication, but there is a line of communication and of course it is provided for in the agreements between the two countries, if their regulatory agency will communicate. I have not seen any indication that there is any lack of communication.

Mr. CLAUSEN. We would appreciate your keeping us advised of what your perception of that communication is as we go along.

Mitchell Sharp of the Northern Pipeline Agency, which I believe is equivalent to our Federal inspector, recently stated that Canada's National Energy Board may not grant export licenses for Alberta gas through the proposed prebuilt United States section until financing for the entire project is approved.

Do you agree with that statement or would you comment on his statement? Is that an accurate statement?

Mr. PIERCE. Congressman, it may have been what Mr. Sharp said; I believe what he is referring to is condition 12 of the conditions of the certificates that we hold.

Condition 12, which is appended to our Northern Pipeline Act, states that the companies shall, before the commencement of construction, file with the Minister of Documents relating to financing of the pipeline—but I think essentially the part he is talking about is the second end of the section—and establish to the satisfaction of the Minister, that is the Minister responsible for the Northern Pipeline Agency, which is presently the president of the Canadian Privy Council, Mr. Baker, and to the satisfaction of the National Energy Board that:

One, financing has been obtained for the pipeline, and I would say this, that since this is a Federal act of the Government of Canada, when they talk about the pipeline it is the pipeline in Canada, because I think that is how it is defined in the act.

Two, protection has been obtained against risk of noncompletion of the pipeline and interruption of construction on a basis acceptable to the Minister and the board.

So it seems that the key matter is that whatever is required must be to the satisfaction of the Board and the Minister. And on that basis, although I think Mr. Sharp is the Deputy Minister, I do not think Mr. Sharp today can determine what will be necessary to satisfy the Minister that the project is proceeding.

Mr. CLAUSEN. Do you think it would be helpful if we tried to obtain from him a clarification of that statement?

Mr. PIERCE. It would be helpful I would think at this time but, having said that, I think all it means in the end is that a nonelected official has indicated what he thinks an elected official will require.

Mr. CLAUSEN. On page 4, and this will be my final question for the moment, you allude to action by the Canadian Parliament on the Northern Pipeline Act. What are the names of the specific Canadian Parliament committees which were actually involved? If you do not have that you can submit it for the record?

Mr. PIERCE. We can submit it.

I think in the end there was a Northern Pipeline Committee, but we will submit it for the record.

Mr. CLAUSEN. Fine.

Thank you, Mr. Chairman.

Mr. RUNNELS. Thank you.

Mr. Williams.

Mr. WILLIAMS. Thank you, Mr. Chairman.

Mr. Pierce, I think all of us are concerned about delays due to legislation or regulation, which cause slowdowns in needed energy construction projects. I do not know if we talked much about the fact that perhaps somewhere there is some legislation or some regulation which may assist construction projects such as yours.

I am wondering, if you know of any legislation or regulation that has assisted you in either the design, location, geotechnical studies which you are doing. Would you share that with the committee?

Mr. PIERCE. Congressman, the Northern Pipeline Agency was set up for that purpose. It was set up for the purpose of assuring that certain public interests were taken care of but, on the other hand, it was there for the expedition of the project. The proof will be in the eating. And I would say to you that at this stage our relations with the Northern Pipeline Agency are satisfactory. At the time the project has been completed, I think we will be in a position to tell you better as to whether or not it is of real assistance.

Mr. WILLIAMS. On pages 7 and 8 you mention assurances that the investment will be recovered in the event the project is not completed because of problems occurring in the United States. What form of assurances do you expect for the recovery of expended funds should noncompletion be caused by the United States? And what do you mean, caused by the United States?

Mr. PIERCE. I would think that we started out on this project on the basis of an agreement between our two countries, which said that the project would be expedited for completion in January 1983. It is now apparent that the project will not be completed by January 1983.

As to what assurances we will need as we go down the line, I am unable to tell you, but I think we have less confidence in words, whether it be in an agreement by our two governments than we have on what we see in relation to expedition of the project. And we are more skeptical today than we were in the beginning, at the time the agreement was approved by both legislatures; what we know now, we would not have $125 million in the project. We would have something in the project but not that much money.

So what is required in the future? I guess that will be determined by what happens over the reasonable future. We think that the Federal inspector has been a very positive thing, but we expected the Federal inspector a couple of years ago. Quite frankly, we were being asked by our American colleagues, get your Parliament going, or they are going to get that act in place, what is holding them up? Eventually the Parliament passed it, passed the act, put in place an agency, an agency in Canada which is for the purpose of providing the one window and establishing quick means of communication and, by the way, which we as the pipeline operators pay for. So we already have that that we are paying for, those Government servants put on the payroll to expedite this pipeline.

So I am not sure what the assurances are, but certainly we are going to have to be absolutely satisfied that—and the financiers are too—that before much more substantial amounts of money are put in, one, that the project is going to proceed; two, that the project is capable of being financed.

We believe the Canadian portion is, but there is no sense in financing the Canadian portion in Canada if all you are going to build is a pipeline in Canada that has nothing going into it or coming out of it. This is something our people are now studying. Over the next few months, depending on the kind of progress we see, the assurances may vary up or down. I guess we are at the point now that we take an awful lot less for granted than we did before, Congressman.

Mr. WILLIAMS. I agree. It is a pretty serious matter that you are addressing here. It would seem to me to be appropriate to define just what those assurances are. If we know what the goal is, we will know whether or not we have reached it.

Mr. PIERCE. Tracking certainly. The people who invest are prepared to take their own risks but, in taking their own risks, have to be assured that the cost they have incurred can be passed on in a way that is clear and legally unquestionable—and tracking is a most important matter in that respect.

Mr. WILLIAMS. Thank you, Mr. Chairman.

Mr. RUNNELS. Mr. Young.

Mr. YOUNG. Mr. Chairman, I would like at this time to submit an opening statement to the committee for the record. Is it permissible?

Mr. RUNNELS. That is.

Mr. YOUNG. Mr. Chairman and fellow colleagues, I think there is one factor that we are overlooking and that is the fact of the State of Alaska. We have heard a great deal from the Foothills representation, of course, and we will hear from Northwest and from the Federal Government and also from the State.

I have read the testimony of the gentleman before us and that of future witnesses, and it seems of little interest to the role the State will play. I think it has to be recognized by this committee and by those people involved, the Federal Government, the participants of the pipeline, Foothills and Northwest, that it is very, very important to the State of Alaska that this construction starts, but with the understanding there is an interfacing that we have the capability of utilizing our gas, our "State of Alaska's" gas within the State.

We also should recognize that without our one-eighth gas there is little chance of this line being built. Those may be strong words, but I think everyone should be very much aware of them. We are a little sort of like the mouse that roared; we have members on this committee who participated in the taking of the lands away from Alaska which belonged to us under our constitutional rights. Now we note an insensitivity to taking of our oil and gas from the State.

I will remind this committee that there is really only one owner of that oil, it is not the oil companies or the gas companies, it is the State of Alaska. Under our constitution we sold the oil, but we control the flow of the oil and the gas.

Mr. RUNNELS. The one-eighth?

Mr. YOUNG. For the total field because we control the flow, that means we control the flow of oil and gas.

I want to get that out in the open because there is great concern in my State that again we are being ignored, shunted aside; those from gas-producing States, though I see in this committee few oil-producing States, I think they have the same feeling. This is not only a national project, it is a State project.

I have only one question for this gentleman who just testified. It is, you have made the statement there is not going to be any financing for your portion of the line if there is not a tracked system, and yet I have been through Canada, I have seen the work that is being done, you are far ahead, there is alinement of the pipeline already in place, test holds have been drilled extensively, clearing has been done in some areas, you are much further ahead than we are.

I will compliment you on your statement. I think it has been held back by this Congress and this Government of ours. But you are also building the line very close to the proximity of about 27 trillion cubic feet of gas which I believe belongs to part of your consortium. Can this line be started and finished on your side and utilized to deliver gas from that field to the United States?

Mr. PIERCE. The main gas production in Canada today of course is in the Province of Alberta. Province of Alberta would cover somewhere in the neighborhood of about 800 miles of pipe.

The Canadian system totals 2,000 miles of pipe. So I guess categorically the answer would be "No."

Mr. YOUNG. There is no design work in transporting Canadian Alberta gas in this pipeline once it is built?

Mr. PIERCE. The work that is going on in relation to the prebuilt system is for the purpose of transmitting Canadian export gas in the early years to get the system in. But that system we would anticipate on the western leg would go from the southwestern part of British Columbia on the U.S. border up to Calgary; it would be a 36-inch system. On the eastern leg it would go from Calgary to Monchy, Mont., in a 42-inch line. So that essentially the major construction of the prebuilt—and the prebuilt occurs in the lower 48, with a combination of northern border system and whatever system is put on the western legislation.

And yes, our design, we are shooting to make deliveries on the western leg in the fall of 1980, if the necessary regulatory approvals are available, and to make deliveries by November 1981 on the eastern leg through the northern border. Our design work is a long way ahead, our alinement is a long way ahead, and in some ways the right-of-way is there.

Mr. YOUNG. One further thing is the question of pressurization of the line. When the line enters Canada now from Alaska, it is proposed by FERC a 1,200-pound test line. What is the test that you foresee as it goes into Canada and where will we lose the pressure of that line or will we lose any pressure at all?

Mr. PIERCE. As a matter of fact, I think as the system is presently designed, and I should leave this to engineers, when the gas comes out of Canada we boost it up to 1,440 to go into the northern border.

Mr. YOUNG. You do boost it up?

Mr. PIERCE. Sure. That is essentially that that pressure is maintained from Alaska until you get to the Canadian side of Monchy and then you move it up to provide better economics for Alaska again through the northern border.

Mr. YOUNG. In your design is there any proposal for extracting wet gases out of the Alaskan gases delivered to Canada?

Mr. PIERCE. No, sir, it is not, that is not our gas to extract.

Mr. YOUNG. Thank you.

Mr. RUNNELS. Thank you.

Mr. Santini.

Mr. SANTINI. Mr. Pierce, you have testified on pages 3 and 4 about your understandable concerns on delay and then you just briefly responded in terms of Foothills' efforts, that you feel in some phases in our endeavor at this time you are ahead.

Where do you feel Foothills is at in terms of complying with its own calendar projections?

Mr. PIERCE. We think, Mr. Chairman, that we can still make a November 1984 delivery.

Mr. SANTINI. So you are on schedule in balance?

Mr. PIERCE. In balance we are at a position that we have cut back, you do not get burned twice the same way, you know, but we are still in a position that we have the resources we believe that we can gear you to meet that date.

Mr. SANTINI. You have also testified in response to questions from one of the members of the committee that you lamented—that was not your word, I will probably regret it—the fact that the Federal inspector had not been on the scene sometime earlier. I believe you indicated 2 years ago it would have been helpful. When you made inquiries as to the reasons for the delay in getting the Federal inspector there, what answers or explanations were you offered?

Mr. PIERCE. I cannot really recall but if I had to guess it would be the same kind of reasons that we use in Canada when something does not happen. It is the Government's fault.

Mr. YOUNG. Will the gentleman yield?

Just for the record, the Federal inspector they are referring to is the U.S. inspector.

Mr. SANTINI. I am aware of that.

Mr. YOUNG. Is this Federal inspector today on line and in the field?

Mr. SANTINI. That was my understanding of Mr. Pierce's testimony.

Mr. PIERCE. He has been appointed.

Mr. SANTINI. He has been identified?

Mr. PIERCE. As I understand it, he is one of the witnesses appearing before you.

Mr. RUNNELS. That is correct. He will be the first witness tomorrow.

Mr. YOUNG. Then we will find out where he really is. I am curious.

Mr. SANTINI. I am shocked our Government has been responsible for the delay. I cannot believe that, but—the whole committee has been shocked to near silence.

I am concerned about another matter discussed with our chairman in the past. That is a bottom line concern with regard to your phase of the project. Those of us in the lower 48 have some sensitivity to it and the upper one has some sensitivity to it. What are the legal possibilities as you understand them today for discriminatory taxation by the Provinces on your leg of the pipeline?

Mr. PIERCE. As I understand them, Congressman, none. There is the treaty which exists between our two countries which says there will be no discriminatory treatments. As we understand it, this pipeline cannot be treated any differently than any other pipeline in Canada. As a matter of fact, I would think in that respect, since it relates to an agreement between our two countries, if one is to assume there is ever discrimination that Government levies on its citizens, I would think there would be less discrimination on this pipeline.

Mr. SANTINI. That is good to hear.

Mr. PIERCE. Now that is not to say that the governments of the Provinces will not grind their best taxes.

Mr. SANTINI. We all deal with and are aware of governmental tax efforts, Mr. Pierce, whether Canada or the United States, whether local or Federal.

How are you going to handle the problem that you shared with us this morning, concerning your cost overruns? Where are you going to get that money for the cost overruns? Has that been worked out yet?

Mr. PIERCE. I suppose that assumes there will be a cost overrun.

Mr. SANTINI. The Federal Government is involved, Mr. Pierce?

Mr. PIERCE. That does not necessarily have to follow. We were talking about other agencies which were set up for the purpose of helping. And I said to you that I believe the Northern Pipeline Agency was set up for that purpose. The proof will be in the eating.

When we talk about overrun, we have been involved in projects not as complicated as this, but in the so-called inflationary years we were involved togehter with a number of other companies in putting together a large project which totaled $1.5 billion United States, in 1975 dollars. It was completed this year under budget. So you know the overrun to be, quite frankly, in that case we provided financing for the overrun to the extent of 25 percent.

I am sorry to have to tell you that we are going to have to give some of the money back to the lenders. What really bothers me about that money is that it was 8.25 percent money.

Mr. SANTINI. An encouraging glimmer on a rather dark horizon. Thank you.

Mr. RUNNELS. Thank you. Mr. Lagomarsino.

Mr. LAGOMARSINO. Thank you, Mr. Chairman.

Mr. Pierce, the discussion this morning has been mainly on the Government delays. Are there any other problems you think that could delay the project, assuming you can get the—big assumption—the legislative and regulatory decisions made that you want made and in the proper timely fashion?

Mr. PIERCE. There are always the normal construction risks that delay a project. I think it is fair to say this project is probably more researched than anything else. Essentially we believe if you got the environmental and the regulatory out of the way, it is essentially a pipeline. And it is a pipeline using basic technology. It has a big pipe and it has a lot of money, but it is a pipeline and we have been building pipelines for many, many years.

On the other hand, it seems that man can always invent ways to delay and can never seem to invent ways to expedite. So what else can delay it?

I guess, Congressman, if you could guarantee that Government would only act reasonable and that the people who work for it would not take the position of safety, which is the no-impact position, and on that basis I do not guess any of us would still be here. I am not even sure whether or not the Indians would have been allowed to ride a horse across the prairie, because everything we do has an impact.

There are inherent problems in any kind of a construction project. You can research it, but you cannot dig a hole every inch of the way to find out what is down there. Periodically, even in building a building, you are going to find a great big boulder and you can be in the middle of the prairie where there are not any other boulders and you are going to have to blow it up and it is going to delay the building.

I am not an engineer, but I believe we have as good engineers as exist anywhere in the world. We believe the construction side of the project can be handled in normal fashion.

We know there are going to be people looking over our shoulders all the time. We have had a lot of it up until now. We are not really sure how much that has cost us. But I would bet, on the basis of productivity, our people spend almost as much time making reports, sitting in meetings with various agencies, as they do doing anything productive.

What are the delays going on? The normal construction delays. The project I just described is a project which included a 1,700-mile pipeline from Fort Saskatchewan north of Edmonton to Ohio, across all kinds of States, some of which had no eminent domain. It was completed in budget and included five extraction plants, two or three derivative chemical plants, world scale ethylene plant, and essentially the overall project was completed in budget and on time. So it can be done.

But there are other projects that are delayed. We do not believe that there is a question of construction, the Olympic Village or the Olympic Stadium in Montreal; we believe there are an awful lot of lessons we have all learned, hopefully, on both sides of the table, from the TAPS pipeline.

Mr. Lagomarsino. I take it you do not foresee any problem with the availability of supplies.

Mr. Pierce. Not at this stage. As a matter of fact, we put our pipe orders up some time ago and we have recently called tenders on the prebuilt system and we expect we can get the deliveries, and the prices are essentially within those we have estimated.

The one thing I must say to you quite frankly is, today there are two things I will not try to estimate: One, what is the cost of money going to be, in either your country or mine, over the next 6 months, or what is the inflationary rate going to be? I do not feel badly about this because there seem to be an awful lot of people who are trying to deal with the situation who are not prepared to give any statements.

Mr. Runnels. Thank you. Mr. Udall, chairman of the full committee.

The CHAIRMAN. Thank you, Mr. Chairman.

I appreciate your holding these very important hearings and I will try to participate as much as I can. The only thing I wanted to comment on now was our ability to learn the lessons of the past.

This committee is involved, as will be the whole Congress this month, in trying to crank up and write a piece of fast track legislation, to speed up major energy projects here in the United States. I was thinking myself how well this ties in with what we are discussing here today because essentially we built a fast track for the Alaska pipeline.

In the judicial-legislative history the staff notes that in 1976 we set up the structure for making a decision quickly. By 1977 it was all done, action in both countries, action in Congress, everything was done. But I think this suggests that we can move, that we can make decisions. But I am discouraged that we get into this many fast-track disputes. It seems more and more like society has become so complex, so divided, so many interests at stake that every province, every special group can find some reason to go to court, some reason to ask for delay, to ask for information, more studies, and so on.

One of the real tests of our country's ability to work with its neighbor and make decisions is whether or not this pipeline is built. It ought to be built, it should be ahead of where we are now. If you and the other witnesses can tell me what we should have learned from all of this, what lessons for general fast-track efforts, I would be very grateful. I am not sure that I am prepared to draw any specific lessons.

Do you have any thought, any advice to the American Congress about what we might do to expedite major energy decisions?

Mr. CLAUSEN. As a Congress.

Mr. PIERCE. Congressman, I certainly have lots of advice for our Canadian Parliamentarians and I think it is proper for me to have the advice. I guess I would not have any advice for you other than the fact that my wife and I often talk about budget and we often put them together but really, in my experience, whether or not the budget turns out is not how you put it together but how you make sure that it is adhered to and that you move forward.

Our resolution is always great but somehow you have to see that action comes and maybe that is what is tending to be wrong with our system. I am not sure that if Columbus and Isabella were alive today in North America that they would have been able to get him off the ground to discover the country. And it is interesting to think back in those days that she was both, I suppose, the person who could authorize it and who could take whatever steps were necessary to kick him off the shore of Spain.

The CHAIRMAN. That may be putting an analogy on that happy note.

Mr. RUNNELS. Thank you, Mr. Chairman.

Thank you Mr. Pierce for coming here today. We appreciate your testimony and we will have some written questions to submit to you.

Mr. PIERCE. Thank you.

[Questions submitted to Robert Pierce, with responses, may be found in the appendix. See table of contents for page number.]

Mr. RUNNELS. Our next witness will be Mr. John McMillian, chairman and chief executive officer with Northwest Energy Co., Northwest Pipeline Corp., and Northwest Alaskan Pipeline Co.

Welcome to our subcommittee. We appreciate your being here today.

[Prepared statements of John G. McMillian, Mark J. Millard, and Frank P. Moolin may be found in the appendix.]

PANEL CONSISTING OF JOHN G. McMILLIAN, CHAIRMAN AND CHIEF EXECUTIVE OFFICER, NORTHWEST ENERGY CO., NORTHWEST PIPELINE CORP., NORTHWEST ALASKAN PIPELINE CO., AND CHAIRMAN OF THE BOARD OF PARTNERS OF THE TRANSPORTATION CO.; MARK J. MILLARD, CHAIRMAN AND SENIOR MANAGING DIRECTOR, LOEB RHOADES SHEARSON; AND FRANK P. MOOLIN, JR., PRESIDENT, FRANK MOOLIN & ASSOCIATES, AND FORMER SENIOR PROJECT MANAGER FOR THE PIPELINE PORTION OF THE TRANS-ALASKA PIPELINE PROJECT

Mr. MCMILLIAN. I would rather summarize the statement.

I have two gentlemen with me, Mr. Mark Millard, our chief financial adviser, and Mr. Frank Moolin.

Mr. RUNNELS. They may come to the table.

Mr. MCMILLIAN. Mr. Chairman, before I summarize my statement, I would like to say something.

We have a very good working relationship with our Canadian partners. We have made many decisions just over the telephone. I have complete confidence in what they say and do.

I think it is a mutual working relationship. As Dizzy Dean said, "If you can do it, you ain't bragging."

If you will look at their history in pipeline construction, they have constructed over 700 miles per year in Alberta, so their construction record is very good, and we feel very confident about them and their ability to finance the project.

With me today, is Mr. Millard, chairman and senior managing director of the Loeb Rhoades Shearson; Mr. Millard has been involved in the financing of four major interstate transmission lines that now exist in our country and has had many years of pipeline experience.

We also have Mr. Moolin, of Frank Moolin & Associates. He was the man responsible for the pipeline construction of the TAPS system.

The reason that Mr. Moolin is here is to bring forth the comparisons and differences between the two systems, and to talk about the problems that we will be facing and that TAPS faced, how the projects do differ, and why we feel confident that our project can be done.

There have been several events since September 1977, which indicate our increasing need for the Alaskan gas. There has been no increase in the U.S. annual natural gas supply.

The gas reserves continue an 8-year downward trend to 200 trillion cubic feet or a reserve life index of 10 years.

The total gas reserve additions in 1978 were 11 trillion cubic feet compared with 26 trillion cubic feet available in Prudhoe Bay. We look at the Alaskan gas system not only to take the gas from

Prudhoe Bay but from the North Slope of Alaska. We believe there is two to three times more gas yet to be discovered in the Prudhoe Bay area.

There has only been one major gas discovery in the United States and that is in the overthrust area in the West, but basically most of the discoveries in the United States have been small scale discoveries.

As we all know, OPEC oil increased from $12.70 a barrel when the project was first approved until today, when it is a floating figure, hard to pin down, but we do know that British Petroleum did announce they bought spot market oil for $35 a barrel.

We do know that new oil in the United States is going for up to $30 a barrel. The cost of this energy and the need for the energy source from Prudhoe Bay, I think, is well known to this committee, so I will not dwell upon that.

I would like to mention to the committee a few of the positive things that have happened since we were here last and then talk about some of the other things.

One positive development that has taken place since the project was approved is passage of the Natural Gas Policy Act. This allowed an energy program to be set forth for our country.

It also established a field price for the natural gas from Prudhoe Bay, Alaska, and allowed us to roll in the pricing of this Prudhoe Bay gas with the lower 48 gas thus insuring its marketability. The President's limited reorganization plan was presented to Congress and approved and the Federal inspector, Mr. Jack Rhett, is now onboard.

We think it is a good selection. He has visited Alaska and all of the major companies dealing with the project. He is positive in his approach. He is firm, but we think he knows big projects and he knows the problems of working with Government and the different Government agencies, and we are very pleased with this man and have great hopes for him.

We have developed two partnerships, and they are strong partnerships, that I think are worth mentioning. We now have six major natural gas transmission companies in the project. Those companies are Northwest Energy Co., Northern Natural Gas Co., United Gas Pipe Line Co., Panhandle Eastern Pipeline Co., Pacific Lighting Development Co., and Pacific Gas and Electric Co.; the last two companies are from California.

This is a strong partnership and we have spent some $100 to $130 million in preplanning, preengineering work. We are planning to increase these expenditures.

The other thing that has happened is that the oil and gas companies have finally executed gas contracts for their gas in Prudhoe Bay, and there are an additional four other transmission companies that we hope will join the project very shortly. We will spend some $400 million in preengineering and development work before our final certificate is approved, and we will spend some $600 million before we lay our first joint of pipe in the ground.

These expenditures are at the risk of the natural gas transmission companies in the project; and we think it's unfair for some other companies to have contracted for gas in the Prudhoe Bay field and not join the project.

They have their right, because we are in effect a common carrier and they can sit back and not join the project and allow the rest of the companies to do this and then come in at the last moment, and we think that is unfair. We are working with these companies and hope we can negotiate with them in a positive manner to join the project.

We have had some very recent decisions from various regulatory agencies. FERC has finally issued the incentive rate of return decision; and we think that this decision is a good decision that we can live with and we are now assured that this decision with its tariff structure will allow us to put together a financing package to go to the financial market for the first time.

The pipeline size and pressure that Mr. Pierce referred to has just been recently approved, so we now know that we are dealing with a 48-inch 1,260-pound pressure system and we can proceed with our engineering work on that basis.

The conditioning plant costs have been determined by FERC, and made is the responsibility of the oil-producing companies, and we think that this is flexible if the oil companies participate in the financing of the project.

We hope so, and we are working with the oil companies as required by the Presidential decision and approved by Congress, that the beneficiaries of the Prudhoe Bay gas sales should participate in the financing of the project, and we have had several meetings with the oil companies. We understand they are meeting with the Government and we plan to continue working with them.

The DOI has recently issued a provisional alinement approval giving us a basis to start doing our detailed engineering, geotechnical and environmental work along the route, and we are working with the DOI, to start the detailed mile-by-mile, foot-by-foot type of engineering that is required.

We have acquired the basic geotechnical data from Alyeska and acquired the camps in agreement with them, so we think that these are the positive things that are happening.

We think there are still some critical items to resolve. We need more equity participants in the project and we need the producer support for financing or we cannot finance the project privately.

We need definitive financing commitments; and Mr. Millard will speak to that. We also need approval of our actual cost and expenditures to date by FERC.

We need the tracking approval by FERC that Mr. Pierce mentioned. This mechanism governs charges for the cost of service from Alaska through Canada and the Lower 48 and is put in place so all the participants will be secure in how they recover their funds.

We need the pipeline stipulations from the Department of Interior and FERC to be approved. This is the legal basis on which we are required to build the pipeline.

As for the project schedule and costs, our project can still be completed in what we call the 1984–85 winter heating season or in November of 1984.

This depends on several factors. It depends upon the oil producers completing the conditioning plant on the same schedule. It depends upon no changes in pipe size or in pressure. It depends upon the producer's financial support this year in order to go to the lenders in the first quarter of next year.

It means an early resolution from the DOI in rerouting and technical issues in late 1979 or very early 1980. We need a final FERC certificate by January 1, 1981. As to the costs of the project, the capital costs are now estimated for the 730-mile Alaskan portion, with AFUDC dollars, at $6 billion; about $6 billion, or slightly less than $6 billion for the Canadian section; and for the Lower 48, $3 billion, for a total of $15 billion. All in escalated dollars.

The original costs, without AFUDC have escalated and changed, as I mentioned in my written report from $3 billion in the original estimate compared to $5 billion that we have today.

This gives us the cost of service for the transportation of gas for 1984 of approximately $5 per million Btu in 1978 dollars. In 1990 this cost of service would decline to $3.50; the year 2000, the cost would go to $2. The question of private financing has been widely publicized, and we could not go to the financial markets with a definitive absolute request for private financing until the two issues, the incentive rate of return and the tariff issues had been settled.

We now are going forward with the private financing, and Mr. Millard will speak to that.

The CHAIRMAN. I just have one quick question, and I do have to go to make another commitment.

The President's decision stated that the beneficiaries identified as the producers in the State of Alaska should share or participate in the financing of the project.

What can you tell me about that, or have they agreed to?

Mr. McMILLIAN. No, sir; they have not agreed to. We are working with them, we feel in a positive manner. Now, we have had several meetings with the oil companies involved, Exxon, Arco, Sohio, BP. We met with those companies ourselves and our Government. When I say our Government, I refer to Secretary Schlesinger and the Department of Energy. They feel that they had very positive meetings with them, and so we are working with them but we do not have a commitment.

We need a commitment by the end of this year to meet our schedules.

The CHAIRMAN. Has Mr. Don Young been cooperative and helpful?

Mr. McMILLIAN. He has been a very cooperative young man. The State of Alaska has not been cooperative in the financing of the project, and I had to report to the President I had some serious doubts that they would be. I had a meeting with the Governor, and it was a positive meeting and he said he is going to get a committee together and get our financial advisers together, and we are trying to work out a way.

Mr. YOUNG. Will the gentleman yield to me?

My name was mentioned?

The CHAIRMAN. I did not mean to start a rally.

Mr. YOUNG. There is a great concern in the State of Alaska. I have urged the State to participate in the financing of this line because I think it protects our interest. We are recognized for our share of gas which is within the President's Directive, that we have the right to utilize that gas and there has been some reluctance on the part of FERC to allow us to, and that decision was unwise, because it leaves us no alternative to be less cooperative with the Federal Energy Regulatory Commission than as cooperative as we had been before.

Mr. CLAUSEN. Will the gentleman yield?

You have touched on a point that needs some elaboration, Mr. McMillian.

When you say the State of Alaska has been a little less than cooperative, is it the Governor? Is it the legislature or some committees in the legislature?

Can we get that kind of information so we know what we are dealing with?

Mr. MCMILLIAN. Yes, sir; I would be glad to comment on that now, because it was not the Governor. The Governor, Jay Hammond, is a Republican Governor, a good Governor. We like him, and we have been able to get along fine together. The problem has not really been with the Governor.

We think that in the senate, some members have been fairly responsive and some members have been supportive of the State.

The house is another question. It is mainly, I think, that we always hear, we cannot get this through the house. In talking to the house members we always hear, well, we do not want to go first. We try to explain they will not be going first but we do need some kind of commitment from them. But the main point, I would say, of delay is the house rather than either the senate or the Governor's office.

Mr. CLAUSEN. I will follow up later.

The CHAIRMAN. Thank you, Mr. Chairman.

Mr. RUNNELS. Thank you, Mr. Chairman.

Go ahead, Mr. McMillian.

Mr. MCMILLIAN. When you look at the financing of the project, you must break the project down to its incremental parts. We look at Alaska as one part and the Canadian portion as another; and Mr. Pierce has spoken to that project. We have confidence in our Canadian partners they will be able to construct this on time and on budget, and be able to finance this in their own traditional ways.

We have the western leg, and we have two very strong California partners there; PG & E and Pacific Lighting. PG & E will build this on their own system, and since they are the world's largest utility, it is kind of like loose pocket change. They can build it on the existing balance sheet.

In the eastern leg, there are four companies within that group officially today. They are Northern Natural, ourselves, Northern Energy, United Gas, and Panhandle Eastern. These are four good transmission companies, and we believe that the approximately $1.4 billion project can be financed by these companies themselves, but we have an additional company to that portion of the project, and that is Trans-Canada, a large Canadian transmission company which will join Northern Border for a respectable interest of approximately 30 percent.

This not only strengthens the partnership, but I think insures that Canadian exports, pre-Alaskan delivery exports, as brought forth by the National Energy Board in their decision could be brought in through the Northern Border pipeline. I would like to stress right now the importance of the prebuilding of the Northern Border pipeline, of the concept that we have proposed or really that the Canadian Government came up with.

This would allow us to use surplus Canadian gas that is now available. We have applied for an export license for a 12-year period. We hope this is approved. If it is not approved, Trans-Canada agrees to step up to the table and give us certain arrangements that we think that the project could be financed with, if shorter exports licenses are obtained.

But by having them as a partner we think that it will give us the opportunity to continue the Canadian exports which makes the overall Alaskan project more economical.

Another question was asked about the building of facilities in Canada for Canadian gas. There is a 56-inch loop in Canada, and this line is designed to bring their frontier gas to the Canadian markets when need be, and we also think this is another positive decision that was made by both our Governments, because it not only allows Alaskan frontier gas to be brought to our markets, but also allows frontier Canadian gas to be brought to United States markets.

We feel that when you break the entire system down into the four parts they become much more realistic and manageable and controllable.

The toughest section we have is through Alaska, and that is 40 percent of our total cost, and that is because of the climatic conditions and the other difficulties that we may experience in Alaska.

Mr. Moolin will touch upon this.

We think that the TAPS experience and our amount of planning and preengineering work has given us an acceptable construction risk basis to finance the project and construct the project on time and within budget. We believe in the project. We believe that the project is necessary, and we believe the project in these times and conditions will displace from 600,000 to 700,000 barrels of OPEC oil, depending on Canadian exports and the final volumes of gas delivered from Prudhoe Bay.

We have devoted our time and energy to this project and continue to do so.

We appreciate this committee's interest in this project. We think it is important. We know that there will be other hearings, and we would like to extend to the committee sometime the opportunity to visit the State of Alaska and look at the system, look at the route and look at some of the problems that we will be discussing in the future.

We think once we both have looked at these possible areas of concern, that there might be less concern and at least a better opportunity to discuss these with you, so we would like to offer and extend that invitation to the committee, hoping that we can do that.

If it pleases the chairman, you may ask me questions now or let Mr. Millard and Mr. Moolin finish and ask us all questions.

Mr. RUNNELS. We thank you for your invitation. We have been to Alaska and we only go when it is warm.

We are running a little late, and I will do the best I can to speed up the process of the subcommittee. I know you have two colleagues that have statements. May we have some questions and answers of you at this time, Mr. McMillian?

Mr. McMILLIAN. Please.

Mr. RUNNELS. I thank you for a very comprehensive report to this subcommittee.

Does this pipeline and this system have anything to do in a competitive manner with the Mexican pipeline that we heard about today?

Mr. McMILLIAN. No, sir; we do not think so. We do not think that the surplus Canadian gas or the Mexican gas is competitive with Alaska gas for a lot of reasons. One is that what you are looking at is a domestic supply of gas that is very badly needed, and we think in the time frames that we are talking about, 1984 and 1985, and with only a 10-year reserve life index for the entire natural gas industry, you are going to need all of the volumes of gas you can get from Mexico and Canada and Alaska, so we do not see that they are competitive.

Mr. RUNNELS. Has anything been worked out in the way of a pricing schedule? Did you mention something about $5 per thousand cubic feet of gas?

Mr. McMILLIAN. Total of cost of service.

Mr. RUNNELS. Did I understand you to say your price estimates have escalated from $3 billion to $6 billion?

Mr. McMILLIAN. Yes, sir.

Mr. RUNNELS. Overall this project is estimated to cost $15 billion at this time?

Mr. McMILLIAN. Yes, sir.

Mr. RUNNELS. There are several things that I think are holding up this pipeline. As I remember, we started back in 1976 when Congress passed the Transportation Act. That was 3 years of delay. Then in 1977, the President reached his decision and this decision was reviewed by Congress. That was 1 more year.

You have mentioned that the appointing of the Federal inspector has had a lot to do with overcoming some of these obstacles. Is this correct?

Mr. McMILLIAN. Yes, sir; we believe it was a very positive move and a good one.

Mr. RUNNELS. You say in your report that over 80 percent of the gas in the Prudhoe Bay field has been committed to 11 major natural gas companies.

What has happened to the other 20 percent?

Mr. McMILLIAN. The other 20 percent, of course, 12½ percent of that is the State's royalty gas. Mr. Young suggests we cannot build the line without State support. We submit that they cannot use the gas until the line is built. So, 12½ percent of that is the State of Alaska's gas, and the rest belongs to major oil producers and companies such as Standard of California, Mobil, Phillips, 2 to 4 percent; but the majority of the gas has been contracted for with the transmission companies.

Mr. RUNNELS. The companies that have purchased that 80 percent, have they joined in the financing of this pipeline?

Mr. McMILLIAN. No, sir; they have not. It has been quite a concern to all of us in the project, because we are spending around $4 million a month on engineering work and geotechnical work and planning.

The two companies that have had the gas for the longest are Columbia Gas and American Natural Resources, and we have invited them to join. We have sent them letters, and copies of the letters are in my testimony. There have been two recent contracts for Arco's gas, with transmission that is Texas Eastern and Texas Gas.

We contacted both ot those companies and hopefully they will join. In the initial comments from American Natural Resources and Columbia Gas, they wonder whether it could be financed privately, and they would like to see further governmental action before they join.

We say to them, that is fine. We are going to get these things done. We need your help now, and we need your assistance now. If you had questions, why did you contract for the gas, because you knew these problems were before us then. We are encouraging these people to join.

If they do not we are going to have to come back to you and ask that the Alaska Natural Gas Transmission Act might be modified, because we think it is unfair for a majority of the industry to have to bear portions of the developmental costs of this project, which keep rising and the others not to bear their part.

We are encouraging them to come in and we are waiving a penalty fee that FERC established on late-comers and trying to get them to come in, and I will keep the committee apprised of this, but it is a concern to us.

Mr. RUNNELS. Let me make sure I understand what you just said.

Did you say your company is spending about $4 million per month?

Mr. McMILLIAN. Our group of companies, our six companies are spending $4 million a month.

Mr. RUNNELS. Mr. Pierce just testified that his group had already spent some $140 million. Is this included in the $4 million?

Mr. McMILLIAN. No, sir; we are talking about two separate amounts in both Canada and Alaska. This does not include the eastern leg.

Mr. RUNNELS. The Sohio pipeline project comes to mind. We held hearings in California repeatedly. We worked on the Sohio project for years trying to untangle a situation that everybody agreed was a good idea. We need a southern leg and a northern leg to move oil across the United States.

I know what happened with the Sohio pipeline proposal. After $40 million of stockholders' moneys had been spent and log jams and delays and so forth by the State of California and the Federal Government, Sohio finally threw their hands up and said, "Forget it". They abandoned the project. Here America sits with no oil pipeline.

I am amazed that people will sign contracts to contract for gas and then not join in the project, because their contract is not worth the paper it is written on if they do not have a delivery system.

Mr. McMILLIAN. Yes, sir, under the act we are in effect a common carrier.

Mr. RUNNELS. Yes; I realize that.

Mr. McMILLIAN. They can transport their gas through our system without putting in a penny.

Mr. RUNNELS. You have got to build it.

Mr. McMILLIAN. If we do not build it it is not any good to them.

Mr. RUNNELS. Under present law nobody else can come in here and advocate building a pipeline, can they?

Mr. McMILLIAN. No, sir.

Mr. RUNNELS. Here you sit with a piece of paper and authority for you and your group to build a pipeline on this side; over here on this side there are some people who own the gas, and they are not joining in the project. So in the meantime, stockholders in Canada and stockholders here in America are spending tremendous amounts of money, and nothing is developing.

Is this correct?

Mr. McMILLIAN. That is correct.

Mr. RUNNELS. Does the fast track legislation affect anything or does this have to do strictly with trying to get people to join the project?

Mr. McMILLIAN. The biggest detriment to the project's progress, was getting the energy bill in place in a timely manner. We thought that would take 3 months. It took a little over 1 year longer. There were a lot of uncertainties, so there was reluctance to go forward by some parties until that happened.

The second most detrimental thing to the project was the incentive rate of return decisions. When it first came out, it was a very negative report; and once you read that you had to grit your teeth to really go foward. But we did, and we worked with FERC, about a 17-month effort in all, but we got that worked out and so that is done.

We have other things that we have to do like a tracking method and working with various governmental agencies and the stipulations and the things that I mentioned to you that we must also resolve in a timely manner.

The transmission companies are saying let us get a little farther down the road and show us this and show us that, and then they will look at joining, so we were on the verge of really coming to the President and Congress asking for a waiver of the Natural Gas Act because of the delay on the incentive rate of return. That is behind us now.

If there is a fast track method we encourage that, and if there is a 17-month delay, or 1-year delay, in a process that need not be when it has clearly been defined in the Nation's best interests, which this project has, by the President and by Congress, then if there is a method for quicker decisions on the fast track method, we need that.

Of course, we think we have some advantage over some of the fast track bills that we have seen, but we would like to see a bill or a method similar to what is being proposed.

Mr. RUNNELS. Is the steel for this pipeline available in America?

Mr. McMILLIAN. We are talking to the U.S steel people. There is one steel mill in the United States that can make 48-inch pipe. The steel that we require is a very tough steel, a very pure steel, very highly specialized steel. There is some question in our metallurgists' minds whether we can really produce this steel but we are working with the American producers trying to do it.

It is a common steel that is used in Russia, and it is produced in Japan, Germany, Italy, France; but we hope that the U.S. plants and the mills can produce pipe of this quality.

Mr. RUNNELS. Thank you.

May I ask you what is being done with the natural gas at this time?

Mr. MCMILLIAN. It is being reinjected into the reservoir. They do use some gas for fuel to reinject it. There is a cost, reinjection cost that is substantial; but it is not being wasted.

Mr. YOUNG. Will the gentleman yield?

Mr. RUNNELS. Yes.

Mr. YOUNG. That is State law. We do not have any flaring of gas.

Mr. RUNNELS. I am happy to hear that they are not flaring it and warming the air up there.

Thank you.

Mr. Clausen?

Mr. CLAUSEN. Thank you, Mr. McMillian, for a very constructive and comprehensive statement.

We have had you before the committee on numerous occasions, and I have always had respect for the fact that you tell it like it is without any wavering or equivocating, and I want you to know we appreciate the amount of time and effort that you have put into this.

If you were standing on the floor of the House as a Member of Congress to address the so-called fast track legislation that is now pending with a recommendation from the administration for an energy mobilization board, would you be for it or against it on the basis of your experience?

Mr. MCMILLIAN. I would be for it very much. It is a very good, strong bill.

Mr. CLAUSEN. I am going to try to do some tracking myself on the experiences that took place with the Sohio people. It was unbelievable that we could have that kind of delay and I am just wondering if there are relevant factors that occurred in the Sohio problem area to the Alaska natural gas transportation system objective here that we are seeking.

Are there comparable factors?

Mr. MCMILLIAN. We did not have the State of California. We had the State of Alaska.

We have a good working relationship with the pipeline people and the officials in Alaska. Yes, I can give you a chronological development or nondevelopment of events.

I can give you that in writing.

I cannot repeat it right now because it is too detailed and complex, but if you wish I will be glad to furnish it to you with an explanation of each item and each problem.

[In response to Mr. Clausen's inquiry, Mr. McMillian subsequently furnished the information requested in a letter dated November 6, 1979, to Chairman Runnels. That letter may be found in the appendix. See table of contents for page number.]

Mr. CLAUSEN. Yes; I think it would be extremely helpful. I asked the previous witness to do something along those same lines. I think one of the important efforts that we are attempting to accomplish here is to gather the data, the facts as they are or have been, so that we can use that as a basis of information upon which to communicate with State and Federal agencies that are involved.

We need to have a factual record, and this would be extremely helpful on the basis of experience and not on the basis of theory.

Mr. MCMILLIAN. I wish you would look at Mr. Pierce's comparison very carefully. He was very kind to us in what he said, the way they have their governmental interface and relations set up. They have made decisions, not months but sometimes years ahead of us, and I think it is not a bad process. I know that, compared with us.

Mr. CLAUSEN. On page 2 you refer to section 9 of the Alaskan Natural Gas Transportation Act and state that Congress directed Federal permits should be expedited and given priority consideration.

Of course, this is correct. However, in your opinion, has the executive branch actually followed this congressional mandate?

Mr. MCMILLIAN. I guess there was an unexpected delay in the reorganization bill that was to create the Office of the Federal Inspector.

I think that that is the main one that I was thinking about. We also had a delay, as I mentioned before, of the energy bill approval. During the uncertainty about an energy bill, rigor mortis almost set in within our industry about development of large projects, not knowing where they were really going to go, or whether they were really going to be financed.

The energy bill was another; the reorganization bill was another, but our main hurdle was the incentive rate of return.

Mr. CLAUSEN. Should the Alaskan project be included in fast track legislation, or if needed, should we simply amend existing legislation, if we conclude that our Government is not moving fast enough?

Mr. MCMILLIAN. I will tell you what we are concerned about on the fast track bill that you have. We would like to see a strong fast track bill, an effective bill that would really be fast track.

We are concerned, in comparison with some of the bills, that some of the judicial review processes that we have in our Alaska natural gas bill are better than some of the ones we see. What we would like to ask you for is the best of both.

We would like to say that we have some good traits in our bill, but if there is something that does not allow us to expedite decisions, then we would like to be included for those particular traits in the fast track bill, and I think in the Senate, Senator Stevens from Alaska did introduce an amendment along those lines that we think, if it can be agreed upon, is a very good amendment.

Mr. CLAUSEN. On the basis of your own experience, what do you think the communication between the Federal Energy Regulatory Commission and the National Energy Board has been? Do you think it has been adequate?

Mr. MCMILLIAN. The National Energy Board, I know, has been involved; their contact has been Jeff Edge. Their point of contact with FERC was Don Smith, and he has recently resigned. I do not know who their contact is now. I think it is the chairman.

I know they have regular meetings, and I know that they discuss things. I think they have a working relationship, but how effective it is, since we are not in these meetings, we do not know.

Some of their decisions favor Canadians, and sometimes we are not always happy with some of their decisions, and sometimes they are not always happy with some of our decisions.

I do know that they talk together and communicate, and I do know there was a great deal of mutual respect between Jeff Edge, the Canadian representative and our Commissioner.

Mr. CLAUSEN. Do you think it would be helpful for those of us in this committee that are going to be involved in monitoring the progress on that particular project for us to meet with our own parliamentary peers of our respective committees and the Canadian Government so that we can mutually discuss what kinds of problems they are having to address, so we do not have to reinvent the wheel in both countries?

Mr. MCMILLIAN. Very much so, and unlike our system here, most of the National Energy Board, decisions do have to go to Parliament or Cabinet, so it is very important for you to understand the Canadian point of view and they to understand yours, and I would encourage that very much. They do have hearings such as you are having today, and even an exchange of witnesses between the two countries to get an exchange of views on national policy would be positive, and I would encourage it.

Mr. CLAUSEN. As you know, and this will be my final point, some of us have been monitoring the disposition of the Alaskan oil and came to realize the number of problems that were evolving. Once we pass a law we anticipate that certain things are going to occur, but that just is not happening, so we have had a continuing monitoring role.

I think the time has come for the people in this country to recognize, like it or not, with the energy demands that are here and the kinds of geopolitical influences and pressures that are occurring every place in the world, that they have to put a very high priority on the development of an adequate, safe, and secure and very functional distribution network between Canada, the United States, and Mexico.

Am I overly concerned or underconcerned or on the right track?

Mr. MCMILLIAN. If anything, you are underconcerned. This is underway, and I agree with you we need this energy exchange; and I could not agree with that statement more.

Mr. CLAUSEN. I am concerned because of what I perceive to be a level of vulnerability. Underlying all of this is a need for an assured energy supply and self-sufficiency, and we do not seem to have people who are adequately concerned about this in positions of influence. I want to develop the most factual record possible to go to the American public and let them know in no uncertain terms that this committee is trying to develop the facts.

Mr. SANTINI. Mr. McMillian, as temporary chairman, it is my turn to welcome you.

I think we ought to put you on part-time status around here. I am sure there are other preoccupations that might not make that possible.

Are you on your timetable?

Mr. McMILLIAN. Not our original timetable.

Mr. SANTINI. How much are you behind?

Mr. McMILLIAN. In the original testimony that we had during the hearings, our target date for completion was January 1 of 1983. We believe if events had transpired we could have met that schedule; but now we are looking at a schedule of 1984, 1985, so we are off our original schedule.

Mr. SANTINI. So you are somewhere between 1 and 2 years behind at this point?

Mr. McMILLIAN. Yes, sir.

Mr. SANTINI. When will your financial cost estimate be ready?

Mr. McMILLIAN. We will have a definitive, not complete, financial cost estimate of the project by the fourth quarter of this year, which we will then base our financing plan on with our financial advisors, and our financial plans will be complete by the fourth quarter of this year around December.

Mr. SANTINI. Do you have any sense of when you will be going to the market?

Mr. McMILLIAN. Yes, sir; we plan to go to the market the first quarter of 1980.

Mr. SANTINI. Thank you, Mr. McMillian.

Thank you, Mr. Chairman.

Mr. RUNNELS. Mr. Young?

Mr. YOUNG. Mr. McMillian, let me say that the feelings are mutual as far as our respective personal roles in this endeavor. I think you have conducted yourself well, and there have been times when you have possibly offended those in Alaska because they do not understand your frustration.

The State has in no way impeded the construction of this line other than the fact that they have been unable to help finance it. That is a problem of education.

One thing you said that you are on track and you foresaw no real slowdowns under the act and under the fast track act proposed, but have you applied for any of the permits necessary for the construction of this line at this time, crossing of streams, all of that kind of stuff?

Mr. McMILLIAN. We have a constant approval or request process for permits. Now, the actual construction permits are right-of-way permits. No; we have not.

Mr. YOUNG. Do you foresee any delay at the Federal level, for example with the U.S. Fish and Wildlife Service of the U.S. Park Service?

Mr. McMILLIAN. That is always a problem. We see two real problems from that standpoint, and one of them is the snow pad construction. This concerns us because we think this concept was thoroughly disproven and if we were mandated by Government to construct on such a method or mode of construction with snow pads with the uncertainty that it could bring forth, we are afraid that we would have to come back and ask for governmental funds to do those functions.

Mr. YOUNG. Of course, my big interest and the interest of Alaska is the conditioning plant. Northwest has indicated repeatedly in Alaska that the company supports to the maximum extent feasible in-State use of the State's royalty share of Prudhoe Natural Gas. If in fact it does withdraw its one-eighth share of the gas at a point in Alaska, say Fairbanks, for in-State use, is Northwest designing its gasline to carry less gas from that takeoff point further south?

Mr. MCMILLIAN. Our time considerations include those volumes of gas.

Mr. YOUNG. Can a gasline designed to carry 100 percent of Prudhoe Bay production still operate efficiently and economically if the State withdraws its one-eighth royalty share for in-State use?

Mr. MCMILLIAN. The initial design is 2.0, 2.4 cubic feet of gas per day. That can be expanded as more gas is available. We do have flexibility in our design to go to lower or higher volumes.

Mr. YOUNG. If the company cannot economically or efficiently operate its gasline south of Fairbanks with seven-eights of the production stream, will Northwest oppose any State efforts to utilize its royalty gas within Alaska on the grounds it will jeopardize the economic viability of the project?

Mr. MCMILLIAN. I did not get the last part of your question.

Mr. YOUNG. If the State decides to use it, will Northwest oppose any State efforts to utilize its royalty gas within Alaska on the grounds it will jeopardize the economic viability on the project?

Mr. MCMILLIAN. What are you going to do on the financing?

Mr. YOUNG. That, we will get to in another question.

Mr. MCMILLIAN. I would like to work with the State of Alaska in optimizing their resources. Our decision has always been, that we are willing to work with you and will continue to try to work with you, but I think you can understand if we do not get a positive response our attitude would naturally change.

Mr. RUNNELS. Would the gentleman yield at this time?

Mr. YOUNG. Yes.

Mr. RUNNELS. I keep hearing about Alaska helping to finance the project. You do not actually mean that Alaska would have to put out bundles of money to finance it, do you, Mr. McMillian?

Mr. MCMILLIAN. That is what the Presidential order says, and that is what you approved in Congress and, yes, we expect them to do it.

Mr. RUNNELS. As Don Young said, it does not say Alaska has to do it. It says they are encouraged to do it.

Mr. YOUNG. I am sure Mr. McMillian is doing all he can.

Mr. RUNNELS. Do they have bonding authority to do this in the State of Alaska?

Mr. MCMILLIAN. We thought we did, but we kind of wonder now, and we have been working on it for 2 years, but they do have that authority. They could do it and raise revenue bonds.

We put a proposal to the State of Alaska that we thought was probably the least onerous type of request that we could make, and we asked for $1 billion worth of tax-free bonds. The project would be the sole source of credit.

Mr. RUNNELS. I thank the gentleman for yielding.

What types of money are we talking about?

Mr. McMILLIAN. For 2 years we could not get this concept through and get anything done on this concept; and what I am saying, and I mentioned this to the Governor, if they have one-eighth of the gas and are going to use it intrastate, let us see them step up the table and pay one-eighth of the cost.

Mr. YOUNG. And get one-eighth of the profit back, if they are going to finance the line. That is negotiable. I am sure we are working on that. This is a line of questioning really basically to get right down to it, and you know what it is and the committee should know what it is, it is where the conditioning plant should be located.

That is what it is all about. I can tell you how to get that line financed real quickly if that conditioning plant is put in the proper place in the State.

If it is put in Prudhoe Bay as suggested by FERC you will have all kinds of problems and so will FERC. Keep that in the back of your mind.

Northwest is committed to delivery, I believe, under contract, a minimum number of Btu's, 1,100 Btu's per 1,000 feet of natural gas across the Alaskan border into Canada for further transmission to the lower 48.

If the State withdraws all or part of its royalty gas for in-State use, will this action reduce the number of Btu's to below the level required by either contract, treaty or technical terms for that portion of the gas downstream of the Alaskan takeoff point?

If you cannot answer that now you may get an engineer to answer it, too.

Mr. McMILLIAN. Do you mean if you withdraw certain liquid hydrocarbons from your gas stream, then how does that affect the Btu value of gas and will it affect it to below 1,100 Btu's?

Mr. YOUNG. Does it affect a treaty or agreement or contract, as we have set it up now with Foothills and within the act itself?

Mr. McMILLIAN. Let me speak to this in general and see if I can answer your question.

The Canadians made an early decision as to pipe diameter; on 48-inch pipe they chose 1,260 pounds, and it has been approved by our Government and the Canadian Government stated at that time given the state of the art of history, that for this diameter pipe under these kinds of conditions this was the state of the art that they felt comfortable with and did approve.

So that means that when we go into the State of Alaska, we have 1,260-pound, 48-inch line. And they also negotiated between the two countries to build a 56-inch-diameter pipe where the Canadian gas can connect with the Alaska system. The amount of liquids that you can carry in a gas stream are a function of the pressure and temperature.

What you are going to be looking at is at the lowest pressure that you are looking at in the entire transportation system, which is a 56-inch line in Canada and that is 1,100 pounds. We can reconstruct and it depends on the processing method that is chosen; but we can reconstruct this gas and process it so it has 1,150 Btu's. It depends on which liquids they wish to take from Fairbanks, and so on and so forth.

I would like to speak to the processing plant.

In my opinion, and I think in most other people's opinion, you would not be able to transport the gas from Prudhoe Bay to Fairbanks without a North Slope processing plant. You have to remove the water vapor from the gas stream, and the CO_2. You have to remove the sulfur from the gas stream. You have to remove the heavier hydrocarbon C_5's, plus you have to remove butanes and propanes because if you do not you have hydrates in your system.

So there has to be some form of processing plant at the North Slope. That does not mean that a petrochemical complex cannot be built in Fairbanks. There is enough ethane in this gas stream at 2 billion cubic feet a day to build two world-size plants with the ethylene source of your petrochemicals.

We have heard there is a world glut of ethylene and you want those other goodies. Well, to find those other goodies that you want, let us know what they are, and let us know what kind of petrochemical plant a responsible party wants to invest in.

I think we can get you the liquid hydrocarbons that you want without endangering the Btu's. It might be 1,150 or 1,095, but the Btu will still be about what we projected.

Mr. YOUNG. I know this is a complex issue and a lot of rumors are heard. I believe you know my interests and the Interior's interests and the State's interests: The main conditioning plant be established in the interior of Alaska. I am not an expert on what can be taken off and what should be taken off and what is marketable. I think that can be worked out.

Our biggest fear is it will be established in Prudhoe which will take off some of the by-products to use for bunker fuel, and I think that will be a terrible disservice to the United States and, No. 2, it will go by Alaska in the lower 48 and there is going to be a large profit down there, and everybody says that is fine.

Frankly, we do not care about the profit in Alaska anymore because the surplus of dollars, of funding moneys, created by the previous administration and this administration will be of little value.

We need to broaden the economic base within the State of Alaska to establish some interfacing so we do not have the up-and-down process. That is what we are really driving for.

If we can work together on this, and I am sure we will, we can solve a lot of your problems and this Nation's problems and certainly a lot of Alaska's problems.

Mr. MCMILLIAN. I know what you are saying. I think it is terminology when you say processing plant in Fairbanks. You cannot eliminate that much CO_2 in the Fairbanks area. There are other environmental concerns you have to think of carefully.

I think what you want is a petrochemical complex there. If you do have somebody to define whether they want ethylene or what type, we have enough ethylene in that stream for two world-size plants.

Mr. YOUNG. Basically, in the designing you said you were going to spend $400 million in designing the line. Have you taken into consideration the utilization of the State gas, the off-stations on the line?

Mr. MCMILLIAN. Yes.

Mr. YOUNG. Good to hear that.

There has been much discussion about pressurization of line, increasing the pressure from Prudhoe Bay to Fairbanks.

Is that an engineering feasibility? Can you do that and lower the pressure at Fairbanks after the liquids are taken off?

Mr. McMILLIAN. A decision was made by the Canadian Government that operation of the system should be the state of the art. Our opinion is that once you go through a new technological breakthrough, talking about 48-inch-diameter pipe, and unknown costs of time, you go through a technological barrier.

Most of the 48-inch systems are in 1,000 pounds but we are going 25 percent over. If you went to, say, 1,680—that was a popular pressure proposed at one time and was very controversial—you are going 68 percent beyond the known actual technology that we have.

So we feel that to privately finance this we have to have something that we know is reliable, so that we know that our cost estimates are going to be reliable when we design it and we know we can weld this thickness of pipe and other factors.

Mr. YOUNG. May I finish with two questions?

One is, you are saying you want the 1,680 that is unpressurized line and could possibly open it up to an environmental lawsuit?

Mr. McMILLIAN. It is not environmental so much. I think it is a technical problem to create reliability in cost estimates and the other factors that are involved, so it is more of a technological problem than environmental.

Mr. YOUNG. On the bottom line, Northwest Pipeline Consortium will or would support a feasible petrochemical industry in the Fairbanks region if properly proposed to you?

Mr. McMILLIAN. If properly proposed and if it did not require an unusual or exotic technology, we would be glad to support it.

Mr. YOUNG. That is good to hear.

One last thing is, the comment you made about Mr. Rhett I think was well taken—the Federal inspector. I will ask him questions. I hope you will be able to help as time goes by. There seems to be a tendency to underfund his office at this time.

If you see any delaying factors as we go through, I hope you will contact this committee because one of the things we found out with TAPS, it was a whole mores of trying to work with the Federal agencies and getting things agreed to and passed and moving along.

Mr. Chairman, I have some other questions for Mr. McMillian, but I will submit them to him. If he will answer them in writing, I will appreciate it.

Mr. RUNNELS. Mr. Lagomarsino?

Mr. LAGOMARSINO. Thank you, Mr. Chairman. I have just a couple of questions.

Do I take it, Mr. McMillian, that your statement is really not that much different from Mr. Pierce's when you talk about the role of Government? You say in your statement that most of the obstacles have been removed when you talk about the Natural Gas Act, the appointment of the inspector and so on.

Then you also have pointed out that the delay in those things has caused the delay in the scheduling from 1983 to 1984, hopefully.

Are we talking about a half empty glass of water as compared to a half full glass of water?

Mr. McMillian. I think that is right. We have these major hurdles behind us that require us to do things now to meet the time schedule. It gives us the freedom and flexibility to go ahead.

We have to file for our certificate and we plan to do it the last of June, first of July, 1980. We would like to have that certificate processed in 6 months and I think it can be because the Federal inspector whom we work with has worked together with us on problems so that this should not attain the complexity of most certificates.

So we hope when we reach that point that it will be expedited in a very efficient manner.

Although we are over the hurdles, the governmental hurdles, there will be others we have to face in the future. That is why I was looking for the best of both worlds in your fast track.

We feel the mechanism we have in effect here with the Federal inspector will allow us to go ahead, but in case something happens——

Mr. Lagomarsino. I gather from what you were saying earlier the amendment Mr. Stevens got into the fast-track legislation would help take care of your problem?

Mr. McMillian. Yes, it would give us the best of both worlds.

Mr. Lagomarsino. I would take it one of the reasons you are having problems in getting additional investors is because of the uncertainty about the regulatory process as we go down the road?

Mr. McMillian. That is part of the problem.

Mr. Lagomarsino. Thank you.

Mr. Runnels. Mr. McMillian, I want to congratulate you on your fine testimony. Now I know why you are chairman of the board and chief executive officer—because you certainly know your answers.

You have two gentlemen with you and it is 1 minute before noon. Which one would like to present his testimony at this time?

Mr. McMillian. I would like Mr. Millard first. Mr. Moolin is going to go into more of the problems actually to be faced and might require more time. So I would suggest Mr. Millard go ahead at this time.

Mr. Runnels. You are the money man. Please go ahead.

Mr. Millard. Thank you, Mr. Chairman.

I think I have been identified by Mr. McMillian in his introductory remarks, and in line with the chairman's admonition, I would like to say that as it frequently happens when you elaborate after Mr. McMillian, one has very little left to do when he has finished. I will only hit the high spots.

Perhaps the most important thing which I can say to you gentlemen of the committee is that there is a great deal of conversation going on about the fact that there are difficulties, that there is a doubt, that there is uncertainty as to whether this pipeline can be privately financed.

I think what all these commentators and critics overlook is the fact that the work on the financing in a true sense had not yet begun. It could not begin because there was no basis in law, in regulatory practice, or in important elements of the total mosaic of this financing which would have made serious negotiations with financial institutions possible.

Until the passage of the Natural Gas Policy Act, until the determination of the rate, until other equally important things, until the decision in the matter of the incentive rate of return, and until the appointment of the Federal inspector, there was no basis to negotiate with financial institutions.

I think that the people who jump to the conclusion that something which had not begun had failed, act a little bit like men who would permit the travesty of a very famous remark in this form: They are saying you have not been given the tools; have you finished the job?

Now the great progress which has been made in the field of regulation in the last 9 months beginning with the passage of the Natural Gas Policy Act has brought us almost to the point where we can begin seriously negotiating with the financial institutions for the financing of this pipeline. But not quite. We are not quite there because the two matters remain which have been frequently mentioned this morning.

The President's decision wisely stated that it is based on the expectation that the beneficiaries of this pipeline will participate meaningfully in its financing.

I believe that I should testify to the fact that it was not Northwest Alaskan who failed in trying to initiate this work at an early date. We have suffered sometimes disappointments and sometimes just an attitude which might be described as a lack of response.

Now we have full understanding for some of the delays which we encountered on that score both with the oil companies and with the State of Alaska. They have their problems, too, some of which have been resolved in the last few months as ours have been resolved. But they also have profits, and while it is true that some of their profits are a cause of their problems, where the financing of the Alaskan pipeline is concerned that connection for opportunity does not exist.

I think it may be worth your while to see the order of magnitude of what we are talking about. I think for all the beneficiaries of the Alaska pipeline, meaning the oil companies and the State, on the pretax basis the daily cash flow today is on the order of $10 million. I believe that the expansion of crude oil production will increase this cash flow by an order of magnitude of 30 to 40 percent. But I also believe that the incorporation of the Prudhoe Bay gas into the natural gas supply of the Nation would lead to a further increase in the cash flow by the same order of about 30 or 40 percent.

We are dealing, therefore, with very large numbers, and these numbers are important to us because they lay the foundation for what we consider—and we have reason to believe that the oil companies consider in the same sense—as a real basis for harmonious cooperation between our project and the two beneficiaries in financing the pipeline through a massive presence of the beneficiaries' capital in the investment cost of the line.

I think it is fair to say, Mr. Chairman, that these base profits cannot be realized without the existence of the pipeline. That is obvious. But it is fair to say that it will be extremely difficult to finance the pipeline privately without that contribution.

Congressman Clausen said at the beginning of this meeting this morning it feels almost like yesterday when the act was passed. If I may say so, these 3 years have been very long years. We, for the reasons which I stated, have been condemned to inaction. We are just at the point here we believe financial action can begin. Unfortunately, it is not only a matter of time lost. It is also a matter of ground lost. The facts of finance today are very different from those which existed in 1977. We are dealing with inflation, we are dealing with interest rates and with a rate of inflation unprecedented in the history of the Nation. None of that has led us to jump to the easy conclusion of saying it is time to be done. We are just about, with confidence and determination, to test our belief that it can be done provided assistance in this operation which we need and which we think is justified from the point of view of the parties to whom we look will be there.

I believe that the prebuilding of the Northern Border to which both Bob Pierce and John McMillian referred is an excellent example of the vigor and the inventiveness of the financial community when it can operate in the framework which makes it practical to try to accomplish a certain aim.

I have real hope that the Northern Border will be operative even before ground day on the big system, and that means in a very short period of time.

I also have confidence, and I would like to close by stating that, that when the project moves from being a conversation piece at the general bankers gathering supported or not supported by costs to the area of real hard work, the financial community will respond to it with the full awareness of the national priority which the importance of the Alaskan pipeline has today for the country.

Thank you.

Mr. RUNNELS. Thank you, Mr. Millard.

I understand you are chairman and senior managing director of your firm; is that correct?

Mr. MILLARD. That is correct.

Mr. RUNNELS. And that you have acted for the financial advisor and have testified in this capacity before the Federal Power Commission and committees of the House and Senate.

Mr. MILLARD. I have, sir.

Mr. RUNNELS. You mentioned doubt and uncertainty on the part of those who are saying in a whisper that this pipeline cannot be financed by private individuals. You say they are overlooking one thing, that those in the financial community have not yet begun but are just poised to begin.

Is that correct?

Mr. MILLARD. That is correct.

Mr. RUNNELS. Mr. Clausen said it only seemed like yesterday when the act was passed. Can you tell me what interest rates were when yesterday occurred, when the bill was passed?

Mr. MILLARD. I meant to look it up yesterday but I did not. Speaking from memory, I will say the prime rate in 1977 was on the order of 8 percent and it is today 14½.

Mr. RUNNELS. From 8 percent to 14½. Can your memory tell you what inflation was running at in 1977?

Mr. MILLARD. Between 6 and 8 percent as against 12 to 14 today.

Mr. RUNNELS. Thank you. We now have a timetable where Congress has acted, the President has acted, and now we are waiting on either States or oil companies or somebody to make these other commitments.

Once these commitments are made, how long do you think it will take financial institutions to agree to fund this pipeline?

Mr. MILLARD. I think it may be worth mentioning that the smallest part, if any, of the financing will be in the nature of a public sale. It will be in the nature of private placements with financial institutions here and maybe abroad.

I think that without that in camera aspect of this financing it would take years and it would really be a self-defeating process because you need a commitment of the totality of the funds required before you break ground.

Given the fact that it will be a private placement, I hope that it could be completed essentially in a 6-month period. There will always, Mr. Chairman, be side aspects of the matter which have to be resolved as time progresses but I think the bulk of it, what is necessary in order to get started, can be done in 6 months.

Mr. RUNNELS. Thank you, Mr. Millard.

Mr. CLAUSEN. Mr. Millard, you clearly are recognized and respected as, if not the most knowledgeable financial advisor in the field, certainly very near the top, and I think you lend a high level of credibility to the hearing process that we are attempting to conduct, so we appreciate very much your taking the time to come down here today.

Would you venture to guess or project what these scheduling costs are going to be, the money costs for the projects between now and 1984 in light of the history of inflation, and interest trends since 1976 that you alluded to earlier?

Mr. MILLARD. Mr. Clausen, would you be equally satisfied with an answer which is slightly different from the question which you asked and which would be an answer to the question: What it would be if all of it were to be financed today or tomorrow or the day after.

Mr. CLAUSEN. That is fine.

Mr. MILLARD. I think we are dealing with a long-term interest rate of somewhere between 11 and 12½ percent.

Mr. CLAUSEN. On this project?

Mr. MILLARD. On this project.

Mr. CLAUSEN. For the financing to complete it.

Mr. MILLARD. That is right.

Mr. CLAUSEN. Coming from you that has substance. As I understand, you have had a little experience in this field. Would you relate that experience to the committee on the basis of your background. I understand that you have been involved in a few projects like this for how many years?

Mr. MILLARD. I have been a partner of the predecessor firm of Loeb, Rhoades, Shearson since 1944 and associated with it since 1940, and I probably was the senior man on three or four large intrastate pipeline financing, to wit, the financing of Trunkline, the financing of Gulf Columbia and the financing of Trans-Western, all three pipelines which are financed as project financing, in other words, not depending on the credit of other parties.

Mr. CLAUSEN. With your previous experience and knowing what we are faced with in this particular project, the magnitude of which appears to be somewhere in the range of $15 billion to $20 billion, does this not frighten you away from your willingness to coordinate the financial aspects of the project?

Mr. MILLARD. Sir, it would be wrong and almost improper if one were to look at the $15 billion project without some degree of trepidation. We feel it. But what helps us a great deal is that we are justified in looking at it in what I might call a segmented way.

There are really four projects from the point of view of the mechanics of financing. There are the two Lower 48 pipelines, the western leg and Northern Border; consider them as having been financed. There is Canada. Robert Pierce spoke with deep knowledge and with the confidence which has always been the hallmark of his company, about their ability to get the job done.

True, some of that Canadian financing will overflow into the U.S. market because the U.S. capital market has always been a source of capital for Canada but it will be bolstered, underpinned and really firmly founded in huge financial resources which public and private institutions in Canada possess which are deeply interested in this particular project.

So we are left now with Alaska. Alaska, as we all know, has been price-tagged for the purposes of these discussions with $6 billion. We believe if we solve the problem of the regulatory environment and of our relations to the parties concerned, these $6 billion can be financed.

Mr. CLAUSEN. References are made on page 5 of your testimony to the so-called financial agreement that you developed between the public and the private sectors of Canada. Would this be an invasion of privacy or are these public sector documents which could be made available to us so we could have the benefit of that kind of arrangement? What would be your response to providing that information?

Mr. MILLARD. Mr. Clausen, I did not refer to any private documents in contradistinction to public documents. I said that public and private sources of financing in Canada would be available.

Mr. CLAUSEN. So there is no formal agreement between the public and the private sector organizations?

Mr. MILLARD. I am not aware of it.

Mr. CLAUSEN. You place a very heavy emphasis on:

> A satisfactory financial agreement with the producers must precede serious conversations with the financial institutions. Failure to obtain that agreement could jeopardize private financing.

Could you elaborate on that?

Mr. MILLARD. I think it can be done in simple words as follows: The world is aware of the importance of the economic contribution which the marketing of Alaskan gas would make to the well-being of the oil giants owning Alaskan gas, and I think it is also known by one and all that all the parties concerned, including these three companies, are very much interested in matters which concern the public welfare in the field of energy.

A refusal by the oil companies to do their financial share, which can be measured in general terms remembering what they have done when it came to financing the movement of the crude oil, and the general development of the Prudhoe Bay field would perhaps be regarded as a vote of no confidence, especially since the very same parties are the ones who probably have maximum experience in the engineering technical and organizational problems which the construction of this pipeline must face.

Mr. RUNNELS. Would the gentleman yield at that point?

Mr. CLAUSEN. Yes.

Mr. RUNNELS. Mr. Millard, on the Alaskan oil pipeline, who owns that pipeline?

Mr. MILLARD. Three companies primarily. In addition to those, there are two or three smaller oil company participants. The largest owner is Standard Oil of Ohio controlled by British Petroleum. Atlantic Richfield and Exxon come next. I believe that amongst the three they own something on the order of 96 percent of the stock of TAPS.

Mr. RUNNELS. Is the reluctance on the part of the oil companies and those who own the oil or gas in Prudhoe to join this system because they do not own the pipeline?

Mr. MILLARD. Mr. Chairman, I find that this is a very difficult question to answer. It requires more knowledge of a hopefully logical and probably very complex attitude in oil company management with respect to the problem which you raise.

If you go back in the history of the American oil industry you will find that the big oil companies have spent 20 years to get out of the natural gas business because they were afraid of regulation. Could it be possible that they want to get back into something which they dreaded so much in the past. One sometimes has the impression that they would welcome combining a higher participation in earnings of the new system than just the ownership of bonds of that system would give them, and I do not believe that northwest Alaskan has ever said a clear-cut no to any such aspirations if they were supported by positive action justifying the proposal.

Mr. RUNNELS. Thank you.

Mr. CLAUSEN. I think for the moment that will suffice. Would you be willing to respond to follow-on questions that some of us on the committee might like to make after we have concluded our hearings? We would like to write to you and then have you respond in writing to some follow-on questions. Will that be agreeable to you, sir?

Mr. MILLARD. I am always available to every member of this committee at any time.

Mr. CLAUSEN. Thank you very much. I think your presentation has been very helpful. I gather from what you are saying that there is a need for something in the way of more of an equity on the part of the producers, an equity interest in this pipeline, than has now taken place.

Mr. MILLARD. If I may, I would just like to say I am not saying at all I do not want to make up anybody's mind, including the oil companies, as to whether they should or want to have a managerial or a decisionmaking participation. If they are talking about remuneration for money, then the gas companies probably will listen to them with an open mind.

Mr. CLAUSEN. Are you saying equity capital is needed?

Mr. MILLARD. No, I am not saying that. That was asked by the chairman, whether they would want to have or whether I suggested that they wanted to have something like an equity participation. I answered that I have not quite said that but I think their willingness to invest might be encouraged if we can talk to them about the fair distribution of the earnings of this pipeline across the table.

Mr. RUNNELS. I think it should be made clear that it is the President's decision that forbids the oil companies, which we have been talking about, from holding an equity position in this pipeline.

Mr. MILLARD. We are very much aware of that.

Mr. RUNNELS. The members of the committee should understand that.

Mr. McMILLIAN. I think they are referring to equity in the light of and in the context of managerial control because there could be a very definite conflict between the producers and the gas transportation companies if they had managerial control of the project.

There are many forms of equity. There can be preferred equity where they have no voting rights but have the same income rights as common equity. There are many ways this could be structured within the imagination of man. So we feel that the debt markets will give us our debt. We feel that the pipeline companies themselves, with the help of public offerings, can get the equity.

A real concern is the oil line heritage we were left with and the tremendous cost overruns that were experienced. We are living with that heritage every day. We have to explain that all the time. So what we are asking in our first concept proposal to them is a cost overrun pool of funds that the financial market would be comfortable enough with if there were enough funds for completion.

We think the debt market has enough funds there, we know with the public markets we can create equity as required. We would not mind talking to them about participating in higher earnings as Mr. Millard said, because we think it is fair.

Mr. RUNNELS. Mr. Lagomarsino.

Mr. LAGOMARSINO. I just want to say I very much appreciate your testimony. I think it is very helpful. You have laid it out so we get a better understanding of exactly what the real problems are. Hopefully, as these hearings develop, we can explore some of these things perhaps with you and with others to see if we can be of some assistance in working it out.

Mr. MILLARD. May I thank you for your kind words and thank you in particular for your willingness to work with us.

Mr. RUNNELS. Mr. Santini.

Mr. SANTINI. No further questions, Mr. Chairman.

Mr. RUNNELS. Mr. Weaver.

Mr. WEAVER. Thank you, Mr. Chairman.

When you say working with us, sir, do you anticipate a change in the law in any way?

Mr. MILLARD. It is not quite my domain to think in legislative terms but this frequently occurs to members of my firm and members of Goldman Sachs and of Lehman Brothers, our financial advisers to the project. Certain things which appeared logical in 1976 are less appropriate under the conditions existing today and while no one wants to add to the legislative burdens in Congress, if these matters become very important, which is more than secondary we will have to come to you and put them before you.

Mr. WEAVER. What is the primary feature you are discussing now?

Mr. MILLARD. I think most important now in the ANGTA legislation is the wholesale provision that any shipper of gas can avail himself of the facilities of the system without contributing to its construction, organization, and to all the problems which we are seeing today.

This had some meaning in 1976 for the simple reason it appeared that participation in the system would be at the premium value. As you know, participation in the construction of the system is a task which requires long days and nights in which you worry an awful lot about that.

Mr. WEAVER. Are you asking also the possibility the oil companies be allowed to have an equity share?

Mr. MILLARD. No, sir. I would certainly not suggest that the oil companies, given their long record of a desire to stay out of all regulated industries, be allowed to participate in the managerial function, direct or indirect, in the Alaskan gas transportation system.

I think that the word "equity," as Mr. McMillian suggested, is something which requires definition. We would not mind if they would participate in earnings beyond the limit of a simple bond interest.

Mr. WEAVER. Are you asking in any way for any Federal Government assistance financially?

Mr. MILLARD. I tried to make the point that although some of our well-wishers—and very many of our not-so-well-wishers—say we can do it without such assistance, we are steadfastly continuing in the difficult role of doing it without Federal assistance.

Mr. WEAVER. I know in Mr. Millard's testimony—I have not had a chance to read Mr. McMillian's testimony—you say, "The appointment of a Federal inspector dedicated to the success of the process was a great step forward. This will help speed the project," and, "The sponsors will receive speedy review and approval" of design changes on the job.

I find that all very interesting. In light of that and other matters, some environmental groups have suggested there be set up an oversight committee to watch over environmental considerations as the pipeline is constructed.

Mr. McMillian, would you see any problem with an oversight committee watching to see that we were proceeding in a sound environmental manner?

Mr. MCMILLIAN. No. We have a good working relationship. If it is the type of oversight that advises the Federal inspector, we think that could be very helpful and beneficial to the Federal inspector. We need an operators committee too.

Mr. WEAVER. Thank you.

Mr. RUNNELS. Thank you. The Chair would like to announce that we will recess for lunch and be back at 2 p.m. and start where we left off. Thank you very much.

[Whereupon, at 12:40 p.m., the subcommittee recessed, to reconvene at 2 p.m., the same day.]

AFTER RECESS

Mr. RUNNELS. The subcommittee will come to order.

We will continue from where we were before we recessed for lunch. Mr. Frank Moolin, currently president of Frank Moolin and Associates, Fairbanks, Alaska is now our witness.

You may summarize your 56-page statement, and then we will ask some questions.

Mr. MOOLIN. Thank you, Mr. Chairman.

My comments are going to be brief, as you suggested. They are going to certainly synthesize from the written statement that I prepared and submitted to the subcommittee. I am going to shift gears now and move away from the fundamental program issues that were discussed by Mr. McMillian and the financial issues discussed by Mr. Millard. I am going to discuss what I refer to as the project issues.

I am going to speak to four basic points.

First, there are many similarities but there are also many differences between the proposed gasline and the Alaska crudeline, but I think the subcommittee should recognize that with few exceptions both the similarities and the differences are such that the risks and the potential for cost increases the gasline is going to be exposed to are going to be considerably less than was the case for the crudeline.

Second, today there is much more understanding about the process of building a large pipeline in Alaska. This is true not only from the technical point of view but certainly with regard to management and the Government involvement.

Third, the transporting chilled gas across permafrost is inherently easier than transporting hot oil. And with several exceptions I believe that the technology required to do this is state of the art.

Fourth, the crudeline was a pioneer project. It was built across a tremendous expansion of land with nothing in the way of support infrastructure and to a large extent the gasline is going to be able to take advantage of existing camps, roads, work pads, and so on.

Finally, that a key to cost-effective completion of the pipeline is going to be the commitment of governmental agencies to maintaining a rigorous timetable for making decisions; that Government must recognize that many decisions are going to be made with less than perfect information, yet they are going to be informed decisions based on the best engineering advice that is available.

It is not necessary to reinvent the wheel and relearn many of the lessons we have already learned from Alaska. I cannot emphasize too much to this subcommittee the importance of clear, concise and unequivocal decisions using what we learned from the construction of the crudeline and applying that to the construction of the gasline.

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Recently there has been, and we are pleased to see, some improvement in the decisionmaking process from Government and certainly with the assignment of the Federal Inspector we have confidence that Government recognizes the role that it plays and the very signal role that Government plays in affecting the costs and the schedule for the project.

If I had to sum my entire testimony in a single statement, it would be that the gasline is a different line, the gasline is a different project, being built at a different time under different physical, social and environmental conditions, but it has a huge advantage because of the tremendous body of knowledge that was developed during the design and construction of the crudeline.

My prepared testimony goes into 11 specific areas related to the construction of the crudeline and how the crudeline and gasline are similar or different, but right now I am going to limit my comments to only several of these. They are going to be limited to the infrastructure; second, to the physical scope of work; third, to some of the planning abilities now associated with the gasline, and fourth, the interface between Northwest and the various regulatory agencies.

As far as infrastructure is concerned, the crudeline was a pioneer project. The gasline is not going to be a pioneer project because much of the infrastructure that was required to build the gasline is already in place. The technical problems associated with the crudeline did create cost increases and delay but a very significant cause that also had serious ripple effects throughout the entire project was the total lack of infrastructure, infrastructure so frequently taken for granted in the lower 48.

Infrastructure was almost totally lacking—and when we are talking about infrastructure we are talking about roads, communications systems, camps, places for people to eat and sleep—was totally lacking. There were no roads north of Livengood—a 70-mile road had to be built to the Yukon River and a 360-mile road from Yukon River to Prudhoe Bay.

In October of 1975 we had completed 40 percent of the crudeline. Until that time there was no vehicular access across the Yukon River. Today there is vehicular access all the way north of Fairbanks to Prudhoe Bay, including crossing the Yukon River. The gasline will not by any stretch of the imagination be subjected to the type of uncertainty and disruption that existed during the early phases of the crudeline.

For Alyeska we built 19 pipeline camps; actually a total of 29 camps were built to accommodate a peak work force of 15,000 people. These camps by and large exist today; Northwest has already acquired many of them and intends to make use of them for their facilities.

I do not want anyone to misunderstand me, to understand that the infrastructure existing in Alaska here today is akin to what is found in the lower 48 because it is not. But there have been significant improvements. The fact is, many of the concurrency problems, the pulling of one's self up by the bootstraps that Alaska had to go through, will to a large extent not exist on the gasline.

I do have some concerns about the effective use of some of the infrastructure, however, because I hear comments from regulatory agencies that they may not permit the use of several of the Alaska camps such as the Prospect Creek and Galbraith, primarily because of small oil spills that occurred, not crude oil but fuel oil spills that occurred in the camps. I believe these problems have been remedied by Alaska.

It still may be necessary for Northwest to take some further action to prevent the situations from developing again. But to require these camps to be moved, to be totally relocated, which has been advocated by some governmental officials, would in my opinion result in an unnecessary environmental impact and certainly unconscionable cost increases. There is nothing wrong with using these camps to build a gasline and I think that everything should be done both by Northwest and the Government agencies to concentrate disturbances at existing camp locations, not create additional problems by having to relocate these small cities, and the tens of millions of dollars associated with them.

The second area I am going to speak to is the physical scope of work, to point out the basic differences between the crudeline and the gasline. I described the crudeline project; I would like to say the crudeline is a civil engineering project that happened to have a pipeline associated with it.

I mentioned the 412 miles of road that had to be built, 137 miles of access roads, the fact there was about 93 million cubic yards of earth work required for the project, and even projects like the Fort Peck Dam only require about 100 million cubic yards of dirt.

One of the concerns, certainly it is in the best interests of Northwest to take advantage of much of the infrastructure, much of the work pad and the dirt work and the civil work already done by Alyeska. It is difficult to find suitable gravel locations, for instance, in the State of Alaska. Many people do not understand this. But gravel is a scarce commodity in the State of Alaska. Many of the best and least costly gravel sites were already mined by Alyeska for building the crudeline. Considerable costs were involved in the mining, hauling, placing and rehabilitating the material sites.

I believe that the gasline should make maximum use of the work pad that was constructed for the crudeline. However, there are comments being made by various regulatory agencies that the gasline alinement should deviate substantial distances from the crudeline. If that takes place, an entirely new work pad would have to be built. Directionally this would significantly increase the gravel requirements and only if there is substantial cost or schedule reduction benefits should any such deviation like this be considered.

I mentioned before a cold gasline is inherently simpler than a hot oil pipeline. One has to be careful to avoid tainting—and I use that in the best of possible sense—tainting the gasline with many of the overly conservative and costly approaches that were mandated for crudeline construction.

I recognize that the Alyeska work pad must be rehabilitated at certain locations, thickened, perhaps widened, extended in width, perhaps additional insulation placed under it so that the belowground gasline can be placed about 80 feet from the centerline of the crudeline. In absolute terms, this is not a small amount of work; it is a significant amount of work but it is nevertheless orders of magnitude less than the effort that would be required if an entirely new work pad had to be constructed to build the gasline.

Another element of the physical scope of work that I would like to make a comparison with is the aboveground pipeline system. The quantity of materials and the logistical support and the transportation and the construction that was required for the crudeline was immense compared with what is going to be required for the gasline because the crudeline required 423 miles of the pipeline to be placed aboveground.

The gasline is planned to be in many respect a conventional pipeline. The gas is going to be chilled, it should not result in any thermal degradation of the permafrost. There should be few if any places where the gasline needs to be located above ground. The only exceptions should be river crossings and stream crossings. Many of the negative surprises that we experienced in building the aboveground crudeline, the upsetting situations, cadence breaks—cadence is the essence of cost-effective pipeline construction—are going to be considerably less for the gasline construction. Yet there continues to be a number of written statements from members of regulatory agencies indicating that it may be desirable to place substantial lengths of the gasline above ground.

In my opinion, there is no reason for the gasline to be above ground and the design solutions that we had to use on the crudeline primarily because hot oil is being moved through that or you had or unstable materials are not applicable to the gasline.

One final area that I should bring to your attention about the difference between the gasline and the crudeline construction is the fact that the gasline is planned to be totally buried, essentially totally buried for 741-mile length, whereas only 375 miles of the crudeline were buried.

Using conventional ditching methods, including drilling and shooting much of the ditch, I do not expect unusual problems in ditching for the gasline. However, this statement is predicated upon being able to work from a normal gravel work pad to perform and support the ditching and subsequent pipelaying operations.

In permafrost, ditching is going to be done when the ground is frozen. However, there are statements being made by members of regulatory agencies promoting the use of snow pads. Mr. McMillian referred to this earlier, promoting the use of snow pads, where you actually lay a road of snow in essence down on top of the permafrost instead of gravel, proposing that the ditching for the pipeline be performed only in the wintertime working off these snow pads.

The concept of trying to perform substantial ditching and then subsequent pipe-stringing and laying from a snow pad during the coldest seasons of the year is totally impractical because of two specific reasons: first, because much of the work would have to be done in the coldest and least productive time of the year, but second, and probably most importantly, because of the loss of flexibility.

Working off a gravel pad gives a degree of flexibility that is impossible to obtain with a snow pad. Certainly that is true for construction of the gasline, but even more true for operation of the gasline when, if problems did exist—the settlement, for instance, it would be necessary to gain access to the line, there would be no gravel pad to get access alongside of the line.

Regardless of the best and the most knowledgeable predictions that were made by the best experts that we could find about the working and weather conditions in Alaska, so-called abnormal conditions caused deterioration of the 6-mile-long snow pad that Alyeska built and required additional construction season to complete the work. If this happens to substantial lengths of the gasline, then I can say with considerable certainty that the schedule slippage will occur and this will be equated into cost overruns.

Just a few words about the planning abilities. Certainly for the crudeline there was little in the way of data base, little in the way of data about working in the Arctic. For the gasline this is not going to be the case. A substantial and even overwhelming data base was generated by Alyeska about work along with the crudeline.

The data base probably includes the most comprehensive soil information that exists about any 800-mile-long stretch of ground in the world. However, a word of caution about this. That is one of the things that can be learned from the crudeline planning and construction, the fact that the number of options and the number of alternatives that are available cannot be kept open forever. There has to be a definitive plan of identifying options, eliminating options that are not cost effective and reducing the number of parallel pads that a project can be carried down.

There is a tendency, what I identify as the Alyeska syndrome, to continue to study, explore and to find different questions that can be asked without making engineering judgments regarding the significance of these questions. This is devastating to the progress, morale and effectiveness of the project team. This can only be brought under control by firm direction from management, both from within Northwest and the Federal inspector's office.

Finally, I conclude my oral statement by making a number of observations about the several recommendations that I think are essential that have to be taken by Northwest and the regulatory agencies.

First, this is the participation, the acceptance and the commitment of agencies. I cannot express to you too strongly how much impact the Government has both on the cost and the schedule of this project, or will have on the cost and schedule of this project.

During planning and design and early phases of the project, it is essential that the Government agencies participate, accept and, most importantly, commit themselves to identifying site and time-specific constraints. This level of involvement is necessary to come up with the detail that is required to build the project and to identify the scope of work and reduce to a minimum those situations that are going to cause upsets in the field.

Second, it is to keep the technological content state of the art. There is a tendency on the part of agencies to use the project as an opportunity to study exotic solutions to problems that may not exist.

There are going to be strong pressures to try unique solutions to problems, and again there has to be firm management direction both within Northwest and by the governmental agencies to keep the project on course by keeping the technological content state of the art.

Finally, and possibly most important, is that of change control. There has to be a recognition that the source of many of the changes that the project will experience, that is going to affect the cost and the schedule of the project and the quality of the project, will be one or more of the governmental regulatory agencies that have responsibility.

I strongly recommend that a formal program be developed by senior Northwest and Government officials to contain change and to review, approve or disapprove, and document any change that significantly affects the cost, the schedule, or the quality of the project.

Furthermore, Northwest and Government officials should commit themselves to basing their go/no-go decisions on the cost and benefits of proposed changes. Unless a high level containment and formal review of proposed changes is achieved, a myriad of changes is going to end up being built with considerable cost and schedule effects, without control of or even senior management knowledge that the changes are taking place.

Mr. Chairman, that concludes my oral comments.

I am convinced that the project can be cost-effectively completed by taking advantage of the lessons that we learned with Alyeska, and certainly some of the recent evidence that I have seen of Government participation, handing down some decisions, and the involvement of the Federal inspector is going to go a long way to that end.

Thank you.

Mr. RUNNELS. Mr. Young.

Mr. YOUNG. Thank you, Mr. Chairman.

Mr. Moolin, good statement. Two questions.

Three or four times you referred to agencies recommending moving certain camps, agencies recommending this. I would like to, Mr. Chairman, respectfully ask the witness to submit to this committee the same request that Mr. Clausen asked for, for the comparison where you see there can be potential bottlenecks, slowing down of this project. You referred to it three or four times.

Mr. MOOLIN. I will be glad to do that. I cannot tell you offhand.

Mr. YOUNG. I think it would be helpful to this committee.

One thing we do not want to get bogged down like you did, as you know well, you are well-versed with the TAPS project, was the constant, who is on first base?—one reason it went to $10 billion.

There is no way Mr. McMillian or anybody else can control the cost of a project when you do not have control of the project. Hopefully that can be avoided and we should be notified ahead of time.

The snow pads, if I understand your testimony correctly, you envision a line within the working area primarily of the TAPS line?

Mr. MOOLIN. Within the general corridor, yes, but not necessarily as close to the crude line as it could be. For instance, if the——

Mr. YOUNG. You say could be. Who has made that decision?

Mr. MOOLIN. I do not think the decision has been made yet. The Department of the Interior has come down with the decision that the basic location of the gas line will be about 60 feet minimum from the crude line, but there is considerable—that is a general statement—numerous site-specific locations where agencies are proposing moving the gas line a considerable distance away from the crude line.

Mr. YOUNG. Do you have offhand, the agencies recommending that?

Mr. MOOLIN. No, sir, I do not, but again I will submit that with my supplemental testimony.

Mr. YOUNG. It would be my feeling that the closer proximity with the safety factors that have been established with previous experience, that line should follow that pad, working facilities and corridor, as closely as possible to the TAPS line unless there is real good sound reason for it. Hopefully you can name those agencies so we can ask them to come down and appear before us.

Mr. MOOLIN. Yes, sir.

Mr. YOUNG. On the snow pad, I happen to agree with you. I personally think it is the greatest grass-cutting project in the world, Mr. Chairman. It is like cutting grass. You have seen these make-work projects; you cut the grass and you say you are employed; of course the grass grows back and you have to cut it again. It is a great way to put people to work; you never finish the job. Building a snow pad is similar—in the springtime it thaws out, there is no more snow pad—I am not sure they protect the environment. Next year you build it all over again. It is a great way to build.

Thank you.

Mr. RUNNELS. Thank you.

Mr. Lagomarsino.

Mr. LAGOMARSINO. I do not have any questions. I just wanted to comment that although the witness skipped through his testimony very quickly, I have been reviewing some of the additional comments here and will read the whole thing. I think there is some very good material here that will be of help to the committee in making its evaluation.

Mr. RUNNELS. Thank you. Did you state that you believe most of the gas pipe line will be underground?

Mr. MOOLIN. Yes, sir.

Mr. RUNNELS. Would you state for the record why you say it should be underground rather than aboveground?

Mr. MOOLIN. Yes, sir, it is very simple.

Building aboveground pipeline is many times more expensive than building belowground pipeline. The TAPS crude line was placed aboveground only when it became necessary. It carries hot oil and whenever the pipeline would have to be placed in what is called thaw-unstable soils—in other words, the hot oil would cause the soil to thaw and settle excessively—the crude line would be placed aboveground. The gas line is going to be chilled, operate at below the freezing point of water.

Mr. RUNNELS. Could you tell us how you are going to freeze or chill this line?

Mr. MOOLIN. The gas will be chilled at the compressor stations. So the gas in essence, technically the hurdles are a lot lower in moving cold gas than moving hot oil.

Mr. RUNNELS. We are trying to get a little education as to the difference between gas and oil pipelines.

Mr. MCMILLIAN. If the chairman pleases, I would like to comment.

We are going to have about 26,000 horsepower at each compressor station for the compression of gas. Since it is a gas, it can be frozen and chilled and we are having 7,000 to 13,000 horsepower of refrigeration at each compressor station to chill the gas. So gas will be chilled at each compressor station to complete any degradation. But additional problems of putting the gas line aboveground—I know in your experiences you have watched a gas line blow—and if you have ever watched a gas line blow aboveground, it is an awesome experience.

If you put that belowground where it is protected from sabotage, where it is firmly emplaced, you have an additional safety factor putting it underground. Then in a real cold environment, such as we will be passsing through, when it gets to 60 below zero the heat exchange of the extra coldness created in that atmosphere aboveground will cause problems with liquids falling out and liquid slugs created in the line that cause operational problems. There are all kinds of reasons for us to be belowground.

Mr. RUNNELS. Thank you.

Mr. Moolin, what is the single most uncontrollable cost in building a pipeline?

Mr. MOOLIN. In my experience the single most uncontrollable cost and yet unidentifiable costs are going to be the requirements of governmental agencies.

Mr. RUNNELS. Requirements of Government agencies?

Mr. MOOLIN. Yes, sir.

Mr. RUNNELS. You had a lot to do with the supervision of the TAPS pipeline. You were in on the planning and the construction. Can you tell me how in the world a pipeline system such as TAPS escalated from $900 million to $9.3 billion?

Mr. MOOLIN. I am glad you asked that question.

That would require a lot more time than I am sure you are going to give me. But certainly the numbers thrown out in 1968 when oil was discovered at Prudhoe Bay by building a pipeline across Alaska, some offhand comment about an $800 million project, it was about a project talking about apples and oranges, comparing it with watermelons. The original concept in the minds of people that gave that number was digging the pipeline, placing a pipeline as you do in west Texas or east Texas; you take a ditch, you put the pipeline in the ditch, you take the stuff that you dug out of the ditch and dump it back around the pipeline. That is not the case.

Actually, when you compare the cost increase, if you want to compare an apple with apple, apples with apples basis on the crude line you would have to be looking at a $5.3 billion project which was the first definitive estimate of the project, based on having about half the project aboveground. I have to say placing a pipeline aboveground varies anywhere from 4 to 7 to 10 times more expensive than placing a pipeline belowground.

Mr. RUNNELS. Could the same thing happen with this gas line that happened with the oil pipeline?

Mr. MOOLIN. No, sir. I think people recognize many of the issues that impact the total cost of a program of this size. Some of the actions that have already been taken to get the definitive—to get a detailed definitive design prior to start of construction, No. 1, but second, getting the Federal inspector or involvement in the project at an early stage, these are going to go a long way to preventing overruns.

For all the reasons I indicated, the lack of infrastructure Alyeska was subjected to, also remember it was talked about in 1968 and the project completed in 1977, so the impact of inflation was certainly substantial. But not only the impact of inflation, the cost of maintaining a large organization, keeping a large organization alive for an extended period of time in itself creates or contributes significantly to the total cost of a program.

So to answer your question, the bottom line, I cannot see this $800 million to $7.8 billion type of increase occurring. There can be cost increases but certainly we understand how to control them now.

Mr. RUNNELS. On page 9 of your statement, you say that in over 4 years and over 200 meetings with governmental representatives at all levels, you did not recall a single instance where a Government representative ever mentioned the cost effect of any particular requirement or course of action recommended by the Government. What do you think is the real reason for this and was this ever brought to the attention of any congressional committee?

Mr. MOOLIN. I do not believe that Government ever perceived its role in the crude line project as being one to insure the most cost-effective construction of the line. Government perceived its role—and I think this was reported to the Congress in the GAO report to Congress about the completion of the crude line—I think the GAO report indicates that Government perceived its role as being one of insuring pipeline integrity and making sure that the environmental stipulations were complied with. It did not in fact see its role one of controlling costs, although the stipulations, the agreement between Alyeska and the Government say that the parties shall balance environmental amenities and values with economic practicalities and technical capabilities to be consistent with applicable national policies.

Mr. RUNNELS. On page 16 you state that the Government has recommended that camps be relocated due to fuel oil leakage. What additional cost and what additional environmental impact or damage can be done by from moving these camps?

Mr. MOOLIN. I do not know what the additional cost would be except it is certainly the multimillion-dollar range, less than $5 million but certainly more than $1 or $2.

Certainly any time in Alaska you attempt to build a new camp at a new location, there is additional environmental impact than there would have been if you had continued using the same camp.

Mr. RUNNELS. On page 30 you refer to the Alyeska syndrome whereby people continue to study, explore and continue to ask different questions without ever making engineering judgments regarding the significance of the questions that they ask. Is this trait particular to the Government agencies or is it present in the project companies?

Mr. MOOLIN. No, sir. It certainly is not present in the project companies. Certainly it is in the best interests of the companies that own or operate these pipelines that they be technically complete, that they be able to operate these pipelines. It is not in the best interest of anyone owning these pipelines that there be troubles with the operation because obviously it affects the bottom line of the operation.

The so-called Alyeska syndrome came about with Alyeska because of a very large number of agencies interfacing, individually in some cases, but in many cases in an uncontrolled way and impacting or stipulating and applying conditions that had to be met by Alyeska. These were the additional studies that never seemed to be satisfied and questions that never seemed to be answered.

Mr. RUNNELS. You further state that this can only be brought under control, by firm direction from Northwest management and from regulatory agencies.

Do you think the structure of the Federal inspector's office will completely solve this problem?

Mr. MOOLIN. I think that the Federal inspector, everything I have seen so far, tells me that directionally this is the right way to go. And I think time will tell. It is going to take time, of course.

The Federal inspector is new in his role, but everything I have seen so far and what I have read that the Federal inspector has said leads me to believe that the Federal inspector certainly understands how important this is to control the cost; that Government itself has a big impact on cost and schedule and he understands this.

Mr. RUNNELS. Thank you, Mr. Moolin, for your fine statement.

Is there any other statement you or Mr. McMillian would like to make at this time?

Mr. MOOLIN. No, sir.

Mr. RUNNELS. Mr. McMillian, could you stay? If there are any questions later would you feel free to answer anything that comes up?

Mr. MCMILLIAN. Yes, I will be available through the entire hearing.

Mr. RUNNELS. Tomorrow also?

Mr. MCMILLIAN. Tomorrow also.

Mr. RUNNELS. I want to thank you both for being here.

[Additional written questions submitted to Mr. McMillian by the subcommittee, with responses, may be found in the appendix. See table of contents for page number.]

Mr. RUNNELS. Our next witness will be Mr. John Sproul, Pacific Gas & Electric Co.

[Prepared statement of John A. Sproul may be found in the appendix.]

STATEMENT OF JOHN A. SPROUL, EXECUTIVE VICE PRESIDENT, PACIFIC GAS & ELECTRIC CO.; AND CHAIRMAN OF THE BOARD AND CHIEF EXECUTIVE OFFICER, PACIFIC GAS TRANSMISSION CO.; ACCOMPANIED BY DANIEL E. GIBSON, GENERAL COUNSEL, PACIFIC GAS TRANSMISSION CO.

Mr. SPROUL. Thank you, Mr. Chairman, and members of the committee.

Mr. LAGOMARSINO. If I might interrupt the witness, I wanted to note for the record Mr. Clausen does intend to be here later. I am sure he would want to be here, Mr. Sproul.

Mr. SPROUL. I am an executive vice president of Pacific Gas & Electric Co. and chairman of the board and chief executive officer of the Pacific Gas Transmission Co.

With me here today is Mr. Daniel E. Gibson, the general counsel of Pacific Gas Transmission Co.

I have submitted a prepared written statement for your consideration which I will, as you requested, summarize in, I hope, a reasonably brief manner.

P.G. & E. and its subsidiary PGT have been designated by President Carter to build the western leg of the Alaska Natural Gas Transportation System (ANGTS).

In addition, P.G. & E., through another subsidiary, Calaska Energy Co., is participating in the partnership that will build the Alaska portion of this system. P.G. & E. will also purchase Alaska North Slope gas to serve the 9.1 million people in our service area in northern and central California.

We have entered into a contract with the Exxon Corp. to purchase one-third of its share of the gas production from the Prudhoe Bay field. Thus, you can see that P.G. & E. and PGT are deeply involved in and strongly committed to this overall project. We believe it to be the single most important domestic energy project on the Nation's agenda today.

We propose to loop or parallel our existing pipeline by installing about 882 miles of new 36-inch diameter pipe side-by-side with the existing line. We will need no new compressor stations or additional horsepower to carry the initial volume of North Slope gas along with roughly 1 billion cubic feet of gas we are carrying now.

The authorized western leg design is blessed with the virtue of simplicity. Conventional pipeline design and construction techniques will be used throughout, relying on known, proven technology. The potential for unforeseen problems and difficulties is vastly reduced by the fact that the western leg expansion is essentially a replication of the existing pipeline and, of course, this in itself will minimize disturbance to the environment.

The authorized western leg design can provide for delivery of approximately 30 percent of the initially expected North Slope natural gas. That is about 600 to 700 million cubic feet of gas per day to markets in California, the Pacific Northwest and other Western States, including Arizona and New Mexico.

PGT's portion is estimated, in 1978 dollars, to cost approximately $417 million. P.G. & E.'s portion is estimated on the same basis to cost $212 million. Thus, the total western leg capital cost is estimated at $629 million. These amounts, while sizable, are within the financial abilities of P.G. & E. and PGT.

Mr. McMillian said this morning, "It is pocket change for us," but it is something within our ability to do.

As I am sure you are aware, Mr. Chairman, and other members of the committee, we, along with other sponsors of the Alaska Highway pipeline project, are proposing at this time to prebuild some of the southerly portions of the overall project.

President Carter, in his 1977 decision, recognized that these additional Canadian gas exports could help offset potential gas shortages in the lower 48 States before the completion of the entire project. That is what the prebuild facilities are designed to do, to bring additional gas from Canada in advance of the overall project.

The President also noted that the ready market for the additional Canadian exports could stimulate exploration and development activities in Canada. Even more important, in the long run is that the availability of this additional Canadian gas will support early construction of the portions of the Alaska Highway pipeline project and will thereby help us to finance and complete the rest of the project. The supply is there and so is the need.

Pacific Interstate Transmission Company, an affiliate of Southern California Gas Co., entered into a contract with Northwest Alaskan to purchase 240 million cubic feet per day of this Alberta-source gas for delivery to consumers in southern California.

PGT will "prebuild" approximately 160 miles of the western leg expansion in order to transport the additional 240 million cubic feet per day of Alberta-source natural gas from the international boundary near Kingsgate, British Columbia to a point of interconnection with the pipeline facilities of Northwest Pipeline Corp. near Stanfield, Oreg.

From that point, the gas would be transported over the facilities of Northwest Pipeline and El Paso Natural Gas Co. to southern California.

The total pipeline distance from the Canadian border to the interconnection between PGT and Northwest Pipeline at Stanfield, Oreg., is actually over 277 miles. Cost of PGT's western leg prebuild facilities is estimated to be $116 million, on a 1978 cost basis.

The Federal Energy Regulatory Commission is considering PGT's application at this time. If it issues a final certificate by the end of this year and if all other necessary regulatory approvals, including the Canadian export license, are in place by that time, we may be able to construct enough of the prebuild facilities in 1980 to allow a portion of the projected additional Alberta gas to flow by late 1980.

In addition to the obvious benefit of providing an additional early source of new gas to southern California consumers, prebuilding does offer a number of other substantial benefits. First, transportation costs for Alaska gas should be less because a portion of the western leg facilities will have been installed at an earlier date at less inflated costs.

Second, two-phase construction of the western leg will also make it easier and more economical to obtain labor and materials necessary for the overall Alaska pipeline project.

Third, PGT will gain additional revenues from transportation of the Alberta gas for Pacific Interstate, thus making available additional internally generated funds for financing of the ultimate phase of the western leg expansion, and reducing the need to issue additional equity shares or long-term debt.

Fourth, and perhaps most important of all, the successful construction of the prebuild phase of the western leg will, I believe, greatly increase investor confidence in the probable success of the overall ANGTS.

Prebuilding will offer firm and convincing evidence that the U.S. Government is fully committed to and supportive of the construction of the western leg and all other portions of the Alaska natural gas transportation system.

The Federal Government has in fact been encouraging in its approach recently to the regulatory responsibilities regarding the western leg so that it can be built in a reasonable and expeditious manner. The recent appointment of Mr. John T. Rhett, Jr. as Federal inspector is an encouraging sign that the Government is gearing up to expedite the project and Mr. Rhett is moving quickly to set up an effective organization.

All that I have said is very positive but I would be less than candid with you, however, if I did not admit that we face a very real threat in regulatory delay which would thwart our ability to achieve the prebuild delivery schedule. For example, we are still tied up in hearings before FERC with 160 miles of prebuild even though this construction is simply a portion of what was authorized by the President back in 1977.

Second, we are still waiting for the issuance of a final right-of-way permit from the Department of the Interior to allow us to cross the three miles of Federal lands—out of the 160-mile total—that are involved in the western leg prebuild proposal.

We need other subsidiary Federal authorizations and site-specific terms and conditions must be developed to enable us to go to final design.

Of course, one of the key elements in the prebuild equation must come from Canada in its approval of the proposed export of Alberta gas.

Quite simply, if we are to have any hope of delivering the first quantities of Alberta gas by the end of 1980, we must have all final major regulatory approvals in place by the end of this year, 1979.

Mr. Chairman, we believe that the expeditious handling of the western leg prebuild is clearly in the national interest. It is one way, and an important way, to help displace some of the demand for OPEC oil. Even of greater importance, perhaps the prebuild will truly be a testing ground for the entire new regulatory structure which has been established to supervise construction of the Alaska natural gas transportation system.

There have been 2 years of delay during which this vital energy project has been exposed to the ravages of inflation. Nevertheless, we are optimistic that the entire Alaska Highway pipeline project can and will be built, but if we face further delay, gas consumers throughout the United States, and the national interests in energy security will have been badly served indeed.

Thank you for the opportunity to present these remarks and I will be pleased to answer any questions you may have.

Mr. RUNNELS. Thank you, Mr. Sproul. I appreciate your statement. I would like to say that in reading it over I think that I find in your statement that you are a little leery of what the bureaucracy of the Federal Government is doing to this project. I am reading on page 11.

> However, we have worked carefully with Federal agency representatives to familiarize them with the true nature of the western leg.
>
> We are happy to report that there is a growing recognition on the part of Federal officials that the western leg poses no significant environmental problems.

I think this is what we are trying to do in this committee, to educate ourselves and our colleagues so that they will know that building the western leg is slightly different from building the pipeline in Alaska.

Mr. SPROUL. We certainly think so, Mr. Chairman. I might add we need your help. I think we are making progress but whatever you and the members of the committee can do in this regard would certainly be appreciated.

Mr. RUNNELS. This is what we are trying to do.

On page 12 you say:

> We are still tied up in hearings before the FERC for the 160 miles of western leg prebuild, even though these facilities are simply a portion of the same facilities that were authorized by the President and conditionally certificated by the FERC almost two years ago in December, 1977.

Why they are still tied up in hearings is beyond me.

Then you say:

> We are still waiting for the issuance of a final right-of-way permit from the Department of the Interior to allow us to cross the three miles of Federal lands—out of the 160 mile total—that are involved in the western leg prebuild proposal.

Whoever is sitting on that either ought to be fired or chased off if he does not get about his business. I think that is ridiculous. We will try to do all that we can to expedite some of the bureaucracy that is holding up the western leg.

Mr. SPROUL. Thank you, sir.

Mr. RUNNELS. I think this is why private business becomes frustrated. I think we are guilty on the legislative end too.

Mr. Clausen.

Mr. CLAUSEN. Thank you, Mr. Chairman.

Mr. Sproul, forgive me for being delayed. I have had a chance to read your testimony and, of course, we are delighted to have you give us the benefit of your experience in the problems you have been facing.

We appreciate very much your report today.

With respect to PGT's application for a final certificate for the prebuild facilities before the Federal Energy Regulatory Commission, do you believe the Federal Energy Regulatory Commission is moving expeditiously on this application?

Mr. SPROUL. Sir, I cannot really say that we do. We are hopeful as a result of certain steps that we have taken recently and have asked for a degree of expedition which we hope they will see in a favorable light, that things will now happen rapidly.

I think while you were out of the room I was talking about our need to have all of the regulatory approvals in play by the end of this year if we are to be able to deliver any part of the prebuild quantities by the end of next year.

One of these is, of course, the FERC approval. So maybe they have not gone as fast as we would have liked in the past but, hopefully, they have been encouraged and have been advised of our degree of need for a quick answer, and we certainy hope we will get it because we have to get it if we are to get this project going.

Mr. CLAUSEN. I am assuming when you say you have to have that in order to get the project going, your situation would be the same as those mentioned by Mr. McMillian this morning, namely, you have to have all the things in line in order to get all your financial arrangements in order, or am I misreading you?

Mr. SPROUL. Our financial arrangements for the prebuild are—this is the prebuild alone and in a sense for the total western leg—really not all that complicated. Sure, it is difficult in a time like this to raise a lot of money but we feel confident we can do it in a conventional manner.

It is not the financial aspects of the prebuild that bother us so much as we need the regulatory approvals so that we can order the pipe, do the final planning, do the final design work so we can get people out in the field next year to start doing the work.

Mr. CLAUSEN. I think this is a natural follow-on to the points my colleague was making. Do you believe that FERC actually has exhibited a degree of understanding and cooperation toward expediting this prebuild process?

Mr. SPROUL. No, sir; I do not.

Mr. CLAUSEN. You cannot be any more forthright than that. What do they relate to you as factors that causes you to make that point?

Mr. SPROUL. It is somewhat difficult for me to respond to that question. Perhaps Mr. Gibson could do better because he is in contact with them all the time, which I am not. But it seems that they do not exhibit the same sense of urgency that we are trying to communicate. Perhaps they do not believe us, that we have to do these things in order to get people in the field next year—to buy the pipe, to do the planning, to get the final engineering done. But we have been before them now for some time.

As I say, I think things are looking up. Dan may be able to give you some detail that I cannot fill in.

Mr. CLAUSEN. Through the course of my questioning I have tried to give people the opportunity to follow up in writing to obtain more specific information and, frankly, more in-depth information, so rather than taking the time of the committee right now I will simply ask that you and your counsel prepare something a little more specific and in as much detail as you feel you can share with us so, again, we will have the kind of hearing record upon which the committee can then start moving toward addressing some of these inhibiting problems.

Mr. SPROUL. We would be glad to do that.

[Editor's Note: In response to Mr. Clausen's request for further details concerning regulatory problems, Mr. Sproul subsequently furnished that information in a letter dated October 30, 1979, to Mr. Clausen. That letter may be found in the appendix. See table of contents for page number.]

Mr. CLAUSEN. How long has your right-of-way permit for crossing 3 miles of Federal lands been before the Interior? I guess the bottom line is has the Department of the Interior moved expeditiously?

Mr. SPROUL. Mr. Gibson advises me that it has been on file since 1974.

Mr. CLAUSEN. That is not what you would describe as being very expeditious, is it?

Mr. SPROUL. I would not characterize it as such.

Mr. CLAUSEN. The same thing would follow, Mr. Gibson. I would like to have you give us a chronological projection of your experience on this matter. Clearly, this has extended over a couple of administrations in the Department and I would like to be able to pin down where the hangup is. We talk about fast track legislation and all that but as I see it, one of the principal purposes of this Oversight and Investigation Subcommittee, one of its present functions, is for us to get to the facts and this would permit us leverage on people who are supposed to expedite procedures.

Mr. RUNNELS. Mr. Lagomarsino.

Mr. LAGOMARSINO. Thank you, Mr. Chairman. I want to compliment you, Mr. Sproul, on your statement. You, in very understandable terms, pointed out some of the problems you have, many of which sound as if they are completely avoidable. I hope this committee is able to find out why some of these things that sound outrageous are happening or are not happening.

Was the idea of the prebuild part of the original plan for the pipeline? Was that part of the package all along?

Mr. SPROUL. You have to go back a ways. Certainly I do not think you can say it was part of the original plan but it was mentioned, I believe, for the first time, in the decision by the National Energy Board of Canada when they selected Mr. McMillian's project as the successful one to build the entire system.

I believe in that decision which goes back a considerable period of time now that NEB said it might be desirable to have what we now call prebuild as a kind of forerunner to the construction of the entire Alaska Highway pipeline project.

Mr. CLAUSEN. Will the gentleman yield?

Mr. LAGOMARSINO. Yes.

Mr. CLAUSEN. Have you had anything in the way of a working relationship with the NEB as contrasted with FERC?

Mr. SPROUL. In a very general sense we have.

Mr. CLAUSEN. In your view is the Canadian National Energy Board inclined to be more expeditious and more responsive by comparison?

Mr. SPROUL. I think that is a fair statement.

Mr. CLAUSEN. You think they are more expeditious and more responsive?

Mr. SPROUL. I do.

Mr. CLAUSEN. Are there more in the way of regulations and/or laws in Canada than what you have to deal with here or are they comparable?

Mr. SPROUL. I suspect comparable in a rough sense. They have an Energy Board which is roughly equivalent to our FERC. They have a Conservation Board in Alberta which is roughly equivalent to the California Public Utilities Commission. Certainly, the general statutory scheme is not the same word for word or is not on all fours, but I think they are generally comparable.

Mr. CLAUSEN. Are the time permit procedures as time consuming as here?

Mr. SPROUL. They do not seem to be, sir, by comparison. One thing I think—and I believe this to be true generally—once you get an administrative decision in Canada, that is pretty much the end of it. The ability to go to court to overturn it or to attack it is somewhat limited.

Here in the United States we have a somewhat different situation. Of course, you cannot blame that on our regulatory agencies.

Mr. CLAUSEN. Thank you. I thank the gentleman for yielding.

Mr. LAGOMARSINO. Obviously, going back to my previous question, the Canadian Government is well aware of the prebuild idea.

Mr. SPROUL. Yes, sir; and we have to have a Canadian permit as part of the overall scheme to accomplish it.

Mr. LAGOMARSINO. Is there any concern on the part of the Canadian Government that should you go ahead with the prebuild and get into the process of importing more of their gas that the rest of the line might not be built?

Mr. SPROUL. Yes, there is that concern. I think it was mentioned this morning when one of the members of the committee read the statement by Mitchell Sharpe, and Mr. Pierce addressed himself to it. They have indicated on a number of occasions that prebuild is not going to go forward until the Canadian Government is satisfied that the entire Alaska Highway pipeline project will be built.

I guess the key to that is what it is going to take to satisfy them that is going to occur. I do not think that has been defined yet, at least to my knowledge it has not been, but the concern that you mention is certainly there.

Mr. LAGOMARSINO. You say, "We have all final regulatory approvals in place by the end of this year, 1979." Are you talking about the process in Canada as well as in the United States?

Mr. SPROUL. I am.

Mr. LAGOMARSINO. I take it the U.S. process has to come first.

Mr. SPROUL. Not necessarily. We just need both of them, U.S. and Canadian, but they do not have to come in sequence.

Mr. LAGOMARSINO. But each is relying on the other.

Mr. SPROUL. Yes, sir.

Mr. LAGOMARSINO. Put it in escrow or something like that.

I am sure it would be probably asking for speculation but can you give me any idea of why Interior has taken over 5 years to not decide on the 3-mile crossing?

Mr. SPROUL. I really am not familiar with the details of that. Perhaps Mr. Gibson is. He has been intimately familiar with those dealings and I think he could probably help you.

Mr. GIBSON. If it please, Mr. Chairman and Mr. Lagomarsino, I would not want to overstress the difficulties that we have had with the Department. Certainly they have been frustrating. But the fact is that we have had our right-of-way permit application on file for the entire western leg since 1974, and the lands that are to be crossed by the prebuild portion of the western leg of course are just a portion of the total amount of lands of approximately 150 miles of Federal lands that are to be crossed by the total western leg.

The Department of the Interior has been processing the application, has considered the environmental impact, issued the environmental impact statement which in part was the basis for the congressional determination of adequacy of environmental impact that preceded the determination for the entire Alaska transportation system.

Since it became clear that the project was going to go forward in 1977, we have continually urged the Department of the Interior to move on our entire application for right-of-way across Federal lands. Ever since we put on file before the FERC in November, 1978, our application for a final certificate for the prebuild portion we have been urging action by the Department of the Interior on that portion.

I must say I do not understand why it should take as much time as it does, but you have to understand it in the context of the way the Government is approaching it.

The Department of the Interior has looked at the matter of the point of view having first developing terms and conditions for the entire right-of-way permit. As Mr. Sproul indicated in his testimony, one of our ironic little tragedies on the western leg is that just because it is a part of the Alaska natural gas transportation system the initial reaction of the uninformed observer is, well, it must be just as complicated as any other part of the Alaska system, therefore, we should apply the same terms and conditions to it.

It took a long time to finally get across the point that it was not as complicated as this. Now the Department of the Interior, I think, is moving along quite well. I really think it has every possibility of getting the right-of-way through those 3 miles of Federal land out by the end of the year.

Mr. LAGOMARSINO. Who have you been dealing with?

Mr. GIBSON. The Department of the Interior has a project office. Mr. William Toskey is the man primarily in charge as the liaison person over there.

Mr. RUNNELS. He is our third witness tomorrow.

Mr. LAGOMARSINO. I want to make one comment that applies to perhaps all the witnesses' testimony. In another committee we were holding a hearing on whether or not we should get into a new system of insurance for American firms that do business overseas. We have insurance called Overseas Private Investment Corporation, OPIC, which insures certain American companies against certain risks, including appropriation by foreign governments of their assets. It was proposed that we expand that program to also cover not only appropriations but "creeping appropriations."

I asked what that was and I was told when the Government, after giving permits to a company to operate, imposes restrictions so onerous that in effect you have taken away a part or all of their assets or their value.

I made the comment that I know a lot of constituents feel that is exactly what is happening in this country but I doubt if anybody would write insurance for American companies against that kind of risk.

Mr. CLAUSEN. In going through your testimony, Mr. Sproul, you seemed to place heavy emphasis on "One of the key elements in the prebuild equation must come from north of our border: Canada's approval of the proposed 12-year export of Alberta gas is necessary if the prebuild concept is to go forward as planned."

Then you go on to say, "The National Energy Board has concluded its omnibus hearings on exports, and we believe it reasonable to expect that a decision on exports will be issued and approved by the Canadian Government by the end of this year."

Are they on track? Is there any reason for you to be concerned because you have placed heavy emphasis on that point? What would be the possibility of delay?

Mr. SPROUL. We think they are on track, Mr. Clausen. I was being, I hope, on the conservative side when I said by the end of this year. I really have some expectation that the Canadian decision will come down well before the end of 1979.

Mr. CLAUSEN. Were you making that point in order to draw the comparison hoping that the United States would keep the same pace?

Mr. SPROUL. Partially, sir. Yes. Right.

Mr. RUNNELS. Mr. Sproul, I want to observe that I believe the Western Leg may have been caught in what we term where I come from, "We walk a switch." I think the State of California and its State agencies were dragging their feet on the Sohio pipeline system and I believe the Federal Government has been dragging its feet on the Western Leg.

You may be the victim of circumstances.

Mr. SPROUL. We really think things are going to get better.

Mr. RUNNELS. Cannot get much worse, can they?

On this pocket change, did you hear Mr. McMillian say it was pocket change?

Mr. SPROUL. Mr. McMillian referred to pocket change when we built the western leg but we think $600 million plus is a little more than that.

Mr. RUNNELS. We thank you very much for your presentation and we will be offering some questions to you for the record.

[Editor's note: Additional questions submitted by the subcommittee, with responses from Mr. Sproul, may be found in the appendix. See table of contents for page number.]

Mr. RUNNELS. Our next witness is Mr. Conrad Pyle, Northern Border Pipeline Co., and Mr. Meierhenry.

[Prepared statement of J. Conrad Pyle may be found in the appendix.]

STATEMENT OF J. CONRAD PYLE, PROJECT MANAGER, NORTHERN BORDER PIPELINE CO.; ACCOMPANIED BY ROY A. MEIERHENRY, TREASURER, NORTHERN NATURAL GAS CO.

Mr. PYLE. Mr. Chairman and members of the subcommittee, it is indeed a great pleasure to be here. This is our first opportunity to appear before this subcommittee. Indeed, it is a great honor to present our project. We are always glad to speak to groups about the Northern Border Pipeline Co. and the prebuild project.

We think it is one of the key hinge pins to getting the Alaska natural gas transportation system off the ground and moving.

Briefly, we have submitted our written statement. I would like to make a few comments to summarize that.

The Northern Border Pipeline Co. is the eastern leg of the Alaska natural gas transportation system which was approved by the President in his decision in 1977. It originates at the Canadian-United States border in Saskatchewan and extends 1,117 miles through five States and ends up in the sixth State of Illinois.

The project is approved by the President, 1,117 miles of 42-inch diameter pipeline with seven compressor stations which was designed to handle about a 1,500 million cubic feet of gas from Alaska.

The partners within the partnership today consist of subsidiaries of Northern Natural Gas Co., United Gas Pipeline Co., Northwest Pipeline Co., Pan Border Gas Co. These four companies are the partners who are now engaged in the project. I would like to describe some of the prebuild portion. Earlier there has been an overall description of what prebuilding for Canadian gas is. The Northern Border has been involved in it.

Three of the companies, the partners within the Northern Border partnership, have purchased gas, Northwest Alaskan whose companies are United Gas Pipeline, purchased 450 million cubic feet a day; Northern Natural Gas Co., purchased 250 million cubic feet a day; Panhandle Eastern Pipeline, who has purchased 150 million cubic feet a day.

For the prebuild project we are proposing building the first 809 miles of the 42-inch diameter pipeline to a point near Ventura, Iowa, together with one 16,200-horsepower compressor station in MacKenzie County, N. Dak.

This would have the capability of transporting 800 million cubic feet a day.

The overall system when expanded for the Alaskan Gas, by the addition of compressor stations and additional 308 miles of 42-inch pipeline would have a capability of transporting 2.2 billion cubic feet a day of gas which would be in addition to roughly 1.4 billion cubic feet a day of Alaskan gas in addition to the 800 million cubic feet a day of Canadian gas.

The benefits from the prebuilding of the Northern Border are numerous. I would like to briefly enumerate the benefits as we view them. First of all, the prebuild would bring the addition of 800 million cubic feet of additional gas reserves into the United States. The Northern Border with various interconnections of the pipelines, the deliveries from the three companies purchasing this gas, indirectly make deliveries from those pipelines that serve almost all the States east of the Rockies.

One of the benefits from the prebuild is it increases the volume through the pipeline by 800 million cubic feet a day. Consumers would benefit from the economies of scale, also service for transporting all the gas would be decreased by the increased volume going through the pipeline.

By prebuilding the project for the Canadian gas in an earlier time frame we would reduce the effects of inflation, decrease the total capital costs of the system itself. Also, if we prebuild and operate the pipeline on Canadian gas prior to the transportation of Alaskan gas, the system would be partially depreciated, depreciation having occurred by the introduction of Alaskan gas, thus reducing the costs of transportation for Alaskan gas.

Additionally, the cash flow generated from the operation of the prebuild project would generate funds, would help finance the Alaskan system. I also see from a project management standpoint immense benefit from building a major portion of our system prior to construction of the Alaskan system, and it would reduce the demand on supplies and contractors in furnishing both materials and labor in construction of the pipeline. By reducing this demand it should make it easier to maintain the schedules and complete the project on time.

Also, by building a large portion of our system prior to the building of the Alaskan system, we would reduce the demand on capital in any given year since the major capital demands for our project would occur in an earlier time frame.

The final reason, which was also enumerated by Mr. Sproul, is that we would increase investor confidence if we can build a major portion of the system prior to getting into construction on the Alaskan system.

Just a minute on the current status of the project in the regulatory scene. We have received a final order of 31–B incentive rate of return rulemaking of September 5 which was one of the major considerations in bringing together our final filing on the cost estimates and the schedule for the project.

We are now in phase 2–B of the hearings in which we will be filing in the future cost estimates and financial statements before the FERC.

I would like to mention just one thing which has occurred within the past week. We have delayed filing our cost estimate as requested to the FERC. We have 30 days to file our cost estimate to accommodate maintaining 1981 service which I will talk about in a few minutes.

I would like to spend just a minute talking about the design of our pipeline, the route and design as opposed to prebuild which is the identical system filed with the FERC, started in 1974, amended in 1976. It is currently the same 42-inch diameter system as approved by the President.

We do have some minor reroutes which we have proposed making. One of them was around an area which was identified by the FERC in earlier hearings, and we have accommodated that reroute.

The second one is around the coal fields in North Dakota, which have been identified after the point in time the President had approved our route. It is one which we very much intend to make as a very minor route deviation. Environmentalists have filed environmental reports with the FERC indicating that this route is equally as environmentally acceptable as the earlier route approved by the President in his decision.

We have one further reroute, which is a last resort, which is a potential reroute around the Fort Peck Indian Reservation. We are negotiating with Fort Peck Indians in trying to get a permit to cross their reservation. It is a unique situation in that the entire route of our pipeline, of course, comes under FERC jurisdiction with right of eminent domain except for the Indian reservation.

So in the event that we are unsuccessful in negotiating for the permit across the Indian reservation, we would require a reroute around that reservation.

We have been encouraged by recent meetings and correspondence with the tribe and expect in the near future to have that resolved.

To get back to our reason for delay in filing the cost estimate, originally our project had been planned on a 2-year construction program, one which we thought was a reasonable and achievable schedule. Since September 5 and the incentive rate of return order, we have proceeded on that original construction plan, which was realistic and achievable in preparing our cost estimates.

During this past month and a half, we have worked towards the cost estimate based on that 2-year construction schedule. We came to the conclusion that if we were to maintain a 2-year construction schedule that it would result in a delay in the in-service date of the project until late 1982. Our original in-service date had been projected in our filing as late 1981.

Late last week, the partners decided that other factors, such as the desire for early delivery of gas and the concerns of the producers, weighed so heavily that we must consider revising our cost estimate and filing it on the basis of a 1-year construction program. We are in progress now of reconstructing our schedules, both construction and procurement activities, and recasting our estimate based on a 1-year construction program which would then result in the same in-service date of late 1981.

I might mention that our reluctance to proceed on a 1-year construction program resulted from the incentive rate of return rule making and procedures. There are a number of aspects of that procedure which place a great deal more risk on the sponsors in the event that they cannot meet the 1-year construction program.

From the standpoint of the sponsors, overruns of the construction schedule would result in additional financing charges, or in this case a financing charge on the cost of the money which reduces the earned rate of return. From the standpoint of the consumers, it could possibly end up in higher cost to the consumer if we are unable to achieve the 1-year program, having attempted it.

One other aspect of the incentive rate of return is that inflation indexing, to protect the sponsors against the ravages of inflation, does not work accurately unless the sponsors are able to make expenditures as projected in their estimate.

As long as we were on a 2-year construction program, we felt quite confident we could control expenditures and be fully protected under the inflation indexing mechanism. On a crash program—1-year construction—this is much more risky and would be much more difficult to control expenditures; and that was weighed in our decision to recast our cost estimate on a 1-year basis.

One further factor that places a great deal more risk on sponsors in going to a 1-year program, is that compressing all of the construction activities into a single year for 809 miles of pipeline, if you compare that to Alaska which is 720 miles, is that it will require a number of construction spreads be active in a single year. We are estimating if we are to do it in a single year, it will take from eight to nine separate contractors, and in the pipeline industry we refer to them as contract spreads.

This, of course, will run concurrently with construction programs with the west coast companies and also with the construction programs at the Foothills pipeline in Canada. The demand for the labor, contractors' resources, for the materials, pipes, valves and fittings and other equipment required for construction will be much greater during this same time period.

This will tend to decrease the competition between contractors and suppliers of materials and could end up with higher costs for each of these items.

In closing, I would like to make just a few points about Northern Border and the importance that it has to the overall Alaska natural gas transportation System. Mr. Millard recognized that Northern Border was of great importance to financing the overall project. If we could get Northern Border completed and financed and in operation prior to the Alaskan system, it would aid in the financial area from a confidence standpoint in the financial community.

Additionally, Northern Border is the largest segment to be prebuilt of the Alaska natural gas transportation system. It is an 809-mile, 42-inch pipeline which is the largest single section being prebuilt.

One other benefit from the prebuilding of Northern Border is that it has been viewed—and I think accurately so—as being the guinea pig for various new procedures which are going to be applied to the Alaska natural gas transportation system. Unlike the western leg, we will be under the incentive rate of return.

We will be under the cost reporting system to the Federal inspectors and will have to institute the inspection program and environmental training required under the President's decision.

We will have to comply with EEO and MBE requirements as described in the President's decision.

And we have a new one which has recently come up, which is the procurement practices being negotiated between Canada and the United States, making each of the sponsors bid competitively, both to the United States and Canada, to give both of these countries a fair competitive position on supplying goods and services.

So, we see many benefits from the project. We think the Northern Border project is a hinge operation and very important part of the Alaska natural gas transportation system and feel confident because our system is being built in the lower 48 States, is of conventional design, does not have the environmental problems of some of the other segments, that it can be built on schedule.

That concludes my comments, Mr. Chairman. I will be glad to answer any questions.

Mr. RUNNELS. Thank you very much, Mr. Pyle.

Do you have the same feeling that Mr. Sproul had, that you have been had by being associated with the difference between building the pipeline in Alaska and one in the lower 48?

Mr. PYLE. We feel we have been painted with the same brush.

Mr. RUNNELS. People should distinguish between the two. Is this correct?

Mr. PYLE. In my opinion, we feel the project would have gone quicker and simpler if we had not had the additional regulations.

Mr. RUNNELS. Will you have any problem in getting the 42-inch pipe you will need for your segment of the pipeline?

Mr. PYLE. The availability of the pipe size diameters and specifications that we have should not be a problem but, depending on the schedule, a 1-year construction schedule, depending on when all the Federal approvals, and so forth, are forthcoming, it could be a problem to get them soon enough in a short enough time span.

Mr. RUNNELS. You are going to put in 809 miles of new pipeline, is that right?

Mr. PYLE. That is correct.

Mr. RUNNELS. How long do you think it would take you to get 809 miles of new pipe if you placed the order today?

Mr. PYLE. We have had estimates that run from 6 to 12 months in order to get deliveries of that amount of pipe.

Mr. RUNNELS. I guess I am a little confused. I thought that your timetable was 2 years to complete this pipeline?

Mr. PYLE. That is correct.

Mr. RUNNELS. Now it has slipped and you are talking about 1 year. So if you are talking about 1 year, and this will escalate the cost, and so forth, and I believe you said you would have to wait from 6 months to 12 months just to get the pipe——

Mr. PYLE. That is correct.

Mr. RUNNELS. How are you going to finish it in a year if it is going to take you a year to get the pipe?

Mr. PYLE. We are talking about a 1-year construction program with enough advance time to get all the materials and the contractors and equipment on site. Our 1-year construction program would be within the year 1981. We would reserve the year of 1980 to get the delivery of the pipe and the associated materials.

Mr. RUNNELS. How about the right-of-way across the Fort Peck Indian reservation?

Mr. PYLE. We hope to have that in 1980.

Mr. RUNNELS. You do not believe you will have a problem with the coal field, or ironing out the problems to get across the Indian reservation you mentioned in your testimony?

Mr. PYLE. The question on the reroute around the coal field is getting approval from the FERC for the reroute and acknowledgment by their environmentalists that it is indeed not any larger environmental impact than the original route.

Mr. RUNNELS. Do you feel as though your group would have any problems, with the interest rate running what it is today, on the financing of your part of the pipeline?

Mr. PYLE. On the financial end, I guess I would defer to Mr. Meierhenry, who has more expertise in that area.

Mr. MEIERHENRY. Mr. Chairman, in answer to your question, at this point our project is not one to be characterized a pocket change, slightly bigger, but we do not anticipate any major problems, and, as Mr. McMillian alluded this morning, we are looking forward to Trans Canada becoming part of the project in making additional capital available from the Canadian market, also.

Mr. RUNNELS. Thank you very much. We appreciate your testimony today, and we will submit some written questions for the record.

[Editor's Note: Additional questions submitted by the subcommittee, with responses from Mr. Pyle, may be found in the appendix. See table of contents for page number.]

Our next witness for today is Mr. Loeffler, counsel to the State of Alaska. I believe you are appearing in behalf of the Governor, is this correct?

Mr. LOEFFLER. That is correct.

Mr. RUNNELS. Welcome to the warm country.

[Prepared statement of Robert H. Loeffler may be found in the appendix.]

STATEMENT OF ROBERT H. LOEFFLER, COUNSEL, ON BEHALF OF THE GOVERNOR AND THE STATE OF ALASKA

Mr. LOEFFLER. Thank you. Unfortunately, I spend most of my time down here, anyway. I should clarify that I am appearing on behalf of the Governor and his administration, and, therefore, I cannot speak for the Alaskan Legislature, which has received some comment this morning.

I think I will let my prepared testimony be submitted, and I will try and hit the five or six large points that I tried to make in the testimony.

First, the Hammond administration and the Governor personally support the gas pipeline, and they support the Northwest Partnership as the person to construct the pipeline. The Governor has announced it will be a priority of his administration to get the pipeline built.

The next question, of course, is State of Alaska financial participation. To date, we have created an Alaska gas pipeline financing authority although there are some problems with it. In the next few months we are going to be engaged in an effort to consider the various options for State financial participation and to try and gain a consensus within the State on that question. And we hope this will fit into the schedule of both the Federal officials and the Northwest Partnership.

Historically, we have said that the proposal of Northwest for tax-exempt bonds looks attractive to the State, and it still looks attractive, but is by no means the only method of participation and won't necessarily be part of the final package.

As I say, we expect to have some answers within the next few months on those questions.

Speaking for the State of Alaska in terms of its royalty interest, we see the conditioning cost issue, and that is the financial and other responsibilities for the construction of the $2 billion conditioning plants, somewhere in Alaska, as a critical issue to getting the project moving. The FERC has adopted an order which would place the entire responsibility for that plant upon the producers and upon the State.

That order is now undergoing rehearing. There have been rather strident protests filed against the order by both the State and the producers, because we think it is not consistent with what Congress ordered in the Natural Gas Policy Act, and I am afraid unless the

Commission changes its course, and it may, that is one that may end up in court.

More than the legal question, the problem I see there is that for several years now parties have said that the execution of gas purchase contracts is essential to the financing of the pipeline. This past spring and summer either contracts or letters of intent were negotiated.

The difficulty is that the disposition of the conditioning costs in those contracts is not consistent with Order 45. So we have the possibility of the contracts being upset by the action of the FERC.

That is not a sign of progress, and we hope that one way or another the issue will be compromised so that the contracts can stand, and that the people who sign the contracts can join the project and move it forward.

In terms of the State's own interest, as he mentioned, the issue of petrochemicals in the last few years is a vital concern. This issue is related both to the location of the conditioning plant and to the pressure of the gas pipeline at least between Prudhoe Bay and Fairbanks.

We have attempted to get the Commission to look again at that issue, and we have been unsuccessful, and I must report that we have gone to court under the Alaska Natural Gas Transportation Act to try and overturn the Commission's determination on that. By law, that decision must come within 90 days, which is approximately January 3.

There is immense popular interest in Alaska in the question of petrochemicals and the related question of the location of the conditioning plant, and unless that concern is satisfied, I suspect that it will be difficult for Alaska's elected officials to find the consensus and support for State financial participation.

We also have been critical of the FERC's approach to a number of the regulatory issues. We share with Northwest in the frustration at the amount of time and proceedings that the incentive rate of return took. In fact, at the opening of those proceedings we urged the Commission to abandon the concept because it was just going to take a long time and with uncertain benefits. In the last revamping of the incentive rate of return, we think the concept has been substantially changed—I will not say abandoned—but changed from what was originally proposed and, therefore in looking back, we question whether the year and a half spent on those regulatory proceedings was really fruitful.

We also believe that the conditioning cost issue question of the CO_2 content of the gas, certain other quality questions are interrelated and should not be handled piecemeal in separate proceedings. This was the brunt of our last petition to the Commission, which they turned down.

On the question of State-permitting authority, I think it is important to point out I have heard no criticism today of the State of Alaska's pipeline coordinator or the functions under him. The pipeline crosses substantial parts of State land, and there will be a right-of-way issued by the State as well as by the Department of the Interior.

To my knowledge, there are no major problems there. In fact, the State appointed its State pipeline coordinator 1½ years before the

Federal inspector was confirmed, and we now are on our second pipeline coordinator. The first one, I think, got a bit frustrated.

But the comments I have heard this morning have really been directed to the question of the State participation in financing, which is quite different than the problem that affected the Sohio line with apparently the State of California's permitting authority.

Lastly, we do see a hopeful sign in the efforts undertaken by the Secretary of Energy to get the various participants and potential participants to agree on a kind of financial plan. This is an effort that is going on outside the FERC processes.

We have confidence in the individual selected to gather the information and put together the plan, and we hope that this will provide a means of compromising the various outstanding issues of getting the financing established and letting the project go forward.

That is all I have to say and I would be happy to answer any questions.

Mr. RUNNELS. Thank you, Mr. Loeffler. I note in your testimony that you say that the State of Alaska supports the construction of the Alaska gas pipeline, and that it supports the construction of the pipeline by Northwest Partnership along the proposed route. Is that correct?

Mr. LOEFFLER. That is correct.

Mr. RUNNELS. And Governor Hammond has made it a priority of his administration?

Mr. LOEFFLER. That is correct.

Mr. RUNNELS. Further in your testimony you say, "even if the legislature had enacted technically perfect legislation, a change in Federal law—the Internal Revenue Code—to afford tax-exempt status with regard to the authority's bonds was necessary." Are you saying that we need to look at Federal law at this point in time?

Mr. LOEFFLER. I think that question is undergoing a further look by the State. With the oil pipeline, the plans were issued under a provision of the revenue code and applies, I believe, to docks and harbors, and it covered the facilities at Valdez.

I am not a tax lawyer and I do not venture into that area. I had an understanding that there was a revision necessary to be absolutely certain that the bonds were covered, but I would say it is premature, because of the efforts going on under the auspices of the Secretary of Energy, and, second, the efforts going on by the State to reconsider what is the most feasible form of financial support. So, right now, I think it is premature for the subcommittee to look at that.

Mr. RUNNELS. In your statement you say that the proposal, in brief, was that the State create a pipeline bonding authority to issue $1 billion in tax-exempt bonds to assist financing of the gas pipeline. A similar arrangement assisted the financing of the Trans Alaska Oil Pipeline.

Mr. LOEFFLER. Right, but there was no amendment, and I am not saying it is necessary to cover the oil pipeline bonds. One may be necessary for the gas bonds.

Mr. RUNNELS. What makes the gas pipeline different from the oil pipeline according to State——

Mr. LOEFFLER. Because we are not talking about docks and harbors, which I believe is the language existing in the Internal Revenue Code provision. This pipeline does not go anywhere near the water.

Mr. RUNNELS. Also, you stated on page 4, "CO_2 content of the gas must be reduced from 12 percent to 1 percent, its pressure must be increased, and much of the natural gas liquids must be removed from the gas because the 1,260 p.s.i.g. pressure Northwest line cannot accept them.

"The cost of the facilities to perform these conditioning functions approaches $2 billion. The Federal Energy Regulatory Commission in its Order No. 45 has said that the producers must perform these functions and may receive no extra compensation for them."

Does the State of Alaska agree or disagree with Order No. 45?

Mr. LOEFFLER. It strongly disagrees.

Mr. RUNNELS. Why does the State strongly disagree?

Mr. LOEFFLER. There are several reasons. Legally it disagrees because the legislative history of the Natural Gas Policy Act indicates that the gas may be sold for the maximum lawful price without conditioning. And Order No. 45 says this isn't so. So, as a legal matter, we think the Commission is in error, and we have made that argument.

In a pipeline sense we argue, and the producers argue, that the gas as it comes off the oilfield separators is ready to be transported in the ordinary lower-48 sense, and that the additional conditioning that is required here is transportation related; it is not an essential part of production, by distinction.

We also believe it is wrong because the order has created sort of a wedge between the producers and the pipeline, and what is needed is to get the producers in some acceptable form into the financing of the pipeline.

Mr. RUNNELS. I noted that Don Young alluded this morning to certain things which would happen if Northwest Pipeline would do certain things. You stated that the people of Alaska really want a petrochemical complex. Is this what they really want?

Mr. LOEFFLER. From my communications with State officials and my own visits to Alaska, yes, there seems to be a great interest. The reason for that is, as you probably know, Alaska has very little industry, and once the oil and gas disappears, there is little left, and there is a hope this will diversify the industry.

Mr. RUNNELS. Do the people of the State of Alaska take into account that Alaska is a long way from where the market would be. Do the people of the State of Alaska take this into account when they are talking about a petrochemical complex?

Mr. LOEFFLER. There are people from the industry who come to Alaska and say that they want to do it or that it is possible, and that the markets would be not the normal markets, but the Pacific rim, and these people are usually welcomed when they come.

We are undertaking, the State administration, an effort to really determine how much serious interest there is in petrochemicals. The Governor appointed a task force to look at that recently. The task force included not only the administration and legislature, but representatives of the bureaus, Fairbanks, Anchorage, North Slope, and their conclusion was they didn't know; they didn't have enough information to determine whether a petrochemical industry was feasible, but they wanted to preserve the right. They have heard both sides of the argument, and there are people in the industry who say it is possible in Alaska.

Mr. RUNNELS. Are the people saying this, the ones who have an interest in the oilfields or interest in the gas?

Mr. LOEFFLER. No.

Mr. RUNNELS. These are outsiders?

Mr. LOEFFLER. Yes.

Mr. RUNNELS. I want to thank you for your presentation. We may send you some questions for the record. We appreciate your being here today.

Mr. LOEFFLER. Thank you.

[Editor's note: Additional questions submitted by the subcommittee, with responses from the State of Alaska, may be found in the appendix. See table of contents for page number.]

Mr. RUNNELS. This committee will recess until 9:45 in the morning. I thank those who were our witnesses and those who have come to observe today. Thank you very much.

[Whereupon, at 3:55 p.m., the subcommittee recessed, to reconvene at 9:45 a.m. o'clock, Tuesday, Oct. 16, 1979.]

ALASKA NATURAL GAS TRANSPORTATION SYSTEM

TUESDAY, OCTOBER 16, 1979

House of Representatives,
Subcommittee on Oversight and Investigations,
Committee on Interior and Insular Affairs,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9:50 a.m., room 1324, Longworth House Office Building, Hon. Harold Runnels (chairman of the subcommittee) presiding.

Mr. Runnels. The Subcommittee on Oversight and Investigations of the Interior and Insular Affairs Committee will come to order.

Our first witness this morning is John T. Rhett, Federal Inspector. I believe he will be accompanied by Peter Cook, the Executive Officer. Welcome, both of you.

[Prepared statement of Hon. John T. Rhett, Jr., may be found in the appendix.]

STATEMENT OF HON. JOHN T. RHETT, JR., FEDERAL INSPECTOR, OFFICE OF THE FEDERAL INSPECTOR, ALASKA NATURAL GAS TRANSPORTATION SYSTEM, ACCOMPANIED BY PETER COOK, EXECUTIVE OFFICER AND DEPUTY FEDERAL INSPECTOR

Mr. Rhett. Good morning, Mr. Chairman. I am really pleased to have this opportunity to appear before you today and introduce myself and my organization, and to discuss the progress that has been made on the pipeline to date.

I do plan to summarize my statement. I obviously will be open for questions from any of you.

During my nomination hearing on July 12, I characterized the job of Federal Inspector as a most challenging assignment. My experiences during these first 3 months as Federal inspector have more than supported that preliminary assessment of the task which lies ahead.

The diversity of terrain, the sensitivity of the environment, the unique construction conditions, the geographic scope of the project, the number of Government and corporate entities involved, and the cost of the project together pose a considerable challenge to all participants. This, however, should not deter us because the benefits to the sponsors and to the country are substantial.

Completion of the pipeline will deliver a volume of natural gas roughly equivalent to 450,000 barrels of crude oil per day. With the addition of compression, this system has the potential to deliver enough energy to offset 600,000 barrels of crude oil per day.

Looking at it another way, the gasline will ultimately supply 5 percent of current U.S. natural gas needs for a period of 25 years. This project, therefore, offers us a unique challenge to marshal the resources of a number of communities—Government, industry, financial, academic—to build an energy transportation system with significant and undisputed benefits to the Nation.

I have been asked to lead the Federal Government's response to this challenge. While the Government is neither building nor financing this pipeline, the extent of our regulatory role makes our participation critical to the success of this project. It is my job to assure that the Federal Government exercises its duties both competently and promptly.

In addition, the development and maintenance of a constructive working relationship among all parties is necessary to assure that the project is constructed in a timely and cost-effective fashion, consistent with environmental and public safety requirements.

I am prepared to do everything I can from the Government side to foster such a constructive relationship.

A large percentage of my efforts to date have been directed to "getting acquainted" with the project sponsors, the Federal agencies, the States and especially Alaska and its people; the Canadians; and, indeed, with the project as a whole.

Getting acquainted with the project itself is a challenge.

I have traveled over 32,000 miles in the past 8 weeks in an effort to acquaint myself with the sponsors and the project. The Alaska Natural gas transportation system spans Alaska, four provinces in Canada, and 10 lower 48 States. It covers every conceivable type of terrain from the fragile Arctic tundra to the prairie pothole region in the Dakotas and Minnesota.

I have flown over most of the line in Alaska and Canada and have been on the ground in many places.

I have also visited Northwest Alaskan Pipeline Co. and their principal construction manager, Fluor Engineering. Northwest has assembled a team composed of topflight personnel, thoroughly capable of providing the needed technical engineering support. In addition, the final resolution of the incentive rate of return and pipe pressure issues, reached by the Federal Energy Regulatory Commission in early September will enable Northwest to continue their mobilization effort.

Due to schedule conflicts, I have not yet been successful in arranging a visit to Pacific Gas Transmission Co. and Pacific Gas & Electric Co. headquarters. However, my discussions with Mr. Prudhomme, president of Pacific Gas Transmission Co., have been very constructive and encouraging.

We do plan to meet next Monday and to fly the western leg together. The western leg of the Alaska natural gas transportation system consists of looping the existing Pacific Gas Transmission Co. and Pacific Gas & Electric Co. system.

By virtue of having constructed and operated a gas transmission line on this right-of-way, Pacific Gas Transmission and Pacific Gas & Electric Co. are well prepared to move ahead with their portion of the Alaska natural gas transportation system.

The Federal Energy Regulatory Commission is scheduled to issue a Certificate of Public Convenience and Necessity early next year and I foresee no major problems which the Office of the Federal Inspector and the sponsors cannot resolve. The exclusion of the western leg from the incentive rate of return process further simplifies the Office of the Federal inspector's responsibilities on the western leg.

The Northern Border Pipeline Co. faces a somewhat more complicated set of problems, but the sponsors are doing an impressive job of dealing with them. Northern Border is completing its final filings for a certificate and work on right-of-way acquisition is also proceeding.

By conventional standards, construction of the 800 miles of pipeline necessary to allow early delivery of Alberta gas constitutes a major undertaking. However, the construction problems on this segment will not be unique.

The sponsors' planning process is well underway and should result in an effective marshaling of the necessary manpower, equipment, and materials.

Obviously, construction on a new alinement has potential for surprises. Yet this route underwent careful analysis before Presidential selection and Northern Border is continuing to supplement the existing data base to reduce the potential for both environmental and technical surprises later on.

Of course, all of the questions have not been answered, nor have all of the problems been resolved. But I am firmly convinced that the successful, timely, cost effective, and environmentally acceptable construction of the Alaska natural gas transportation system rests on two critical factors: One, careful and thoughtful planning to foresee and resolve problems early and, two, genuine dedication by all parties, both Government and private alike, to cooperatively resolve the problems which surface.

I am encouraged by what I have seen so far in both of these areas.

For any project, and especially for one of this magnitude, the development of realistic and detailed schedules is a significant element of the total project planning process. All relevant activities and their interrelationships must be considered. In the beginning a certain number of assumptions must be made from which subsequent activity time frames are developed.

Current sponsor schedules assume satisfactory and timely completion of financing, the Federal Energy Regulatory Commission certification process and other major actions. Failure to complete any of these major actions within the assumed time frame thus necessitates reevaluation of the remainder of the schedule. Because project schedules are a major component of the sponsors' certification filings, all existing schedules are now being reviewed. A review of these schedules by Federal Energy Regulatory Commission and myself is currently underway as a part of the sponsor's request for certification.

The schedules presently under review call for Alaskan gas to begin flowing from Prudhoe Bay to the Lower 48 during the winter of 1984–85.

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The eastern and western legs do not involve unique construction situations.

I am convinced that while the Federal Government obviously has to make sure that all of the applicable rules and regulations are carried out, it also must let the companies proceed in order to get these projects moving quickly. This is particularly important with the prebuild section which can bring excess Canadian gas to the lower 48 before Alaskan gas is available.

I do not mean by this that there are not problems. I do not mean that there is not an oversight responsibility; both by me and obviously by you.

The major thing that I do want to emphasize is that we are concentrating on trying to clear all the roadblocks early.

Since my confirmation as Federal inspector in July, I have devoted a great deal of my energies to developing an organization which will be capable of effectively fulfilling all Federal inspector responsibilities. My responsibilities are spelled out in the Alaska Natural Gas Transportation Act, the President's Decision and Reorganization Plan No. 1. The principal ones are:

(1) Coordinating the scheduling and issuance of all Federal authorizations for the project;

(2) Enforcing all relevant Federal statutes, including monitoring compliance with any terms and conditions imposed;

(3) Monitoring all actions taken to assure that cost control, safety and environmental protection objectives are fulfilled while still achieving the timely construction and initial operation of the Alaska natural gas transportation system; and

(4) Establishing a joint, cooperative relationship with affected State governments and the Government of Canada.

The organization of the Office of the Federal Inspector must be capable of fulfilling this wide range of responsibilities and it must do so within a rather unique set of parameters.

The Office of the Federal Inspector is a single purpose organization with a wide scope of responsibilities, with a limited duration. It must be highly flexible, in order to be capable of focusing attention on problems wherever they arise.

Although initially our major headquarters will be located in Washington, we plan to have field offices in the near future on each segment of the pipeline: Eastern, western, and Alaska, we will also establish close liaison with Canada.

As the work builds up in Alaska, the bulk of the Washington personnel will be shifted there.

My full testimony and our quarterly report cover the organization in detail. Copies of the report have been furnished to the staff.

The regulatory decisions that have been made by the Federal Energy Regulatory Commission in the past 2 months have collectively begun to create the positive regulatory climate essential to project success.

For example, the producers are currently evaluating investment options while Northwest Alaskan continues to pursue various other funding sources. In general, the financing community is responding favorably to the recent turn of events. Department of Energy representatives are closely watching this area and are keeping me apprised of developments as they occur.

Another long-standing issue which is nearing resolution is the content of the administrative, environmental and technical stipulations which will be attached to the Department of the Interior's grant of right-of-way across Federal lands. These stipulations have been under development for some time and the project sponsors have actively participated throughout the process.

The Department of the Interior will be ready to issue grants to both the Pacific Gas Transmission Co. and Northern Border before the end of next month. Work on the grant and stipulations for the Alaska segment is also nearing completion.

The Department of the Interior also has the lead responsibility for the preparation of a set of regulations to implement the equal employment opportunity provisions of the Alaska Natural Gas Transportation Act and the minority business enterprise participation requirements of the President's decision.

My staff has been involved with this effort and I am pleased to report that the cooperation evidenced by both the Department of the Interior and Federal Energy Regulatory Commission has been exemplary in this area. When these regulations are finalized, the Alaska Natural Gas Transportation System will have an effective means to assure equal opportunity and to promote minority business enterprise participation in all phases of the project.

Even though these minority business enterprise regulations have not yet been finalized, the Department of Transportation has taken affirmative steps to fulfill the intent of the Alaska Natural Gas Transportation Act and the President's decision in this area.

Late in 1978, the Department of Transportation solicited offers from minority businesses to provide technical assistance in reviewing the design and quality control programs. My staff is actively participating in the final contract negotiations to broaden the scope to include other areas of the Office of the Federal Inspector's interest.

Also of note in the area of technical assistance, I am developing an agreement with the Chief of the Corps of Engineers for assistance in reviewing Northwest's engineering solutions to permafrost-related problems.

This assistance will be provided by a number of the Corps of Engineers' divisions and laboratories, including the Cold Regions Research and Engineering Laboratory which employs some of the world's experts in permafrost dynamics and Arctic engineering.

In addition to their inhouse expertise, the Corps of Engineers will draw upon the resources of the U.S. Geological Survey, and the academic and international engineering communities. This expertise will be invaluable to the Office of the Federal Inspector during the design review stage.

I would like to divert a minute.

During the design phase, we do not plan to be a reactive organization. We plan to be completely active, helping the sponsors and their contractors resolve any problems that might exist. This is, I think, an example of where we will be able to aid by bringing together the top expertise in the country.

The support and cooperation I have gotten from all the agencies is especially appreciated since I do not intend to duplicate existing expertise which can be made available to the Office of the Federal Inspector.

There exists among the Federal agencies a sincere desire to face the issues squarely and to resolve them with equanimity and prudent haste. This is not to say that reaching agreement has always been easy or quick.

As I have reported already, there are a number of issues which are still unresolved. Yet the lines of communication are open and the flow of information and ideas is steadily increasing. And, more importantly, all key parties both in Government and the private sector are participating. This is a new atmosphere for the Alaska Gas project and I firmly believe it is a healthy one. I intend to do everything I possibly can to see that it continues.

At the September Executive Policy Board meeting, the State of Alaska's pipeline coordinator reported significant progress in the area of socioeconomics in which the State has assumed the lead responsibility.

The State and Northwest Alaskan have been able to reach agreement on a number of provisions which the State believes will be effective in minimizing socioeconomic impacts during construction.

Here again, the case is by no means closed, but the outlook is encouraging. I will continue to follow developments in this area closely.

Socioeconomics is but one of the areas of impact on, and involvement with, the State of Alaska which merits special attention. As mentioned before, the State has participated in the development of the environmental and technical stipulations to assure uniformity of the requirements which will be imposed on both State and Federal lands.

Not only should the requirements be as uniform as possible, but the monitoring and enforcement structures should also be compatible and closely coordinated. The vehicle for the resolution of this and other related issues is, of course, the Joint Federal/State Monitoring Agreement.

Because these issues are both very complex and extremely important, I have personally been involved and will continue to monitor the negotiation process to assure that the details of the agreement are fairly and intelligently developed.

This is also an extremely important area. For the company to be able to project costs, they have to know what to expect. Thus, there has to be an evenhanded, reasonable approach which the companies can predict. A number of surprises will undoubtedly occur in Alaska during construction, I do not want the Federal Government's actions to be one of them.

As the members of this committee are well aware, this is not the first time that the Alaska natural gas transportation system has received congressional attention, nor, I dare say, will it be the last. This project is immense, no matter what measuring tool one applies. Somewhere along the line almost everyone has an interest. Some of the interests are very limited in time; some are quite narrow in scope; and some pervade every facet of the project.

As Federal Inspector, I fully recognize that it is my responsibility to be constantly aware of these interests. During my trips to both

Alaska and Canada, I have met, or tried to meet with, as many groups as possible who have expressed an interest in this project.

While in Washington, I have spent time with representatives of various groups and through these talks I have gained a valuable understanding of the perspective of each of these interests. I have also come to understand that achieving a balance between these interests will not always be easy. Yet, as Federal Inspector, I am prepared to fully accept my responsibility for determining how competing interests will be balanced and for accomplishing this in a fair and responsible manner.

For example, environmental groups have proposed formation of a citizens committee which would be attached to the Office of the Federal Inspector. The perspective which such a citizens committee could bring to the Office of the Federal Inspector could be a valuable asset to the decisionmaking process. I am currently analyzing the available options to determine which alternative will best achieve our common objective: the minimization of environmental damage.

I remain firmly convinced that early, careful planning will accomplish this objective; first by eliminating most of the major potential environmental problems, and second by serving to reduce the severity of the problems which may surface later. The key is to recognize problems early so that they can be solved reasonably and without excessive costs or delays.

The past 3 months have been an education; and a valuable and rewarding one. I am encouraged by what I have seen and I am optimistic about the future. As a result of the dedicated efforts and cooperative attitude evidenced by all sides, a number of problems are now on their way to resolution.

I fully recognize that there are difficult choices ahead, but I stand prepared to assure you that they will be made fairly, intelligently and quickly. If we can succeed in maintaining the forward motion which has already begun, we shall have a successful project which is a credit to us and to the Nation.

Both Mr. Peter Cook, my deputy, and I are available for any questions, Mr. Chairman.

Mr. RUNNELS. Thank you very much for a most enlightening statement. I congratulate you not only on your statement, but also on your appointment. I am no flaming liberal and in my career as chairman of this subcommittee you are the first to indicate to me that you are a conservative. The reason I say this is that you used both sides of your sheets of paper. No other witness has been conservative enough to use their paper that way. I congratulate you. If that is any indication of how you are going to run your office, you and I are going to get along real well.

Mr. RHETT. Mr. Chairman, of course, one of the big issues that is outstanding is the reimbursement issue and I am sure that Mr. McMillian was counting the number of sheets of paper that I used.

Mr. RUNNELS. It is the American taxpayer and the American consumer that should be saying "thank you" because if you are going to operate in this manner, you are going to save money in the long run. I know a lot of people say you are going to be saving for Northwest Pipeline. That is not who you are really saving for.

You are saving money for the American consumer because that is who will pick up the tab. Is this correct?

Mr. RHETT. Yes, sir.

Mr. RUNNELS. How large is your staff today?

Mr. RHETT. Presently it is 26 people. We are exactly on schedule.

Mr. RUNNELS. At its peak during the construction period, what do you think it will be?

Mr. RHETT. In the neighborhood of about 230. We will have about five to six offices, but the bulk of this staff will be in Alaska.

Mr. RUNNELS. What is your budget for fiscal year 1980?

Mr. RHETT. For 1980, $15 million.

Mr. RUNNELS. What in your opinion are the most serious unresolved issues up to this point?

Mr. RHETT. The most serious one is financing. In the 2 months that I have been on board, Mr. Chairman, the whole atmosphere of the project has changed due to the regulatory decisions that have been made. I think the financial community has more confidence in the project as a result.

There are some technical hurdles but in my opinion these can all be overcome by competent engineering, in an adequate period of time and in a cost effective way.

Mr. RUNNELS. I am happy to hear you say that you can see this change of atmosphere and change of feeling. The testimony yesterday indicated a lot of it was due to your being appointed Federal Inspector. What do you think caused the delay in your appointment?

Mr. RHETT. Mr. Chairman, you are a little out of my bailiwick; although it does seem like it took an inordinate amount of time.

I know that the Canadians are about 14 months ahead of us, but I can assure yout that we are catching up fast.

Mr. RUNNELS. In your testimony you have stated that you have visited the western leg and the northern leg and also your various counterparts in Canada. Is this correct?

Mr. RHETT. Yes.

Mr. RUNNELS. I am trying to establish a complete record. It was a long time coming and we are happy that you have been appointed. I have already established that you are conservative; now, to ask you a personal question. We are running a little bit behind on this project. By any chance were you a 7-month baby?

If you do not want to answer, you do not have to.

We are going to assume that you are going to double up and catch up.

Mr. RHETT. Yes, sir.

Mr. RUNNELS. Mr. Clausen.

Mr. CLAUSEN. I want to join my genial chairman in welcoming you before the committee, Jack, and to add to what he has said in a bipartisan tone about how genuinely pleased we are that you have been selected to serve in this capacity. I say this on the basis of the many, many years we worked together on my other committee assignment when you were serving in the Environmental Protection Agency trying to bring some semblance of balance between the economical and environmental considerations we all have to face. I think you are eminently qualified. As you can see by the reception you are receiving from this committee, as well as the feedback I am hearing, people are genuinely pleased at your appointment. I think there is lots of optimism simply because of the fact you were selected for this important responsibility.

Mr. RHETT. Thank you.

Mr. CLAUSEN. There are a few things.

You made reference to the Joint Federal/State Monitoring Agreement. How voluminous is that agreement?

Mr. RHETT. Mr. Clausen, I cannot really tell you yet because we are still negotiating. It could end up being fairly complex and fairly thick, but the major part of the agreement, that part which establishes a cooperative working relationship, should only be very, very short.

There are a number of difficult problems which, though mainly legal, still have to be worked out. If necessary, the agreement could have appendices to resolve any legal problems.

Mr. CLAUSEN. My reason for asking how voluminous it might be is whether it should be made a part of our record because we are attempting to develop the kind of record that would include the most important documents.

As a part of our total effort it would be helpful if the committee had that or if it is very voluminous a summary of the agreement.

Mr. RHETT. The problem is that neither myself nor the State has approved it as yet. We are still in the middle of negotiations.

I wonder if it might not be appropriate for us to finish this extremely important document and then furnish it to the committee.

Mr. CLAUSEN. That is exactly why I am making the request. As soon as it can be completed I would like to see it, Mr. Chairman, be made a part of the record or the file, depending upon the size of the document.

Mr. RUNNELS. Without objection, it is so ordered.

Mr. CLAUSEN. On page 4 of your testimony with respect to the western leg, you state that "the Federal Energy and Regulatory Commission is scheduled to issue a Certificate of Public Convenience and Necessity early next year and I foresee no major problems which the Office of the Federal Inspector and the sponsors cannot resolve."

While the section regarding your office is encouraging, there appears to be some slippage on the Federal Energy Regulatory Commission western leg approval when compared to testimony received yesterday. Why cannot FERC approval be forthcoming this year?

Mr. RHETT. Mr. Clausen, I think that Chairman Curtis will be here.

Mr. RUNNELS. He is our next witness.

Mr. RHETT. I wonder if I could defer that issue to him?

Mr. CLAUSEN. All right. But I will get back to you.

Mr. RUNNELS. Would the gentleman yield?

If I understood correctly, the Inspector does not really have full sway over the western leg and the Northern Border pipeline system.

Mr. RHETT. No, Mr. Chairman, the Federal inspector will have oversight responsibility on both Lower 48 legs as well as the Alaskan segment.

Mr. RUNNELS. I mean concerning things like issuing the permits like the Department of the Interior's. You mentioned in your statement that the Department is going to be issuing one next month. I was trying to point out the difference between your role in Alaska which is a little different from the role in the Lower 48.

Mr. RHETT. That is particularly true for the western leg, because it does not have the incentive rate of return mechanism which is a very complex experiment. I am sure Chairman Curtis can address this in more detail.

The major thing on the western leg is that the company is well prepared. I am convinced that if something does not really get hung up in the Federal Energy Regulatory Commission right now, and if the Canadian National Energy Board approves the prebuild, that leg will stay on the schedule presented yesterday.

Mr. CLAUSEN. Are you confident that the Department of the Interior will be ready to issue a right-of-way grant to the Pacific Gas Transmission Co. by the end of next month?

Mr. RHETT. Yes, sir. In fact, I discussed this with them yesterday.

Mr. CLAUSEN. Do you have adequate or truly full support and cooperation from the executive branch in the staffing and the funding of your office consistent with what you perceive to be the requirements?

Mr. RHETT. Very much so. In fact it is somewhat unique.

As my budget examiner told me, he was putting on his white hat for these two or three budget exercises that we are going through now, but next year he will put his black hat on. We are getting complete support, yes, sir.

Mr. RUNNELS. Excuse me. You might tell him where your office is so he will know. Where is your office?

Mr. RHETT. It is presently with OMB in the New Executive Office Building.

Mr. CLAUSEN. You make reference to the dedicated efforts and the cooperative attitude evidenced by all sides. Is that unique in your experience? Is this cooperative effort because of the recognition of the energy crisis and the requirements that have to be met here?

Mr. RHETT. I think it is unique. As you know from my background, I have had to work with a number of agencies before. We are just not seeing the turf fighting. People are trying to put their shoulders to the wheel and to make sure that the problems are resolved, but I really think it is the result of two factors. First, it is the energy crisis and the dedicated effort of the top people to resolve the issues. That attitude is filtering down.

The second thing is that the office of the Federal inspector is an experiment in public administration. I think between the power that is given to the Federal inspector and the energy crisis, I am seeing something very unique.

Mr. CLAUSEN. The fact that this was created by the Congress suggests that maybe we have done something right for a change.

Mr. RHETT. I think so, very much so.

Mr. CLAUSEN. Let me just ask you a final question.

A lot of us on the committee and in the Congress have placed a high priority on the establishment of an energy distribution network here in the Western Hemisphere. Are we overstating its requirements or needs in terms of meeting the energy needs or are we understating it?

I feel very strongly about it. That is the reason why I am pleased to see a person of your caliber aboard to bring it on line as quickly as possible. I would like to have your view on the necessity for an energy distribution network.

Mr. RHETT. I think it is completely essential. I do not think there is any understatement at all. We still have problems in oil distribution; there will be further gas distribution systems. I am just convinced that the country needs this project. I am sure you have read articles in the newspapers which I claim that Mexican gas or liquid natural gas are viable alternatives to the Alaska pipeline. I just do not believe it. We need all of these energy sources. And we also need the distribution systems to be able to carry energy where the country needs it. I think this project is an integral portion of that distribution system.

Mr. CLAUSEN. We certainly look forward to working with you. I am sure the committee will not only follow your activities with interest, but as part of the monitoring effort we want to be in the writing wing with you.

Mr. RHETT. Right, I am looking forward to it.

Mr. RUNNELS. Before the next Congressman asks questions, I might suggest to those of the press, those who are writing, who want to use these seats around here, that they may feel free to come up here and sit down. There is no use standing up when there are seats available.

Mr. RUNNELS. The gentleman from Montana, Mr. Williams.

Mr. WILLIAMS. Thank you, sir.

How will your office and the Federal Energy Regulatory Division divide responsibility in computing costs for the incentive rate of return mechanism?

Mr. RHETT. We are presently negotiating what the exact division of responsibility will be. In fact, I met with Chairman Curtis last Friday. I would assume that we ought to be able to resolve this issue within the next 2 to 3 weeks.

Obviously, I am trying to make sure that I have enough tools to do the job and do the job properly.

Chairman Curtis, though, also by law has certain responsibilities in this area and either I have to satisfy those for him or he has to have some oversight.

Mr. WILLIAMS. Thank you.

What are the employment requirements under the equal opportunity provisions of the act?

Mr. RHETT. Excuse me?

Mr. WILLIAMS. What are the minority employment requirements under the provisions of the equal employment opportunity provisions?

Mr. RHETT. We have a set of regulations that are just about to go out; in general, for EEO we will be trying to at least meet the general pattern of population distribution. Also, in minority business, we are considering dropping the level for contract review from $1 million down to $500,000. I am not sure exactly how this will come out.

Mr. WILLIAMS. We heard a great deal of concern expressed yesterday from officers of both Foothills and Alaska Northwest Natural Gas concerning what they claimed to be the costly and time-consuming delays which they say are caused by legislative and regulatory proceedings here in the United States.

Recognizing that you have not—that your tenure in this specific job is yet limited, do you have some thoughts about those delays? Are they real? And do you have any recommendations for this committee about how legislative or regulatory delays and lags might be prevented in the future?

Mr. RHETT. I think there are two things. One of them you all are presently acting on. That is your Energy Mobilization Board. This is where you finally get a focal point and somebody who is responsible. I think that where the responsibility can be spread around it is difficult to get timely decisions. With your Energy Mobilization Board, handling the priority projects, I think many of these regulatory problems can be overcome.

I also think that you need to watch me and my organization very closely, because this is an experiment in the same thing. It is a little more down on the back end rather than the front end like the Mobilization Board, but I think these two items are not only important, I think they are essential for us to meet our energy needs.

Mr. WILLIAMS. Thank you.

Mr. CLAUSEN. Would the gentleman yield?

Mr. WILLIAMS. Yes.

Mr. CLAUSEN. You have made reference to the Energy Mobilization Board. The Senate has passed a bill. The House Interstate and Foreign Commerce Committee and the Interior Committee have versions of their own. Have you had a chance to evaluate the Senate version? Will it get the job done?

Mr. RHETT. Congressman, I assume we are talking about the general energy field rather than the pipeline. First, let me make sure I understand the question.

Mr. CLAUSEN. One or both.

Mr. RHETT. OK. Let us talk in general.

Mr. CLAUSEN. General energy projects?

Mr. RHETT. Yes, generally I believe it will. I think it is an extremely good bill and I think the authority to expedite should accomplish our purposes and yet not reach the point that we are running roughshod over the States or something of this nature.

Mr. WILLIAMS. If I may reclaim my time.

You are saying, sir, that you prefer the Energy Board to deal with procedural delays and difficulties rather than substantive law?

Mr. RHETT. In general, this is my feeling. I feel we are better off that way. If you have the procedure set up, and if you can isolate the problems early, I personally think the substantive part can be resolved.

Mr. WILLIAMS. From your experience, are the delays occurring because of States or because of Federal law and procedures?

Mr. RHETT. I think it is a combination.

Mr. WILLIAMS. Governors tell us that they are on time and on line and the Federal Government is creating the delay.

Mr. RHETT. I think it is all the way across the board. There are problems statewide, there are local problems, and there are also Federal problems in this. Most States have parallel laws for environmental or consumer protection that can cause delays. And if you have one central focal point where all of these can be laid out, and if you can waive the procedural portions, State, local and Federal, I think we have an opportunity to speed these projects along.

I firmly believe that you always need to be able to "pin the rose" on one person. The head of your board would have the responsibility for making sure that these things are done; there would be no diffusion of responsibility.

Mr. RUNNELS. The chairman is invoking the 5-minute rule as of right now. I tried to be lenient yesterday and tried to be lenient today. If we do not invoke the 5-minute rule—we were here until after 3 o'clock yesterday afternoon. So it is the 5-minute rule.

Next, Mr. Lagomarsino.

Mr. LAGOMARSINO. I will use the 50-second rule. Thank you, Mr. Chairman.

I am sure that you are well aware from your work and also from the testimony yesterday that, unlike so many other projects that we have had the luxury of dragging out for years and so on in the past, if we apply that same standard to this project we may well not have one; that it is not just a question of delay costs money, delay may cost the entire project, as apparently was the case with the Sohio project in southern California. So I compliment you on your statement and on your willingness and eagerness to get on with this job. I think it is essential to the future of the energy-independent feature of our country.

Have you had a chance—this was alluded to earlier but I am not sure the specific question was asked or answered—have you had a chnace to look at the language that Senator Stevens of Alaska inserted in the Mobilization Board bill?

Mr. RHETT. I have read it. We are in the process of analyzing it. However, I need to do more analysis of it. What he is trying to accomplish is extremely good; in other words, the best of both worlds.

I am trying to look at it from a procedural administrative viewpoint. The one thing that I do not think would be helpful is to put another layer over the Federal Inspector. In other words, if the Federal Inspector has to operate under the board, then I am afraid we are going to get two things: We are going to get into administrative and legal problems, plus, again we have reached that point of not having a single focal point of responsibility. I am not sure whether this is adequately taken care of. My lawyers are working on this.

We would be happy to work with the committee's staff on this.

Mr. LAGOMARSINO. Thank you.

I might just say that I hope and I am sure you will share that information with us because we are going to be working on that legislation ourselves pretty soon on the floor.

Mr. RHETT. I will, sir.

Mr. RUNNELS. Mr. Young of Alaska.

Mr. YOUNG. Mr. Chairman, I thank you for invoking the 5-minute rule; I appreciate it.

Mr. RUNNELS. You knew what was coming.

Mr. YOUNG. I knew what was coming. I was late getting here. So I am doubly chastised.

Mr. RUNNELS. No, no, no. It applies to the chairman as well as to the members.

Mr. YOUNG. Mr. Rhett, I want to personally compliment what progress you have made. You mentioned staff, 26 members; how many are in Alaska now?

Mr. RUNNELS. How many what?

Mr. YOUNG. How many staff members are in Alaska now?

Mr. RHETT. My top technical man is there right now; but let me explain that.

Mr. YOUNG. You do not have to explain too much; I am just curious.

Mr. RHETT. I have one staff person there now. But I think it is important for you and the committee to understand the way that I am developing my organization.

I brought one man down from Alaska and he is my top technical man. There is a second man, Paul Steucke, who has been in Alaska for the last 3 or 4 years and will be sent back shortly. But at the same time I struck an agreement with the executive coordinating committee which is run by Curt McVee from Alaska. They agreed to operate for me until I could select a top quality staff. I am getting tremendous support from all quarters. And I might add, it is not just the Federal establishment but it is also Chuck Behlke, the Alaska State Pipeline Coordinator, who is a real pro.

We almost always have somebody in Alaska; as a matter of fact, I plan to be there next Tuesday.

Mr. YOUNG. At the appropriate time I hope you plan on staying for a period of time while you are in Alaska.

Mr. RHETT. Yes, sir.

Mr. YOUNG. This is out of line in a sense. I also have suggested we consider, because the line is 400 miles north of Fairbanks and 400 miles south of Fairbanks within Alaska, that Fairbanks be given some consideration. It is very difficult for me since I am a Representative of all the State. But I had an experience with this during the TAPS operation where a lot of the decisions were made in Anchorage, 400 miles away from the line. I think you should be in the field close to the operation.

Yesterday during the testimony of a couple of witnesses, there was allusion to agency lack of action, not referring to you particularly. Have you run into any difficulties with fish and wildlife, birds and feathers and all those things?

Mr. RHETT. Congressman Young, not really. Now let me explain this.

I have been on board a little over 2 months and I am finding nothing but cooperation. That does not mean that there were not delays in the past. There have been major delays in the past on the project. But I think that since I have come on board, and I hope part of it is leadership that my office has been able to give, that we are finding a very cooperative approach to resolution of problems.

Mr. YOUNG. What is your linkage as far as your answering to anybody other than the President? Who do you answer to?

Mr. RHETT. Theoretically I answer to the President. Of course Vice President Mondale has been intimately involved in the project, as well as Secretary Duncan. I also answer to the oversight committees.

Mr. YOUNG. What I am trying to get across is, I am sure as this line progresses after going through the TAPS line, that there is going to be a lot of people trying to tell you what to do that have nothing to do with the pipeline as far as I am concerned. Do you have to answer to Andrus or Kathy Fletcher or Joan Davenport or Chris Carlson or any of that type.

Mr. RHETT. No. In general, my access has been straight to the Vice President to date.

Mr. YOUNG. One thing I would appreciate not only as a representative from the State but as a member of this committee that if there is any time we can be of assistance to you, please let us know. We want to make sure there are not arbitrary roadblocks of things that really do not make sense. Please feel free to contact this committee—and of course myself, respectively, and we will see if we can help—because your job is very important.

I like the idea of "pinning a rose" on you. I think that is the whole key to the timely construction of this pipeline, not only engineeringwise but delivery to the consumers. I went through this time and again where there would be a delay, for absolutely no reason at all. We dug up pipe that had no reason to be dug up, none whatsoever. Someone said it was not properly done, one group. We had stoppages at crossings, we had to go through four, five different agencies, it was just a whole boondoggle of management.

I hope your position will give you the authority to make those decisions with the responsibility laying upon your back.

Mr. RHETT. I appreciate the offer. You know, I do not want to underplay the fact that, as I have said, we have some tough decisions and some tough head-knocking coming. None of these issues will be easy to resolve; if they were you would not need me.

Mr. YOUNG. But the decision has to be in your hands. That is one thing I was pleased with what you said. Even with Mr. Stevens, my senior Senator, I hope he recognizes that a double layer of brass will not achieve what we are seeking out of this committee. I am sure that is not his intent at all.

Mr. RHETT. I am sure it was not.

Mr. YOUNG. I hope you will make the pertinent decisions regarding construction of this line.

Mr. RUNNELS. The gentleman's time has elapsed.

We want to thank you for being here.

Mr. Cook, do you have any statement you would like to make.

Mr. COOK. Thank you, sir. I think Mr. Rhett has said everything for now.

Mr. RHETT. Good deputy.

Mr. RUNNELS. Jack, you were answering a question as to who you had to answer to. Is your wife in the audience?

Mr. RHETT. Yes, sir.

Mr. RUNNELS. Will she raise her hand, please? She comes from the finest congressional district in America. I did not say where.

Mr. CLAUSEN. And I thought your opening remark was sincere.

Mr. RUNNELS. We thank you for being here. If this committee can be of any assistance at any time, we would hope that you would feel free to keep our staff informed of your operations and on what is going on so that we may be able to help out.

Mr. RHETT. Mr. Chairman, I appreciate the opportunity to appear before you today.

Mr. RUNNELS. Thank you.

Is Mr. Curtis in the audience yet?

Mr. Curtis had another meeting to go to. He wants to appear personally. So we will have Mr. Curlin, accompanied by Mr. Toskey. Mr. Curlin is Assistant Deputy Secretary of the Department of the Interior. We are happy to have you here. You may summarize your statement and it will be included in its entirety.

[Prepared statement of Hon. James W. Curlin, may be found in the appendix.]

STATEMENT OF HON. JAMES W. CURLIN, DEPUTY ASSISTANT SECRETARY, DEPARTMENT OF THE INTERIOR, ACCOMPANIED BY WILLIAM M. TOSKEY, AGENCY AUTHORIZED OFFICER, ANGTS

Mr. CURLIN. Thank you very much, Mr. Chairman. This is the first time before this subcommittee and I am looking forward to this interchange, as well as those in the future which I am sure will occur.

I am prepared to summarize my statement, Mr. Chairman. I would like to do this as briefly as possible and talk about three particular items of interest to the subcommittee:

First, the situations that will be required for grants of right-of-way; second, the alignment of the right-of-way; and third, the unique qualities of the Haines-Fairbanks right-of-way decision.

In that order, then, with regard to the right-of-way grants, the Department of the Interior has responsibility for making these grants over Federal lands. It will have to make grants to each of the following four companies—there will be four grants:

Northwest Alaskan Pipeline Co., Alaskan leg; Northern Border Pipeline Co., eastern leg; Pacific Gas Transmission Co., western leg from the United States-Canadian border to Oregon-California State line; and the Pacific Gas & Electric Co., western leg within the State of California.

For the convenience of the committee, we have included a map attached to the testimony that you may look at if you wish.

According to the current construction schedules, construction will begin first on the eastern leg and the Pacific Gas Transmission segment of the western leg from the United States-Canadian border to Stanfield, Oreg.

The right-of-way grants covering portions of these systems will be executed upon completion of the stipulations and, as the Federal inspector has said, this will be in November. Grants covering the Alaskan leg and the Pacific Gas Transmission segment of the western leg from Stanfield to the Oregon-California line will be done in sequence. The Alaskan leg should be within the next 6 to 9 months.

The cooperation that has been received by the Department from other agencies and the Federal inspectors is a splendid example, I believe, of the cooperation that this administration, is putting forth in pursuing this and other major energy activities.

However, to be perfectly blunt, we do have a problem within the Department of the Interior in balancing the objectives of several of the statutes which we have to work with. One of these, of course, is the Mineral Leasing Act under which the right-of-way grants are made, and the second is the expedited processes of the Alaska Natural Gas Transportation Act which we are discussing today.

There are four things that are required of us with regard to the granting of rights-of-way: The restoration, revegetation, curtailment of erosion that might result from construction; protection of air and water quality that might derive from the activities of this construction and the operation of the pipeline; control or prevention of environment and property damage and hazards to public health and safety, and fourth, the protection of the interests of individuals living in the general area of the right-of-way who rely upon those resources for subsistence.

Now, it is expected in a 4,000-mile pipeline right-of-way project that there are going to be both the extremes of the environment involved and some extremely difficult engineering and environmental problems to be resolved, particularly in the construction through permafrost. It is not exactly what you call state-of-the-art technology, but each and every turn can bring surprises. The Federal inspector has recognized this in his statement and we are prepared to deal with these problems as they come up.

Another responsibility of the Department of the Interior is the impact that may derive on wildlife, fisheries habitat, and so forth. Inevitably there will be damage. This has been acknowledged. Our problem is minimizing that.

I believe through the splendid cooperation that we are receiving from the company and the cooperation we are receiving from the other Federal agencies that we can minimize these impacts and move in an expedited way to accomplish the objectives of the project.

With regard to the Alaska Natural Gas Transportation Act, its objectives are to bring the resources of the Government together to expedite the construction of the project.

The urgent need for the pipeline, combined with the constraints imposed by the incentive-rate-of-return concept, does create some economic tensions between what one might characterize as least cost engineering solutions and the achievement of the environmental protection that I have just summarized.

In addition to the consideration of capital costs for engineering and construction adjustments for environmental reasons, we feel that the life-cycle costing for maintenance of the line should also be considered in the formulation of the incentive rate of return.

Now personally, I do not hold myself out as having any expertise. I have a minimal knowledge with regard to the calculation of this experimental concept of regulation and I am sure that Chairman Curtis will treat this indepth. But the Department has been urging the Regulatory Commission to consider the life-cycling costs, the impact of these costs on both the construction and the maintenance of this line with regard to the rates, and the company's response to the Government's need to protect and maintain the environment.

We have been seeking mutual solutions. As I mentioned, the progress has been good. It is not to say that we are over the hump yet, but the stipulations are well developed. We are confident we will be able to move expeditiously in November.

Mr. Toskey has just returned from Alaska. He has information of greater detail and on the progress that has been made on formulating the stipulations. These will be compiled in a handbook which will be used by the construction crews at the pipeline, the pipeline management, and the Federal agencies and personnel who are responsible for overseeing these activities. By assembling this in handbook form, we feel that everyone will have information that has been developed and derived by the interaction of the Federal-private sector in the State of Alaska.

The second item is pipeline alignment: The President's decision and report to Congress, in September 1977, set out the general location of the pipeline, that is with regard to paralleling the Alyeska oil line to Delta Junction and then following the Alaskan Highway to the Canadian border. However, there are a number of details with regard to alinement, in placing this natural gas line parallel to the oil pipeline, which still must be resolved.

After a number of exchanges between the company and the Department of the Interior and other agencies, there was a working group assembled in Salt Lake City to discuss the technical concerns that still faced the group in meeting these responsibilities. Membership of this group included representatives of Federal agencies, the State of Alaska, the Trans-Alaska pipeline system (TAPS), and, of course Northwest Alaskan Pipeline Co. itself.

The working group, made up of an impressive mass of expertise, was divided into eight technical teams to examine specific concerns. These teams dealt with construction, thermal problems, geotechnical problems, the proximity problems, hydrology, the cost, erosion control, and biological impacts.

However, while the working group was contemplating these problems and devising solutions and expanding data and information, the company was permitted, of course, to go ahead with its design and planning based upon the resolution of several factors that were agreed to by the company with the working group. And the planning and design has continued on that basis.

There has been one meeting held. There are three meetings scheduled with the working group and the company to convey the information and develop the strategies. The first one was held in September and there will be another meeting held in the early part of November, somewhere between the 8th and 10th. This schedule has not been nailed down.

There still remain a number of concerns that this working group will have to address, however. To summarize: There is the effect of frost heave on the chilled buried line, the effect on ground water, thermal interaction with the hot oil line if it is buried in close proximity to that line, the impact of blasting on the oil line, risk analysis of the mutual impact between oil and gas line during the construction and operation, slope stability of thaw-unstable soils, crossings of the oil line, and then, of course, the mitigation measures for fish and wildlife and their habitats.

The company continues to work on these in close association with the Department. We have offered our assistance. We will go as far as necessary in resolving these particular problems.

The last item, the Haines right-of-way, is a rather complex situation. The status of ownership of some of the right-of-way is still under advisement.

I have brought with me for inclusion in the record with permission a letter which was transmitted from Assistant Secretary Guy Martin to the General Services Administration, which outlines in detail the problems associated with the Haines right-of-way.

Mr. WILLIAMS. It is so ordered.

Mr. CURLIN. Thank you.

[The letter referred to above may be found in the appendix.]

Mr. CURLIN. Involved in these uncertainties of jurisdiction are certain Native claims which must be resolved by the Alaska Native Claims Appeal Board of the Department of the Interior. You can appreciate that trying to reach a schedule and hold a schedule on something as complex as an appeal procedure with regard to Native claims prohibits us or makes it very difficult to anticipate when this will be resolved.

However, we will be moving as expeditiously as possible to resolve those decisions.

In addition to the Native claims problems, there are three Federal agencies which are involved as well: The Department of the Interior, the General Services Administration, and the Department of the Army.

The Department of the Interior, as soon as the clarification with regard to some of the uncertainties of the ownership of the right-of-way area is resolved, will move expeditiously for grants of right-of-way to the company. However, in the event that certain of these areas are found to be within the realm of the Native claims, then of course this will become a private negotiation with the company and with the Natives.

Just to summarize, we are quite pleased with the cooperation we are getting, with the guidance we are getting from the Federal inspector. The Department has created a counterpart to the Federal inspector's office. Mr. Toskey heads that up. It operates as an independent unit under the Assistant Secretary for Land and Water. We feel in this way we are able to deal with the internal problems of the multiple agencies of the Department of the Interior much in the way the Federal inspector is dealing with the overall Federal agencies.

Mr. YOUNG. Did you say Mr. Koskey?

Mr. CURLIN. Mr. Toskey.

Mr. YOUNG. Is he the same one that held up the lake for P.G. & E. for 3 to 5 years?

Mr. CURLIN. I will let him answer that.

Mr. YOUNG. Are you the same gentleman?

Mr. TOSKEY. No, sir, I have been in the Department of the Interior only 3 months.

Mr. YOUNG. You are not the same one?

Mr. TOSKEY. Yes.

Mr. YOUNG. You are the same one that was mentioned yesterday?

Mr. TOSKEY. Yes.

Mr. YOUNG. You are the counterpart?

Mr. TOSKEY. I hold the position within the Department of the Interior responsible for coordinating all activities within the Department for the gas line.

Mr. YOUNG. I can see why we are going to have to have the Energy Mobilization Board.

Thank you.

Mr. CURLIN. This concludes my statement and I would be willing to answer questions.

Mr. WILLIAMS. Thank you.

Originally Northwest proposed that the gas pipeline cross over the oil pipeline 64 times. What is the latest proposal?

Mr. CURLIN. We now estimate the cross-overs will be approximately 40.

Mr. WILLIAMS. Thank you.

Mr. Young.

Mr. YOUNG. Mr. Chairman, Mr. Curlin, I was reading your testimony while you presented it. On page 3 you have some remarkable statements. For example, Arctic permafrost is a fragile feature of the northern environment. I have heard that since 1968. I think that has been established.

Is there anything new about the construction or the crossing of streams or location of the pipeline from Prudhoe Bay to Delta?

Mr. CURLIN. We have gained a great deal of experience, Mr. Young. Of course, with each excursion into that area we learn more.

Certainly there are unique situations that will arise. Because of the proximity, however, with the oil line, we do have that base of knowledge upon which to operate. The difference between burying a chilled line and a hot oil line over the surface, of course, can result in different engineering considerations.

I personally do not have the expertise to make any specific judgment. My intuition however, is that while we may run into some surprises from time to time, in general we have the knowledge to carry this project out without major concern.

Mr. YOUNG. Further on page 4, it says hundreds of spawning beds for commercial and sports fish lie in the same general path of the pipeline. Are any of these streams different than were crossed with the oil line?

Mr. CURLIN. I believe not.

Mr. YOUNG. Was there any damage to anyone's knowledge to any of the spawning stream?

Mr. CURLIN. Not of a major nature.

Mr. YOUNG. It says, "The exact location of each spawning bed is not known."

Mr. CURLIN. I believe that stands on the facts, yes.

Mr. YOUNG. But it is the same path that we took with the TAPS line.

Mr. CURLIN. I do not disagree.

Mr. YOUNG. To my knowledge, there is only one spawning stream that will be crossed from Delta to the Alaskan border.

Mr. CURLIN. You probably know more about that than I.

Mr. YOUNG. The thing that really bothers me is, this is fine testimony but it is fraught with insinuations there is going to be great environmental damage done when we are really following the parallel path of the TAPS line and we have a counterpart to Mr. Rhett and we are going to hear from the Army in a few moments, and it looks to me we are appearing to build a case to be faced with the same exact problems of delay that was fraught with the TAPS line.

Mr. CURLIN. I would disagree that you could follow that conclusion, Mr. Young. You may interpret it that way. I do not see that as a prospect.

I think the Department is looking at these possibilities. We do have the experience. It was not intended that this statement be inflammatory or to imply that we will have horrendous problems, but merely to recognize that in dealing with these problems there is a responsibility, a legal responsibility on our part, and that we will do the best we can to resolve them.

We all recognize the need for the pipeline. We intend to see that it is constructed expeditiously and with minimal impact on the environment.

Mr. YOUNG. The last sentence, "Thus, some unforeseen damage to spawning beds will inevitably occur," that is an assumption.

Mr. CURLIN. It is an assumption, correct.

Mr. YOUNG. It is inflammatory, to say something like that about spawning streams, that this pipeline is going to cross exactly the same way TAPS did. It has a fine record, to my knowledge there has been no damage. This is a beautiful piece of Interior work. Thank you, Mr. Chairman.

Mr. RUNNELS. Thank you.

Mr. Lagomarsino.

Mr. LAGOMARSINO. Mr. Curlin, is the Haines right-of-way the one referred to yesterday by the witnesses?

Mr. CURLIN. I am not sure. There is only one Haines right-of-way.

Mr. LAGOMARSINO. They did not use that term. They said there was a 3-mile——

Mr. CURLIN. No, that was a different situation, sir.

Mr. LAGOMARSINO. Can you tell us about that situation?

Mr. CURLIN. The situation to the degree of delay that was implied with regard to the 3-mile sector, is that it? I can address that in a general way. I have no institutional memory on this, sir, so I am having to rely on other information. I think there are three elements, at least two elements that you must consider as background on that particular situation.

The President's decision was pending until the fall of 1977 with regard to this pipeline action. That is the first point.

The second point is that the policy board, which supports the activities of the Federal inspector, had made a decision that it wished to make the stipulations as uniform as possible among all of the legs of the pipeline. Therefore, to get uniformity, they must consider in totality those actions. These stipulations have now been developed. We are ready to move forward.

Those two elements, the delay in the President's decision with regard to the overall project and, second, the wish for uniformity among stipulations on the right-of-way—the right-of-way stipulations are the other factor. We are ready to move.

Mr. LAGOMARSINO. Thank you.

Mr. RUNNELS. Thank you.

Mr. Clausen had an important meeting in his office and he asked if counsel would ask some questions that he had and I agreed to it.

Mr. ROGERS. Thank you, Mr. Chairman.

Welcome to the subcommittee, Mr. Curlin.

Mr. CURLIN. Thank you, sir.

Mr. ROGERS. Have you taken the position formerly occupied by Gary Wicks?

Mr. CURLIN. That is correct. I am known as Wick's replacement.

Mr. ROGERS. Will you be the Department's point of contact for matters concerning the proposed Alaska gas project?

Mr. CURLIN. I will be at the Deputy Assistant Secretary's level, yes, sir.

Mr. ROGERS. Will the staff of the authorized officer in Anchorage be converted over to the proposed Alaska gas project? I am speaking of the office in Anchorage, Mr. Turner, the other gentlemen who have been involved in that office with the Trans-Alaska Pipeline System.

Mr. CURLIN. We do not anticipate that move at this time, no, sir.

Mr. ROGERS. Will the authorized office or staff remain independent as it relates to a chain of command within the Department of the Interior or will it be converted, against the wishes of this subcommittee, into the Bureau of Land Management?

Mr. CURLIN. No, it will not be against the wishes of the subcommittee. We expect it to remain independent.

Mr. ROGERS. Would you please provide for the record a detailed analysis on why it has taken the Department of the Interior 5 years to review Pacific Gas Transmission Co.'s right-of-way permanent grant application?

Mr. CURLIN. We will be pleased to provide that for the committee.

Mr. ROGERS. Thank you.

Thank you, Mr. Chairman.

[Editor's Note: The Department subsequently submitted the information requested above in a letter dated November 1, 1979. The letter may be found in the appendix. See table of contents for page number.]

Mr. RUNNELS. Thank you.

Bill, do you have any statement you would like to make?

Mr. TOSKEY. No, sir, Mr. Chairman.

Mr. RUNNELS. I recognize that you have only been on board for a few months. Is this not correct?

Mr. CURLIN. Sir, a few weeks; 4 weeks, as a matter of fact.

Mr. RUNNELS. Yesterday the Secretary of the Interior, Secretary Andrus, made a recommendation to the President concerning the Northern Tier oil transportation systen. This is fine. We have had a communications problem, they have failed to keep this subcommittee informed on the actions which they have taken over which we have jurisdiction. We do not have a copy of the report.

If you could see that the information is provided to us on his selection yesterday of the Northern Tier oil pipeline proposal, we would appreciate it.

Mr. CURLIN. I will be pleased to do that, Mr. Chairman.

Mr. RUNNELS. The reason we need this information, is that the decision has a kicker in it that we do not quite understand. He made the recommendation, and gave them a reasonable time to get financing and so forth. We would like to have the report for our records to know what a reasonable time is, because if that does not happen, then he recommends another pipeline system. So there are really two recommendations.

Would you see that we get it?

Mr. CURLIN. Yes, we will get that to you, Mr. Chairman.

Mr. RUNNELS. We want to thank you very much for your testimony today and we will be looking forward to visiting with you later.

Mr. CURLIN. Thank you very much.

Mr. RUNNELS. We will now revert back on our schedule. I see Mr. Curtis has come into the room. We will have the Honorable Charles B. Curtis, Federal Energy Regulatory Commission, accompanied by Mr. John Adger, director of Alaska Gas Project Office.

Chairman Curtis, you may summarize your statement, if you wish. It will be included in its entirety in the record, and we will have questions and answers.

[Prepared statement of Hon. Charles B. Curtis may be found in the appendix.]

STATEMENT OF HON. CHARLES B. CURTIS, CHAIRMAN, FEDERAL ENERGY REGULATORY COMMISSION, U.S. DEPARTMENT OF ENERGY; ACCOMPANIED BY JOHN B. ADGER, DIRECTOR, ALASKA GAS PROJECT OFFICE

Mr. CURTIS. Thank you, Mr. Chairman. I will do that.

First, let me express my appreciation to the committee for hearing me out of order. As the chairman was informed, the Commission held hearings this morning of an extraordinary nature to evaluate the circumstances of the accident of the Cove Point LNG facility and to hear a proposal for the resumption of service. That hearing will reconvene this afternoon, and I am grateful for the committee's indulgence in accepting this change in time.

I will attempt to summarize my statement, which, is very short because I recognize that the committee wishes to proceed to questions.

Your invitation requested that I address the Commission's regulatory actions pertaining to the Alaska natural gas transportation system, and the progress of our talks with the Government of Canada regarding agreements regarding a procurement policy for the pipeline.

My statement summarizes the key Commission actions briefly; I have attached a more complete account of what the Commission has done and is doing. With regard to procurement policy, I have also attached to my statement a copy of a letter sent by then Commissioner Don S. Smith to Congressmen Dingell and Eckhardt, reporting on the outcome of Mr. Smith's most recent discussions with the Canadian Government representatives on that subject.

I would like to defer to the State Department and to the Office of the Federal Inspector for any further information on progress in formalizing the agreements referred to in Commissioner Smith's letter.

Mr. Chairman, following the passage of a joint resolution by the Congress in November of 1977, confirming the President's recommendation for the selection of a transportation system, the Commission began an evaluation of various authorizations it would have to grant in the course of completing the certification process for the Alaska natural gas transportation system. This evaluation was an effort to identify those matters on which a decision might be necessary, helpful, or essential in assisting the private parties involved in the project to move forward to the project-financing stage.

Although the Commission's normal posture is to respond to applications made by sponsors of projects, the Commission has taken the initiative in a number of areas to provide timely resolution of the many complex issues which affect the Alaska natural gas transportation system. We believe we have now completed action on the principal decisions required of us to permit the sponsors to formalize and complete project-financing plans. These decisions have to do with the rate of return on equity investent in the project, and with the project.

The rate of return on equity is important for attracting capital support for the project. The project company tariffs establish the contractual conditions which govern provisions of the transportation service. Under the financing framework recommended by the President and approved by the Congress, the tariff provides an essential piece of security for the project's debt, once operations commence. Thus, early resolution of these questions was important to negotiations over financing.

The Commission has also resolved a key design question: the size and maximum allowable operating pressure of the Alaska segments. Although this issue is not normally considered until final certification, application for which in this case was not expected before June of 1980, this issue was selected by the Commission for early resolution in order to facilitate preparation of detailed cost estimates for the Alaska segment. Such estimates are also important, if not essential, to obtaining financing.

The Congress, itself, has provided perhaps the most important of the decisions remaining after passage of the joint resolution approving the President's recommendation. That decision was to fix a price for the gas at the Prudhoe Bay Reserve. Passage of the Natural Gas Policy Act in late 1978 provided a ceiling for the field price of the gas, and rolled in pricing treatment for that price, plus the cost of transporting the gas to market. In the absence of congressional action, the Commission would have been required to make these decisions pursuant to its authority under the Natural Gas Act—a task which I think all parties would agree would have entailed years to bring to successful conclusion.

Mr. Chairman, these three sets of decisions—the rate of return and tariff, the Alaska segment design, and the pricing treatment—we believe provide a foundation for development of a definitive financing plan for the Alaska natural gas transportation system.

Before returning to the specifics in the course of responding to your questions, let me simply, in conclusion, observe that in my opinion the Commission has worked conscientiously and diligently in an attempt to meet the statutory direction to expedite consideration of the project.

Clearly, the most fundamental decision facing the Commission has been the decision on the incentive rate of return, which is a mechanism commanded by the President's decision and affirmed by the Congress. It is a mechanism, the theory of which was sound, which had not previously been developed.

The Commission has confronted an extremely difficult chore, one which we believe and hope, through conscientious efforts, we have now reached a successful conclusion. If the Commission's conclusions survive court review this project will then be able to be presented to the financial markets for the assemblage of necessary capital for its financing.

Mr. Chairman, I recognize that this committee and the Congress in general have justifiable concerns that the agencies of Government are incapable of responding promptly and expeditiously to render decisions on essential energy projects in order to meet the requirements of the nation. I can only say for the Commission's part, it has been a difficult chore; one that I hope this committee will agree we have given an honest and conscientious effort toward, and one that we believe now is in a state where the framework has been established to permit the project to go forward.

With that, I would be happy to attempt to respond to any of your questions.

Mr. RUNNELS. Thank you very much, Mr. Curtis, for an excellent statement.

I think the members of this subcommittee can sympathize with you as to the magnitude of your job. As you stated, just with the rate of return and tariff proceedings before the Commission, you considered almost 1,000 pages, consultant reports, staff reports and comments, and so forth. You said that in 2 months you did what under a jury or a trial situation would take 3 years to accomplish.

We recognize that your job is tremendous. However, I believe that the American people have watched the bureaucracy—and I include the legislative branch as well as the executive branch of Government—drag its feet since October 1973. They do not really understand what is happening to them as far as inflation and the cost of energy are concerned.

I think the majority of the American people want Government to cut or speed up the process somehow. If we in this committee can help you in any way, please feel free to call on us.

Mr. CURTIS. Thank you, sir. I certainly agree with your comments. The mechanisms of Government have not been effective and responsive to the needs of the people.

We have difficult balances to strike. We have processes which simply must be adapted to the demands of the 1970's. That has not been done in the past as effectively as it must be done in the future.

Mr. RUNNELS. Mr. Curtis, you and Mr. Adger, and I know he is a well-informed person and probably knows as much or more about the Alaska project than anyone, are getting kicked every day. That makes your job that much tougher.

I would like to ask you if you know what the arguments are against locating the conditioning plant in Fairbanks. Is this under your jurisdiction?

Mr. CURTIS. I must give you a complicated answer to the question.

The Commission has rendered a decision which approved the applied-for design specifications for the Alaskan segment of the project, regarding both the size and the pressure of the pipe. I would be happy to offer for the committee's consideration, a copy of the Commission's opinion issued Aug. 6 of 1979 in this docket, which, on page 7, recognizes that the Commission's decision may have some effect on the liquid-carrying capacity of the pipeline, but that the capacity is also affected by other factors, such as the carbon dioxide content of the gas stream, as well as the nature of the conditioning-processing facilities. In that proceeding, the State of Alaska and Earth Resources both urged the Commission to defer its decision and not approve the applied-for pipe size and pressure specifications of the applicant. They did so on the basis that there was an interrelationship between the pipe size and pressure decision and the CO_2 content decision, which would affect the location of the conditioning plant.

The Commission's original proposal was put out for comment, and an opportunity for hearing was afforded. No party requested a hearing before the Commission, and none was held. The Commission stated, "On the basis of the record before us that record supported the choice of 1,260 p.s.i.g. and does not support any other choice."

The Commission has received a petition to vacate. We have denied that petition. The basis of our decision on August 6, and of our determination to deny the petition to vacate, was essentially the determination that the record before us provided support for the applicant's choice of 1,260 p.s.i.g. and the sizing, 48-inch, of the Alaskan segment.

I would point out that the Commission authorized that choice. It does not mandate that choice. Applicant could have chosen another choice and attempted to support it, or applicant may in the future amend its certificate to offer another sizing and pressure provided applicant can justify it as being economically sound and otherwise consistent with the public convenience and necessity.

Thus, it was on that basis the Commission decided to render the decision of August of this year rather than to defer any longer. I call the committee's attention to a statement appearing on page 6 of that decision, which states: "The basic issue therefore is whether the Commission should decide the pressure now or delay its decision, pending further proceedings to compile a more extensive record. In this regard, Alaskan Northwest, the applicant, states in its comments that a choice of any pressure other than 1,260 p.s.i.g. would substantially delay the project." And the Commission quotes from that statement.

[The Commission opinion, issued August 6, 1979, Docket Nos. CP78-123, and others, referred to above, may be found in the appendix. See table of contents for page number.]

Mr. CURTIS. This Commission has taken very seriously its congressional mandate in section 9 and elsewhere in the Alaska Natural Gas Transportation Act to expedite its decisions. We determined that we could defer no longer, and, therefore, given the choice between further delay, which the applicant tells us could substantially add to both the cost and the construction period for this project, and arriving at the conclusion that the record before us supported the specifications as applied for by the applicant, we did confirm and approve those pressure and sizing proposals.

The Commission further recognizes that the issue of who shall bear the cost of the conditioning plant, also influences the positioning of the conditioning plant, since that issue is entangled with a question of allowing amounts for certain production-related cost above ceiling prices set in section 109 of the Natural Gas Policy Act. The Commission has made a decision on that matter although unlike the pipe size and pressure decision, this decision is still subject to rehearing.

Essentially the Commission has this problem: We are under a statutory direction to decide. The participants in our proceeding have asked us to defer and to delay for further consideration and the development of a more extensive record on CO_2 specifications, on pipe sizing and pressure, as well as on the production-related cost issue. In each instance, this Commission has tried to make the decision on the basis of the record before us in carrying out the statutory mandate.

We recognize fully that if the various participants in the case of production-related costs are able to work together outside of the adversarial context of a proceeding before the Commission, there will be a better opportunity that this project will, in fact, go forward and be built under the time schedules targeted for it.

Weighed against that realization is the command that the Commission decide. For example, on the production-related cost issue, the Commission has been working on this issue in various stages—as described more fully in my attachment 1—since February of this year. We have, as of yesterday, received a request to issue an order which will, in essence, hold in abeyance a final Commission decision to allow the Secretary of the Department of Energy to intervene in our proceedings and present matters for our consideration.

The Commission will act upon that request tomorrow, therefore I cannot discuss its merits. Yet, I wanted to draw that outline for the committee so that you understand, as I am sure you do, the record reflects the rock and the hard-place type of position that the Commission finds itself—both giving an opportunity for this evolutionary negotiating process to take place among the various persons who have direct and substantial interests, and at the same time, carrying out the statutory direction to make decisions necessary to get essential elements in place to permit this project to be financed.

Mr. RUNNELS. Thank you very much. My time has expired.

The gentleman from Montana, Mr. Williams.

Mr. CURTIS. I apologize.

Mr. RUNNELS. That is not necessary. Just so we have the details in the record.

Mr. WILLIAMS. Thank you, Mr. Chairman.

I want to comment some, if I may, Mr. Chairman, on the statement which you made concerning the dismay which the public has regarding the legislative and regulatory and judicial delays which have slowed some of the needed energy projects.

I think the Congress and the bureaucracy joins the public in that concern. Out in Montana, which is the State I represent, there are people who have those same concerns, and there are other voices, too. Those other voices are in the vast majority, and they say unquestionably that while they want to cut through the regulations and the restrictions and the redtape and the judicial delays which are preventing needed energy construction projects from going ahead, they do not under any condition wish to return to the "good old days" when industry alone decided its convenience and necessity and the public was left out of those decisions.

Our State of Montana, you know, along with some other States which were rich in natural resources, were used for many years as colonies to industry. We do not want to return to those days; so I guess we will have to find a middle ground here in cutting through the restrictions, regulations, and the redtape, and I commend you, Mr. Curtis, and you, Mr. Chairman, for trying to speed that day when we can stop the foot-dragging and get on with the necessities occasioned by our energy crisis.

Mr. Curtis, does the Commission have sufficient resources with which to dedicate priority actions to this project?

Mr. CURTIS. We will need additional resources in the future, Congressman. One of the ironies confronting the Commission in its last budget cycle was that our authorizing committee cut a substantial portion of the money which we had requested to be devoted to this function on the conclusion, as stated in the committee's report, that we were running far ahead of the applicant and that we should not be spending public moneys until there was a commensurate commitment of private moneys.

That budgetary decision was confirmed by the Appropriations Committees and in the appropriation bill which has been signed into law. We will seek to recover additional moneys in the next fiscal year, which we continue to believe are required for us to adequately carry out our responsibilities.

Mr. WILLIAMS. In closing, Mr. Chairman, I just want to say I was intrigued by Mr. Curtis' description of the rock and the hard place in which the Commission finds itself, and in that description you delineated the scenario and the evolution of some of the processes you go through, and I noted that on more than one occasion the sponsors of the project have asked for delays. I think the record should note that, and I appreciate having your testimony to that effect.

Thank you, Mr. Chairman.

Mr. RUNNELS. Would you care to respond to that?

Mr. CURTIS. I think Mr. Williams is correct; that there have been instances of requesting delays in the pacing of the decision; but I must admit that a fair statement would be that the project sponsors continually urged the Commission to adopt a decision pace that was more ambitious than the Commission was finally able to conclude. However, there have been those instances of delays sought for the project sponsors. A number of parties have requested delays of the Commission; and this is part of the balance of which Mr. Williams speaks. It is incumbent upon the agencies and independent commissions to provide both the forum for the rationalization of a multitude of social goals which represent conflicting but deep commitments on the part of the people, as well as a balance in the procedural mechanisms by which we discharge that decisional responsibility. By that I mean we must afford an opportunity to present views while at the same time allowing for the decision to be rendered in an expeditious and timely manner. It is quite understandable that the participants in the process may disagree, and do disagree rather strongly sometimes, as to the striking of those balances that the Commission comes out with.

Mr. RUNNELS. Where I come from, we have a statement that sort of fits in: Sometime you have to do less butt kicking and more handshaking.

Mr. CURTIS. That is good advice.

Mr. RUNNELS. Mr. Young?

Mr. YOUNG. Mr. Curtis, first, let me say—as one who has supported basically the position I support that we are going to need energy in Alaska, and provide it—you are one of those who supported my position before the hearings we had, which makes it very difficult for me to be terribly upset with you personally. I want you to know that. But there are some questions I would like to ask.

Do you have a copy of the Fairbanks response, *Prudhoe* v. *Fairbanks?*

Mr. CURTIS. Not with me.

Mr. YOUNG. I would like to submit that to you and have one of your staffers read it, because there is pertinent information there.

If I understood your answer to the chairman, the basic decision on pressurization of the line was based upon the applicant's request.

Mr. CURTIS. Yes, sir.

Mr. YOUNG. Were there any other decisions, like the potential for the petrochemical industry? Was that taken into consideration in Alaska?

Mr. CURTIS. Yes. We evaluated the record, which consisted of a number of things: first, a report from the Alaskan delegate, who is the Alaskan project director, Mr. Adger, on my right, as well as the comments received on that report, the minutes of a number of informal meetings, together with the materials developed in the course of Mr. Adger's report to the Commission on which we solicited comments.

Mr. YOUNG. May I interrupt?

Mr. CURTIS. If I may just add, both Earth Resources and the State of Alaska made appearances in that proceeding. Their comments were evaluated by us in reaching the conclusion noted on page 6 that the record before us supported the choice of 1,260 p.s.i.g. We did not believe that the record before us supported any other choice. But that does not mean it was an exclusive decision.

Mr. YOUNG. As long as the chairman does not take all my time up with the answers, and I do appreciate them, because they are informative.

On page 2 of your testimony—is this correct? The Commission issued the delegate's report on May 17, 1979, and there was no request for public hearings?

Mr. CURTIS. That is correct.

Mr. YOUNG. The State did not request it?

Mr. CURTIS. That is correct.

Mr. YOUNG. And Earth Resources did not request it?

Mr. CURTIS. That is correct. They filed comments.

Mr. YOUNG. But they did not request public hearings?

Mr. CURTIS. Yes, sir.

Mr. YOUNG. I think that is important for the record, too.

Second, with your recommendation what will happen to the liquids at Prudhoe Bay?

Mr. CURTIS. It depends on the liquids, as I understand it, Mr. Young. Some of the liquids, the ethanes and the propanes, will be consumed in the act of conditioning. Other liquids could be, as I understand it, transported through the oil pipeline.

Mr. YOUNG. Are any of those liquids going to be utilized for energy to operate the conditioning plant?

Mr. CURTIS. It is my understanding that a good portion of the propanes and ethane would be consumed in the operation of the conditioning plant.

Mr. YOUNG. Did FERC consider the possibility of using the vast quantities of coal located up there for alternate energy and utilizing the ethanes and propanes further down the line?

Mr. CURTIS. The Commission does not have certification authority with respect to the conditioning plants design and process, or as to the fuel which is consumed by it. As you know, Mr. Young, if the conditioning plant is located at Prudhoe, it will be on State land. It is unclear to me whether the State has some certificate authority, or could impose some restrictions which would allow address to the question that you just asked of me, but it is not one that we would address in the course of our proceedings.

Mr. YOUNG. You are in court now over your decision?

Mr. CURTIS. On the pipe size and pressure; yes, sir.

Mr. YOUNG. The Canadian pressure is a 56-inch pipe?

Mr. CURTIS. Forty-eight-inch.

I beg your pardon. The Alaskan segment is 48-inch. The joint segment from Whitehorse to Dawson is 56-inch, 1,000.

Mr. YOUNG. Mr. Chairman, I am not an engineer. I am trying to figure out why one is 48 and one is 56, and what we plan to do with lower pressure on one end and larger pressure on the other end.

We heard testimony there was no plan to transport immediately any Mackenzie field gas. There is more than meets the eye here, and we want to make sure we look at that.

I know my time is running out, Mr. Chairman.

Mr. Curtis, we are not through with this. You have fulfilled your job, I think adequately, and if you sensed the hostility had for some other agencies, you may be well aware of this. I have seen the Federal Energy office guilty of this, and I have been sometimes blaming the delays on your agency, and it appears to me there are a lot of other people undercutting you constantly, which makes your job more difficult.

I am going to continue, as Congressman, and the State is, too, to see if we cannot reverse the decision of the pressure line, or if we cannot deliver that pressure but still deliver gas to where the conditioning should take place and not on the State lines.

Mr. Chairman, I have no further questions.

Mr. RUNNELS. Mr. Lagomarsino?

Mr. LAGOMARSINO. Thank you, Mr. Chairman. Just a couple of specific questions.

On page 5, Mr. Curtis, you say, "The Commission is scheduled to consider action in the first phase of that proceeding this week"—talking about the prebuilt project—"and we are hopeful of completing action in all phases in early 1980."

Could you be more specific?

Mr. CURTIS. I will try.

The Commission has divided its prebuilt applications into three phases, believing this method is the most expeditious way of sorting through the decisions that are required to be made. For example, phase 1 deals with the interrelationship of the prebuilt to the total system. We believe that the Commission's decision on that is essential for early project financing purposes. That is the decision that we expect to make within this next week or so.

With respect to the remaining phases of the decision, if I might relate to what I know is a specific concern of this committee, we intend to make the decision with respect to the western leg before the end of the year.

With respect to the eastern portion of the system, in the northern border, we intend to make that decision in early 1980, and it is for that reason that you have our statement that we hope to conclude the entirety of it by early 1980. We do however, recognize the importance of making a decision on the western leg before the end of calendar 1979, and we intend to make a decision by then.

Mr. LAGOMARSINO. That is very encouraging.

Then you say with regard to the Alaska segment, the project sponsors do not currently plan to file for these approvals until June of 1980.

How long do you think it will take the Commission to act on the applications once they are filed?

Mr. CURTIS. I understand that the applicant hopes for a decision to be rendered by the Commission within 6 months. Assuming that the applicant's submission is complete and well documented, I believe it reasonable to expect the Commission to act within the 6-month period.

Mr. LAGOMARSINO. Thank you.

Mr. CURTIS. I cannot however, judge the adequacy of the application at this time.

Mr. LAGOMARSINO. Thank you.

Mr. RUNNELS. Thank you.

Since Mr. Clausen cannot be here, we will have some questions from his counsel.

Mr. ROGERS. Mr. Curtis, I would like to welcome you today on behalf of Mr. Clausen. He asked that I express to you, in his capacity as being ranking Republican on the full committee, his appreciation for the outstanding job that your Commission has done in keeping all of the subcommittees, at least on the minority side, informed.

Unfortunately, the Department of the Interior does not do half as good a job as your Commission, and they come under our jurisdiction. Maybe it comes from your training of being independent at the Securities and Exchange Commission?

Who has replaced former Commissioner Don Smith in meeting with the Canadian Government representatives on the proposed Alaska gas transportation system?

Mr. CURTIS. When Commissioner Smith, who had assumed, at my request, primary responsibility for this project on behalf of the Commission, resigned his position on the Commission effective June 30, I took over direct control of the project and have been engaged in the regulatory consultations as contemplated under article 9 of the principles of agreement.

With respect to the functions Commissioner Smith engaged in regarding the procurement aspects of it, that has not been a matter that I pursued. It is the general belief that the State Department and the Federal inspector will pick up that function. In my opinion, this task is more appropriate for the Federal Inspector's broader reach and vision of the project.

Mr. ROGERS. And would you please provide for the record the names and respective positions of the individuals within the Canadian National Energy Board who serve as counterparts to the Commissioners of your Commission?

Mr. CURTIS. We would be happy to do so.

[In response to the above request, the FERC subsequently furnished the following information.]

The NEB is composed of nine members, which form into panels to hear cases. The panel considering matters affecting the Alaska Natural Gas Transportation System (ANGTS) is one dealing with tariffs and financing for the system. That panel is chaired by C. Geoffrey Edge, Vice-Chairman of the NEB, and includes Livia M. Thur and R. B. Horner as Members. Order No. RH-2-79 (copy attached) establishes the subject matter and conduct of the panel hearings.

Another NEB panel is considering applications for net new exports of Canadian gas, among them those sought by the United States and Canadian sponsors of the proposal to "pre-build" the southern segments of the ANGTS. The presiding member of that panel is NEB Chairman J. G. Stabback, and includes J. R. Jenkins and J. Farmer as Members. Order No. GH-2-79 (also attached) establishes the subject matter and conduct of those hearings.

Mr. ROGERS. Thank you very much.

That is all, Mr. Chairman.

Mr. RUNNELS. Mr. Curtis, and Mr. Adger, we want to thank you both for being here today and we appreciate the work you are doing. We are looking forward to working with you in the future.

Mr. CURTIS. Thank you, Mr. Chairman. I especially want to state on behalf of the Commission our appreciation for the fairly unusual experience of the subcommittee's understanding of the difficulties that confront us. There is room for criticism of the Commission's actions, but we hope that the committee can conclude that we have conscientiously attempted to discharge our responsibilities.

We thank you, sir.

Mr. RUNNELS. Thank you very much.

Our next and last witness is Brigadier General Robinson, Deputy Director of Civil Works, Office of the Chief of Engineers, Department of the Army, accompanied by Col. Robert Bauchspies, Agency Authorized Officer.

[Prepared statement of Brig. Gen. Hugh G. Robinson may be found in the appendix.]

STATEMENT OF BRIG. GEN. HUGH G. ROBINSON, DEPUTY DIRECTOR OF CIVIL WORKS, OFFICE OF THE CHIEF OF ENGINEERS, DEPARTMENT OF THE ARMY, ACCOMPANIED BY COL. ROBERT BAUCHSPIES, AGENCY AUTHORIZED OFFICER (AAO)

Mr. RUNNELS. Welcome, General, to our subcommittee. You may summarize or give your statement any way you want to. It will be included in the record in its entirety.

General ROBINSON. Thank you very much. It is a pleasure to be here. In addition to being Deputy Director of Civil Works, I am also the Chief of Engineers' representative from the Executive Policy Board, and Colonel Bauchspies is the Agency Authorized Officer.

I appreciate this opportunity to appear and with the chairman's permission I will summarize my statement which has been submitted for the record.

As you are aware, Public Law 94–586 made it clear that the Federal agencies, such as the Corps of Engineers, were to assist the then Federal Power Commission and the President, within the scope of their existing statutory authorities, in carrying out their respective responsibilities pursuant to the act.

Further, Public Law 94–586 indicated clearly that actions necessary or related to the construction and initial operation of the approved transportation system, such as the issuance of permits under the statutory regulatory program of the Corps of Engineers, would continue to be an agency responsibility but would also be expedited and take precedence over other similar permit actions before the agency.

As a result of Public Law 95–158, the Executive Policy Board envisioned in the 1976 act came into existence on an ad hoc basis. The Corps of Engineers, the Environmental Protection Agency, the Federal Energy Regulatory Commission, and the Departments of Transportation and Energy were the first members of the EPB.

The corps was active in all aspects of the work of the EPB to include, of particular relevance to these hearings, active participation in the technical advisory committee to include, by mid-1978, one technical subcommittee concerned with permafrost and another technical subcommittee concerned with geology.

As Mr. Curlin earlier stated, we have been participating in a joint multidisciplinary working group with the corps being the chairman of the geotechnical group for that particular effort.

With congressional approval of Reorganization Plan No. 1 of 1979—Office of the Federal Inspector for Construction of the Alaska Natural Gas Transportation System—by May 31, 1979, and by virtue of Executive Order 12142, the Alaska Natural Gas Transportation System, dated June 21, 1979, the role of the Corps of Engineers changed from that of an active agency participant in interagency technical review and study activities and membership on an ad hoc Executive Policy Board to that of full membership by Presidential designation on an Executive Policy Board with a specific charter and a concurrent responsibility to appoint an Agency Authorized Officer.

Since Jack Rhett was confirmed by the Senate as the Federal inspector there has been an exchange of ideas between the Chief of Engineers and the Federal inspector, and members of their staffs, upon the Federal inspector's initiative with a view to identifying areas in which the Corps of Engineers could, as a Federal agency, provide technical assistance within its many areas of engineering and related expertise to the Federal inspector and his office on matters pertaining to the preconstruction, construction, and initial operation of the system.

As Jack said in his testimony, we are seeking to achieve a formal agreement for the corps to provide cold weather engineering technical support to the Federal inspector on frost heave problems and provide assistance in the review and design of a cost/schedule control system for the Federal inspector's office while further exploring means to provide corps support on such matters as the review of engineering designs, plans, and specifications; field enforcement of permits and other authorizations; and audit and cost control including application of the incentive rate of return.

In summary, the Corps of Engineers currently occupies a policy advisory role through its membership on the recently established Executive Policy Board and is represented within the Alaska Natural Gas Transportation System through its appointed Agency Authorized Officer, Colonel Bauchspies.

The corps is ready to provide, and to study further means of providing, technical assistance support to the Federal inspector and his office as determined to be necessary, and requested, by the Federal inspector in the public interest for the economical and expeditious completion of the approved transportation system.

This concludes my statement. I will be glad to answer any questions that you may have.

Mr. RUNNELS. Thank you very much. I would like to congratulate you on your direct and to the point testimony.

Would you please elaborate on your agreement to provide technical support to the Federal inspector?

General ROBINSON. The Federal inspector had asked the Chief of Engineers to advise him on the support that might be available from the Corps of Engineers. As a result of that and a particular request back from Jack Rhett, we are considering providing technical support in the frost heave area.

As you probably know, our region does have expertise in this area, and we do intend to bring together all of the expertise that is available, including the academic community, Government agencies, et cetera.

There was one other part that he did ask us for and I believe that was the scheduling costs.

Mr. RUNNELS. On page 2, in the middle paragraph, can you summarize the issues you mention are under study by a geotechnical group?

General ROBINSON. Yes, sir. That ad hoc group is looking at some of the particular construction problems that are entailed in the construction of this pipeline, transporting natural gas under 1,260 psig via a buried 4-foot diameter pipeline through a permafrost area offers unique challenges to the state-of-the-art.

Various technical groups have made a preliminary listing of potential technical problems which require analysis that could occur during construction of ditching operations, after pipe burial and prior to chilled gas flow, and during the actual operation of the system.

These technical areas are, of course, in addition to areas relating to the proximity issue. They deal in part with ditch instability, slope stability, changes in hydrology and erosion control, thaw, pipe floating, frost heave, and the creation of a frost bulb around the pipe.

Mr. RUNNELS. Thank you very much.

Mr. Rogers, I believe, has some questions for Mr. Clausen.

Mr. ROGERS. Thank you, Mr. Chairman. Welcome to the subcommittee, General. I am sure you know the people on this side of the aisle from Public Works and Transportation.

When do you anticipate reaching a formal agreement with the Federal inspector on providing cold weather engineering technical support to the Federal inspector on the frost heave problem?

General ROBINSON. We anticipate we will have complete agreement to include all of the other areas that the Federal inspector asked us to look at by the first of November.

Mr. ROGERS. How many personnel within the corps have been committed to the Alaska Natural Gas Transportation System project?

General ROBINSON. At the present time we just have one Agency Authorized Officer, Colonel Bauchspies. A number have been included in the technical review. All along our districts anywhere along the pipeline have been involved; the Alaska district is particularly involved in the project, and I do not know the exact number of people they have had with them on the project.

Mr. ROGERS. Thank you, sir. Thank you, Mr. Chairman.

Mr. RUNNELS. We want to thank you very much, General, for appearing here today and you, also, Colonel. We will be in touch with you through our staff.

I want to thank the witnesses who have appeared before this subcommittee. I want to thank those who have observed these hearings. Particularly, I want to compliment the staff of this subcommittee for arranging a very fine hearing as far as the chairman is concerned.

These hearings are concluded for today.

[Whereupon, at 12 noon, the subcommittee was adjourned.]

57-087 0 - 80 - 8

A P P E N D I X

Additional Material Submitted for the Hearing Record

ALASKA NATURAL GAS TRANSPORTATION SYSTEM

STATUS REPORT

Prepared by Staff for the

SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS

of the

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

of the

U.S. HOUSE OF REPRESENTATIVES

Ninety-Sixth Congress

First Session

December 1979

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

December 12, 1979

The Honorable Harold Runnels
Chairman
Oversight and Investigations
Subcommittee
1535 Longworth House Office Building
Washington, D.C. 20515

Dear Mr. Chairman:

There is hereby submitted for consideration by Members of the Oversight and Investigations Subcommittee the following report relating to the Alaska Natural Gas Transportation System.

Sincerely,

Timothy W. Glidden
Staff Director-Counsel

Joy R. Gwaltney
Research Consultant

Martha Anne McIntosh
Research Consultant

CONTENTS

I. INTRODUCTION

The Alaska Natural Gas Transportation System (ANGTS) may serve as a prototype for this Nation's proposed "fast track" energy projects. The ANGTS is an ambitious undertaking. Its $15 billion proportions alone serve to support its number one standing within Federal agencies, taking regulatory and administrative precedence over all other projects. The Congress has focused its attention on the system on five separate occasions since 1973, giving the concept form, defining the Federal role, and providing a regulatory climate suitable to a one-of-a-kind project of this magnitude. The executive branch of the Federal government has been equally active: it negotiated a treaty with Canada which was formalized in 1977, the President referenced his full support of the project in a televised energy speech, and then the executive branch effected a limited reorganization of the government to provide a Federal focal point for regulating construction and operation of the pipeline.

This report will trace the progress of this energy project, identify the participants and their responsibilities, and discuss issues which are yet to be resolved.

II. PROJECT DESCRIPTION

The Alaska Natural Gas Transportation System is currently in its design and engineering phase. When operational, the pipeline will transport natural gas 4,787 miles from Prudhoe Bay on the North Slope of Alaska, across the Canadian frontier to a point near Calgary where it will split into two lines going into the lower 48 states, one toward the West Coast and the other into the Midwest. The pipeline will be capable of transporting 2.4 billion cubic feet of gas per day (bcfd) with a built-in expansion potential to 3.4 bcfd. The cost to construct the system is estimated to be $15 billion in escalated dollars, 1984 dollars, with a completion target date of November 1984.

The Prudhoe Bay field is estimated to contain 26 trillion cubic feet (tcf) of natural gas. By comparison, the total proven U.S. gas reserves (non-Alaskan) are estimated at 185 tcf. The annual rate of consumption of natural gas within the U.S. is 19.9 tcf (1977). Therefore, at peak production the ANGTS could deliver 6 percent of the nation's natural gas requirements from a reserve that represents more than 10 percent of the known U.S. supply of natural gas.

For planning and construction purposes the ANGTS is broken down into four sections, or legs. Although each leg has its own sponsors, contracts, and construction schedules, the system is statutorily a single entity with close coordination both internationally and among the corporate sponsors.

A. Alaskan Leg

The Alaskan Leg will consist of 741 miles of pipeline. It will parallel the Trans-Alaska oil pipeline from Prudhoe Bay to a point south of Fairbanks where it will turn eastward and follow the Alaska Highway and the Haines oil products pipeline right-of-way to the Alaska/Yukon Territory border near Border City, Alaska.

Plans call for a buried pipeline carrying chilled gas at 1260 pounds per square inch (psig) pressure through 48-inch diameter pipe. It is estimated that the Alaskan Leg will cost $6 billion in escalated dollars (a figure which includes finance charges on funds used during construction or AFUDC) to construct. The sponsors of the Alaskan Leg are a consortium of six gas transmission companies, with Northwest Energy Company of Salt Lake City, Utah, acting as the managing partner. The consortium is called the Alaskan Northwest Gas Transportation Company and is composed of Northwest Energy Company, Panhandle Eastern Pipeline Company, Northern Natural Gas Company, United Gas Pipeline Company, Pacific Lighting Corporation, and Pacific Gas and Electric Company. Efforts are being made to have other gas transmission companies join this consortium. Current projections by the sponsors indicate that this leg will be operational by late 1984.

B. Canadian Leg

The Canadian Leg will travel 2,028 miles from the Alaska/Yukon Territory border, parallel to the Alaska Highway, through the Provinces of British Columbia and Alberta to a point near Caroline Junction, Alberta. There the pipeline will split into the Western Leg which will enter the United States near Eastport, Idaho, and the Eastern Leg which will cross the international border at Morgan, Montana.

The design and diameter of the Canadian Leg will vary according to need. Plans call for a buried line using 48-inch diameter pipe from the Alaskan border to Whitehorse, Yukon, where the pipe diameter will increase to 56-inches. This enlargement is intended to accommodate possible future Canadian gas sources in the Beaufort

Sea through the use of a proposed Dempster Highway Lateral pipeline which will connect to the ANGTS at Whitehorse. The pipe dimensions will again change south of Caroline Junction, Alberta, by employing 36-inch diameter pipe for the Western Leg and 42-inch diameter pipe for the Eastern Leg.

The sponsoring consortium of the Canadian Leg is called Foothills Pipe Lines (Yukon) Ltd. Foothills is the parent organization of five subsidiary companies which will construct and operate the line. The Alberta Gas Trunk Line Company owns 50 percent of the outstanding shares of stock in Foothills. The remaining 50 percent is owned by Westcoast Transmission Company Limited.

C. Western Leg

The Western Leg will carry the Alaska North Slope gas 911 miles from the international boundary near Eastport, Idaho, through the states of Washington and Oregon and into California where the line will terminate at Antioch near the San Francisco Bay. This leg is the most conventional of all the ANGTS sections in design, construction techniques, financing, and tariff provisions. It is a full paralleling or "looping" of an existing natural gas pipeline owned and operated by the Pacific Gas Transmission Company (PGT) through Idaho, Washington, and Oregon, and the Pacific Gas and Electric Company (PG&E) in California. PGT is a 53 percent owned subsidiary of PG&E and these two companies will jointly sponsor, finance, construct and operate the Western Leg.

Approximately 883 miles of new, 36-inch diameter pipe will be installed alongside an existing pipeline. No new compressor stations will be required to maintain an operating pressure of

911 psig. Through interconnection with other transmission companies, the Alaskan gas will reach markets throughout the Pacific Northwest and the Rocky Mountain States. A segment of this Leg is expected to be operational in late 1980.

D. Eastern Leg

The Eastern Leg will transport gas from the Saskatchewan/ Montana border near Morgan, Montana, for 1,117 miles across North Dakota, South Dakota, Minnesota, Iowa and into Dwight, Illinois, south of Chicago.

The 42-inch diameter pipeline will carry gas at a pressure of 1435 psig to markets throughout the Plains states, the Midwest, the South and the Eastern Seaboard through the existing transmission systems of various partners in the Northern Border consortium. The consortium consists of Northern Natural Gas Company of Omaha, Nebraska, the managing partner, Northwest Energy Company, Panhandle Eastern Pipeline Company, United Gas Pipeline Company, and TransCanada Pipelines, Ltd. TransCanada is the largest gas transmission company in Canada. When the firm joined the Northern Border consortium in October 1979 it became a 30 percent equity partner and agreed to secure the entire debt structure of the Eastern Leg through Canadian markets. The sponsors of this Leg plan to have a portion of it operational in the fall of 1981.

III. BACKGROUND

The term "Prudhoe Bay" became linked with domestic energy resources in 1968 with the first big oil strike on the North Slope. The Prudhoe Bay field is about 18 miles wide and 45 miles long and is estimated to contain 9.6 billion barrels of recoverable oil associated with 26 trillion cubic feet (tcf) of saleable natural gas. Although part of the natural gas is in solution, a significant amount is in a free gas cap above the oil. A consensus has been reached among various petroleum engineers on the probable size of the gas reserve, however some experts believe that the potential quantity of recoverable gas could range from 72 to 185 tcf.

A. Legislative History

After five years of debate in the courts and within the Federal government on the best route for construction of a pipeline to transport oil from Prudhoe Bay to market, Congress enacted legislation in 1973 which authorized the construction of a pipeline from Prudhoe Bay to Valdez, Alaska. Incorporated in this measure, Public Law 93-153, the Trans-Alaska Pipeline Act, was a provision which heralded the development of the Alaska Natural Gas Transportation System. Section 301 of that Act authorized and requested the President to determine the willingness of the Government of Canada to permit the construction of a natural gas pipeline for Alaska North Slope gas across Canada (Appendix I). Almost immediately an application for a certificate to construct the gas pipeline was filed with the Federal Power Commission (FPC) in the U.S. and its Canadian counterpart, the National Energy Board (NEB), by the Arctic Gas consortium. A competing application was filed six months later, in September 1974, by El Paso Alaska Company, and in July 1976 another application was filed by the Alcan Pipeline Company (later called the Alaskan Northwest consortium). Each proposal included a different pipeline route.

Congress returned to the Alaskan gas pipeline issue in 1976. Recognizing the shortages of natural gas, the large reserve in Prudhoe Bay, the critical need for the Federal government to marshal forces to expedite construction of a gas pipeline, and the disastrous impact delays were having on the cost of constructing the oil pipeline, Congress debated and passed the Alaska Natural Gas Transportation Act, Public Law 94-586 (Appendix II).

This Act was a break from tradition: it structured a route selection process that would draw upon all relevant governmental, public, and private expertise; it gave a new definition to the relationship between the Federal regulatory agencies and the private pipeline sponsors; it acknowledged the need to expedite administrative procedures; it limited judicial review to claims that the Act infringed upon Constitutional rights and to claims that certain actions were beyond the bill's scope of authority; and it called for the appointment of a Federal Inspector to coordinate and direct Federal activities.

Within a year of passage, the President selected a route and issued his Decision and Report to Congress on the Alaska Natural Gas Transportation System. This September 1977 document selected the Alcan Pipeline Company proposal to construct and operate a gas pipeline, it identified the system's components and route, and it set general terms and conditions relating to financing, antitrust policies, environmental and engineering standards, and enforcement of Federal requirements. The Decision in its entirety assumed the force of law when Congress passed Public Law 95-158 approving the President's action.

Congress' most recent examination of Alaskan gas policies occurred in 1978 when it considered and enacted the Natural Gas Policy Act, P.L. 95-621. Two aspects of this complex and controversial Act have direct bearing on the proposed pipeline: first, the Act assured North Slope gas producers a wellhead price of $1.45 per thousand cubic feet plus an allowance for inflation, and second, the Act allowed the cost of Alaskan gas transported through the ANGTS to be "rolled in," a term which refers to a pricing mechanism wherein the price of Alaskan gas is averaged in with the prices of other cheaper gas supplies resulting in a higher overall gas price for all consumers in the ANGTS system, but a lower price than the cost of the Alaskan gas.

B. Negotiations with Canada

The State Department began negotiations with Canada in 1974 in response to the Congressional mandate spelled out in the Trans-Alaska Pipeline Act. The Government of Canada indicated a willingness to first consider an agreement of general applicability, with an agreement on a specific pipeline proposal to follow. The first product of these negotiations was the Transit Pipeline Treaty which was initialled in January 1976 and formally ratified by Congress in 1977. The Treaty governs all existing and future transit pipelines in the two countries for thirty-five years and provides (a) assurances of noninterference with the flow of hydrocarbons, (b) avenues for binding arbitration in the event of disputes, and (c) terms of non-discriminatory treatment by either country with regard to taxation.

The negotiators' second product was an Agreement on Principles, signed in September 1977 which deals specifically with the Alaska gas pipeline. It provides assurances on taxation levels, tariffs, project timetables, and a general designation of route. It also provides an outline of the financing plans, regulatory requirements, competitive contracting mechanisms, and methods of coordination and consultation between the two governments.

The Canadian Parliament moved quickly to give legal status to this Agreement. In April 1978 Parliament assented to the Northern Pipeline Act which established the Northern Pipeline Agency and transferred to it the necessary powers to carry out the Federal responsibilities outlined in the Agreement on Principles. Beyond the Act's similarities to its American legislative counterpart, it goes into a regulatory area where Congress is unable to follow. The Northern Pipeline Act officially grants a certificate of public convenience and necessity to Foothills Pipe Lines (Yukon) Ltd. In the United States issuance of a similar certificate culminates years of regulatory proceedings by the Federal Energy Regulatory Commission and immediately precedes initiation of construction. In short, the Northern Pipeline Act retooled Canadian administrative mechanisms in the form of the Northern Pipeline Agency, a counterpart to our Office of the Federal Inspector.

IV. FEDERAL REORGANIZATION

The need for a coordinated approach to Federal oversight and management of the ANGTS was graphically demonstrated during the construction of the Trans-Alaska oil pipeline. In attempting to construct the oil pipeline across Federal land in an arctic environment, the sponsors bitterly complained that, in addition to environmental and technical uncertainties, the uncoordinated actions of the Federal government added to construction delays and cost increases.

A. Office of the Federal Inspector

The concept of a "one-window" approach to Federal control over planning, construction, and initial operation of the gas pipeline received Congressional endorsement in the Alaska Natural Gas Transportation Act with the "one-window" being the Office of the Federal Inspector. By Presidential decree and Congressional consent the enforcement powers of all responsible Federal agencies were vested in the Federal Inspector for the purpose of constructing the gas pipeline (Reorganization Plan No.1 of 1979 - Appendix III). Accordingly, the Federal Inspector is responsible for the following:

1) enforcing all Federal statutes relevant to the ANGTS, including the monitoring of compliance with any terms and conditions or stipulations which are attached to any Federal authorization;
2) monitoring actions taken to assure that cost control, safety, and environmental protection objectives are fulfilled while still achieving the timely construction and initial operation of the ANGTS;
3) keeping the President and the Congress informed on project progress, including factors which may delay construction and initial operation of the system and the extent to which the objectives outlined in Number 2 above are being met;

4) establishing a joint surveillance and monitoring agreement with the State of Alaska; and

5) coordinating the scheduling and issuance of all Federal permits and related activities to assure timely and unified decisions.

Simply stated, the Federal Inspector is designated to be the principal point of contact for the pipeline owners, contractors, state agencies, and Canadian entities. He serves at the pleasure of the President. Moreover, the statutory enforcement responsibilities of the Environmental Protection Agency, the Corps of Engineers, the Department of Transportation, the Department of Energy, the Federal Energy Regulatory Commission, the Department of the Interior, the Department of Agriculture, and the Department of Labor have been transferred to the Federal Inspector. These agencies retain their authority to issue necessary permits; however, the Federal Inspector will set the timetable for permitting actions and will be responsible for keeping the agency actions on schedule.

John T. Rhett, Jr. was appointed Federal Inspector by the President and confirmed by the Senate in July 1979. The Office of the Federal Inspector is being organized by function with three field/project offices, corresponding to the three American legs of the pipeline, and a headquarters in Washington. When construction of the Alaskan Leg begins in 1981 the headquarters will be relocated to a site in Alaska. Currently no decisions have been announced on the locations of the field/project offices in Alaska or the lower 48 states.

Staff requirements are expected to include over 200 positions during construction in Alaska with an annual budget of approximately

$30 million. A considerable portion of the budget will be applied to contracts for outside support in the fields of engineering and environmental review and quality assurance. Staff requirements will drop off drastically in late 1985, the anticipated first anniversary of the operation of the pipeline.

B. Agency Authorized Officers

In accordance with provisions of the President's Decision and the Reorganization Plan, each Federal agency with statutory responsibilities relating to the ANGTS has appointed an Agency Authorized Officer (AAO). These officers represent and exercise the internally delegated authorities of their respective agencies in matters pertaining to the project. During the permitting phase of the project the AAOs will be responsible for expediting the issuance of their agency's permits. They will also prepare enforcement handbooks for use by field-level personnel. During the enforcement phase of the project. AAOs will review the enforcement efforts of the Federal Inspector's staff to assure that their agency's policies are being properly carried out. While serving as AAOs for the project, these officials will have other administrative duties within their agencies, they will be located within the Office of the Federal Inspector, and they will relocate to Alaska along with the headquarters staff at the start of the construction phase of the Alaskan Leg.

Organizationally, the AAOs have direct access to the Federal Inspector, the functional elements within their agencies, and their respective members on the Executive Policy Board.

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C. Executive Policy Board

The Executive Policy Board was created through Executive Order 12142 as an advisory body to the Federal Inspector on matters pertaining to overall project management and to specific agency authorities (Appendix IV). The Board is composed of the Secretaries, or their designees, of eight Federal agencies: Agriculture, Energy, Labor, Transportation, Interior, Environmental Protection Agency, Federal Energy Regulatory Commission and the Army Corps of Engineers. Additional members may be elected to the Board by vote of a majority of the members. The Department of State has indicated an interest in participation as a member of the Board. The Chairman is elected annually by majority vote of the members. Recently, the Army Chief of Engineers was elected the Board's first Chairman.

V. REGULATORY ISSUES

During the period from September 1977, when the President announced his selection of the Alcan pipeline proposal, to July 1979, when the Federal Inspector was confirmed, two agencies were the focus of Federal regulatory activity: the Department of the Interior and the Federal Energy Regulatory Commission.

The Department of the Interior took the lead in several areas pertaining to the ANGTS. A set of stipulations to attach to the eventual grant of right-of-way across Federal land was drafted through consultation with the Executive Coordinating Committee, a group of state and Federal officials interested in the environmental and technical standards to be required of the pipeline sponsors. Department officials also began looking at the "proximity" problems, those difficulties relating to the construction of a cold gas pipeline next to a hot oil pipeline in Alaska's extreme climate. A third area requiring attention was the possible use of the abandoned Haines oil products pipeline right-of-way south of Fairbanks.

The Federal Regulatory Commission began an intensive series of proceedings which will eventually culminate in the issuance of certificates of public convenience and necessity to the sponsors of the various legs.

A. Department of the Interior

1. Stipulations - In May 1979 the Department of the Interior published proposed stipulations which will apply to the construction, operation, and termination of all three American legs of the ANGTS and which encompass administrative procedures, environmental requirements, and general technical standards. These stipulations were revised in September 1979, but will not be considered final until they are attached to the Federal grant of right-of-way. In accepting the grant, the pipeline sponsors will become legally bound to the terms and conditions spelled out in the stipulations.

Although the Federal Energy Regulatory Commission and the State of Alaska must publish terms and conditions applicable within their jurisdictions, the Department of Interior stipulations are significant for two reasons. First, the stipulations will control the environmental and technical standards of construction over two-thirds of the route of the Alaska segment and to a large extent will set the standards for other units of government to follow in exercising their regulatory authorities. Second, the stipulations were drafted to reflect the experience gained in constructing the Trans-Alaska oil pipeline. In that venture the General Accounting Office, among others, concluded that uncertainty over the interpretation of that project's stipulations complicated planning, delayed the construction schedule, and added to the cost of the project.

The stipulations for ANGTS are general in nature and provide the framework for further planning and design by the sponsors. Control over the details will be afforded the Federal Inspector through the comprehensive "preliminary" plans which include:

- Environmental briefings
- Oil and hazardous substances control
- Air quality
- Pesticides, herbicides, chemicals
- Solid waste management
- Liquid waste management
- Erosion and sedimentation control
- Stream, river, and flood plain crossings
- Material exploration and extraction
- Overburden and excess material disposal
- Clearing
- Visual Resources
- Blasting
- Restoration
- Pipeline contingency
- Quality assurance, quality control
- Surveillance and maintenance
- Cultural resource preservation
- Fire control
- Wetland construction
- Seismic monitoring
- Corrosion control
- River training structures
- Traffic management
- Materials stockpiling

The preliminary plans, along with an analysis of the effect of plans on the Trans-Alaska oil pipeline, will be submitted to the Federal Inspector and will have to be approved in writing before a "notice to proceed" with construction will be issued. In addition, the sponsors are also directed to submit to the Federal Inspector summary network analysis diagrams for use in determining the adequacy of the sponsor's management approach. This factor was also identified by the General Accounting Office in 1978 as being underemphasized in the Trans-Alaska oil pipeline project and, once again, as being directly related to that project's cost overruns.

The following is a brief summary of the three categories which are addressed in the stipulations for all three ANGTS legs:

a. General Requirements

This category provides to the sponsors: (1) a definition of terms, (2) procedures to be followed in dealing with the Federal government (as represented by the Federal Inspector during all phases of planning, construction, and initial operation), (3) a register of the rights and responsibilities of both the sponsors and the Federal Inspector, and (4) a list of subjects (listed above) for which comprehensive plans are required prior to issuance of a "notice to proceed".

b. Environmental Requirements

The following provisions are contained in this section: (1) the sponsors shall provide environmental briefings to their supervisory and field personnel, (2) pollution control efforts must meet all applicable air and water quality standards, address sanitary and waste disposal, and the use of pesticides, (3) measures to minimize erosion and sedimentation on land and at stream crossings must be undertaken, (4) free passage of fish and big game must be assured during construction, and the sponsors must avoid disturbances of fish spawning, rearing, and overwintering areas, (5) clearing, debris disposal, and restoration must be accomplished under stated guidelines, (6) the use and storage of explosives must follow a pre-approved plan and shall be limited in certain areas, (7) cultural resources must be identified and protected, and (8) a pipeline contingency plan must specify the steps to be taken in the event of a break, leak, or explosion.

c. Technical Requirements

The standards outlined in this category make reference to proven engineering practices and Federal safety standards and are applied to roads, slope stability, bridges, erosion, and pipeline design. Of special importance are the weld inspection requirements (not less than 90 percent using x-ray radiography), earthquake and fault displacement protection, and pipeline corrosion control and maintenance.

These requirements differ very little among the three legs. More coverage is given to the Alaskan segment because of the nature of the terrain, the proximity of the pipeline to the TAPS line, and the critical balances which exist within the arctic biota. It has been pointed out by Department of the Interior officials that the stipulations are not considered to be a final package. Prior to the time of signing of the grant of right-of-way by the Secretary and the sponsors, further modifications in the stipulations may occur.

2. Proximity - No single issue underscores the technical difficulties in constructing a buried pipeline in an arctic environment like the proximity issue. In passage of the 1973 amendments to the Mineral Leasing Act, P.L. 93-153, Congress found utilization of existing right-of-way corridors across Federal lands to be in the public interest. By encouraging multiple use of these existing corridors, the impact of proliferating pipeline routes on the environment is reduced.

The proposed route of the Alaskan Leg of the ANGTS follows the Trans-Alaska oil pipeline right-of-way for approximately 540 miles. The ANGTS sponsors point to the economic and environmental benefits to be derived from building the gas pipeline on the other side of the gravel work pad which parallels the oil pipeline and from using the same haul road and construction camps that were used in constructing the oil pipeline.

While the owners of the oil pipeline are on record as supporting the construction of a gas pipeline, they have expressed concern over the impact construction of the new gas pipeline will have on operations of the oil line. At present the owners of the oil line are by statute strictly liable for any damages in connection with or resulting from activities in the oil line right-of-way, without regard to fault. These owners are concerned about the effects of blasting during construction of the gas pipeline, the number of times the two lines cross over or under one another, the impact on slope stability of new construction in thaw unstable soils, and a variety of other related geotechnical issues. The oil pipeline owners' risk analysis of the impact of construction of the gas pipeline adjacent to the existing oil pipeline concludes that substantial damage and spillage of crude oil will occur with the probable consequence of long shutdown periods for the oil pipeline.

The Department of the Interior has the authority to grant multiple uses of existing corridors and to set conditions to assure a safe and harmonious relationship between parties in the same right-of-way. In preparing to set conditions for the Alaskan Leg the Department assembled a working group of technical experts from government and industry for the purpose of identifying the problems that need to be solved before a right-of-way is granted. In June 1979 the Department wrote to the gas pipeline sponsors and allowed them to proceed with planning and design based on their proposed route provided they could (a) resolve twelve major concerns of the working group, (b) consider a number of site-specific route alternatives, and (c) accept seventeen assumptions and conclusions of the work group relating to such issues as a minimum separation distance of the two pipelines of 80 feet, the use of the existing workpad, and the effects of controlled blasting.

The Interior letter was significant because it enabled the sponsors to accelerate their engineering and geotechnical studies to focus on the issues identified by the Interior Department. Tests are being conducted relating to such subjects as frost heave effects, metallurgy, blasting, hydrology, soils, and pipe corrosion. Meetings are continuing between the sponsors, the owners of the oil pipeline, and the Department of the Interior. Until various technical issues can be satisfactorily resolved, a final route cannot be identified and a firm construction cost estimate is impossible.

3. Haines Right-of-Way - The proposed route of the ANGTS in Alaska will require legal clarification of the ownership of the Haines oil producet pipeline right-of-way from Delta Junction southeasterly past the communities of Tanacross, Tok, and Northway Junction in Alaska. This right-of-way is closely parallel to the Alaska Highway.

The ownership question is complex. The Haines oil products pipeline was constructed in the 1950's by the Army Corps of Engineers for use by the Department of Defense. The 50-foot wide right-of-way across public land was set aside at that time in cooperation with the Bureau of Land Management through several different procedures all authorized under existing law. Over the years much of the public lands traversed by the pipeline was conveyed out of Federal ownership although the right-of-way was reserved for Federal use. Some of the public lands occupied by the pipeline which remain in Federal ownership have been selected by Alaskan Natives or claimed by the State of Alaska.

In 1973, the Corps of Engineers initiated procedures under the Federal Property and Administrative Services Act to relinquish Department of Defense jurisdiction over the pipeline. The General Services Administration began procedures to determine if the remaining lands should be disposed of through public sale or returned to the public domain. The Department of the Interior has announced its intention to grant a right-of-way for the ANGTS across all Federal lands along the Haines right-of-way. This action will be subject to adjudication as it relates to several land claims filed by Alaska Native corporations before the Alaska Native Claims Appeal Board.

The General Services Administration is expected to either sell or lease lands within its jurisdiction to the gas pipeline sponsors, again subject to the adjudication of land claims by Alaska Natives. With respect to lands determined to be Native lands, the gas pipeline sponsors will negotiate with the owners for purchase of rights-of-way in the same manner involved in access across any private lands. Decisions on claims before the Alaska Native Claims Appeal Board are expected within a few months.

B. Federal Energy Regulatory Commission

1. Incentive Rate of Return - The Incentive Rate of Return (IROR) is a concept which was expressed in the President's Decision for use in deterring cost growth during construction of the pipeline. It is a format that is not available under conventional public utility ratemaking practices and applies only to the Alaskan segment and the Eastern Leg (Northern Border) of ANGTS. The IROR attempts to provide an incentive for management to reduce construction costs by allowing rates of return on equity to be increased if the actual construction costs of the project are at, or below, the target estimates. As cost overruns accelerate, the rate of return diminishes to a predetermined "floor" or minimum amount. On August 29, 1979, the Federal Energy Regulatory Commission (FERC) published its final order setting the terms for the IROR

and pipeline company tariffs. The IROR mechanism has associated with it numerous new definitions, but the tariff schedule boils down to an understanding of four key terms: center rate of return, marginal rate of return, cost performance ratio, and operation phase rate.

"Center Rate of Return": The center rate of return is that return which the sponsors will earn on their equity investment if they are able to build the project at the cost estimate determined by the President in his Decision. This rate may be adjusted later, at the time of final cost estimates perhaps, but currently assumes that the system will be constructed with a 30 percent cost growth in the Alaskan Leg, and a 10 percent cost growth in the Eastern Leg. Given these allowances for cost growth, the sponsors can expect a rate of return of 17.5 percent and 15 percent respectively. If the project is constructed at costs under the final cost estimate, significantly higher rates of return are allowed. If the project is constructed at costs above the final cost estimate, lower rates of return are allowed.

"Marginal Rate of Return": This is the rate of return allowed on cost overruns. The marginal rate has been set at 8 percent, a level below the cost of capital which is expected to act as an incentive to reduce spending on cost overruns. This rate also is the floor of the IROR schedule.

"Cost Performance Ratio": This ratio is used to measure the degree of cost growth or reduction from the projected costs of the project. It is the ratio of Actual Capital Costs to the Projected Capital Costs. A ratio of greater than 1.0 indicates that actual costs are greater than the budgeted costs. As mentioned above, the Alaskan segment is expected to be built with a 30 percent cost growth (its center rate which would earn 17.5 percent). Therefore, the Alaskan cost performance ratio would be 1.3. The following chart provides a sample schedule for the IROR mechanism given variable cost performance ratios:

Cost Performance Ratio	Rate of Return (%) Alaskan Leg	Rate of Return (%) Northern Border
0.8	23.44	17.62
0.9	21.72	16.56
1.0	20.35	15.70
1.1	19.23	15.00
1.2	18.29	14.42
1.3	17.50	13.92
1.4	16.82	13.50
1.5	16.23	13.13
1.6	15.72	12.81
1.7	15.26	12.53
1.8	14.86	12.28
1.9	14.50	12.05
2.0	14.17	11.85
2.1	13.88	11.67
2.2	13.61	11.35
2.3	13.37	11.35
2.4	13.15	11.21
2.5	12.94	11.08
2.6	12.75	10.96
2.7	12.57	10.85
2.8	12.41	10.75

"Operation Phase Rate": This rate applies to the return on equity which will compensate equity investors for the risks incurred during operation of the pipeline. It has been set by FERC at 14 percent for the Alaskan segment, and 13 percent for the Eastern Leg.

Another feature of the final FERC order on project tariffs is that the tariffs are to be "cost-of-service" rather than the conventional fixed-rate tariffs. The cost-of-service tariff allows the project sponsors to charge their customers rates adequate to recover their full expenses regardless of fluctuations in costs or volumes of gas transported. These tariffs will not become effective until the system is completed, thereby removing the consumers from risk of noncompletion of the system. A provision has been adopted in the event of an extended total cessation of service for thirty consecutive calendar days under which the sponsors would forfeit their return on and of equity until service resumes. Debt service will be allowable in all events except non-completion.

2. Conditioning Costs - Settlement of the issue of who should be responsible for gas conditioning costs was FERC's second major challenge. Unlike other issues in the ANGTS proceedings, this conditioning question directly involved the producers of Prudhoe Bay natural gas - Atlantic Richfield, Exxon, and Sohio. The conditioning decision was also thought to be the most likely to result in litigation. It was made on August 24, 1979, as FERC Order No. 45. The two central questions addressed were who should be responsible for the construction and operation of a conditioning facility, and what allowances, if any, should be permitted in the $1.45 per mcf ceiling price of Alaskan gas to reflect conditioning costs?

"Conditioning" is defined by FERC as any treatment of the raw gas which is necessary to render it transportable through the ANGTS. This includes chilling and compressing the gas, water removal, and cleansing the gas stream of sulfur, hydrogen sulfide, oxygen, carbon dioxide and other impurities. Quality specifications for Alaskan gas have not been made final by regulatory authorities in either the United States or Canada. The debate centers on the levels of carbon dioxide to be allowed. Some carbon dioxide removal is required to prevent corrosive chemical reactions from occurring in the pipeline (such reactions occur at CO_2 levels above 3 percent by volume). A further reduction of carbon dioxide content below 3 percent permits the transportation of a greater volume of gas, thereby enhancing the transportation efficiency of the system. Therefore, a 3 percent level could be required for pipeline safety considerations, but a lower level would clearly benefit the transporters and shippers. The cost of gathering and conditioning Alaskan gas has been estimated at $.75 per million btu (1978 dollars). A conservative cost estimate for construction of a gas conditioning facility is $2 billion.

FERC Order No. 45 places responsibility for conditioning on the producers, a responsibility which the producers say will reduce their return on gas sales significantly. The FERC order accomplishes this in two ways. First, it amends the Commission's interim regulations implementing the Natural Gas Policy Act of 1978 (P.L.95-621) to allow first sellers (the producers) to apply to the Commission for an allowance on the costs incurred in removing carbon dioxide from levels of 3 percent or lower. Second, the Commission publicly announced a statement of policy that any costs incurred by shippers or transporters to condition gas will be considered "imprudently incurred" and not recoverable in their tariffs. In the first instance, producers cannot expect to pass-through costs to condition gas to the 3 percent level and may "apply" for an increase in the wellhead ceiling price for their gas only for costs to condition it below 3 percent. In the second instance, FERC has announced that it will not approve any tariff submitted by the pipeline company which reflects conditioning costs. FERC has gone one step further by adjusting its previously issued tariff order (the incentive rate of return rulemaking) to reflect a prohibition on passing through any conditioning costs from transporter to shipper, except to remove carbon dioxide to levels below 3 percent.

The rationale for the final decision on conditioning costs is based on a line of reasoning that has been evident in all FERC decisions on ANGTS: the need for a reasonable distribution of the financial burden of constructing the system among the potential beneficiaries. In the President's Decision the producers were specifically prohibited from equity participation in the pipeline. Although it is yet considered a possibility that the producers will proffer some form of debt guarantee, FERC has determined that the capital investment required for the conditioning facilities would only be a further financial burden on the ANGTS and that it is an appropriate responsibility of the producers.

A discussion of project financing will follow later in this report, however, officials of the Department of Energy considered FERC's Order No. 45 on conditioning costs so integrally related to an overall financing structure that the Secretary of Energy requested a rehearing to allow additional time for financing proposals involving the producers to emerge. The request was granted by FERC and the effective date of Order No. 45 was stayed until December 5, 1979.

3. Pipeline System Design - Design standards for the construction of any pipeline must identify two basic factors: operating pressure and pipe diameter. Debate on pipeline design centered

primarily on the Alaskan Leg and portions of the Canadian Leg where "conventional" standards do not exist because of extreme climatic conditions. International agreement was necessary because the pipe design used in Alaska would necessarily be followed across the border into Canada at least as far as Whitehorse, Yukon, where the "joint-use" segment begins. This segment stretches from Whitehorse to the point at Caroline Junction, Alberta, where the line bifurcates. It is this portion of the pipeline which is designed to carry future quantities of Canadian gas when such resources begin to flow from potential reservoirs in the Beaufort Sea.

American and Canadian government technical representatives began meeting soon after Congress approved the President's Decision. That document identified the desirability of a 48-inch diameter pipeline and created a predisposition to a 1260 psig operating pressure by stating that the facilities approved by the President are those contained in the Alcan application. Alcan (later Alaskan Northwest) applied for 1260 psig.

The Decision goes further, however, by suggesting that the sponsors should consider greater operating pressures in order to increase throughput of gas. The matter was left for resolution by FERC and the Canadian National Energy Board (NEB).

For their part, the Canadians expressed reservations about the safety and reliability of a high pressure system. Their technical representatives pointed out that the capital cost estimates of such a system are questionable because the high pressure design goes beyond proven technical standards, which are conventional systems operating below 1100 psig. As a result of these concerns, the Canadian NEB selected a large diameter pipe, 56-inch, and an operating pressure of 1080 psig for the joint-use section.

The Canadian design decision on the joint-use segment effectively narrowed the options for system design north of Whitehorse. The choices became the 1260 psig system proposed by the sponsors of the Alaskan Leg, or a thicker walled 48-inch diameter pipe which could operate at 1400 psig, 1440 psig, or 1680 psig, as proposed by other parties to the FERC design proceedings.

The choice of operating pressure is important, not only because of the relationship of the pressure to throughput (directly proportional), but also because there is a relationship between the pressure and the ability of the gas stream to carry natural gas liquids. These gas liquids, or NGL, are hydrocarbons containing more carbon atoms in each molecule and are "richer" than natural gas (which is composed mostly of methane).

Source	Energy Values Btu*/cubic foot	Btu/barrel
Natural Gas:		
C_1 (methane)	950	2,478,000
Gas Liquids:		
C_2 (ethane)	1,700	2,916,000
C_3 (propane)	2,550	3,824,000
C_4 (butane)	3,354	4,162,000
C_5 (pentane)	4,015	4,625,000
Crude Oil:		
C_6 and higher	--	5,800,000

*British Thermal Units

The State of Alaska is looking very closely at the ability of the gas stream to carry the NGL in order to keep open the option of developing a world-class petrochemical industry using the NGL as

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feedstocks. The State's principal objective is to relieve the "boom-bust" cycles associated with direct export of its raw materials. In the case of the State's royalty oil, agreements were reached to insure construction of in-state refining capacity. State officials contemplate a similar venture for their royalty gas and they specifically support development of a petrochemical plant near Fairbanks where unemployment now stands at 14 percent.

Alaska's comments in FERC's proceeding on system design underscore the interrelationship of several major issues under review by FERC in separate proceedings. The State recommended an omnibus proceeding to resolve at one time (a) pipeline design, (b) location of the conditioning plant, and (c) carbon dioxide content of the gas stream. State officials contend that a decision on the sponsors' pipeline design could foreclose the possibility of transporting the NGL to Fairbanks through the pipeline. The level of CO_2 in the pipeline affects the safety and efficiency of the pipeline. However, once CO_2 is removed, the ability of the gas stream to transport the NGL is reduced.

FERC announced on August 6, 1979, its decision to approve the sponsors' system design of 48-inch diameter pipe and 1260 psig operating pressure. The Commission indicated that it would consider the complex NGL carrying capacity issue in the context of the carbon dioxide proceeding rather than delay a system design decision. The State of Alaska has challenged the FERC decision. It filed an appeal in the U.S. Court of Appeals for the District of Columbia Circuit on October 5, 1979. Under the judicial review process mandated in the Alaska Natural Gas Transportation Act, the Court has 90 days to rule on the complaint.

4. Terms and Conditions - Similar to the Stipulations of the Department of the Interior, FERC's Terms and Conditions are requirements that are attached to the certificate of public convenience and necessity and relate specifically to private lands. FERC's draft Terms and Conditions were published for comment in May 1979 and proposed that the pipeline sponsors prepare a handbook for all private landowners along the right-of-way containing information on construction schedule, environmental and safety practices, and settlement procedures. Also recommended is the installation of toll-free telephone lines to the pipeline companies for use by the affected landowners when questions arise. The FERC document also proposed conditions relating to the issuance of stop-work orders by government field officials. Final action by FERC on its Terms and Conditions is pending consultation with the Federal Inspector.

VI. SPECIAL CONCERNS

Three issues of special significance to the ANGTS have not been fully resolved to date. The first is the question of project financing: Can the sponsors of the ANGTS attract major lenders for debt support? The second issue involves the location of the gas plant. The third special concern is with the implementation of procurement agreements between the United States and Canda.

A. Financing

A major factor in the selection of the Alcan proposal by the President and its concurrence by Congress was the pledge of the sponsors that the system would be privately financed. The foundations for a financing plan were laid in the President's <u>Decision</u>. This 1977 document stands out in the midst of the 1979 financing imbroglio by virtue of its simplicity. It has withstood determined attempts since 1977 to soften its requirements. However, the first and only test of the <u>Decision's</u> financing tenets and the sponsors' solemn pledges to secure private financing will come during the first quarter of 1980 when major lenders will be given a financial prospectus and asked to materially support the $15 billion project.

The <u>Decision</u> includes the following requirements:

1. The sponsors shall provide for private financing of the project;
2. The producers of Alaskan gas shall be excluded from ownership of the gas pipeline. They may not be equity members of the sponsoring consortium, have any voting power in the project, have any role in the management or operations of the project, or 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;
3. The producers of Alaskan gas may provide guarantees for project debt; and
4. A variable rate of return shall be set to provide substantial incentives to construct the project without incurring overruns.

The report accompanying the President's Decision outlines a plan to enable private financing by allocating the project's risks. It provides:

1. The equity investment in the project shall be placed at risk under all circumstances and considered the first funds spent. The rate of return on equity will compensate sponsors for bearing this risk;
2. Major beneficiaries of the project, the producers and the State of Alaska, should participate in the financing either directly or in the form of debt guarantees;
3. The burden of cost overruns shall be shared by equity holders and consumers through the variable rate of return; and
4. Consumers will provide debt service in the event of service interruption only after the pipeline is completed and service begins.

Conventional financing structures consist of cash from sponsors, who hold title to the facilities being financed, and cash from lenders, who require a reasonable rate of return on their principal over a specified period of time. A 50 percent debt, 50 percent equity capital structure is customary for major natural gas pipeline companies in the lower 48 states.

The equity investors, or sponsors, generally "risk" their capital; that is, in the event of project failure the equity owners obtain a return of their investment only in the event assets remain after repayment of principal and accrued interest to lenders. By contrast, lenders, such as major insurance companies, pension funds, and banks, do not perceive their advances as "risk" capital, but require assurances, under any circumstances, of recovery of their principal with interest.

Various risks associated with a $15 billion project, portions of which are to be constructed in an arctic environment, will be critically examined. The risk of non-completion encompasses factors such as unmanageable cost overruns, unforeseen technical problems, or delaying legal or regulatory obstacles which could cause the project to be abandoned prior to completion. The risk of service interruption, once the pipeline is operational is based on the possibility that problems along the pipeline, within the gas conditioning plant, or associated with gas reserve itself could stop or reduce gas flow to consumers. Another risk is that of project abandonment once it has been completed. For example, if interruption of service continued for an extended period of time, the project could fail. A final type of risk which will be examined by lenders is the risk that the gas, once onstream, will cost too much to market. Whereas, most of these risks are associated with construction of the Alaskan Leg of the pipeline, their impact on financing falls equally on all segments of the system because revenues will depend on the flow of Prudhoe Bay gas.

The sponsors of the Alaskan Leg propose a 75/25 debt to equity ratio and non-recourse "project financing" to construct their $6 billion segment of the pipeline. This proposed unconventional financing structure results from the relatively small size of the six pipeline companies in the consortium and their correspondingly narrow equity base. The partners' capital structures are presently highly leveraged and they do not have the advantage of owning the resource to be transported. By comparison, it was the asset of owning the oil reserves which enabled the sponsors of the Trans-Alaska oil pipeline to leverage the sizeable cost overruns which they experienced in construction of that pipeline.

Non-recourse "project financing", as distinguished from "balance sheet" financing, will have significance for ANGTS debt lenders. In "project financing" a new enterprise or project entity is created which, in and of itself, could generate sufficient revenues to pay its operating costs, interest and principal on its debt, and a return <u>on</u> and, ultimately, a return <u>of</u> equity to its investors. In other words, the pipeline's equity owners will not be responsible for debt service if construction is delayed or abandoned, if the gas turns out to be unmarketable, or if gas shipments are reduced or interrupted. The only source of funds for the purpose of debt repayment will be the gas consumer. To protect the consumer from unreasonable risk, the President's <u>Decision</u> and Report limits the payment of debt service by consumers to the operating phase, not the construction phase. Consumers will share the risk of service interruption, not the risk of non-completion. Debt lenders will face the risk of non-completion without recourse. In the case of the more conventional "balance sheet" financing, the sponsoring companies would have to place their entire assets behind the project debt.

Within this framework of risk allocation the sponsors of the Alaskan Leg have endeavored to reduce lender uncertainty by working to secure positive regulatory action on major ratemaking issues, by trying to attract other gas transmission companies into their consortium as equity partners, and by encouraging the other project beneficiaries, the gas producers and the State of Alaska, to help finance the system. The sponsors' efforts and other events in government have combined to help establish a favorable regulatory climate: the pipeline system design, incentive rate of return, and tariff issues were addressed by FERC; the appointment of a Federal Inspector with strong decision-making authority has had positive implications; Congress passed the Natural Gas Policy Act which set a wellhead price for Prudhoe Bay gas without need of further onerous regulatory review; and, gas sales contracts between the producers and gas transmission companies were initialed.

Lender uncertainty currently centers around four factors: (a) whether the Federal government can be self-disciplining and assure timely action, (b) the need for additional expenditures by the project sponsors for design, engineering, and other technical work, (c) whether the other major beneficiaries will provide debt support or overrun guarantees, and (d) whether there can be assurances of perfect shipper tracking once the project is completed. An examination of the last two factors follows.

1. Major Beneficiaries

Producers - The sponsors of the Alaskan Leg point out that the main producers of Prudhoe Bay gas, Exxon, Atlantic Richfield, and Sohio will realize $50 billion in 1979 dollars from the sale of their natural gas. The producers, however, respond that before any gas can be shipped they must invest $1 to $2 billion in field development, $2 billion to construct the gas conditioning plant, and potentially another $2 billion to institute waterflooding in the Prudhoe Bay reservoir. An impasse was broken in July 1979 when the President publicly accused the producers of foot-dragging and announced that he had instructed the Secretary of Energy to meet with the producers and discuss ways to help finance the project. Secretary Schlesinger met with the producers on August 8, 1979, and outlined that the producers should provide the $2 billion for the gas conditioning plant and $2.7 billion in guarantees against cost overruns on the pipeline. The producers replied that they would not commit funds without a voice in the management of the project. In October 1979 Exxon presented a counter-proposal to the Department of Energy pledging the producers to a 40 percent equity and a 40 percent debt role in project financing provided that (a) construction and operation of the conditioning plant would become the responsibility of the sponsors, (b) producer participation in system ownership would be approved by FERC, and (c) the present partnership agreement would be revised for a two-thirds vote on significant issues.

The other two producers indicated they agreed with the general outline of the Exxon proposal. Further meetings on the issue are expected to take place to narrow the distance between the Secretary of Energy's plan and the Exxon proposal while keeping within the provisions of the President's Decision and Report.

State of Alaska - Alaska is included on the list of major beneficiaries by virtue of its "producer" status as owner of 12.5 percent of the Prudhoe Bay gas and because of the predictable revenue increases and employment benefits which would result from construction of the project. It is anticipated that the State could realize as much as $7.5 billion from the sale of Prudhoe Bay gas in the form of royalties and severance taxes, as well as $50 million per year in property taxes. Several hundred permanent jobs would be created in addition to the sizeable labor force needed during the project's construction period.

In 1978 the sponsors of the Alaskan Leg requested the State of Alaska to support the project in the form of $1 billion in tax-exempt revenue bonds and $500 million in convertible debentures, which are interest-bearing securities that are exchangeable for preferred equity after construction is completed. Later that year the State Legislature passed a bill to set up the Alaska Gas Pipeline Financing Authority through which the State could issue the $1 billion in tax-exempt bonds. Technical revisions to the bill became necessary after questions arose as to the legal ability of the Authority to issue bonds. In addition, the revenue bonds could only have been issued after the U.S. Congress acted to amend the Internal Revenue Code to give the project special tax-exempt status. In looking further at the bonding authority, State officials began to discuss the possibility of tying policy objectives to the revision amendments to insure in-state hire and the availability of comprehensive information on the sponsors' overall financing plan. The sponsors withdrew their proposal for State participation after a special session of the State Legislature in August 1979 failed to give approval to either the technical amendments for debt participation or to any form of equity participation.

The reluctance of the State Legislature to act on this measure despite Governor Hammond's indication that the pipeline was a priority project in his administration was based on the Legislature's conclusion that the State was being asked to become a lender without sufficient financial information on the project, well in advance of the sponsors' formal proposals to other lenders. Under these circumstances the Legislature objected to unconditional commitment of funds. Other factors contributed to the Legislature's conclusion including the following: a commonly shared belief that the sponsors' actions during the debate had alienated Alaskan groups which traditionally support growth and development; the fact that no action was taken by the sponsors to secure the necessary change in law by the U.S. Congress; the fact that the requested equity contribution represented one-half of the State's annual operating budget; the compounded risk which would result from committing State revenues, which are heavily dependent on Prudhoe Bay oil production income, to another venture associated with the same reservoir; and, the hope of legislative leaders that the financing issue could be used to leverage support from the sponsors for locating the gas conditioning plant in Fairbanks. Although several options for financial participation are actively being examined by the State, it is likely that the agreement finally reached on producer participation will have a strong impact on the State's participation plan.

2. Shipper Tracking

In deciding whether or not to participate in financing on a non-recourse basis, lenders will look both at the ability of the sponsors to complete construction and at the project's tariff arrangements. The tariff is a lengthy legal and operating document that defines how the company owning and operating the pipeline will charge its customers "the shippers" and what transportation services will be provided by the company. At a minimum, tariff arrangements are expected to provide sufficient dollars to cover debt obligations under each and every circumstance.

FERC approved the cost-of-service tariff applications of both Alaskan Northwest and Northern Border which allows them to automatically pass along costs associated with operation of the pipeline without prior approval by FERC. The key issue is the extent to which the shippers will be able to "track" or pass the costs along to local distribution companies and ultimately to end users. The obstacle to perfect "tracking" by the shippers of all legitimate charges is the separation of regulatory authority between FERC and the state utility commissions. Under normal operating conditions all transportation costs could be expected to be passed along to the end user. However, a question remains as to whether or not the individual state regulatory authorities will approve agreements requiring pass-through of costs, particularly debt service, during periods of service interruption.

B. Location of the Conditioning Plant

The State of Alaska strongly supports a Fairbanks location for the gas conditioning plant. The Alaskan Leg sponsors have proposed that the plant be located at Prudhoe Bay. A decision on location will be based on factors under review in several FERC proceedings including pipeline system design, CO_2 content, and conditioning costs. Responsibility for construction of the facility has not been finally assigned and is a significant factor in development of a financing plan. The plant is expected to cost in excess of $2 billion and to take four and one-half years to construct with a 1,000 person workforce.

FERC gave direction to the debate on location in July when it released a draft environmental impact statement which was prepared by its environmental staff in cooperation with the Environmental Protection Agency. FERC prefaced this action with two explanations. First, even though the facility does not come under certification requirements, the agency felt compelled to present all relevant information on ANGTS to the public. Second, FERC determined that an environmental assessment was necessary because (a) the conditioning facility will be a major construction project, and (b) the facility is not covered under Sections 8(e) and 10(c) of the Alaska Natural Gas Transportation Act and is therefore subject to the requirements of the National Environmental Policy Act. Public hearings on the draft impact statement were held in September.

On the basis of environmental factors, the July draft statement concluded that a Prudhoe Bay site would be superior to the Yukon River and Fairbanks alternatives and that the North Slope site would have the fewest adverse effects. The land in the vicinity of Prudhoe Bay has already undergone significant development by the petroleum industry and the North Slope Borough has proposed zoning in the area of preferred industrial development.

Another strong argument supporting a Prudhoe Bay site is based upon the sponsors' desire to employ the most cost-effective construction methods available. Although construction costs on the North Slope are higher than in Fairbanks, the coastal location of the Prudhoe Bay site enables it to be served by barges. Barges are able to transport very large modules which can be set in place on prepared gravel pads, eliminating the need for extensive on-site construction in extremely adverse conditions. The modules are fabricated at locations in the lower 48 states where assembly costs are lower and productivity and quality assurance are more reliable. An inland location in Alaska, such as Fairbanks, requires the transporation of much smaller components on trucks or by rail with a greater degree of on-site assembly resulting, in the opinion of the sponsors, in higher overall costs.

The State's primary objective is to encourage long-term industrial expansion and provide permanent employment opportunities within the State. State officials argue that the economies of scale used to justify the Prudhoe Bay site are outweighed by lower costs in Fairbanks. They urge recognition of the State's proposal to construct a petrochemical manufacturing facility in Fairbanks with its concomitant co-location economies with the conditioning plant. At present the State is acting through legal channels to keep all of its options open and is seeking the support of the sponsors in exchange for the State's participation in the financing of the pipeline.

C. Procurement: "Canadian Content"

The issue of procurement practices to be followed by the United States and Canada in constructing the ANGTS was an important and difficult aspect of the negotiations on the Agreement on Principles. Canadian procurement policy, commonly referred to as the "Canadian Content" policy, runs counter to normal United States' policies on international trade. Canadian policies are outlined by the National Energy Board in its July 1977 decision approving a joint project for delivery of northern gas:

"In respect to Canadian content: (1) The Company shall so design its program for the procurement of goods and services for the project to assure that:

(a) Canadians have a fair and competitive opportunity to participate in all facets of the project;
(b) the level of Canadian content is optimized, so far as practicable, with respect to the origin of products, services, and their constituent components;
(c) maximum advantage is taken of opportunities provided by the project to establish and expand supplier firms in Canada; and
(d) maximum advantage is taken of opportunities provided by the project to foster research and development technological activities in Canada."

To assure that Canadian policies are used only to give Canadian firms a fair opportunity to compete, rather than to allow them to obtain contracts without regard to competition from outside Canada, Sections 7 and 8 were added to the Agreement on Principles (Appendix V). Section 7 was added to provide the standard of "generally competitive terms" and the factors to be weighed in determining whether or not competition was being unfairly restrained. Section 8 was added to provide a consultation mechanism for resolution of any differences which might arise. Section 7 also lists the available remedies, including the renegotiation of contracts or the reopening of bids. Also contained in the Agreement on Principles, however, is a statement of objectives which has been used to fortify the "Canadian Content" procurement policy. The preface states, in part, that it is desirable to maximize related industrial benefits of each country through construction and operation of the pipeline system. Thus, "Canadian Content" has come to mean a Canadian procurement policy which has as its goal the enhancement and expansion of Canadian industry.

Two events occurring in February 1978 focused attention on Canadian procurement policies. First, during the debate in the Canadian House of Commons on the pipeline enabling legislation, officials stopped just short of giving legal status to the Foothills' target of 90 percent "Canadian Content." Deputy Prime Minister Allan J. MacEachen was quoted as saying that the Canadian government would assist the sponsors in reaching that goal. The second event was Canada's announcement on February 20, 1978, that it had selected a 56-inch, 1080 psig pipeline system design for the 1,085 mile segment between Whitehorse, Yukon, and Caroline Junction, Alberta. United States officials had informed their Canadian counterparts that they preferred a 48-inch system because they felt that it would provide the lowest cost of service, a cost that the American gas consumer will ultimately have to assume. Deputy Prime Minister MacEachen was quoted as saying that a key reason his government prefers the 56-inch version is that the large size pipe is currently made by two Canadian companies but isn't made in the United States.

In light of these events, development of detailed procedures and safeguards under Section 8 of the Agreement on Principles is essential. Fundamental elements of the consultation mechanism are (a) the assurance of access to all relevant documents to insure that the procurement process is on a competitive basis, and (b) the assurance that access to this information will be provided within a timeframe which has meaning in the bidding process. The consultation procedures under Section 8 have not

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yet been agreed to despite the advanced progress of procurement activities for the Canadian Leg of the ANGTS. Consultation is expected to involve officials of the Northern Pipeline Agency and the Office of the Federal Inspector rather than the traditional governmental authorities, the Canadian National Energy Board and the Federal Energy Regulatory Commission. It is hoped that a regular exchange of information will take place with the understanding that each party must have full access to all relevant forms and documents.

VII. CONCLUSION

The Subcommittee on Oversight and Investigations of the Committee on Interior and Insular Affairs held hearings on October 15 and 16, 1979, concerning the Alaska Natural Gas Transportation System. The purpose of the hearings was to focus attention on the current status of the regulatory decisions affecting construction of the pipeline, to meet the newly appointed Federal Inspector, and to receive testimony from the pipeline sponsors outlining their plans and requirements.

It was apparent from the testimony received that the level of confidence in the project had improved significantly in the weeks immediately preceding the hearings. This confidence was reflected in statements by both the sponsors and the Federal regulators and could be attributed to two factors. First, a combination of regulatory decisions and the appointment of the Federal Inspector enabled the sponsors to begin formulating credible cost estimates and financial proposals to present to potential lenders. Second, events occurring in oil exporting countries had revived the sense of urgency within the United States to develop a greater degree of energy self-sufficiency. The Alaska Natural Gas Transportation System is the only project on the drawing boards that would provide a major new domestic energy supply to the nation in the near future. On several occasions President Carter has reiterated his commitment to building the gas pipeline in order to improve our national security position with respect to increasing energy supplies and with respect to reducing the outflow of dollars to oil producing nations.

Future milestones which will determine the fate of the pipeline are (1) an agreement among the participants on financial support roles, (2) the ultimate decision of lenders on debt support, (3) the outcome of technical challenges to construction of the pipeline in Alaska and northern Canada, and (4) the development of a working relationship between the sponsors and the Federal Inspector during construction of the pipeline. The Subcommittee will continue to review progress at each of these milestones and will schedule oversight hearings when appropriate.

APPENDIX I

Public Law 93-153
93rd Congress, S. 1081
November 16, 1973

An Act

To amend section 28 of the Mineral Leasing Act of 1920, and to authorize a trans-Alaska oil pipeline, and for other purposes.

* * * * * *

TITLE III—NEGOTIATIONS WITH CANADA

SEC. 301. The President of the United States is authorized and requested to enter into negotiations with the Government of Canada to determine—

(a) the willingness of the Government of Canada to permit the construction of pipelines or other transportation systems across Canadian territory for the transport of natural gas and oil from Alaska's North Slope to markets in the United States, including the use of tankers by way of the Northwest Passage;

(b) the need for intergovernmental understandings, agreements, or treaties to protect the interests of the Governments of Canada and the United States and any party or parties involved with the construction, operation, and maintenance of pipelines or other transportation systems for the transport of such natural gas or oil;

(c) the terms and conditions under which pipelines or other transportation systems could be constructed across Canadian territory;

(d) the desirability of undertaking joint studies and investigations designed to insure protection of the environment, reduce legal and regulatory uncertainty, and insure that the respective energy requirements of the people of Canada and of the United States are adequately met;

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(e) the quantity of such oil and natural gas from the North Slope of Alaska for which the Government of Canada would guarantee transit; and

(f) the feasibility, consistent with the needs of other sections of the United States, of acquiring additional energy from other sources that would make unnecessary the shipment of oil from the Alaska pipeline by tanker into the Puget Sound area.

The President shall report to the House and Senate Committees on Interior and Insular Affairs the actions taken, the progress achieved, the areas of disagreement, and the matters about which more information is needed, together with his recommendations for further action. Presidential report to congressional committees.

SEC. 302. (a) The Secretary of the Interior is authorized and directed to investigate the feasibility of one or more oil or gas pipelines from the North Slope of Alaska to connect with a pipeline through Canada that will deliver oil or gas to United States markets. Study.

(b) All costs associated with making the investigations authorized by subsection (a) shall be charged to any future applicant who is granted a right-of-way for one of the routes studied. The Secretary shall submit to the House and Senate Committees on Interior and Insular Affairs periodic reports of his investigation, and the final report of the Secretary shall be submitted within two years from the date of this Act. Investigation costs. Reports to congressional committees.

SEC. 303. Nothing in this title shall limit the authority of the Secretary of the Interior or any other Federal official to grant a gas or oil pipeline right-of-way or permit which he is otherwise authorized by law to grant.

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APPENDIX II

Public Law 94-586
94th Congress

An Act

To expedite a decision on the delivery of Alaska natural gas to United States markets, and for other purposes.

Oct. 22, 1976
[S. 3521]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Alaska Natural Gas Transportation Act of 1976.
15 USC 719 note.

SHORT TITLE

SECTION 1. This Act may be cited as the "Alaska Natural Gas Transportation Act of 1976".

CONGRESSIONAL FINDINGS

15 USC 719.

SEC. 2. The Congress finds and declares that—

(1) a natural gas supply shortage exists in the contiguous States of the United States;

(2) large reserves of natural gas in the State of Alaska could help significantly to alleviate this supply shortage;

(3) the expeditious construction of a viable natural gas transportation system for delivery of Alaska natural gas to United States markets is in the national interest; and

(4) the determinations whether to authorize a transportation system for delivery of Alaska natural gas to the contiguous States and, if so, which system to select, involve questions of the utmost importance respecting national energy policy, international relations, national security, and economic and environmental impact, and therefore should appropriately be addressed by the Congress and the President in addition to those Federal officers and agencies assigned functions under law pertaining to the selection, construction, and initial operation of such a system.

STATEMENT OF PURPOSE

15 USC 719a.

SEC. 3. The purpose of this Act is to provide the means for making a sound decision as to the selection of a transportation system for delivery of Alaska natural gas to the contiguous States for construction and initial operation by providing for the participation of the President and the Congress in the selection process, and, if such a system is approved under this Act, to expedite its construction and initial operation by (1) limiting the jurisdiction of the courts to review the actions of Federal officers or agencies taken pursuant to the direction and authority of this Act, and (2) permitting the limitation of administrative procedures and effecting the limitation of judicial procedures related to such actions. To accomplish this purpose it is the intent of the Congress to exercise its constitutional powers to the fullest extent in the authorizations and directions herein made, and particularly with respect to the limitation of judicial review of actions of Federal officers or agencies taken pursuant thereto.

DEFINITIONS

15 USC 719b.

SEC. 4. As used in this Act:

(1) the term "Alaska natural gas" means natural gas derived from the area of the State of Alaska generally known as the North Slope of Alaska, including the Continental Shelf thereof;

(2) the term "Commission" means the Federal Power Commission;

(3) the term "Secretary" means the Secretary of the Interior;

(4) the term "provision of law" means any provision of a Federal statute or rule, regulation, or order issued thereunder; and

(5) the term "approved transportation system" means the system for the transportation of Alaska natural gas designated by the President pursuant to section 7(a) or 8(b) and approved by joint resolution of the Congress pursuant to section 8.

FEDERAL POWER COMMISSION REVIEWS AND REPORTS

Proceedings, suspension.
15 USC 719c.
15 USC 717w.

SEC. 5. (a)(1) Notwithstanding any provision of the Natural Gas Act or any other provision of law, the Commission shall suspend all proceedings pending before the Commission on the date of enactment of this Act relating to a system for the transportation of Alaska natural gas as soon as the Commission determines to be practicable after such date, and the Commission may refuse to act on any application, amendment thereto, or other requests for action under the Natural Gas Act relating to a system for the transportation of Alaska natural gas until such time as (A) a decision of the President designating such a system for approval takes effect pursuant to section 8, (B) no such decision takes effect pursuant to section 8, or (C) the President decides not to designate such a system for approval under section 8 and so advises the Congress pursuant to section 7.

(2) In the event a decision of the President designating such a system takes effect pursuant to this Act, the Commission shall forthwith vacate proceedings suspended under paragraph (1) and, pursuant to section 9 and in accordance with the President's decision, issue a certificate of public convenience and necessity respecting such system.

(3) In the event such a decision of the President does not take effect pursuant to this Act or the President decides not to designate such a system and so advises the Congress pursuant to section 7, the suspension provided for in paragraph (1) of this subsection shall be removed.

Recommendation, submittal to President.

(b)(1) The Commission shall review all applications for the issuance of a certificate of public convenience and necessity relating to the transportation of Alaska natural gas pending on the date of enactment of this Act, and any amendments thereto which are timely made, and after consideration of any alternative transportation system which the Commission determines to be reasonable, submit to the President not later than May 1, 1977, a recommendation concerning the selection of such a transportation system. Such recommendation may be in the form of a proposed certificate of public convenience and necessity, or in such other form as the Commission determines to be appropriate, or may recommend that no decision respecting the selection of such a transportation system be made at this time or pursuant to this Act. Any recommendation that the President approve a particular transportation system shall (A) include a description of the nature and route of the system, (B) designate a person to construct and operate the system, which person shall be the applicant, if any, which filed for a certificate of public convenience and necessity to construct and operate such system, (C) if such recommendation is for an all-land pipeline transportation system, or a transportation system involving water transportation, include provision for new facilities to the extent necessary to assure direct pipeline delivery of Alaska natural gas contemporaneously to points both east and west of the Rocky Mountains in the lower continental United States.

(2) The Commission may, by rule, provide for the presentation of data, views, and arguments before the Commission or a delegate of the Commission pursuant to such procedures as the Commission determines to be appropriate to carry out its responsibilities under paragraph (1) of this subsection. Such a rule shall, to the extent determined by the Commission, apply, notwithstanding any provision of law that would otherwise have applied to the presentation of data, views, and arguments. Rule.

(3) The Commission may request such information and assistance from any Federal agency as the Commission determines to be necessary or appropriate to carry out its responsibilities under this Act. Any Federal agency requested to submit information or provide assistance shall submit such information to the Commission at the earliest practicable time after receipt of a Commission request. Cooperation.

(c) The Commission shall accompany any recommendation under subsection (b)(1) with a report, which shall be available to the public, explaining the basis for such recommendation and including for each transportation system reviewed or considered a discussion of the following: Report, public availability.

(1) for each year of the 20-year period which begins with the first year following the date of enactment of this Act, the estimated—

(A) volumes of Alaska natural gas which would be available to each region of the United States directly, or indirectly by displacement or otherwise, and

(B) transportation costs and delivered prices of any such volumes of gas by region;

(2) the effects of each of the factors described in subparagraphs (A) and (B) of paragraph (1) on the projected natural gas supply and demand for each region of the United States and on the projected supplies of alternative fuels available by region to offset shortages of natural gas occurring in such region for each such year;

(3) the impact upon competition;

(4) the extent to which the system provides a means for the transportation to United States markets of natural resources or other commodities from sources in addition to the Prudhoe Bay Reserve;

(5) environmental impacts;

(6) safety and efficiency in design and operation and potential for interruption in deliveries of Alaska natural gas;

(7) construction schedules and possibilities for delay in such schedules or for delay occurring as a result of other factors;

(8) feasibility of financing;

(9) extent of reserves, both proven and probable and their deliverability by year for each year of the 20-year period which

begins with the first year following the date of enactment of this Act;

(10) the estimate of the total delivered cost to users of the natural gas to be transported by the system by year for each year of the 20-year period which begins with the first year following the date of enactment of this Act;

(11) capability and cost of expanding the system to transport additional volumes of natural gas in excess of initial system capacity;

(12) an estimate of the capital and operating costs, including an analysis of the reliability of such estimates and the risk of cost overruns; and

(13) such other factors as the Commission determines to be appropriate.

(d) The recommendation by the Commission pursuant to this section shall not be based upon the fact that the Government of Canada or agencies thereof have not, by then rendered a decision as to authorization of a pipeline system to transport Alaska natural gas through Canada.

Transportation system, recommendation, submittal to President.

15 USC 717w.

Environmental impact statement, submittal to President.

(e) If the Commission recommends the approval of a particular transportation system, it shall submit to the President with such recommendation (1) an identification of those facilities and operations which are proposed to be encompassed within the term "construction and initial operation" in order to define the scope of directions contained in section 9 of this Act and (2) the terms and conditions permitted under the Natural Gas Act, which the Commission determines to be appropriate for inclusion in a certificate of public convenience and necessity to be issued respecting such system. The Commission shall submit to the President contemporaneously with its report an environmental impact statement prepared respecting the recommended system, if any, and each environmental impact statement which may have been prepared respecting any other system reported on under this section.

OTHER REPORTS

Comments, submittal to President.
15 USC 719d.

Public availability.

SEC. 6. (a) Not later than July 1, 1977, any Federal officer or agency may submit written comments to the President with respect to the recommendation and report of the Commission and alternative methods for transportation of Alaska natural gas for delivery to the contiguous States. Such comments shall be made available to the public by the President when submitted to him, unless expressly exempted from this requirement in whole or in part by the President, under section 552(b)(1) of title 5, United States Code. Any such written comment shall include information within the competence of such Federal officer or agency with respect to—

(1) environmental considerations, including air and water quality and noise impacts;

(2) the safety of the transportation systems;

(3) international relations, including the status and time schedule for any necessary Canadian approvals and plans;

(4) national security, particularly security of supply;

(5) sources of financing for capital costs;

(6) the impact upon competition;

(7) impact on the national economy, including regional natural gas requirements; and

(8) relationship of the proposed transportation system to other aspects of national energy policy.

(b) Not later than July 1, 1977, the Governor of any State, any municipality, State utility commission, and any other interested person may submit to the President such written comments with respect to the recommendation and report of the Commission and alternative systems for delivering Alaska natural gas to the contiguous States as they determine to be appropriate. Comments, submittal to President.

(c) Not later than July 1, 1977, each Federal officer or agency shall report to the President with respect to actions to be taken by such officer or agency under section 9(a) relative to each transportation system reported on by the Commission under section 5(c) and shall include such officer's or agency's recommendations with respect to any provision of law to be waived pursuant to section 8(g) in conjunction with any decision of the President which designates a system for approval. Report to President.

(d) Following receipt by the President of the Commission's recommendations, the Council on Environmental Quality shall afford interested persons an opportunity to present oral and written data, views, and arguments respecting the environmental impact statements submitted by the Commission under section 5(e). Not later than July 1, 1977, the Council on Environmental Quality shall submit to the President a report, which shall be contemporaneously made available by the Council to the public, summarizing any data, views, and arguments received and setting forth the Council's views concerning the legal and factual sufficiency of each such environmental impact statement and other matters related to environmental impact as the Council considers to be relevant. Report to President.

PRESIDENTIAL DECISION AND REPORT

SEC. 7. (a)(1) As soon as practicable after July 1, 1977, but not later than September 1, 1977, the President shall issue a decision as to whether a transportation system for delivery of Alaska natural gas should be approved under this Act. If he determines such a system should be so approved, his decision shall designate such a system for approval pursuant to section 8 and shall be consistent with section 5(b)(1)(C) to assure delivery of Alaska natural gas to points both east and west of the Rocky Mountains in the continental United States. The President in making his decision shall take into consideration the Commission's recommendation pursuant to section 5, the report under section 5(c), and any comments submitted under section 6; and his decision to designate a system for approval shall be based on his determination as to which system, if any, best serves the national interest. 15 USC 719e.

(2) The President, for a period of up to 90 additional calendar days after September 1, 1977, may delay the issuance of his decision and transmittal thereof to the House of Representatives and the Senate, if he determines (A) that there exists no environmental impact statement prepared relative to a system he wishes to consider or that any prepared environmental impact statement relative to a system he wishes to consider is legally or factually insufficient, or (B) that the additional time is otherwise necessary to enable him to make a sound decision on an Alaska natural gas transportation system. The President shall promptly, but in no case any later than September 1, 1977, notify the House of Representatives and the Transmittal to Congress, delay. Notice to Congress.

Senate if he so delays his decision and submit a full explanation of the basis of any such delay.

(3) If, on or before May 1, 1977, the President determines to delay issuance and transmittal of his decision to the House of Representatives and the Senate pursuant to paragraph (2) of this subsection, he may authorize a delay of not more than 90 days in the date of taking of any action specified in sections 5 and 6. The President shall promptly notify the House of Representatives and the Senate of any such authorization of delay and submit a full explanation of the basis of any such authorization.

Notice to Congress.

(4) If the President determines to designate for approval a transportation system for delivery of Alaska natural gas to the contiguous States, he shall in such decision—

(A) describe the nature and route of the system designated for approval;

(B) designate a person to construct and operate such a system, which person shall be the applicant, if any, which filed for a certificate of public convenience and necessity to construct and operate such system;

(C) identify those facilities, the construction of which, and those operations, the conduct of which, shall be encompassed within the term "construction and initial operation" for purposes of defining the scope of the directions contained in section 9 of this Act, taking into consideration any recommendation of the Commission with respect thereto; and

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

Chairman, appointment.

(5) After a decision of the President designating an Alaska natural gas transportation system takes effect under section 8, the President shall appoint an officer of the United States, with the advice and consent of the Senate, or designate a board (consisting of such an officer, so appointed with the advice and consent of the Senate, as chairman and such other individuals as the President determines appropriate to serve on such board by reason of background, experience, or position) to serve as Federal inspector of construction of such transportation system, except that no such individual or officer may have a financial interest in the approved transportation system. Upon enactment of a joint resolution pursuant to section 8 approving such a system the Federal inspector shall—

Joint surveillance and monitoring agreement, establishment.

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

(B) monitor compliance with applicable laws and the terms and conditions of any applicable certificate, rights-of-way, permit, lease, or other authorization issued or granted under section 9;

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

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

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

(6) If the President determines to designate for approval a transportation system for delivery of Alaska natural gas to the contiguous States, he may identify in such decision such terms and conditions permissible under existing law as he determines appropriate for inclusion with respect to any issuance or authorization directed to be made pursuant to section 9.

Transmittal to Congress.

(b) The decision of the President made pursuant to subsection (a) of this section shall be transmitted to both Houses of Congress and shall be considered received by such Houses for the purposes of this section on the first day on which both are in session occurring after such decision is transmitted. Such decision shall be accompanied by a report explaining in detail the basis for his decision with specific reference to the factors set forth in sections 5(c) and 6(a), and the reasons for any revision, modification of, or substitution for, the Commission recommendation.

Financial analysis.

(c) The report of the President pursuant to subsection (b) of this section shall contain a financial analysis for the transportation system designated for approval. Unless the President finds and states in his report submitted pursuant to this section that he reasonably anticipates that the system designated by him can be privately financed, constructed, and operated, his report shall also be accompanied by his recommendation concerning the use of existing Federal financing authority or the need for new Federal financing authority.

(d) In making his decision under subsection (a) the President shall inform himself, through appropriate consultation, of the views and objectives of the States, the Government of Canada, and other governments with respect to those aspects of such a decision that may involve intergovernmental and international cooperation among the Government of the United States, the States, the Government of Canada, and any other government.

(e) If the President determines to designate a transportation system for approval, the decision of the President shall take effect as provided in section 8, except that the approval of a decision of the President shall not be construed as amending or otherwise affecting the laws of the United States so as to grant any new financing authority as may have been identified by the President pursuant to subsection (c).

CONGRESSIONAL REVIEW

15 USC 719f.

SEC. 8. (a) Any decision under section 7(a) or 8(b) designating for approval a transportation system for the delivery of Alaska natural gas shall take effect upon enactment of a joint resolution within the first period of 60 calendar days of continuous session of Congress beginning on the date after the date of receipt by the Senate and House of Representatives of a decision transmitted pursuant to section 7(b) or subsection (b) of this section.

(b) If the Congress does not enact such a joint resolution within such 60-day period, the President, not later than the end of the 30th day following the expiration of the 60-day period, may propose a new decision and shall provide a detailed statement concerning the reasons for such proposal. The new decision shall be submitted in accordance with section 7(a) and transmitted to the House of Representatives and the Senate on the same day while both are in session and shall take effect pursuant to subsection (a) of this section. In the event that a resolution respecting the President's decision was defeated by vote of either House, no new decision may be transmitted pursuant to this subsection unless such decision differs in a material respect from the previous decision.

(c) For purposes of this section—

(1) continuity of session of Congress is broken only by an adjournment sine die; and

(2) the days on which either House is not in session because of an adjournment of more than 3 days to a day certain are excluded in the computation of the 60-day calendar period.

(d)(1) This subsection is enacted by Congress—

(A) as an exercise of the rulemaking power of each House of Congress, respectively, and as such it is deemed a part of the rules of each House, respectively, but applicable only with respect to the procedure to be followed in that House in the case of resolutions described by paragraph (2) of this subsection; and it supersedes other rules only to the extent that it is inconsistent therewith; and

(B) with full recognition of the constitutional right of either House to change the rules (so far as those rules relate to the procedure of that House) at any time, in the same manner and to the same extent as in the case of any other rule of such House.

"Resolution."

(2) For purposes of this Act, the term "resolution" means (A) a joint resolution, the resolving clause of which is as follows: "That the House of Representatives and Senate approve the Presidential decision on an Alaska natural gas transportation system submitted to the Congress on ————, 19 , and find that any environmental impact statements prepared relative to such system and submitted with the President's decision are in compliance with the Natural Environmental Policy Act of 1969."; the blank space therein shall be filled with the date on which the President submits his decision to the House of Representatives and the Senate; or (B) a joint resolution described in subsection (g).

42 USC 4321 note.

Referral to congressional committees.

(3) A resolution once introduced with respect to a Presidential decision on an Alaska natural gas transportation system shall be referred to one or more committees (and all resolutions with respect to the same Presidential decision on an Alaska natural gas transportation system shall be referred to the same committee or committees) by the President of the Senate or the Speaker of the House of Representatives, as the case may be.

(4)(A) If any committee to which a resolution with respect to a Presidential decision on an Alaska natural gas transportation system has been referred has not reported it at the end of 30 calendar days after its referral, it shall be in order to move either to discharge such committee from further consideration of such resolution or to discharge such committee from consideration of any other resolution with respect to such Presidential decision on an Alaska natural gas transportation system which has been referred to such committee.

(B) A motion to discharge may be made only by an individual favoring the resolution, shall be highly privileged (except that it may not be made after the committee has reported a resolution with respect to the same Presidential decision on an Alaska natural gas transportation system), and debate thereon shall be limited to not more than 1 hour, to be divided equally between those favoring and those opposing the resolution. An amendment to the motion shall not be in order, and it shall not be in order to move to reconsider the vote by which the motion was agreed to or disagreed to. Debate limitation.

(C) If the motion to discharge is agreed to or disagreed to, the motion may not be made with respect to any other resolution with respect to the same Presidential decision on an Alaska natural gas transportation system.

(5)(A) When any committee has reported, or has been discharged from further consideration of, a resolution, but in no case earlier than 30 days after the date of receipt of the President's decision to the Congress, it shall be at any time thereafter in order (even though a previous motion to the same effect has been disagreed to) to move to proceed to the consideration of the resolution. The motion shall be highly privileged and shall not be debatable. An amendment to the motion shall not be in order, and it shall not be in order to move to reconsider the vote by which the motion was agreed to or disagreed to.

(B) Debate on the resolution described in subsection (d)(2)(A) shall be limited to not more than 10 hours and on any resolution described in subsection (g) to one hour. This time shall be divided equally between those favoring and those opposing such resolution. A motion further to limit debate shall not be debatable. An amendment to, or motion to recommit the resolution shall not be in order, and it shall not be in order to move to reconsider the vote by which such resolution was agreed to or disagreed to or, thereafter within such 60-day period, to consider any other resolution respecting the same Presidential decision.

(6)(A) Motions to postpone, made with respect to the discharge from committee, or the consideration of a resolution and motions to proceed to the consideration of other business, shall be decided without debate.

(B) Appeals from the decision of the Chair relating to the application of the rules of the Senate or the House of Representatives, as the case may be, to the procedures relating to a resolution shall be decided without debate.

(e) The President shall find that any required environmental impact statement relative to the Alaska natural gas transportation system designated for approval by the President has been prepared and that such statement is in compliance with the National Environmental Policy Act of 1969. Such finding shall be set forth in the report of the President submitted under section 7. The President may supplement or modify the environmental impact statements prepared by the Commission or other Federal officers or agencies. Any such environmental impact statement shall be submitted contemporaneously with the transmittal to the Senate and House of Representatives of the President's decision pursuant to section 7(b) or subsection (b) of this section. 42 USC 4321 note. Submittal to congressional committees.

(f) Within 20 days of the transmittal of the President's decision to the Congress under section 7(b) or under subsection (b) of this section, (1) the Commission shall submit to the Congress a report commenting on the decision and including any information with regard to that decision which the Commission considers appropriate, Report, submittal to Congress.

Hearings. Report, submittal to Congress.

and (2) the Council on Environmental Quality shall provide an opportunity to any interested person to present oral and written data, views, and arguments on any environmental impact statement submitted by the President relative to any system designated by him for approval which is different from any system reported on by the Commission under section 5(c), and shall submit to the Congress a report summarizing any such views received. The committees in each House of Congress to which a resolution has been referred under subsection (d)(3) shall conduct hearings on the Council's report and include in any report of the committee respecting such resolution the findings of the committee on the legal and factual sufficiency of any environmental impact statement submitted by the President relative to any system designated by him for approval.

Congressional committee hearings.

Waiver, submittal to Congress.

(g)(1) At any time after a decision designating a transportation system is submitted to the Congress pursuant to this section, if the President finds that any provision of law applicable to actions to be taken under subsection (a) or (c) of section 9 require waiver in order to permit expeditious construction and initial operation of the approved transportation system, the President may submit such proposed waiver to both Houses of Congress.

(2) Such provision shall be waived with respect to actions to be taken under subsection (a) or (c) of section 9 upon enactment of a joint resolution pursuant to the procedures specified in subsections (c) and (d) of this section (other than subsection (d)(2) thereof) within the first period of 60 calendar days of continuous session of Congress beginning on the date after the date of receipt by the Senate and House of Representatives of such proposal.

(3) The resolving clause of the joint resolution referred to in this subsection is as follows: "That the House of Representatives and Senate approve the waiver of the provision of law ( ) as proposed by the President, submitted to the Congress on , 19 ." The first blank space therein being filled with the citation to the provision of law and the second blank space therein being filled with the date on which the President submits his decision to the House of Representatives and the Senate.

(4) In the case of action with respect to a joint resolution described in this subsection, the phrase "a waiver of a provision of law" shall be substituted in subsection (d) for the phrase "the Alaska natural gas transportation system.".

AUTHORIZATIONS

15 USC 719g.

SEC. 9. (a) To the extent that the taking of any action which is necessary or related to the construction and initial operation of the approved transportation system requires a certificate, right-of-way, permit, lease, or other authorization to be issued or granted by a Federal officer or agency, such Federal officer or agency shall—

(1) to the fullest extent permitted by the provisions of law administered by such officer or agency, but

(2) without regard to any provision of law which is waived pursuant to section 8(g) issue or grant such certificates, permits, rights-of-way, leases, and other authorizations at the earliest practicable date.

(b) All actions of a Federal officer or agency with respect to consideration of applications or requests for the issuance or grant of a certificate, right-of-way, permit, lease, or other authorization to which subsection (a) applies shall be expedited and any such application or request shall take precedence over any similar applications or requests of the Federal officer or agency.

(c) Any certificate, right-of-way, permit, lease, or other authorization issued or granted pursuant to the direction under subsection (a) shall include the terms and conditions required by law unless waived pursuant to a resolution under section 8(g), and may include terms and conditions permitted by law, except that with respect to terms and conditions permitted but not required, the Federal officer or agency, notwithstanding any such other provision of law, shall have no authority to include terms and conditions as would compel a change in the basic nature and general route of the approved transportation system or those the inclusion of which would otherwise prevent or impair in any significant respect the expeditious construction and initial operation of such transportation system. Terms and conditions.

(d) Any Federal officer or agency, with respect to any certificate, permit, right-of-way, lease, or other authorization issued or granted by such officer or agency, may, to the extent permitted under laws administered by such officer or agency add to, amend or abrogate any term or condition included in such certificate, permit, right-of-way, lease, or other authorization except that with respect to any such action which is permitted but not required by law, such Federal officer or agency, notwithstanding any such other provision of law, shall have no authority to take such action if the terms and conditions to be added, or as amended, would compel a change in the basic nature and general route of the approved transportation system or would otherwise prevent or impair in any significant respect the expeditious construction and initial operation of such transportation system.

(e) Any Federal officer or agency to which subsection (a) applies, to the extent permitted under laws administered by such officer or agency, shall include in any certificate, permit, right-of-way, lease, or authorization issued or granted those terms and conditions identified in the President's decision as appropriate for inclusion except that the requirement to include such terms and conditions shall not limit the Federal officer or agency's authority under subsection (d) of this section.

JUDICIAL REVIEW

SEC. 10. (a) Notwithstanding any other provision of law, the actions of Federal officers or agencies taken pursuant to section 9 of this Act, shall not be subject to judicial review except as provided in this section. 15 USC 719h.

(b)(1) Claims alleging the invalidity of this Act may be brought not later than the 60th day following the date a decision takes effect pursuant to section 8 of this Act.

(2) Claims alleging that an action will deny rights under the Constitution of the United States, or that an action is in excess of statutory jurisdiction, authority, or limitations, or short of statutory right may be brought not later than the 60th day following the date of such action, except that if a party shows that he did not know of the action complained of, and a reasonable person acting in the circumstances would not have known, he may bring a claim alleging the invalidity of such action on the grounds stated above not later than the 60th day following the date of his acquiring actual or constructive knowledge of such action.

(c)(1) A claim under subsection (b) shall be barred unless a complaint is filed prior to the expiration of such time limits in the United States Court of Appeals for the District of Columbia acting as a

Special Court. Such court shall have exclusive jurisdiction to determine such proceeding in accordance with the procedures hereinafter provided, and no other court of the United States, of any State, territory, or possession of the United States, or of the District of Columbia, shall have jurisdiction of any such claim in any proceeding instituted prior to or on or after the date of enactment of this Act.

(2) Any such proceeding shall be assigned for hearing and completed at the earliest possible date, shall, to the greatest extent practicable, take precedence over all other matters pending on the docket of the court at that time, and shall be expedited in every way by such court and such court shall render its decision relative to any claim within 90 days from the date such claim is brought unless such court determines that a longer period of time is required to satisfy requirements of the United States Constitution.

USC prec. title I.

(3) The enactment of a joint resolution under section 8 approving the decision of the President shall be conclusive as to the legal and factual sufficiency of the environmental impact statements submitted by the President relative to the approved transportation system and no court shall have jurisdiction to consider questions respecting the sufficiency of such statements under the National Environmental Policy Act of 1969.

42 USC 4321 note.

SUPPLEMENTAL ENFORCEMENT AUTHORITY

Compliance order or civil action. 5 USC 719i.

SEC. 11 (a) In addition to remedies available under other applicable provisions of law, whenever any Federal officer or agency determines that any person is in violation of any applicable provision of law administered or enforceable by such officer or agency or any rule, regulation, or order under such provision, including any term or condition of any certificate, right-of-way, permit, lease, or other authorization, issued or granted by such officer or agency, such officer or agency may—

(1) issue a compliance order requiring such person to comply with such provision or any rule, regulation, or order thereunder, or

(2) bring a civil action in accordance with subsection (c).

(b) Any order issued under subsection (a) shall state with reasonable specificity the nature of the violation and a time of compliance, not to exceed 30 days, which the officer or agency, as the case may be, determines is reasonable, taking into account the seriousness of the violation and any good faith efforts to comply with applicable requirements.

Civil penalty.

(c) Upon a request of such officer or agency, as the case may be, the Attorney General may commence a civil action for appropriate relief, including a permanent or temporary injunction or a civil penalty not to exceed $25,000 per day for violations of the compliance order issued under subsection (a). Any action under this subsection may be brought in any district court of the United States for the district in which the defendant is located, resides, or is doing business, and such court shall have jurisdiction to restrain such violation, require compliance, or impose such penalty or give ancillary relief.

Jurisdiction.

EXPORT LIMITATIONS

15 USC 719j. 15 USC 717w.

SEC. 12. Any exports of Alaska natural gas shall be subject to the requirements of the Natural Gas Act and section 103 of the Energy

Policy and Conservation Act, except that in addition to the requirements of such Acts, before any Alaska natural gas in excess of 1,000 Mcf per day may be exported to any nation other than Canada or Mexico, the President must make and publish an express finding that such exports will not diminish the total quantity or quality nor increase the total price of energy available to the United States. 42 USC 6212. Presidential finding, publication.

EQUAL ACCESS TO FACILITIES

SEC. 13. (a) There shall be included in the terms of any certificate, permit, right-of-way, lease, or other authorization issued or granted pursuant to the directions contained in section 9 of this Act, a provision that no person seeking to transport natural gas in the Alaska natural gas transportation system shall be prevented from doing so or be discriminated against in the terms and conditions of service on the basis of degree of ownership, or lack thereof, of the Alaska natural gas transportation system. 15 USC 719k.

(b) The State of Alaska is authorized to ship its royalty gas on the approved transportation system for use within Alaska and, to the extent its contracts for the sale of royalty gas so provide, to withdraw such gas from the interstate market for use within Alaska; the Federal Power Commission shall issue all authorizations necessary to effectuate such shipment and withdrawal subject to review by the Commission only of the justness and reasonableness of the rate charged for such transportation.

ANTITRUST LAWS

SEC. 14. Nothing in this Act, and no action taken hereunder, shall imply or effect an amendment to, or exemption from, any provision of the antitrust laws. 15 USC 719*l*

AUTHORIZATION

SEC. 15. There is hereby authorized to be appropriated beginning in fiscal year 1978 and each fiscal year thereafter, such sums as may be necessary to carry out the functions of the Federal inspector appointed by the President with the advice and consent of the Senate under section 7. 15 USC 719m.

SEPARABILITY

SEC. 16. If any provision of this Act, or the application thereof, is held invalid, the remainder of this Act shall not be affected thereby. 15 USC 719n.

CIVIL RIGHTS

SEC. 17. All Federal officers and agencies shall take such affirmative action as is necessary to assure that no person shall, on the grounds of race, creed, color, national origin, or sex, be excluded from receiving, or participating in any activity conducted under, any certificates, permit, right-of-way, lease, or other authorization granted or issued pursuant to this Act. The appropriate Federal officers and agencies shall promulgate such rules as are necessary to carry out the purposes of this section and may enforce this section, and any rules promulgated under this section through agency and department provisions and rules which shall be similar to those established and in effect under title VI of the Civil Rights Act of 1964. Discrimination, prohibition. 15 USC 719*o*. Rules. 42 USC 2000d *et seq.*

REPORT ON THE EQUITABLE ALLOCATION OF NORTH SLOPE CRUDE OIL

Report to Congress. 43 USC 1651 note.

SEC. 18. Within 6 months of the date of enactment of this Act, the President shall determine what special expediting procedures are necessary to insure the equitable allocation of north slope crude oil to the Northern Tier States of Washington, Oregon, Idaho, Montana, North Dakota, Minnesota, Michigan, Wisconsin, Illinois, Indiana, and Ohio (hereinafter referred to as the "Northern Tier States") to carry out the provisions of section 410 of Public Law 93-153 and shall report his findings to the Congress. In his report, the President shall identify the specific provisions of law, which relate to any determination of a Federal officer or agency as to whether to issue or grant a certificate, permit, right-of-way, lease, or other authorization in connection with the construction of an oil delivery system serving the Northern Tier States and which the President finds would inhibit the expeditious construction of such a system in the contiguous States of the United States. In addition the President will include in his report a statement which demonstrates the impact that the delivery system will have on reducing the dependency of New England and the Middle Atlantic States on foreign oil imports. Furthermore, all Federal officers and agencies shall, prior to the submission of such report and further congressional action relating thereto, expedite to the fullest practicable extent all applications and requests for action made with respect to such an oil delivery system.

43 USC 1651 note.

ANTITRUST STUDY

Report to Congress. 15 USC 719 note.

SEC. 19. The Attorney General of the United States is authorized and directed to conduct a thorough study of the antitrust issues and problems relating to the production and transportation of Alaska natural gas and, not later than six months following the date of enactment of this Act, to complete such study and submit to the Congress a report containing his findings and recommendations with respect thereto.

EXPIRATION

15 USC 719 note.

SEC. 20. This Act shall terminate in the event that no decision of the President takes effect under section 8 of this Act, such termination to occur at the end of the last day on which a decision could be, but is not, approved under such section.

Approved October 22, 1976.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 94-1658, Pt. 1 (Comm. on Interstate and Foreign Commerce).
SENATE REPORT No. 94-1020 (Comm. on Commerce and Comm. on Interior and Insular Affairs).
CONGRESSIONAL RECORD, Vol. 122 (1976):
July 1, considered and passed Senate.
Sept. 30, considered and passed House, amended.
Oct. 1, Senate agreed to House amendments.
WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 12, No. 44:
Oct. 22, Presidential statement.

APPENDIX III

Title 3—

The President

REORGANIZATION PLAN NO. 1 OF 1979

Prepared by the President and transmitted to the Senate and House of Representatives in Congress assembled, April 2, 1979, pursuant to the provisions of Chapter 9 of Title 5 of the United States Code.

Office of the Federal Inspector for Construction of the Alaska Natural Gas Transportation System

Part I. Office of the Federal Inspector and Transfer of Functions

Section 101. *Establishment of the Office of Federal Inspector for the Alaska Natural Gas Transportation System*

(a) There is hereby established as an independent establishment in the executive branch, the Office of the Federal Inspector for the Alaska Natural Gas Transportation System (the "Office").

(b) The Office shall be headed by a Federal Inspector for the Alaska Natural Gas Transportation System (the "Federal Inspector") who shall be appointed by the President, by and with the advice and consent of the Senate, and shall be compensated at the rate now or hereafter prescribed by law for Level III of the Executive Schedule, and who shall serve at the pleasure of the President.

(c) Each Federal agency having statutory responsibilities over any aspect of the Alaska Natural Gas Transportation System shall appoint an Agency Authorized Officer to represent that authority on all matters pertaining to pre-construction, construction, and initial operation of the system.

Section 102. *Transfer of Functions to the Federal Inspector*

Subject to the provisions of Sections 201, 202, and 203 of this Plan, all functions insofar as they relate to enforcement of Federal statutes or regulations and to enforcement of terms, conditions, and stipulations of grants, certificates, permits and other authorizations issued by Federal agencies with respect to pre-construction, construction, and initial operation of an "approved transportation system" for transport of Canadian natural gas and "Alaskan natural gas," as such terms are defined in the Alaska Natural Gas Transportation Act of 1976 (15 U.S.C. 719 *et seq.*), hereinafter called the "Act", are hereby transferred to the Federal Inspector. This transfer shall vest in the Federal Inspector exclusive responsibility for enforcement of all Federal statutes relevant in any manner to pre-construction, construction, and initial operation. With respect to each of the statutory authorities cited below, the transferred functions include all enforcement functions of the given agencies or their officials under the statutes as may be related to the enforcement of such terms, conditions, and stipulations, including but not limited to the specific sections of the statute cited. "Enforcement", for purposes of this transfer of functions, includes monitoring and any other compliance or oversight activities reasonably related to the enforcement process. These transferred functions include:

(a) Such enforcement functions of the Administrator or other appropriate official or entity in the Environmental Protection Agency related to compliance with: national pollutant discharge elimination system permits provided for in Section 402 of the Federal Water Pollution Control Act (33 U.S.C. 1342); spill prevention, containment and countermeasure plans in Section 311 of the Federal Water Pollution Control Act (33 U.S.C. 1321); review of the Corps of Engineers' dredged and fill material permits issued under Section 404 of the

Federal Water Pollution Control Act (33 U.S.C. 1344); new source performance standards in Section 111 of the Clean Air Act, as amended by the Clean Air Act Amendments of 1977 (42 U.S.C. 7411); prevention of significant deterioration review and approval in Sections 160–169 of the Clean Air Act, as amended by the Clean Air Amendments of 1977 (42 U.S.C. 7470 *et seq.*); and the resource conservation and recovery permits issued under the Resource Conservation and Recovery Act of 1976 (42 U.S.C. 6901 *et seq.*);

(b) Such enforcement functions of the Secretary of the Army, the Chief of Engineers, or other appropriate officer or entity in the Corps of Engineers of the United States Army related to compliance with: dredged and fill material permits issued under Section 404 of the Federal Water Pollution Control Act (33 U.S.C. 1344); and permits for structures in navigable waters, issued under Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. 403);

(c) Such enforcement functions of the Secretary or other appropriate officer or entity in the Department of Transportation related to compliance with: the Natural Gas Pipeline Safety Act of 1968, as amended (49 U.S.C. 1671, *et seq.*) and the gas pipeline safety regulations issued thereunder; the Federal Aviation Act of 1958, as amended (49 U.S.C. 1301, *et seq.*) and authorizations and regulations issued thereunder; and permits for bridges across navigable waters, issued under Section 9 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. 401);

(d) Such enforcement functions of the Secretary or other appropriate officer or entity in the Department of Energy and such enforcement functions of the Commission, Commissioners, or other appropriate officer or entity in the Federal Energy Regulatory Commission related to compliance with: the certificates of public convenience and necessity, issued under Section 7 of the Natural Gas Act, as amended (15 U.S.C. 717f); and authorizations for importation of natural gas from Alberta as predeliveries of Alaskan gas issued under Section 3 of the Natural Gas Act, as amended (15 U.S.C. 717b);

(e) Such enforcement functions of the Secretary or other appropriate officer or entity in the Department of the Interior related to compliance with: grants of rights-of-way and temporary use permits for Federal land, issued under Section 28 of the Mineral Leasing Act of 1920 (30 U.S.C. 185); land use permits for temporary use of public lands and other associated land uses, issued under Sections 302, 501, and 503–511 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1732, 1761, and 1763–1771); materials sales contracts under the Materials Act of 1947 (30 U.S.C. 601–603); rights-of-way across Indian lands, issued under the Rights of Way Through Indian Lands Act (25 U.S.C. 321, *et seq.*); removal permits issued under the Materials Act of 1947 (30 U.S.C. 601–603); approval to cross national wildlife refuges, National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd–668jj) and the Upper Mississippi River Wildlife and Fish Refuge Act (16 U.S.C. 721–731); wildlife consultation in the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*); protection of certain birds in the Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*); Bald and Golden Eagles Protection Act (16 U.S.C. 668–668d); review of Corps of Engineers dredged and fill material permits issued under Section 404 of the Federal Water Pollution Control Act (33 U.S.C. 1344); rights-of-way across recreation lands issued under the Land and Water Conservation Fund Act of 1965, as amended (16 U.S.C. 4601–4–4601–11); historic preservation under the National Historic Preservation Act of 1966 as amended (16 U.S.C. 470–470f); permits issued under the Antiquities Act of 1906 (16 U.S.C. 432, 433); and system activities requiring coordination and approval under general authorities of the National Trails System Act, as amended (16 U.S.C. 1241–1249), the Wilderness Act, as amended (16 U.S.C. 1131–1136), the Wild and Scenic Rivers Act, as amended (16 U.S.C. 1271–1287), the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), the Act of April 27, 1935 (prevention of soil erosion) (16 U.S.C. 590a–f), and an Act to Provide for the Preservation of Historical and Archeological Data, as amended (16 U.S.C. 469–469c);

(f) Such enforcement functions of the Secretary or other appropriate officer or entity in the Department of Agriculture, insofar as they involve lands and programs under the jurisdiction of that Department, related to compliance with: associated land use permits authorized for and in conjunction with grants of rights-of-way across Federal lands issued under Section 28 of the Mineral Leasing Act of 1920 (30 U.S.C. 185); land use permits for other associated land uses issued under Sections 501 and 503–511 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1761, 1763–1771), under the Organic Administration Act of June 4, 1897, as amended (16 U.S.C. 473, 474–482, 551), and under Title III of the Bankhead-Jones Farm Tenant Act of 1937, as amended (7 U.S.C. 1010–1012); removal of materials under the Materials Act of 1947 (30 U.S.C. 601–603) and objects of antiquity under the Antiquities Act of 1906 (16 U.S.C. 432, 433); construction and utilization of national forest roads under the Roads and Trails System Act of 1964 (16 U.S.C. 532–538); and system activities requiring coordination and approval under general authorities of the National Forest Management Act of 1976 (16 U.S.C. 1600 *et seq.*); the Multiple Use-Sustained-Yield Act of 1960 (16 U.S.C. 528–531); the Forest and Rangelands Renewable Resources Planning Act of 1974 (16 U.S.C. 1601–1610); the National Trails System Act, as amended (16 U.S.C. 1241–1249); the Wilderness Act, as amended (16 U.S.C. 1131–1136); the Wild and Scenic Rivers Act, as amended (16 U.S.C. 1271–1287); the Land and Water Conservation Fund Act of 1965, as amended (16 U.S.C. 460 *et seq.*); the Federal Water Pollution Control Act of 1972 (33 U.S.C. 1151 *et seq.*); the Fish and Wildlife Coordination Act and Fish and Game Sanctuaries Act (16 U.S.C. 661 *et seq.* and 694, 694a–b, respectively); the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470–470f); an Act to Provide for the Preservation of Historical and Archeological Data, as amended (16 U.S.C. 469–469c); the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*); the Watershed Protection and Flood Prevention Act, as amended (16 U.S.C. 1001 *et seq.*); the Soil and Water Conservation Act of 1977 (16 U.S.C. 2001 *et seq.*); and the Act of April 27, 1935 (prevention of soil erosion) (16 U.S.C. 590a–f);

(g) Such enforcement functions of the Secretary or other appropriate officer or entity in the Department of the Treasury related to compliance with permits for interstate transport of explosives and compliance with regulations for the storage of explosives, Title XI of the Organized Crime Control Act of 1970 (18 U.S.C. 841–848);

(h) (1) The enforcement functions authorized by, and supplemental enforcement authority created by the Act (15 U.S.C. 719 *et seq.*);

(2) All functions assigned to the person or board to be appointed by the President under Section 7(a)(5) of the Act (15 U.S.C. 719e); and

(3) Pursuant to Section 7(a)(6) of the Act (15 U.S.C. 719e), enforcement of the terms and conditions described in Section 5 of the *Decision and Report to the Congress on the Alaska Natural Gas Transportation System*, as approved by the Congress pursuant to Public Law 95–158 (91 Stat. 1268), November 2, 1977, (hereinafter the "*Decision*").

Part II. Other Provisions

Section 201. *Executive Policy Board*

The Executive Policy Board for the Alaska Natural Gas Transportation System, hereinafter the "Executive Policy Board", which shall be established by executive order, shall advise the Federal Inspector on the performance of the Inspector's functions. All other functions assigned, or which could be assigned pursuant to the *Decision*, to the Executive Policy Board are hereby transferred to the Federal Inspector.

Section 202. *Federal Inspector and Agency Authorized Officers*

(a) The Agency Authorized Officers shall be detailed to and located within the Office. The Federal Inspector shall delegate to each Agency Authorized Officer the authority to enforce the terms, conditions, and stipulations of each grant, permit, or other authorization issued by the Federal agency which appointed the Agency Authorized Officer. In the exercise of these enforcement functions, the Agency Authorized Officers shall be subject to the supervision and direction of the Federal Inspector, whose decision on enforcement matters shall constitute "action" for purposes of Section 10 of the Act (15 U.S.C. 719h).

(b) The Federal Inspector shall be responsible for coordinating the expeditious discharge of nonenforcement activities by Federal agencies and coordinating the compliance by all the Federal agencies with Section 9 of the Act (15 U.S.C. 719g). Such coordination shall include requiring submission of scheduling plans for all permits, certificates, grants or other necessary authorizations, and coordinating scheduling of system-related agency activities. Such coordination may include serving as the "one window" point for filing for and issuance of all necessary permits, certificates, grants or other authorizations, and, consistent with law, Federal government requests for data or information related to any application for a permit, certificate, grant or other authorization. Upon agreement between the Federal Inspector and the head of any agency, that agency may delegate to the Federal Inspector any statutory function vested in such agency related to the functions of the Federal Inspector.

(c) The Federal Inspector and Agency Authorized Officers in implementing the enforcement authorities herein transferred shall carry out the enforcement policies and procedures established by the Federal agencies which nominally administer these authorities, except where the Federal Inspector determines that such policies and procedures would require action inconsistent with Section 9 of the Act (15 U.S.C. 719g).

(d) Under the authority of Section 15 of the Act (15 U.S.C. 719m), the Federal Inspector will undertake to obtain appropriations for all aspects of the Federal Inspector's operations. Such undertaking shall include appropriations for all of the functions specified in the Act and in the general terms and conditions of the *Decision* as well as for the enforcement activities of the Federal Inspector. The Federal Inspector will consult with the various Federal agencies as to resource requirements for enforcing their respective permits and other authorizations in preparing a unified budget for the Office. The budget shall be reviewed by the Executive Policy Board.

Section 203. *Subsequent Transfer Provision*

(a) Effective upon the first anniversary of the date of initial operation of the Alaska Natural Gas Transportation System, the functions transferred by Section 102 of this Plan shall be transferred to the agency which performed the functions on the date prior to date the provisions of Section 102 of this Plan were made effective pursuant to Section 205 of this Plan.

(b) Upon the issuance of the final determination order by the Director of the Office of Management and Budget for the transfers provided for by subsection (a) of this section, the Office and the position of Federal Inspector shall, effective on the date of that order, stand abolished.

Section 204. *Incidental Transfers*

So much of the personnel, property, records and unexpended balances of appropriations, allocations and other funds employed, used, held, available, or to be made available in connection with the functions transferred under this Plan, as the Director of the Office of Management and Budget shall determine, shall be transferred to the appropriate agency or component at such time or times as the Director of the Office of Management and Budget shall provide, except that no such unexpended balances transferred shall be used for purposes other than those for which the appropriation was originally made. The Director of the Office of Management and Budget shall provide for the terminating of the affairs of the Office and the Federal Inspector upon their abolition pursuant to this Plan and for such further measures and dispositions as such Director deems necessary to effectuate the purposes of this Plan.

Section 205. *Effective Date*

This Plan shall become effective at such time or times as the President shall specify, but not sooner than the earliest time allowable under Section 906 of Title 5 of the United States Code, except that the provisions of Section 203 shall occur as provided by the terms of that Section.

Jimmy Carter

[FR Doc. 79-10607 Filed 8-11-79; 11:31 am]
Billing code 3105-01-M

LEGISLATIVE HISTORY:

WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS:

Vol. 15, No. 14: Apr. 2, Presidential message transmitting Reorganization Plan No. 1 of 1979 to Congress. (Also printed as House Document No. 83.)

HOUSE REPORT No. 96-222 accompanying H. Res. 199 (Comm. on Government Operations).

SENATE REPORT No. 96-191 accompanying S. Res. 120 (Comm. on Governmental Affairs).

CONGRESSIONAL RECORD, Vol. 125 (1979):

Apr. 3,	H. Res. 199,	resolution of disapproval, introduced in House and referred to Committee on Government Operations.
Apr. 4,	S. Res. 120,	resolution of disapproval, introduced in Senate and referred to Committee on Governmental Affairs.
May 23,	S. Res. 120,	rejected by Senate.
May 31,	H. Res. 199,	rejected by House.

APPENDIX IV

Title 3—

The President

Executive Order 12142 of June 21, 1979

The Alaska Natural Gas Transportation System

By the authority vested in me as President by the Constitution and laws of the United States of America, including Section 301 of Title 3 of the United States Code and Sections 201 and 205 of Reorganization Plan No. 1 of 1979, it is hereby ordered as follows:

1-101. Reorganization Plan No. 1 of 1979, not having been disapproved by Congress (S. Res. 126, 125 Cong. Rec. S 6563-64 (May 23, 1979); H. Res. 199, 125 Cong. Rec. H 3950-51 (May 31, 1979)), shall be effective on July 1, 1979.

1-102. In accord with Section 201 of that Plan, there is hereby established the Executive Policy Board for the system for the transportation of Alaska natural gas ("the System") as such system is defined in the Alaska Natural Gas Transportation Act of 1976 (15 U.S.C. 719 *et seq.*).

1-103. The Board shall consist of the Secretaries of the Departments of Agriculture, Energy, Labor, Transportation, and the Interior, the Administrator of the Environmental Protection Agency, the Chief of Engineers of the United States Army, and the Chairman of the Federal Energy Regulatory Commission. Additional members may be elected to the Board by vote of a majority of the members. The Board will by majority vote elect a Chairman to serve for a one-year term.

1-104. The Board shall perform the following functions:

(a) Advise the Federal Inspector for the Alaska Natural Gas Transportation System (the "Federal Inspector") established by Reorganization Plan No. 1 of 1979, on policy issues in accord with applicable law and existing Departmental or Agency policies.

(b) Provide advice, through the Federal Inspector, to the officers representing and exercising the functions of the Federal Departments and Agencies that concern the System ("Agency Authorized Officers").

(c) Advise the Federal Inspector and the Agency Authorized Officers on matters concerning enforcement actions.

(d) At least every six months, assess the progress made and problems encountered in constructing the System and make necessary recommendations to the Federal Inspector.

1-105. The Federal Inspector shall keep the Board informed of the progress made and problems encountered in the course of construction of the System.

1-106. Whenever the Federal Inspector determines that implementation of Departmental or Agency enforcement policies and procedures would require action inconsistent with Section 9 of the Alaska Natural Gas Transportation Act of 1976, the Federal Inspector shall issue a written statement of such determination including a complete factual and legal basis for the determination. A copy of each statement shall be forwarded promptly to the Board and made available to the public by the Federal Inspector.

1-107. After written notice of a proposed enforcement action is given by the Federal Inspector, the Federal Inspector will be subject to the rules of procedure for *ex parte* contacts as reflected in the guidelines and policies of Departments and Agencies from which the specific enforcement authority is transferred.

1–108. The Federal Inspector and all employees of the Office of the Federal Inspector shall be subject to the provisions of Executive Order No. 11222, concerning standards of conduct for Federal employees. The Federal Inspector shall issue standards of conduct, pursuant to the Order, for the Office of the Federal Inspector.

1–109. To the extent permitted by law, each Department and Agency shall cooperate with and furnish necessary information and assistance to the Board in the performance of its functions.

1–110. This Order shall be effective on July 1, 1979.

Jimmy Carter

THE WHITE HOUSE,
June 21, 1979.

[FR Doc. 79–19830
Filed 6–22–79; 9:13 am]
Billing code 3195–01–M

APPENDIX V

NATURAL GAS PIPELINE FROM ALASKA

JOINT HEARINGS

BEFORE THE

SUBCOMMITTEE ON ENERGY AND POWER
COMMITTEE ON
INTERSTATE AND FOREIGN COMMERCE

AND THE

SUBCOMMITTEE ON
INDIAN AFFAIRS AND PUBLIC LANDS
COMMITTEE ON
INTERIOR AND INSULAR AFFAIRS
HOUSE OF REPRESENTATIVES

NINETY-FIFTH CONGRESS

FIRST SESSION

ON

THE PRESIDENT'S DECISION ON AN ALASKAN NATURAL GAS TRANSPORTATION SYSTEM

SEPTEMBER 22, 23, AND OCTOBER 14, 1977

*　　*　　*　　*　　*

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

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

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

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

1. Pipeline Route

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

2. Expeditious Construction; Timetable

(a) Both Governments will take measures to ensure the prompt issuance of all necessary permits, licenses, certificates, rights-of-way, leases and other authorizations required for the expeditious construction and commencement of operation of the Pipeline, with a view to commencing construction according to the following timetable:

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

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

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

3. Capacity of Pipeline and Availability of Gas

(a) The initial capacity of the Pipeline will be sufficient to meet, when required, the contractual requirements of United States shippers and of Canadian shippers. It is contemplated that this capacity will be 2.4 billion cubic feet per day (bcfd) for Alaska gas and 1.2 bcfd for Northern Canadian gas. At such time as a lateral pipeline transmitting Northern Canadian gas, hereinafter referred to as "the Dempster Line", is to be connected to the Pipeline or at any time additional pipeline capacity is needed to meet the contractual requirements of United States or Canadian shippers, the required authorizations will be provided, subject to regulatory requirements, to expand the capacity of the Pipeline in an efficient manner to meet those contractual requirements.

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

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

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

4. Financing

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

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

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

5. Taxation and Provincial Undertakings

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

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

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

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

1980--$5 million Canadian

1981--$10 million Canadian

1982--$20 million Canadian

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

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

(A) December 31, 2008, or

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

(iv) Subject to subparagraph (b)(iii), if for the year ending on December 31, 1987, the percentage increase of the aggregate per capita revenue derived from all property tax levied by any public authority in the Yukon Territory (excluding the Yukon Property Tax) and grants to municipalities and Local Improvement Districts from the Government of the Yukon Territory, as compared to the aggregate per capita revenue derived from such sources for 1983, is greater than the percentage increase for 1987 of the Yukon Property Tax as compared to the Yukon Property Tax for 1983, the maximum level of the Yukon Property Tax for 1987 may be increased to equal the amount it would have reached had it increased over the period at the same rate as the aggregate per capita revenue.

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

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

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

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

(ix) It is understood that indirect socio-economic costs in the Yukon Territory will not be reflected in the cost of service to the United States shippers other than through the Yukon Property Tax. It is further understood that no public authority will require creation of a special fund or funds in connection with construction of the Pipeline in the Yukon, financed in a manner which is reflected in the cost of service to U.S. shippers, other than through the Yukon Property Tax. However, should public authorities in the State of Alaska require creation of a special fund or funds, financed by contributions not fully reimbursable, in connection with construction of the Pipeline in Alaska, the Governments of Canada or the Yukon Territory will have the right to take similar action.

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

6. Tariffs and Cost Allocation

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

(a) The Pipeline in Canada and the Dempster Line will be divided into zones as set forth in Annex II. Except for fuel and except for Zone 11 (the Dawson-Whitehorse portion of the Dempster Line), the cost of service to each shipper in each zone will be determined on the basis of volumes as set forth in transportation contracts. The volumes used to assign these costs will reflect the original BTU content of Alaskan gas for U.S. shippers and Northern Canadian gas for Canadian shippers, and will make allowance for the change in heat content as the result of commingling. Each shipper will provide volumes for line losses and line pack in proportion to the contracted volumes transported in the zone. Each shipper will provide fuel requirements in relation to the volume of his gas being carried and to the content of the gas as it affects fuel consumption.

(b) It is understood that, to avoid increased construction and operating costs for the transportation of Alaskan gas, the Pipeline will follow a southern route through the Yukon along the Alaska Highway rather than a northern route through Dawson City and along the Klondike Highway. In order to provide alternative benefits for the transportation of Canadian gas to replace those benefits that would have been provided by the northern route through Dawson City, U.S. shippers will participate in the cost of service in Zone 11. It is agreed that if cost overruns on construction of the Pipeline in Canada do not exceed filed costs set forth in Part D of Annex III by more than 35 percent, U.S. shippers will pay the full cost of service in Zone 11. U.S. shipper participation will decline if overruns on the Pipeline in Canada exceed 35 percent; however, at the minimum the U.S. shippers' share will be the greater of either two-thirds of the cost of service or the proportion of contracted Alaskan gas in relation to all contracted gas carried in the Pipeline. The proportion of the cost of service borne by U.S. shippers in Zone 11 will be reduced should overruns on the cost of construction in that Zone exceed 35 percent after allowance for the benefits to U.S. shippers derived from Pipeline construction cost savings in other Zones. Notwithstanding the foregoing, at the minimum, the U.S. shippers' share will be the greater of either two-thirds of the cost of service or the proportion of contracted Alaskan gas in relation to all contracted gas carried in the Pipeline. Details of this allocation of cost of service are set out in Annex III.

(c) Notwithstanding the principles in subparagraphs (a) and (b), in the event that the total volume of gas offered for shipment exceeds the efficient capacity of the Pipeline, the method of cost allocation for the cost of service for shipments of Alaskan gas (minimum entitlement 2.4 bcfd) or Northern Canadian gas (minimum entitlement 1.2 bcfd) in excess of the efficient capacity of the Pipeline will be subject to review and subsequent agreement by both Governments; provided however that shippers of either country may transport additional volumes without such review and agreement, but subject to appropriate regulatory approval, if such transportation does not lead to a higher cost of service or share of Pipeline fuel requirements attributable to shippers of the other country.

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

7. Supply of Goods and Services

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

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

8. Coordination and Consultation

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

9. Regulatory Authorities: Consultation

The respective regulatory authorities of the two Governments will consult from time to time on relevant matters arising under this Agreement, particularly on the matters referred to in paragraphs 4, 5 and 6, relating to tariffs for the transportation of gas through the Pipeline.

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10. Technical Study Group on Pipe

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

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

11. Direct Charges by Public Authorities

(a) Consultation will take place at the request of either Government to consider direct charges by public authorities imposed on the Pipeline where there is an element of doubt as to whether such charges should be included in the cost of service.

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

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

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

12. Other Costs

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

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

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

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

13. Compliance with Terms and Conditions

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

14. Legislation

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

15. Entry Into Force

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

ANNEX I

The Pipeline Route

In Alaska:

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

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

In Canada:

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

From the Alaska-Yukon border, the Foothills Pipe Lines (South Yukon) Ltd. portion of the Pipeline will proceed in a southerly direction generally along the Alaska Highway to a point near Whitehorse, Yukon, and thence to a point on the Yukon-British Columbia border near Watson Lake, Yukon where it will join with the Foothills Pipe Lines (North B.C.) Ltd. portion of the Pipeline.

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

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

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

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

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

ANNEX II

Zones for the Pipeline and the Dempster Line in Canada

Zone 1 Foothills Pipe Lines (South Yukon) Ltd.

Alaska Boundary to point of interconnection with the Dempster Line at or near Whitehorse.

Zone 2 Foothills Pipe Lines (South Yukon) Ltd.

Whitehorse to Watson Lake.

Zone 3 Foothills Pipe Lines (North B.C.) Ltd.

Watson Lake to point of interconnection with Westcoast's main pipeline near Fort Nelson.

Zone 4 Foothills Pipe Lines (North B.C.) Ltd.

Point of interconnection with Westcoast's main pipeline near Fort Nelson to the Alberta-B.C. border.

Zone 5 Foothills Pipe Lines (Alta.) Ltd.

Alberta-B.C. border to point of bifurcation near Caroline, Alberta.

Zone 6 Foothills Pipe Lines (Alta.) Ltd.

Caroline, Alta. to Alberta-Saskatchewan border near Empress.

Zone 7 Foothills Pipe Lines (Alta.) Ltd.

Caroline to Alberta-B.C. border near Coleman.

Zone 8 Foothills Pipe Lines (South B.C.) Ltd.

Alberta-B.C. border near Coleman to B.C.-United States border near Kingsgate.

Zone 9 Foothills Pipe Lines (Sask.) Ltd.

Alberta-Saskatchewan border near Empress to Saskatchewan-United States border near Monchy.

Zone 10 Foothills Pipe Lines (North Yukon) Ltd.

Mackenzie Delta Gas fields in the Mackenzie Delta, N.W.T., to a point near the junction of the Klondike and Dempster Highways just west of Dawson, Yukon Territory.

Zone 11 Foothills Pipe Lines (South Yukon) Ltd.

A point near the junction of the Klondike and Dempster Highways near Dawson to the connecting point with the Pipeline at or near Whitehorse.

ANNEX III

Cost Allocation in Zone 11

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

(i) There will be calculated, in accordance with (iii) below, a percentage for Zones 1 - 9 in total by dividing the actual capital costs by filed capital costs and multiplying by 100. If actual capital costs are equal to or less than 135% of filed capital costs, then United States shippers will pay 100% of the cost of service in Zone 11. If actual capital costs in Zones 1 - 9 are between 135% and 145% of filed capital costs, then the percentage paid by United States shippers will be adjusted between 100% and 66 2/3% on a straight-line basis, except that in no case will the portion of cost of service paid by United States shippers be less than the proportion of the contracted volumes of Alaskan gas at the Alaska-Yukon border to the same volume of Alaskan gas plus the contracted volume of Northern Canadian gas. If the actual capital costs are equal to or exceed 145% of filed capital costs, the portion of the cost of service paid by United States shippers will be not less than 66 2/3% or the proportion as calculated above, whichever is the greater.

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

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

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

If the actual capital costs in Zone 11, after making this adjustment, are equal to or less than 135% of filed capital costs, then no adjustment is required to the percentage of the cost of service paid by United States shippers as calculated in (i) above. If, however, after making this adjustment, the actual capital cost in Zone 11 is greater than 135% of the filed capital cost, then the proportion of the cost of service paid by

United States shippers will be a fraction (not exceeding 1) of the percentage of the cost of service calculated in (i) above, where the numerator of the fraction is 135% of the filed capital cost and the denominator of the fraction is actual capital cost less the adjustments from (a) and (b) above. Notwithstanding the adjustments outlined above, in no case will the percentage of the actual cost of service borne by United States shippers be less than the greater of 66 2/3% or the proportion of the contracted volumes of Alaskan gas at the Alaska-Yukon border to the same volume of Alaskan gas plus the contracted volume of Northern Canadian gas.

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

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

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

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

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

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

Filed Capital Costs for the Pipeline in Canada

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

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

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

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

The actual capital cost, for purposes of this Annex, shall be the booked cost as of the date "leave to open" is granted plus amounts still outstanding to be accrued on a basis to be approved by the National Energy Board. Actual capital costs shall exclude working capital, property taxes, and direct charges for road maintenance of up to $30 million Canadian in the Yukon as specifically provided herein.

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

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

ANNEX V

Statement by the Government of the Province of Alberta

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 of this undertaking will be the subject of a Federal-Provincial Agreement to be negotiated when the Canada-United States protocol or understanding has been finalized.

Statement by the Government of the Province of Saskatchewan

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

Statement by the Government of the Province of British-Colombia

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

AD REFERENDUM TEXT OF AN AGREEMENT BETWEEN THE GOVERNMENT OF THE UNITED STATES OF AMERICA AND THE GOVERNMENT OF CANADA CONCERNING TRANSIT PIPELINES

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

Believing that pipelines can be an efficient, economical and safe means of transporting hydrocarbons from producing areas to consumers, in both the United States and Canada;

Noting the number of hydrocarbon pipelines which now connect the United States and Canada and the important service which they render in transporting hydrocarbons to consumers in both countries;

Convinced that measures to ensure the uninterrupted transmission by pipeline through the territory of one Party of hydrocarbons not originating in the territory of that Party, for delivery to the territory of the other Party, are the proper subject of an agreement between the two Governments;

Have agreed as follows:

ARTICLE I

For the purpose of this Agreement:

(a) "Transit Pipeline" means a pipeline or any part thereof, including pipe, valves and other appurtenances attached to pipe, compressor or pumping units, metering stations, regulator stations, delivery stations, loading and unloading facilities, storage facilities, tanks, fabricated assemblies, reservoirs, racks, and all real and personal property and works connected therewith, used for the transmission of hydrocarbons in transit. "Transit Pipeline" shall not include any portion of a pipeline system not used for the transmission of hydrocarbons in transit.

(b) "Hydrocarbons" means any chemical compounds composed primarily of carbon and hydrogen which are recovered from a natural reservoir in a solid, semi-solid, liquid or gaseous state, including crude oil, natural gas, natural gas liquids and bitumen, and their derivative products resulting from their production, processing or refining. In addition, "hydrocarbons" includes coal and feedstocks derived from crude oil, natural gas, natural gas liquids or coal used for the production of petro-chemicals.

(c) "Hydrocarbons in transit" means hydrocarbons transmitted in a "Transit Pipeline" located within the territory of one Party, which hydrocarbons do not originate in the territory of that Party, for delivery to, or for storage before delivery to, the territory of the other Party.

ARTICLE II

1. No public authority in the territory of either Party shall institute any measures, other than those provided for in Article V, 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.

2. The provisions of paragraph 1 of this Article apply:

(a) In the case of Transit Pipelines carrying exclusively hydrocarbons in transit, to such volumes as may be transmitted to the Party of destination in the Transit Pipeline;

(b) In the case of Transit Pipelines in operation at the time of entry into force of this Agreement not carrying exclusively hydrocarbons in transit, to the average daily volume of hydrocarbons in transit transmitted to the Party of destination during the 12 month period immediately prior to the imposition of any measures described in paragraph 1;

(c) In the case of Transit Pipelines which come into operation subsequent to the entry into force of this Agreement not carrying exclusively hydrocarbons in transit, to such volumes of hydrocarbons in transit as may be authorized by the appropriate regulatory bodies; or

(d) To such other volumes of hydrocarbons in transit as may be agreed upon subsequently by the Parties.

3. Each Party undertakes to facilitate the expeditious issuance of such permits, licenses, or other authorizations as may be required from time to time for the import into, or export from, its territory through a Transit Pipeline of hydrocarbons in transit.

ARTICLE III

1. No public authority in the territory of either Party shall impose any fee, duty, tax or other monetary charge, either directly or indirectly, on or for the use of any Transit Pipeline unless such fee, duty, tax or other monetary charge would also be applicable to or for the use of similar pipelines located within the jurisdiction of that public authority.

2. No public authority in the territory of either Party shall impose upon hydrocarbons in transit any import, export or transit fee, duty, tax or other monetary charge. This paragraph shall not preclude the inclusion of hydrocarbon throughput as a factor in the calculation of taxes referred to in paragraph 1.

ARTICLE IV

1. Notwithstanding the provisions of Article II and paragraph 2 of Article III, a Transit Pipeline and the transmission of hydrocarbons through a Transit Pipeline shall be subject to regulations by the appropriate governmental authorities having jurisdiction over such Transit Pipeline in the same manner as for any other pipelines or the transmission of hydrocarbons by pipeline subject to the authority of such governmental authorities with respect to such matters as the following:

a. Pipeline safety and technical pipeline construction and operation standards;
b. environmental protection;
c. rates, tolls, tariffs and financial regulations relating to pipelines;
d. reporting requirements, statistical and financial information concerning pipeline operations and information concerning valuation of pipeline properties.

2. All regulations, requirements, terms and conditions imposed under paragraph 1 shall be just and reasonable, and shall always, under substantially similar circumstances with respect to all hydrocarbons transmitted in similar pipelines, other than intra-provincial and intra-state pipelines, be applied equally to all persons and in the same manner.

ARTICLE V

1. In the event of an actual or threatened natural disaster, an operating emergency, or other demonstrable need temporarily to reduce or stop for safety or technical reasons the normal operation of a Transit Pipeline, the flow of hydrocarbons through such Transit Pipeline may be temporarily reduced or stopped in the interest of sound pipeline management and operational efficiency by or with the approval of the appropriate regulatory authorities of the Party in whose territory such disaster, emergency or other demonstrable need occurs.

2. Whenever a temporary reduction of the flow of hydrocarbons through a Transit Pipeline occurs as provided in paragraph 1:

(a) In the case of a Transit Pipeline carrying exclusively hydrocarbons in transit, the Party for whose territory such hydrocarbons are intended shall be entitled to receive the total amount of the reduced flow of hydrocarbons,

(b) In the case of a Transit Pipeline not carrying exclusively hydrocarbons in transit, each Party shall be entitled to receive downstream of the point of interruption a proportion of the reduced flow of hydrocarbons equal to the proportion of its net inputs to the total inputs to the Transit Pipeline made upstream of the point of interruption. If the two Parties are able collectively to make inputs to the Transit Pipeline upstream of the point of interruption, for delivery downstream of the point of interruption, of a volume of hydrocarbons which exceeds the temporarily reduced capacity of such Transit Pipeline, each Party shall be entitled to transmit through such Transit Pipeline a proportion of the total reduced capacity equal to its authorized share of the flow of hydrocarbons through such Transit Pipeline prior to the reduction. If no share has been authorized, specified or agreed upon pursuant to Article II, paragraph 2, the share of the Parties in the reduced flow of hydrocarbons shall be in proportion to the share of each Party's net inputs to the total flow of hydrocarbons through such Transit Pipeline during the 30 day period immediately preceding the reduction.

3. The Party in whose territory the disaster, emergency or other demonstrable need occurs resulting in a temporary reduction or stoppage of the flow of hydrocarbons shall not unnecessarily delay or cause delay in the expeditious restoration of normal pipeline operations.

ARTICLE VI

Nothing in this Agreement shall be considered as waiving the right of either Party to withhold consent, or to grant consent subject to such terms and conditions as it may establish consistent with the principles of uninterrupted transmission and of non-discrimination reflected in this Agreement, for the construction and operation on its territory of any Transit Pipeline construction of which commences subsequent to the entry into force of this Agreement, or to determine the route within its territory of such a Transit Pipeline.

ARTICLE VII

The Parties may, by mutual agreement, conclude a protocol or protocols to this Agreement concerning the application of this Agreement to a specific pipeline or pipelines.

ARTICLE VIII

The Parties may, by mutual agreement, amend this Agreement at any time.

ARTICLE IX

1. Any dispute between the Parties regarding the interpretation, application or operation of this Agreement shall, so far as possible, be settled by negotiation between them.

2. Any such dispute which is not settled by negotiation shall be submitted to arbitration at the request of either Party. Unless the Parties agree on a different procedure within a period of sixty days from the date of receipt by either Party from the other of a notice through diplomatic channels requesting arbitration of the dispute, the arbitration shall take place in accordance with the following provisions. Each Party shall nominate an arbitrator within a further period of sixty days. The two arbitrators nominated by the Parties shall within a further period of sixty days appoint a third arbitrator. If either Party fails to nominate an arbitrator within the period specified, or if the third arbitrator is not appointed within the period specified, either Party may request the President of the International Court of Justice (or, if the President is a national of either Party, the member of the Court ranking next in order of precedence who is not a national of either Party) to appoint such arbitrator. The third arbitrator shall not be a national of either Party, shall act as Chairman and shall determine where the arbitration shall be held.

3. The arbitrators appointed under the preceding paragraph shall decide any dispute, including appropriate remedies, by majority. Their decision shall be binding on the Parties.

4. The costs of any arbitration shall be shared equally between the Parties.

ARTICLE X

1. This Agreement is subject to ratification. Instruments of Ratification shall be exchanged at Ottawa.

2. This Agreement shall enter into force on the first day of the month following the month in which Instruments of Ratification are exchanged.

3. This Agreement shall remain in force for an initial period of thirty-five years. It may be terminated at the end of the initial thirty-five year period by either Party giving written notice

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to the other Party, not less than ten years prior to the end of such initial period, of its intention to terminate this Agreement. If neither Party has given such notice of termination, this Agreement will thereafter continue in force automatically until ten years after either Party has given written notice to the other Party of its intention to terminate the Agreement.

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

DONE in duplicate at Washington, D.C in the English and French languages, both versions being equally authentic, this twenty-eighth day of January 1977.

Julius L. Katz — For the Government of the United States of America

J. H. Warren — For the Government of Canada

* * * * * *

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C.

STATEMENT OF
J. DEXTER PEACH, DIRECTOR
ENERGY AND MINERALS DIVISION
BEFORE THE
HOUSE SUBCOMMITTEE ON
OVERSIGHT AND INVESTIGATIONS
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

Mr. Chairman:

We appreciate your invitation to discuss costs for the Alaska Highway Gas Pipeline Project. But first, some background information on the Project itself may be helpful.

As you know, the Alaskan Natural Gas Transportation Act of 1976 was passed to expedite Federal actions, making possible a pipeline system to deliver North Slope Alaskan natural gas to U.S. markets. The President, in September 1977, recommended the Alaska Highway Gas Pipeline Project--a 4,800-mile overland pipeline system--over two alternative proposals with a start-up date anticipated by January 1983. The President's decision was heavily influenced by the Project sponsors' assurance that the pipeline could be privately financed. Federal financial assistance was "explicitly rejected" by the President.

The Congress approved this decision in November 1977 and--as part of its consideration of the President's National Energy Plan--later passed favorable gas pricing legislation through the Natural Gas Policy Act of 1978. This Act, which allows the cost of Alaskan gas to be averaged with cheaper gas supplies, was viewed as a key factor in assuring the Project's viability.

The Project is currently scheduled to come on line about 2 years later than anticipated in 1977--late 1984 instead of early 1983. In our opinion, further delays are possible as complex issues--such as the securing of right-of-way agreements and deciding how to treat gas conditioning costs--still need to be worked out. Such delays of course affect costs. I think it might be appropriate in this regard to remember what happened with the costs of the Trans-Alaska Oil Pipeline Project.

In our June 1978 report, "Lessons Learned From Constructing the Trans-Alaska Oil Pipeline" (EMD-78-52, dated June 15, 1978), we noted how cost estimates rose as system design and engineering became better defined. The lesson to be learned is that realistic cost estimates are usually available only after detailed engineering design. For example, in 1968, using a feasibility study as the basis, the oil line's estimated cost was about $1 billion. By May 1974, at the start of preconstruction, the cost was about $4 billion. As of April 1977, shortly after permanent pipeline construction started, the cost was over $6 billion. After 6 months of operation, the estimated cost was about $8 billion.

Similarly, the gas line's estimated cost seems to be increasing as more is known. In March 1977, the sponsors estimated that the line would cost about $6.6 billion in 1975 dollars--which means that is how much it would have cost if started and completed in 1975. That same estimate in escalated dollars--i.e., basing the estimate on costs anticipated in the year construction was actually to take place and thus the expenditure incurred--amounted to $9.6 billion. In September 1977, the President used a $10 to $13 billion estimated cost figure. Currently, the sponsors are talking about a $15 billion cost for the Project, although no official revised cost estimate has been made public--nor is one expected before next Spring.

In preparing for this hearing, you requested our Office to provide a "ballpark estimate" of the Project's cost adjusted to 1979 dollars, applying appropriate indices to the sponsors' original cost estimates and assuming no change in the Project's scope or other factors. We have done this and now have found that the $6.6 billion estimate in 1975 dollars is equivalent to about $10.2 billion in 1979 dollars as of January 1, 1979. That is the date of the latest indices. The cost as of October 1979 would be higher, particularly in view of the recent inflationary spiral. It should also be noted that the $10.2 billion estimate in 1979 dollars already exceeds the sponsors'

March 1977 $9.6 billion estimate in escalated dollars for a project anticipated, at that time, to be completed by January 1983.

Let me explain the methodology we used in arriving at the $10.2 billion figure. We adjusted the sponsors' earlier figures by applying an index of construction costs to each of the four main segments of the pipeline. In addition, because the Alaskan sponsors notified the Federal Energy Regulatory Commission that their costs will already be at least 30 percent higher than originally estimated, for other than inflationary reasons, we increased the cost of the Alaskan segment by 30 percent before adjusting it. The results came out as follows:

	1979 dollars	1975 dollars
Alaska	$ 4.4 billion	$ 2.4 billion
Canada	3.6 billion	2.6 billion
Western Leg	.7 billion	.5 billion
Eastern Leg	1.5 billion	1.1 billion
	$10.2 billion	$ 6.6 billion

You may wonder about the seemingly large disparity between our $10.2 billion figure and the sponsors' $15 billion figure. Remember, ours is based on 1979 dollars--not escalated dollars--and is comparable to the $6.6 billion in 1975 dollars.

While no official revised cost estimate is available, such an estimate is very important in lining up financial backing and also since it will be used as the starting point in determining the approved rate of return on investment for the sponsors. As you may know, the Federal Energy Regulatory Commission, on September 6, approved an incentive rate of return based on how well the Project meets its estimated cost. The Commission's order makes clear that the sponsors may elect to revise their cost estimate for the Alaskan segment as a basis for determining their rate of return. We understand that the sponsors do plan to use a revised estimate on the basis that design conditions have changed significantly since 1977.

Thus it is difficult to speculate on what the revised cost estimate will be.

The slippage in bringing the Project on line, the already announced cost growth, and the potential for higher costs as engineering estimates are completed highlight the difficulty of putting together a complete financial package for this Project and thus the possibility of renewed discussions about Federal financial assistance. Therefore, I want to briefly discuss our report, "Issues Relating to the Proposed Alaska Highway Gas Pipeline Project," that we are issuing to the Congress and request that the full report be made part of the record.

As I stated earlier, when the President and the Congress approved construction of the Alaska Highway Gas Pipeline Project in 1977, they specified that the Project should be privately financed and Federal financing assistance was "explicitly rejected."

However, in January of this year, in response to a question from the Joint Economic Committee, the Secretary of Energy discussed the possibility of $2 to $3 billion in Federal loan guarantees for the Alaskan segment of the Project. Loan guarantees to support energy and other costly projects have become popular because their supporters argue that the program is costless in the absence of a default. If the borrower repays the loan, the budgetary impact would be limited to administrative expenses. In case of default, however, the liability to the Government becomes substantial.

There are other potential avenues for financial backing--short of Federal financial involvement--that are still under consideration. These include participation by various beneficiaries of the Project such as the State of Alaska, the gas producers, and purchasers of the gas. In any event, this Project offers a potentially significant future domestic gas supply. Thus, if Federal financing assistance is requested, Project proponents undoubtedly will urge the Congress to quickly provide the needed assistance.

Currently it is premature to consider Federal financial involvement since (a) it is not known that help will be needed and (b) some important issues have not been resolved. In addition, without specific legislation, the Department of Energy lacks authority to make loan guarantees to the Project.

Although Federal financial assistance has not been requested, we believe that getting prepared for a prompt, informed decision--should such assistance be requested--is essential.

If the sponsors should demonstrate the need for Federal financial assistance after all regulatory procedures are completed, the Congress should evaluate alternatives to Project gas before it considers granting financial aid to the Project. Possible alternatives to be evaluated include

--conservation steps,

--unconventional domestic resources,

--intensified drilling in the lower 48-States,

--liquefied natural gas, and

--Mexican and Canadian gas.

However, if the Congress decides to grant financial aid it should (1) evaluate all feasible alternatives to Federal financial involvement (not just loan guarantees) and (2) ensure that the public interest is served and that the

Government has an appropriate control over and return on its investment.

In our view, the Secretary of Energy is the appropriate person to provide information and analyses to the Congress should a decision be needed on Federal financial assistance for the Alaskan gas pipeline. In that light, we make two recommendations to the Secretary of Energy in our report.

First, the Secretary of Energy should, within 60 days, provide the Congress an analysis showing how this Project now fits in with the overall national energy plan and strategy to satisfy the Nation's future energy needs.

In addition, if the sponsors officially state that the Project cannot be privately financed or Federal financing assistance is requested, the Secretary of Energy should provide the Congress, within 90 days of that occurrence, his recommendation on the matter of Federal financial involvement.

The Secretary, in support of his recommendation, should provide a detailed analysis of the Project and alternatives which could secure or conserve a similar or greater amount of gas or equivalent amount of energy. The analysis should

--demonstrate why his recommendation is the best course of action, and

--compare the benefits that each source could provide if it received the same amount and type of Federal financial assistance or an amount approximating that requested for the pipeline.

Using this information, Congress would be in a better position to make an informed decision on how best to invest Government funds to meet national energy needs.

In closing, I emphasize that our comments should not be construed as taking a GAO position either for or against the Project or on what the congressional decision should be on the issue of Federal financial involvement if it occurs. Our prime concern is that the Government should be in a position to make an informed decision on what to do <u>if</u> Federal assistance is proposed.

This concludes my statement, Mr. Chairman. I will be happy to answer any questions.

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October 17, 1979

TO : Subcommittee on Oversight and Special Investigations, Committee on Interior and Insular Affairs
Attention: J. Gwaltney

FROM : Alvin Kaufman, Senior Specialist in Mineral and Regulatory Economics.

SUBJECT : Perspectives on Major Issues Impacting the Alaska Gas Pipeline

As you requested, I am enclosing the Alaska study prepared by myself, J. Riva, and G. Pagliano, with assistance from S. Bodilly.

In the event, the Committee intends to publish the report we will be happy to supply a formal transmission letter from Mr. Gude.

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MAJOR ALASKA GAS PIPELINE ISSUES--A PERSPECTIVE

By

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October 17, 1979

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SUMMARY

The Alaska Natural Gas Pipeline, if completed, will be the costliest public or private project in history. Due to the scale of the project, the physical environment in which it is to be built, legal and environmental constraints and the uncertain extent of gas reserves in the area, the project has been stalled as some of the issues involved in completion are resolved. This report provides information on the present status of the pipeline in three areas: regulatory issues; the current known resources and production capability of the region and prebuilding and design issues. The report analyzes the decisions and latest information in these three areas and provides an outlook on the issues or problems still needing resolution.

Part 1 of the report details and analyzes recent regulatory decisions made by the Federal Energy Regulatory Commission (FERC) regarding conditioning costs and rate of return to investors. FERC has issued orders that the conditioning costs of the gas will be absorbed by the producers of gas as opposed to the pipeline companies. The cost of strict standards on CO_2 content in the gas will, however, be absorbed by the shippers. This decision was made to assure the guarding of the public interest, to avoid incremental pricing and to improve financability of the line. In determining the rate of return for the sponsors of the pipeline the large risks factors were taken into account. An Incentive Rate of Return was decided on by FERC. The determinants of this type of rate are discussed as are some of the implications. Issues such as an all-events tariff, billing, interim rates and service interruption are not discussed.

Part 2 is a general discussion on the potential of deliverability of Canadian gas to the pipeline. The availability of Canadian gas to the pipeline would assure constant and prolonged product flow through the line. Three areas are discussed: Western Canada, the Mackenzie Delta and the Arctic Islands. Exploration activity, reserves and production capability for each area are given. Possible geographic, exploration, drilling and delivery problems are considered to determine the potential for export to the U.S. The analysis shows that although reserves and exploration in Western Canada are adequate for a pipeline, the rate of production has been low. This may hamper exports to the U.S. especially considering Canadian energy export policies and reserve estimate methodology. The Mackenzie Delta-Beaufort Sea region has reserves to support a pipeline, however, the climatic conditions may cause production to be very expensive and an immense effort given the 10 year timeframe of the pipeline. The same seems probable for the Arctic Islands.

Part 3 discussed the proposed design of the pipeline and the proposed prebuilding plan. Under the prebuilding plan, Canadian sections of the pipeline would be built first to demonstrate feasiblity. The proposed scheme would allow greater certainty as to the completion of the project, thus encouraging the needed financial investments. Flaws of this scheme are pointed out especially the uncertainty of the deliverance of Alberta gas and the high risk of the Alaskan section. The design of the pipeline is discussed with details as to the Canadian/U.S. negotiations, alternative design proposals and concerns over safety.

PERSPECTIVES ON MAJOR ISSUES IMPACTING THE ALASKA GAS PIPELINE

Introduction

The Alaska gas pipeline is unique in the attention lavished on the project by the Congress. This has ranged from the establishment of a procedural framework to expedite the final decision on the line (Alaska Natural Gas Transportation Act of 1976) through establishment of pricing requirements (Natural Gas Policy Act of 1978). As a consequence of the transportation act, the President sent to the Congress in September of 1977 his findings regarding the building of the line. This decision was approved and adopted by the Congress in November of that year (House Joint Resolution 621).

The decision identifies the facilities that are to comprise the transportation system, and set forth the general framework within which the Federal Energy Regulatory Commission (FERC) was to operate in resolving the various problems and issues effecting the line.

The subsequent passage of the Natural Gas Policy Act added to this framework by establishing a statutory price for Prudhoe Bay gas and setting forth other requirements. Within this framework, many of the issues surrounding the building of the line are now either in the process of resolution or have been resolved. The major issues break down into technical and regulatory problems. The technical issues deal with questions regarding the design of the line (size and pressure requirements), and the question of preconstruction and consequent use of the line for transportation of Canadian gas until the Alaska portions are completed. The regulatory issues devolve into what we can call tariff questions and pipeline questions. The major tariff issue is the question of who will pay to condition the gas for transportation. The major pipeline question revolves around the rate of return.

Inasmuch as these are issues over which the Congress must exercise oversight, CRS has been asked to prepare an analysis of the major problem areas.

Part 1: Regulatory Issues*

Aside from the two major regulatory issues dealing with conditioning costs and the rate of return, there are several procedural issues such as questions on the billing commencement date, interim rates, service interruption procedures, billing procedures, accounting treatment and so forth. Although substantial sums of money are involved, these are generally minor issues, and we will not discuss these here. Further, many of these have now been resolved by a recent order of the commission. 1/

In addition, in the course of the pipeline case there has been considerable discussion of the need for an all-events tariff. The all-events tariff permits the pass through of costs to the customer without the need of an evidentiary hearing. 2/ It thus bypasses normal regulatory procedures. Rates are automatically adjusted on a regular basis, such as monthly or quarterly, in line with changes in costs. Although there are arguments pro and con in regard to the use of such a tariff, it does not appear to be an issue in the Alaska pipeline case in that all parties agree that some form of an all-events tariff is required. As a consequence, we will restrict our discussion to the conditioning cost and rate of return issues.

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*Prepared by Alvin Kaufman, Senior Specialist in Mineral and Regulatory Economics.

1/ Federal Energy Regulatory Commission. Order No. 31, Docket No. RM78-12. June 8, 1979. pp. 147-233.

2/ For a more complete discussion of this issue see: Kaufman, Alvin and Russell J. Profozich. The New Mexico Cost of Service Index: An Effort in Regulatory Innovation. National Regulatory Research Institute. In Press.

Conditioning Costs

The cost of conditioning the gas for transportation involves those costs related to chilling the gas, freeing it of excessive water, liquid hydrocarbons, sulfur, hydrogen sulfide, carbon dioxide, oxygen and various impurities, as well as compressing it to the proper pressure for pipeline transmission. Most natural gas in the lower 48 states is generally processed in order to recover the liquid hydrocarbons. The gas is then conditioned to meet quality standards. In the case of Prudhoe Bay gas, however, additional conditioning is required in order to prevent degradation of the permafrost, enhance the transportability of the gas under adverse climatic conditions, meet the quality standards for natural gas generally, and enhance the transportation economics. This latter item involves reduction of the CO_2 content below the normal 3% by volume used in the lower 48 states to approximately 1%. This reduction not only prevents corrosion in the line but improves transportation efficiency by permitting the movement of a greater volume of natural gas than would otherwise be possible.

The allocation of the cost of this conditioning is controversial because it raises questions as to the marketability of the gas. Conditioning costs are estimated in a 37 to 60 cent per million Btu range. Under the terms of the Natural Gas Policy Act (NGPA), that portion of the conditioning costs not included in the Prudhoe Bay statutory well head price of $1.45 per million Btu plus inflation, must be priced incrementally. The $1.45 plus inflation will be priced to the consumer on a rolled-in basis.

In rolled in pricing, the cost of the Alaska pipeline gas is averaged with all other sources of gas. The consumer pays the same rate for all gas delivered to him on an average basis. On the other hand, under incremental pricing each consumer pays a price based on the cost of the specific gas source. In other words, if the Alaska price is rolled-in, a higher gas price is paid by all consumers on the system, but this price is lower than the actual cost of the supplemental gas. As a result, all consumers provide a subsidy to those using the supplemental source. Conversely, incremental pricing requires the end user of supplemental gas to pay the full delivery price of that gas, while the user of non-supplemental gas continues to pay a lower price. The result is a two tier pricing system, with administrative complications in deciding who pays what as well as potential marketability problems for the Alaskan gas.

During the proceedings on this question the Federal Energy Regulatory Commission (FERC) staff and several interveners maintained that conditioning costs should only be permitted as an add on to the lawful price if production and conditioning costs exceed that price. Exxon, on the other hand, maintained that conditioning is necessitated by the special transportation requirements and thus is a function of transportation. Exxon noted, along with a series of legal arguments, that it had entered into a gas sale contract with Pacific Gas and Electric Company (PGE) for the sale of 225 million cubic feet of natural gas per day over a 20 year period.

PGE had agreed to pay for the conditioning facilities. Exxon stated its belief that the Commission should accept that contract as a precedent. In its discussion Exxon carefully avoided presenting definitive production cost data. It took the position that value of service pricing is now required by the NGPA rather than cost-based rates.

The primary issue then becomes the question of marketability. The FERC staff took the position that shifting conditioning costs to the consumer would make it difficult to sell Alaskan gas because of the incremental pricing provision of the NGPA. A study by Foster Associates, filed as part of the Exxon brief, indicated that conditioning costs charged on an incremental basis will increase the average retail price of gas by only 5 cents per million Btu and cause a decline in demand on the order of 30 to 40 billion cubic feet per year, or less than 0.2% of demand. Foster concluded that Prudhoe Bay gas, with conditioning costs charged on an incremental basis, is price competitive in all but two regions of the 48 states, particularly New England and the Coastal Appalachian states. Natural gas would not be price-competitive in those areas with or without Alaskan gas. 3/

3/ Reply comments of Exxon Corp. FERC Docket RM 79-19. March 28, 1979; and Appendix A to the Reply Comments by Foster Associates, Inc. The Marketability of Prudhoe Bay Gas in the Lower 48 States.

FERC has now issued a decision in the case. 4/ In its opinion, FERC reasoned that the gas producers are responsible for the cost of conditioning gas based on the fact that the producers will enjoy benefits from the sale of the Prudhoe Bay gas. These costs should be apportioned to best insure that the line will be built, and to provide a positive net national economic benefit. The President's Decision, endorsed by a joint congressional resolution, bars the producers, for anti-trust reasons, from owning portions of the line. The Commission believes that the producers should carry the costs of conditioning in order to place a burden on them that is commensurate with the benefits which they will receive from the construction of the line. Therefore, they should carry the conditioning costs to encourage efficiency in lieu of investment in the line. This would also relieve the project sponsors and gas shippers of a financial burden since the financial resources of the gas transmission industry, in FERC's opinion, should go directly towards the support of the line and not to the conditioning facility. This then provides a method for the producers to help in making the line feasible without taking on ownership. The Commission noted that it was too early to determine the precise costs of conditioning or the impact on marketability of the gas. Marketability is not a serious concern in the Commission's view. As a consequence, its order is not premised on marketability.

4/ FERC. Regulations And Statement Of Policy, Treatment Of Certain Production Related Costs For Natural Gas To Be Sold And Transported To The Alaskan Natural Gas Transportation System. Order No. 45, Docket No. RM 79-19. Issued August 24, 1979.

In discussing quality standards, the Commission noted that those in vogue in the lower 48 states are indicative of prevailing industry practices because they were established over time. Prudhoe Bay contracts, on the other hand, are new. Therefore, if the first contracts are used as a precedent, these would establish the industry practice and would dictate the Commission's policies, and thus circumscribe its discretion. FERC did not feel that it could permit precedent to be established in such a manner.[5/] The Lower 48 state standards, however, cannot apply to Alaska. Special standards are needed in order to assure transportability. This is particularly true of the CO_2 requirement. The Alaska line requirements specify a content of not more than 1% by volume, not only to prevent corrosion but to improve transportation efficiency. This compares with 3% in the Lower 48 states. The stricter standard established in Alaska is primarily for transportation efficiency and thus is not the usual practice. It is, therefore, the opinion of the commission that the cost differential between reaching 3% versus 1% should be borne by the shippers rather than by the producers. In its earlier notice of proposed rule making and statement of policy, which preceded the final decision, the Commission noted that placing the responsibility for conditioning costs on the producers would assure adequate volumes of gas in order to maximize the use of the conditioning plant.

5/ FERC. Treatment Of Certain Production Related Costs For Natural Gas To Be Sold And Transported To The Alaskan Natural Gas Transportation System. Docket RM 79-19. Feb. 2, 1979.

The Commission further noted that the $1.45 per million BTU price, mandated in the NFPA was more than adequate to cover all costs incurred by the producers. It asserted its policy would result in cost allocations consistent with the public interest, improved financiability and markability, the avoidance of incremental pricing, and compliance with the intent of Congress.

Rate of Return Issue

The major issue is the allocation of risk among the various project participants. That is, how much risk will the pipeline sponsors, consumers, gas shippers, distributors, and investors be asked to bear. These risks included uncertainty regarding marketability and future prices, marginal economics, possible unforseen production problems and a possible reduction in world energy prices, particularly oil. All of these uncertainties are compounded by the size of the project and the long time over which repayment will occur. The apportionment of risks is essential because of what appears to be reluctance on the part of financial institutions to fund the project and because of its marginal economics and substantial size.[6/]

To a considerable extent, the rate of return issue highlights the uncertainties inherent in the project. Under normal regulatory

6/ Pipedream? Alaskan Gas Pipeline Seems in Deep Trouble For Lack of Financing. Wall Street Journal, May 23, 1979: 1, 24.

procedures the allowed rate of return on equity would reflect not only the cost of money but the risks being born by the equity holders. These risks would include the potential for the loss of equity, and the potential for having to use other assets of the company to make good on the debt incurred by the pipeline. Such risks are impacted by changes in costs and gas availability, service interruptions, marketting difficulties and unforeseen increases in construction costs. The risk of cost and thruput changes, however, tends to be minimized by the availability of the all-events tariff. Under an all-events tariff, changes in operating costs and those induced by reduced gas flow would be automatically passed-on to the consumer. This pass-on, however, could compound marketability risks by raising the price to a level beyond that which consumers are willing to pay. The legally mandated rolled-in pricing tends to minimize that risk by spreading the high costs among all gas consumers, rather then just those using Alaskan gas. Despite this protection, however, the equity holder is exposed to a marketability risk resulting from the introduction of new technology. Over the 20 year life of the pipeline it is possible that new inventions will enter the market to reduce the demand for gas. Further, there is the risk of a service interruption with the consequent reduced revenue. The Alaskan pipeline will be a single pipe and as a result there is a somewhat higher probability of interruption than in the usual looped line. A looped line consists of two segments joined at various points, thus permitting one segment to operate if the other goes out. The single pipe design is compounded by problems peculiar to the area such as permafrost settlement, and maintenance and operating problems resulting from the weather.

Many of the problems that increase the probability of service interruptions may have an impact on construction costs beyond what has been estimated. In an effort to minimize the impact of such factors and to assure tight cost control during the construction phase, the rate of return is being used as an incentive. The President's Decision provided for a variable rate of return on equity as such an incentive.7/ This rate of return concept was to reward the applicant for completing the pipeline under budgeted cost and penalized them for incurring cost overruns. The variable rate of return concept was put into practice in a recent FERC order.8/

The mechanism selected by the Commission is called the incentive rate of return (IROR). FERC maintains this system will equitably distribute the burden of cost overruns between consumers and investors. Consumers continue to carry the depreciation expense associated with with prudently incurred investment including cost overruns, but they bear only a portion of the return on investment. Where construction

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7/ U.S. Senate. Committee on Energy and Natural Resources. Decision of the President, Decision and Report to Congress on the Alaska Natural Gas Transportation System. 95th Congress, 1st session. Washington, D.C., U.S. Govt. Print. Off., 1977. Publication 95-56. p. 37.

8/ FERC. Determination Of Incentive Rate Of Return, Tariff and Related Issues, Order Setting Values For Incentive Rate of Return, Establishing Inflation Adjustment And Change in Scope Procedures, And Determining Applicable Tariff Provisions. Order No. 31, Docket No. RM 78-12. Issued June 8, 1979.

costs are less than anticipated, these savings are divided between lower prices for the consumer and higher returns to investors.

The IROR is dependent on a complicated formula which is beyond the scope of this paper. As a consequence, only the major elements wil be outlined here. The IROR is included as part of the center rate of return. Its size is determined by the cost performance ratio.

The Cost Performance Ratio--This is the relationship between actual and projected costs. A ratio greater than one indicates actual costs exceed the estimate; a ratio less than one indicates actual costs are less than estimated. The estimated costs are those filed with FERC prior to the issuance of the final certificate of public convenience and necessity. Actual costs are the direct costs of construction. Both sets will be exclusive of inflation. In addition, projected costs may be adjusted for changes in scope. These are defined as major events beyond the control of the equity investors and which they could not reasonably anticipate. Examples of events that might change the project scope are war, natural disaster, changes compelled by new laws or regulations, and delays caused by the government. The cost performance ratio is used to determine the size of the IROR.

The Rate of Return--The development of the IROR starts with the center rate of return (ROR). This is the return that is needed to compensate investors for the financial and business risks of the project. The ROR is developed from an operation phase rate plus a premium for project risks and a premium for IROR risks. The operation phase rate is the basic rate needed to compensate investors for the risks incurred after construction is complete and the line is in operation. The project risk premium compensates for the risk of noncompletion and other construction period risks since these are to be borne by investors and project beneficiaries, and not by consumers. The IROR risk permium is to compensate for uncertainty regarding the ultimate rate of return to be earned by the project sponsors.

The ROR is the return allowed when the cost performance ratio is one. As the ratio increases the IROR portion of the ROR will be reduced, and vice versa. The IROR for each cost performance ratio is computed as the weighted average of the ROR and the marginal rate. The latter is the rate of return allowed on incremental investment above or below the base estimate.

The Commission felt, however, that the establishment of an unusually high or low allowed rate of return over the 25 year life of the pipeline would create complications for future regulation of the line, and could impact the future financing of expansions or additions. As a result, it decided to make a one time adjustment to the rate base once the pipeline starts operation, rather than set a lifetime rate of return. The operation phase rate will then be allowed on the adjusted rate base. The adjusted rate base will be computed using a standard discounted cash flow analysis. This will be designed so that the present worth of the return on equity and the return of equity over the operating life of the line is equivalent to the present worth of the return from applying the incentive rate of return to the unadjusted rate base.

The Commission order indicates the IROR would be 23.44% on the Alaska Segment and 17.62% on the Northern Border Segment, if costs are 20% below the budget. If costs are 30% above the budget then the rate of return would be 17.5% on the Alaska Segment and 13.92% on the Northern Border Segment. If costs are double those anticipated, the rate of return would drop to 14.17% on the Alaska Segment and 11.85% on the Northern Border. The result of these computations would mean that if the actual cost of the Alaska Segment was 20% less than anticipated, the rate base would be adjusted upward by 48.88%; if costs were 30% higher than anticipated the rate base would be adjusted upward by 18.13%, and if costs were doubled it would be adjusted upward by 0.9% for the Alaska Segment. The Northern Border Segment would be adjusted somewhat less (25.15% for a 20% underestimate, 5.02% for a 30% overrun, and a decline of 6.25% in the rate base for a doubling of cost). The project sponsors have insisted that they not be exposed to the risk of earning less than 13% on equity through the operation of the IROR. The rates of return established by the Commission do not reach 13% until costs overrun the original March 1977 estimates in the Decision by 140% for the Alaska and 60% for the Northern Border segments. It is at these levels of overrun that the President's decision suggests that the economics of the entire project should be reviewed.

It is the Commission's opinion that the IROR concept affords an ample opportunity to earn generous rates of return if the sponsors perform, and permits consumers to obtain the natural gas they need at an acceptable price.

Part 2: Deliverability of Canadian Gas*

Canadian gas, which potentially could be included in a pipeline from Alaska, would come from Western Canada and, in the longer term, may also come from the Mackenzie Delta - Beaufort Sea region and/or the Arctic Islands area.

Western Canadian Petroleum Province

This region includes the sedimentary rock portions of the Prairie and the Northwest and Yukon Territories lying between the Precambrian Shield and the Rocky Mountains.

Geology - This is the best known area in Canada in terms of subsurface geology and is in a mature stage of hydrocarbon exploration. 9/ The oil and gas region of Alberta is located in the southwestern part of the Western Canadian Sedimentary Basin and southern Saskatchewan and Manitoba are on the northern side of the Williston Basin. Both basins have simple structural geology and low regional dips. Most of the oil and gas in both basins occurs in stratigraphic traps.

The Williston Basin in Saskatchewan and Manitoba is a simple, relatively shallow basin that has exhibited a low hydrocarbon potential. The best prospects appear to have been tested and the

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*Prepared by Joseph P. Riva, Jr., Science Policy Research Division.

9/ Department of Energy, Mines and Resources of Canada. Oil and Natural Gas Resources of Canada, 1976. Minister of Supply Services, Canada, 1976. Report EP77-1. p. 25.

remaining potential appears to be small. 10/ The rocks in the basin range from Ordovician to Cretaceous (500 million to 65 million years old). In Alberta there is reasonable expectation for additional hydrocarbon discoveries in stratigraphic traps that are less obvious and perhaps smaller than those found to date, and in deeper parts of the basin that have yet to be thoroughly tested. 11/

The hydrocarbon accumulations of Alberta may be considered in two groups, those occuring in the geologically complex foothills zone of the Rocky Mountains and those found in the gently dipping rocks beneath the Interior Plains. A number of large gas accumulations, some associated with oil, have been found in the foothills belt which separates the Rocky Mountains from the Alberta Plains. The fields are essentially complex fault structures which have been overthrust from the west. Most of the gas accumulations occur in Mississippian (345 million year old) dolomitic limestones, but there are also some Triassic (225 million year old) and Devonian (395 million year old) producers. 12/ The Alberta Plains, lying northweast of the foothills zone, consists of an area of about 190,000 square miles of mainly Mesozoic and Paleozoic strata (570 to 65 million years old). There are two principle types of hydrocarbon

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10/ Ibid.

11/ Ibid.

12/ Tiratsoo, E. N. Oilfields of the World. Houston, Gulf Publishing Company, 1976. p. 281.

accumulations, Paleozoic reef limestone oilfields and Mesozoic sandstone gas accumulations. 13/

The deeper part of the Western Canada Sedimentary Basin lies in northeastern British Columbia. Because the region was deeply buried under sediments in the past and has a relatively high geothermal gradient in some places, the discoveries have mostly been of gas. Most of the drilling has been on surface indications or on features such as reef structures which are found by geophysical methods. Future exploration will most likely be for relatively deep stratigraphic traps.

Exploration Activity--The Western Canada Sedimentary Basin is in a mature stage of hydrocarbon exploration. Almost 100,000 wells have been drilled in the region since the discovery of the Leduc oil field in 1947 and these wells have resulted in the discovery of over 3,000 fields, most of which occur within Alberta. The last major discovery in Alberta had been in 1965 until the 1976 discovery of oil at West Pembina and gas at Elmworth-Wapiti. The Elmworth gas play cuts across a deep, gas prone area straddling the Alberta-British Columbia border. Between them, the two new discoveries have dominated Alberta drilling the past year. 14/ The Elmworth gas discoveries have been made mainly in the Lower Cretaceous rocks. Nearly 100 wells have been drilled, ranging from 6,000 to 12,000 feet in depth. Proved and probable reserves

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13/ Ibid., p. 283.

14/ Crow, Patrick. Two big plays spur Canadian drilling flurry. The Oil and Gas Journal, February 26, 1979: 93.

in the Elmworth area have been estimated at 6 trillion cubic feet.

Economic considerations in the Western Canada region differ greatly from those in any of the frontier areas. The infrastructure is already in place and the logistical problems are minimal. Thus, even the smallest pools are expected to be economic. Most of the larger structures have probably already been tested and exploration in the future will probably be devoted to searching for the remaining smaller structural pools and the downdip, tight sandstone gas accumulations of the deeper parts of the basin, such as Elmworth.

Reserves, Resource Estimates and Production Capability--Proved gas reserves for Western Canada were estimated by the National Energy Board at 65.8 trillion cubic feet at the end of 1978. 15/ Projections of reserve additions for the area to the year 2000 vary considerably, from 32 to 103 trillion cubic feet. 16/ The fundamental thesis upon which the higher figures are based is that as reservoir quality deteriorates larger and larger amounts of natural gas are trapped in the lower porosity sands. In areas such as Elmworth, the the gas is thought to be trapped by a gas-water interface where high water saturation of the low permeability rock reduces gas permeability to near zero, resulting in

15/ The National Energy Board. Canadian Natural Gas Supply and Requirements. Minister of Supply and Services, Canada, 1979. p. 8.

16/ Ibid., p. 9.

water block. 17/ If conditions similar to those at Elmworth exist over the entire Deep Basin, the region may contain ultimate potential recoverable gas resources estimated at as much as 150 to 440 trillion cubic feet. 18/ The problem is slow rates of recovery, as it would take 40 years to recover the first 13 trillion cubic feet. 19/ The wells are very expensive as they are deep and massive hydraulic fracturing is necessary to stimulate gas production.

There is a stated concern by the National Energy Board of Canada that the view that the Deep Basin contains a gas potential of as much as 400 trillion cubic feet may be misleading to those who may wrongly assume that Canada has an additional resource of such magnitude to serve its short and medium term requirements. 20/

The ultimate gas potential for Western Canada is estimated by the National Energy Board to range between 126 trillion cubic feet (the low case) and 156 trillion cubic feet (the high case) with 146 trillion cubic feet the expected case. 21/ Alberta's Energy Resources Conservation Board has recently projected its ultimate natural gas resources at 130 to 140 trillion cubic feet

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17/ Masters, John A. Deep basin gas trap, western Canada. The American Association of Petroleum Geologists Bulletin, February 1979: 181.

18/ Ibid.

19/ Canadian Natural Gas Supply and Requirements, p. 18.

20/ Ibid., p. 19.

21/ Ibid., p. 10.

and raised established reserves to 86.3 trillion cubic feet. 22/ Industry has indicated that the ultimate gas resource of the Deep Basin ranges from 140 trillion feet at current prices to 264 trillion cubic feet at $3.50 per thousand cubic feet. 23/

Problems of markets and transport are apparent in the Canadian gas industry. The number of producing gas wells increased from 7,954 at the end of 1976 to 12,944 at the end of 1977. Production, however, increased from 3.07 trillion cubic feet per year to only 3.18 trillion cubic feet per year. 24/

In general for Canada, the National Energy Board projects a gas supply availability of 3.5 trillion cubic feet in 1979, a 3.8 trillion cubic feet peak in 1981, and a decline to 1.9 trillion cubic feet in 2000. Gas export policy is based on these production projections along with reserve and reserve addition estimates. In estimating future gas production, and thus exports allowed, the Board has been conservative in using reserve additions only in conventional areas, primarily Western Canada, and in assuming production rates of about half those of the United States.

22/ Alberta hikes gas reserves estimates. Oil and Gas Journal, September 10, 1979: 103.

23/ Canada deep basin gas seen at 140-264 trillion. Oil and Gas Journal, February 26, 1979: 58.

24/ Maciej, Hans. Canada: The emphasis is on exploration. World Oil, August 15, 1978: 62.

Mackenzie Delta - Beaufort Sea Petroleum Province

This province includes the onshore part of the Mackenzie Delta and the offshore Beaufort Sea, extending to the edge of the continental shelf.

Geology--The region is underlain by deltaic sandstones and shales of Mesozoic and Tertiary age (7 to 225 million years old). These sediments thicken rapidly northward to more than 40,000 feet under the Beaufort Sea, only a few miles from shore. These deltaic sediments overlie faulted older Paleozoic rocks, which rise to the surface and are exposed in the southern part of the region in Aklavik Arch. The Tertiary rocks contain the most important sandstone reservoirs, but there is also petroleum potential in porous sandstones of Mesozoic ages. Possible traps for hydrocarbons include folds, block faults, and updip permeability barriers.

Exploration Activity--Significant exploration activity in the province began in the 1960's with the first hydrocarbon discovery at Atkinson in 1969. Since that time a number of significant discoveries have been made. About 15 possible oil and gas fields have been found onshore. At least three of the gas fields are reported to be of commercial size. The greatest potential, however, appears to be in the offshore areas of the Beaufort Sea, the area of thickest sediments. The rate of exploration in this most difficult drilling environment is controlled by the availability of specialized drill ships and icebreakers. Drilling since 1975 has provided evidence that the Beaufort Sea portion of the region has significant hydrocarbon potential. The drilling, plus over 40,000 miles of seismic survey lines, has indicated that there are 45 or more geologic structures which may contain petroleum. The structures appear to be reasonably large. Thus far there have been five gas and two oil discoveries. The K-50 Nektoralik well tested oil and gas at rates as high as 1,150 barrels of oil per day and 10 milllion cubic feet of gas per day. The Nektoralik structure covers an area of about 42 square miles. The C-50 Ukalerk well tested gas at 16.9 million cubic feet per day and 1,150 barrels of oil per day. The Ukalerk-Tingmiark structure is about 150 square miles in areal extent. 25/ A recent discovery, the M-13 Kopanoar, flowed oil at a rate of 6,000 barrels per day for a three hour test. The zone tested was 40 feet thick, but the oil productive interval exceeds 200 feet, at a depth of 11,500 feet. 26/ The Kopanoar structure covers an area of about 55 square miles. The well may be capable of producing as much as 12,000 barrels of oil per day from the tested interval. 27/ Another well is being drilled offshore at Nerlerk, but all drilling will stop in late October for the winter and will not begin again until June or July.

The discoveries to date, as well as the geology indicate that a significant hydrocarbon resource may exist

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25/ McCaslin, John C. High-flowing discovery enhances Arctic. Oil and Gas Journal, September 17, 1979: 141.

26/ Ibid.

27/ Open waters of Beaufort host major oil strike. The Oil and Gas Journal, September 17, 1979: 42.

in the province but because of the deltaic nature of the Tertiary deposits, a large number of moderate size pools are expected. 28/ Also, this type of geological environment suggests that the fields may be broken into many pools by the abundant normal faults and that reservoirs may be stacked above each other so that multiple productive zones may be anticipated in any one structure. 29/ These characteristics will complicate recovery, reserve calculations, and economics. However, almost as important as sizable reserves is sufficient reservoir permeability and thickness for high hydrocarbon deliverability. Production wells and equipment are very expensive in this environment, and only relatively few new holes are possible in each short drilling season. Thus, each well must be highly productive to be economic.

Reserves, Resource Estimates, and Production Capability--The National Energy Board of Canada investigated the gas potential of the Mackenzie Delta-Beaufort Sea area at the end of 1978. The Board's findings regarding established marketable gas in the region was an estimated 5.3 trillion cubic feet. 30/ A later industry estimate of the proved reserves is 7.5 trillion cubic feet of gas and one half billion barrels of oil. 31/ It is believed that the gas re-

28/ Oil and Natural Gas Resources of Canada, 1976, p. 31.

29/ Ibid.

30/ Canadian Natural Gas Supply and Requirements, op. cit., p. 1.

31/ McCaslin, John C. High-flowing discovery enhances Arctic.

serves in the region are adequate to meet the threshold requirements for a gas pipeline which could carry 260 billion cubic feet of gas per year in the late 1980's. 32/

Any estimate of the rate of additions to reserves in the region must be regarded as speculative. The drilling season is short and depends upon the weather. Progress is also affected by economic, regulatory, and political decisions as well as by success in exploration. The Canadian Energy Board accepted a range of estimates which might be attainable by the year 2000, given the requisite levels of exploration and development. 33/ The range was between 17 and 23 trillion cubic feet. 34/ Industry estimates of gas potential are much higher than this, but no time frame for recovery factors are given. Dome Petroleum, a company active in the region, estimates a potential of 250 to 320 trillion cubic feet of gas. 35/ Comparable estimates have been made by the Geological Survey of Canada. These projections, called ultimate potential, range from: 39 trillion cubic feet (90 percent probability); to 60 trillion cubic feet (50 percent probability) to 99 trillion cubic

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32/ Crow, Patrick. Canadian frontier potential still high; but production distant. The Oil and Gas Journal, February 26, 1979: p. 89.

33/ Canadian Natural Gas Supply and Requirement, p. 36.

34/ Ibid., p. 33.

35/ Crow, Patrick, p. 88.

feet (10 percent probability). 36/ These estimates are considerably lower than those of Dome.

A reserve of even 5.3 trillion cubic feet of gas would be sufficient to support a 260 billion cubic feet per year gas pipeline. However, at the tested production rates, over 50 production wells would be required to deliver that amount of gas. To accomplish this level of development within the next ten years, given the short drilling season and the serious technical difficulties of offshore production in an area where polar pack ice which is subject to shearings and the formation of pressure ridges scours the sea bottom in waters up to 150 feet deep, will be very expensive and require an immense effort.

Arctic Islands Petroleum Province

The Canadian Arctic Archipelago includes all of the islands north of the Canadian mainland and west of Greenland.

Geology--The Sverdrup Basin is generally regarded as the Arctic Islands region having the best potential for hydrocarbon production. This region is located in the northern part of the Queen Elizabeth Islands. The major axis of the Sverdrup Basin trends in a southwesterly direction from western Ellesmere Island to northern Melville Island. The basin has an area of about 121,000 square miles of which 65,000 is covered by water. It is a very large sedimentary basin which first formed in early Carboniferous time (about 345 million years ago), and contains more than 30,000 feet of mostly sandstone and shale sediments in its

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36/ Canadian Natural Gas Supply and Requirements, p. 34.

center. The most important hydrocarbon discovery trend has been an area of large, low relief domal features along the southern margin of the basin, but other possible hydrocarbon traps include faulted structures, updip permeability barriers, and salt related structures.

The Arctic fold belts region occurs in the form of a band along the southern margin of the northern Arctic Islands and borders the north side of Viscount Melville Sound. The region is underlain by a wedge of carbonate rocks which thickens into a deeper basin to the north. It contains rapidly changing sedimentary facies, with shales (potentially rich source rocks) interbedded with carbonate rocks (potential reservoir rocks) in an area called the hingeline of the basin. This hingeline is the location of the best hydrocarbon potential of the region. 37/ The region is highly complex with large elongated folds, reef buildups, and updip permeability barriers as potential traps for oil and gas.

Exploration Activity--Significant exploration activity began in the Sverdrup Basin in 1969. Since that time over 130 holes have been drilled and a number of discoveries have been made. Major gas fields have been found on northern Melville Island (the Drake Point and Hecla fields) and five smaller gas fields were located in the area of King Christian and Ellef Ringnes Islands. Drilling emphasis has shifted from onshore to offshore as apparently no large undrilled struc-

37/ Oil and Natural Gas Resources of Canada, 1976, p. 35.

tures remain on land. The sea is ice-covered most of the year, however, and the technology has been developed to drill from reinforced ice platforms with land rigs. A major recent offshore gas discovery was the Panarctic AIEG Whitefish H-63. The 6,400 foot well encountered a gas producing zone between 6,231 and 6,378 feet. The zone tested at 8.1 million cubic feet of gas per day, but is thought to be capable of producing substantially higher volumes. It and a second productive zone, were not fully tested because of the deteriorating condition of the ice platform from which the well was drilled. 38/ The Whitefish H-63 is thought to be a large field with up to 5 trillion cubic feet of gas reserves. 39/ The Drake Point field is estimated to contain reserves of 5.2 trillion cubic feet and the Hecla field to have reserves of 3.5 trillion cubic feet.

Although the hydrocarbons in the Sverdrup Basin are expected to be dominantly gas, there is the possibility of finding significant oil deposits as well, but it is thought that the oil would most likely occur in the older rocks in the margins of the basin. Most future gas discoveries will probably be made offshore. 40/

Only a few wells have been drilled in the Arctic Fold Belts. There has been one noncommercial discovery of oil at Brent Horn on

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38/ Panarctic hails gas strike in Arctic Islands. The Oil and Gas Journal, May 28, 1979: 58.

39/ Ibid.

40/ Oil and Natural Gas Resources of Canada, 1976, p. 33.

Cameron Island. Brent Horn wells have been gauged at rates of up to 3,500 barrels per day, but production is from cavernous rock and sufficient reserves for commercial production have not as yet been proved. However, the region has not been well explored, and has the geological potential for a significant hydrocarbon resource. The Brent Horn oil discovery is important as it is a first clear indication that hydrocarbons have been generated and have migrated and accumulated in the region.

Reserves, Resource Estimates, and Production Capability--The National Energy Board of Canada estimated that the established marketable gas reserves in the Arctic Islands totaled 9.2 trillion cubic feet at the end of 1978. Industry estimates were somewhat higher at 11.8 trillion cubic feet. 41/ With the addition of an estimated 5 trillion cubic feet from the Whitefish H-63 field, latest total proved reserves according to industry would be about 16.8 trillion cubic feet. Threshold proved reserve volumes for a 42 inch gas pipeline to southern markets are considered to be between 20 to 30 trillion cubic feet. 42/ Thus, estimated proved reserves are approaching the volumes needed to support such a pipeline. The gas wells drilled thus far have tested as good producers. Flows have ranged from 20 to 75 million cubic feet per day. Therefore, fewer wells may be necessary to realize the same gas production volumes in the Arctic

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41/ Crow, Patrick, p. 90.

42/ Panarctic hails gas strike in Arctic Islands, p. 58.

Islands as in the Beaufort Sea. Also, the drilling is not entirely dependent upon the seasons, although the rigs must be moved from the ice platforms during the summer.

The Energy Board accepted a range of estimates regarding the rate of projected additions to gas reserves in the Arctic Islands. These additions, which might be attainable by the year 2000, given the requisite levels of exploration and development, range from 16 to 42 trillion cubic feet. 43/

The ultimate gas potential has been estimated by industry to be 100 to 125 trillion cubic feet. 44/ The Geological Survey of Canada, however, estimates ultimate gas production potential for the Arctic Islands ranging from 24 trillion cubic feet (90 percent probability), to 51 trillion cubic feet (50 percent probability), to 106 trillion cubic feet (10 percent probability). 45/

While the proved natural gas reserves in the Arctic Islands exceed those of the Mackenzie Delta region they are still below the threshold volume considered necessary for a pipeline. However, especially in view of the recent discovery at Whitefish H-63, prospects appear reasonably good for future discoveries that will increase proved gas reserves to volumes acceptable for pipeline construction (between 20 and 30 trillion cubic feet). However, the rate at which these

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43/ Canadian Natural Gas Supply and Requirements, p. 33.

44/ Crow, Patrick, p. 89.

45/ Canadian Natural Gas Supply and Requirements, p. 34.

additions might be made is affected by economics, regulatory decisions, and political conditions as well as by success in drilling.

Part 3: Prebuilding and Design Issues*

Prebuild Issues

Prebuilding a portion of the Alaska gas pipeline was originally conceived to help prove the Alcan proposal could be financed totally by the private sector. Alcan's sponsors maintained that prebuilding most of the eastern leg of the Alaska gas pipeline, hooking it up to surplus Alberta gas supplies, and selling the gas in the U.S., would generate needed revenues to help finance the rest of the project.

The prebuild plan called for the Northern Border Pipeline Company, presently composed of Northern Natural Gas and Panhandle Eastern Pipeline, to construct an 809 mile pipeline from the international border to Ventura, Iowa (see map) for operation in 1981. Northern Natural would receive 200 million cubic feet per day (Mcf/d), Panhandle Eastern 150 Mcf/d, and United Gas Pipe Line Company 450 Mcf/d. The balance of 240 Mcf/d is designated for the West Coast via the western leg (see map).

Prebuilding the pipeline, however, has run into delays. First, the entire project has been delayed due to uncertainties surrounding the project. Second, the prebuild concept had assumed approximately 1.04 billion cubic feet per day (bcf/d) of Canadian gas would be available for export to the U.S. over the next 12 years. The Canadians simply cannot guarantee this magnitude of supply over that period of time.

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*Prepared by Gary J. Pagliano, Environment and Natural Resources Division.

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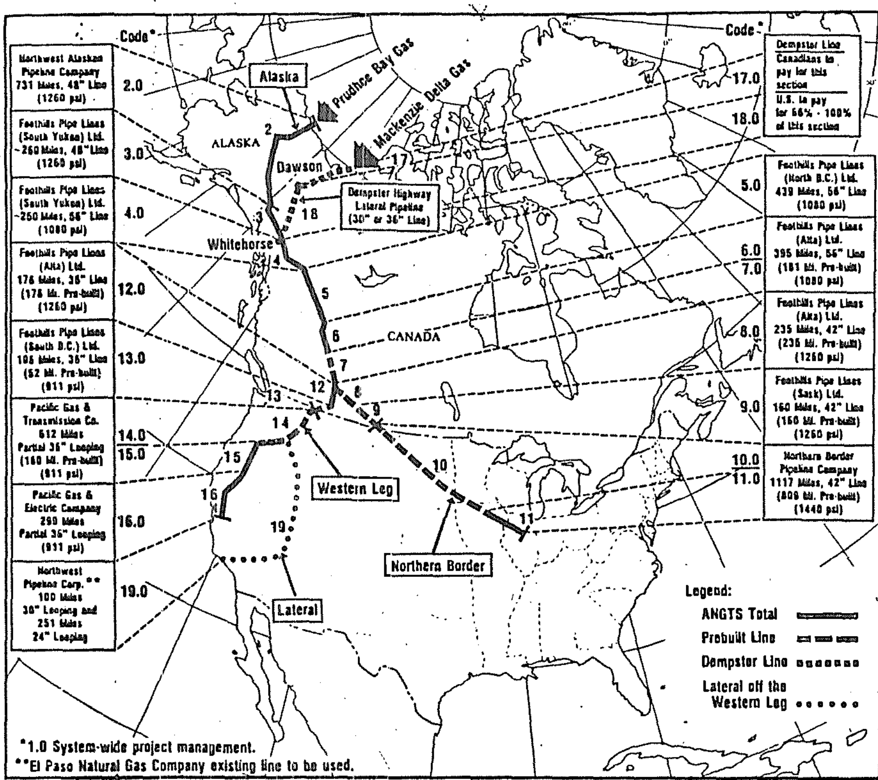

Figure 1. ANGTS AND RELATED PIPELINES PROPOSED LOCATION CODES FOR MANAGEMENT INFORMATION SYSTEM

Uncertainties--The uncertainties surrounding the Alaska gas project are due to financing, rate of return and construction uncertainties. First, in terms of financing, the pipeline will cost at least $15 billion, making it the costliest private or public project in history, and thus difficult to finance. Compounding that problem is the relatively small size of the sponsoring pipeline companies, with a corresponding lack of the proper credit rating for such a large scale project. The Alaskan natural gas producers (Arco, Exxon and Sohio) have a higher credit rating, but by law are prohibited from owning any equity interest in the line. To increase the credit rating of the sponsoring pipeline companies, the producers are being encouraged to participate in the project's debt financing. Similarly, the State of Alaska is being encouraged to participate in both the project equity and debt financing. The producers and the State of Alaska are encouraged to share some of the financial risk because of the large benefits each will derive from the project. So far, the producers and the State of Alaska have not made any commitments.

Second, the project's unique rate of return system poses additional risk for investors. A variable rate of return structure has been established to reward or punish the sponsors for meeting or exceeding cost targets (see part 1 for a fuller discussion of this issue).

Finally, potential construction problems exist particularly for the Alaska segment of the pipeline. The frigid climate, permafrost, and the mountainous terrain make it difficult to project how long it will take to build the pipeline and how much it will cost. The frost heave problem is an example of the unique Arctic hazards. Freezing action in nonpermafrost and discontinuous permafrost regions can cause vertical soil movements of several feet. To determine more accurately what might happen under various conditions, Northwest Alaska Pipeline Company, project sponsor for the Alaska segment, has established a frost heave test facility in Fairbanks. 46/

It should be emphasized that like a chain, a pipeline project is as strong as its weakest, most risky segment. The Alaska segment represents that most risky segment, thus casting doubt over the whole project. The doubt makes it difficult to induce large institutional investors such as insurance companies and pension funds to put up the billions of dollars needed to finance the pipeline. If any segment of the pipeline were not completed, especially the Alaskan segment, lenders would not get their money unless there was third party completion guarantee.

The prebuild proposal helps to counter some of the project uncertainties. It gets the project started and focuses on a technically easy-to-construct pipeline segment. The entire Alaskan project is going to be financed on a "project financed" basis instead of "balance sheet" financed basis because of the insufficient asset size of the pipeline sponsors. In project financing, the project is rated only on its own economic merits, thus the sooner cash begins flowing the

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46/ Hale, Dean. Frost heave tests underway for Alaska Gas Pipeline. Pipeline and Gas Journal. September 1979: 24.

better. Prebuild, by sending Canadian gas for sale in the U.S. before the Alaska segment is completed, gets cash flowing as soon as possible. The reduced construction hazards on the prebuild section indicates a lower probability of cost overruns and a more predictable rate of return.

Alberta Gas--The quantity of Alberta gas exportable to the U.S. in the future is now under consideration by the Canadian National Energy Board (NEB). In February 1979, the NEB announced that a total of two trillion cubic feet of new natural gas (tcf) would be available for export during the next eight years. This announcement makes the prebuild proposal doubtful. It would require 50 percent more gas over the same period of time. Rightly or wrongly, and the sponsors have not clarified this point, it has been assumed that the prebuild volume of 1.04 bcf/d was the minimum necessary for the prebuild pipeline to neutralize some of the uncertainties associated with the entire project.

There is, however, a possiblity that Alberta export volumes, the main source of Canadian gas exports, could increase. The NEB authorized ceiling of 2 tcf was based on the 1978 Alberta Energy Resources Conservation Board (AERCB) estimate that Alberta's ultimate recoverable gas resources were 100 tcf. Recently, the AERCB has revised its ultimate gas resource estimate to 130-140 tcf. The revised AERCB estimates increase the province's surplus available for export by 3-5 tcf. 47/

47/ Oil and Gas Journal. Alberta hikes gas reserve estimates. September 10, 1979: 103.

The new figures are likely to influence the NEB which is considering export applications totaling about 9 tcf.

Even if the NEB increases the gas export ceiling, the probability is that the new volumes will not satisfy the prebuild pipeline's 12 year requiremnet. Canada's top priority at this time, is to satisfy its own energy demands from Canadian sources. If Canada's oil imports were reduced or terminated, it is most likely a shift to natural gas would result, thus reducing the exportable gas surplus.

Further, the Canadians feel construction of the entire Alaska gas pipeline would provide a major economic boost to their country. Some estimate that in the early 1980's it would contribute one percent to Canada's Gross National Product (GNP). In addition, once the Alaska gas pipeline is operating, it gives Canada access, via the Dempster Highway Lateral Pipeline (see map), to recently discovered new gas supplies in the Beaufort Sea and the Arctic Islands, as well as to the Mackenzie Delta gas.

A long-term, guaranteed supply of Alberta gas, along with the uncertainties in constructing the Alaska segment, raises the possibility that only the prebuild pipeline would be constructed. Canada would like to avoid that scenario. As a result, the prebuild proposal will most likely be held captive until the fate of the entire Alaska gas pipeline is finally decided.

Design Questions

The main design questions relate to the appropriate diameter and pressure for two segments of the Alaska gas pipeline: the Alaska and Canadian segments. FERC recently decided that the proper pipeline pressure for the Alaska pipeline segment would be 1260 pounds per square inch above atmospheric pressure (psig). The Canadian National Energy Board (NEB) in February 1978 decided that most of the Canadian pipeline segment would be 56 inches in diameter.

The Canadian decision was controversial because there are no American companies that can manufacture such large diameter pipe. With only Canada and 1 or 2 other countries in the world having such manufacturing capacity, the NEB decision was viewed by some as a "policy" to reduce American business opportunities.

The Alaska Segment--The 1977 Presidential report to the Congress stipulated the Alaskan pipeline segment would be 48" in diameter and operate at a maximum pressure of 1260 psig. 48/ To finalize the pipeline's specifications, FERC proceeded with a certification process in

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48/ Executive Office of the President. Energy Policy and Planning. Decision and Report to Congress on the Alaska Natural Gas Transportation System. September, 1977.

which comments from Alaskan Northwest, the pipeline sponsor, and the State of Alaska were considered.

Alaskan Northwest concurred with the President's decision. The State, however, expressed concern that the 1260 psig pressure might preclude two important options--development of a petrochemical industry and restriction of siting of the gas conditioning facilitites. In the case of petrochemicals, this industry would be based on Prudhoe Bay's natural gas liquids. A higher pressure would tend to increase the possiblity of using the pipeline to transport petrochemicals, since there is some relationship between pipeline pressure and the ability of the gas stream to carry the gas liquids. Insofar as siting is concerned, if the gas conditioning facilities were located in Fairbanks, the Alaska pipeline segment connecting Prudhoe Bay and Fairbanks would require a higher operating pressures than 1260 psig. After some deliberation, FERC ruled to finalize the original specification of a 48" diameter pipe and 1260 psig operating pressure. 49/

The Canadian Segment 50/-An important question from the onset in the the U.S.-Canadian negotiations concerning the Alaska gas project was the diameter and operating pressure of the Canadian pipeline segment. The

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49/ Order Approving Alaska Segment Design Specification and Initial System Capacity. FERC. Docket Nos. CP 78-123, et. al., August 6, 1979.

50/ The following discussion is based on the statement of Don S. Smith, Vice Chairman-FERC, before hearings entitled "U.S. Industry Participation In Construction Of Alaskan Natural Gas Pipeline." Hearings were before the Subcommittee on Energy and Power, House Commmittee on Interstate and Foreign Commerce. April 24, 1978. Serial No. 95-139.

The NEB originally selected a 48" diameter pipenine operating at standard pressure of 1260 psig. The U.S. negotiating team suggested a higher operating pressure in order to increase the pipeline efficiency. The Canadians, however, expressed severe reservations about high pressure technology on safety and reliability grounds. To address the pipeline size issue, the U.S.-Canadian agreement 51/ on the project called for the NEB to consider 54", 1120 psig pipe; 48", 1260 psig pipe; 48", 1680 psig pipe, or any other size pipe for the system's safe, reliable and economic operation. On February 13, 1978, the U.S. filed a technical report with the NEB pointing out the economic advantages of a higher pressure 48" pipeline over the larger diameter alternative.

During subsequent U.S.-Canadian technical meetings, the U.S. suggested that if a larger pipeline were chosen, it should be a 56" system instead of the 54" system mentioned in the prior negotiations. The rationale for this change was that 56" was the standard world size for pipe in excess of a 48" diameter, and that size system offered operating advantages over the 54" system. On February 21, 1978 the NEB selected the 56" system.

Canadian Procurement Policy--The NEB decision focused attention on a long standing Canadian procurement policy, known as "Candian

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51/ "Agreement Between the United States of American and Canada on Principles Applicable to a Northern Gas Pipeline", Section 10, August, 1977.

Content". Canadian business participation is an issue in both countries because some Canadians feel that their government did not go far enough to guarantee higher levels of Canadian Content on the Alaskan project, while U.S. firms feel that the Canadians have been assured too many business opportunitites on the project.

To address the "Canadian Content" issue, Sections 7 and 8 were added to the "Agreement on Principles." 52/ Section 7 provides a standard of "generally competitive terms" which outlines factors to determine whether or not competition was unfairly restrained on the project, and sets out remedies such as renegotiation of contracts or reopening of bids. Section 8 provides a consultation mechanism to resolve differences.

Providing added assurance to U.S. firms is the Alaska Natural Gas Transporation Act of 1977, which established the U.S. Office of the Federal Inspector to oversee the regulatory and other aspects of constructing the Alaska gas pipeline. In addition, FERC has indicated the Office of the Federal Inspector will contain a special competition section. The new group will attempt to resolve complaints about the lack of competition in supplying goods and services to the project's Canadian segment.

52/ "Agreement Between...." op. cit.

Issues Relating To The Proposed Alaska Highway Gas Pipeline Project

This Project currently is scheduled for completion in 1984--about 2 years later than anticipated in 1977--as an entirely private enterprise. Two key remaining issues concern the requirements that will be included in the right-of-way agreements and how the gas-conditioning costs will be treated.

At this time the sponsors are working to privately finance the Project. Notwithstanding this, the question of Federal financing assistance for the Project's Alaskan segment has been publicly discussed by U.S. officials.

This report emphasizes GAO's prime concern that, if Federal financial assistance is proposed, the Government be in a position to make an informed decision.

ISSUES RELATING TO THE
PROPOSED ALASKA HIGHWAY
GAS PIPELINE PROJECT

D I G E S T

When the President and the Congress approved construction of the Alaska Highway Gas Pipeline Project--a system to transport natural gas from northern Alaska to midwestern and western U.S. markets--in 1977, they specified that the Project should be privately financed; Federal financing assistance was "explicitly rejected" and the administration's official position has not changed. (See pp. 8 and 9.)

However, on January 23, 1979, in response to a question from the Joint Economic Committee, the Secretary of Energy discussed the possibility of $2 billion to $3 billion in Federal loan guarantees for the Alaskan segment of the Project. (See pp. 19 to 21.)

If Federal financing assistance is requested, Project proponents undoubtedly will urge the Congress to quickly provide the needed assistance. At the same time, alternatives may exist which could secure or conserve a similar or greater amount of gas. Among the potential alternatives are

--conservation steps,

--intensified drilling in the lower 48-States,

--liquefied natural gas,

--Mexican and Canadian gas, and

--unconventional domestic resources. (See pp. 25 to 32.)

Chapter 3 briefly discusses data and concepts relevant to the questions that need to be answered before a decision is made. (See pp. 22 and 23.) The data are not GAO predictions; rather, they represent one of several possibilities.

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GAO has no conclusions on what the congressional decision should be but believes that its recommended analyses should help objective decisionmaking.

THE PROJECT IS DELAYED

The Project's original time frame to deliver Alaskan gas to the lower 48-State markets is delayed from early 1983 to at least late 1984. The sponsors' schedules to deliver Canadian gas by the winter of 1979-80 are delayed to November 1980 for service to the West and November 1981 for deliveries to the Midwest. (See p. 5.)

FURTHER DELAYS ARE POSSIBLE

Two key issues concern the requirements that will be included in the right-of-way agreements and how the gas-conditioning costs will be treated. (See pp. 11 to 13.)

Since the pipeline will be built on public lands, the State and Federal Governments will grant right-of-way agreements which give permission to use these lands. To protect the public interest in these lands, the agreements will include environmental and technical requirements that must be followed when building and operating the system. Based on the Government's experience with the oil pipeline, disagreements may lead to lengthy proceedings.

Before this Project can transport any Prudhoe Bay gas, the gas must be conditioned to remove impurities, compressed, and chilled. Since the conditioning plant may cost about $2 billion, the treatment of the conditioning costs can affect the gas price and marketability--a key to the Project's viability and, thus, its ability to be privately financed.

MATTERS FOR CONGRESS

The Congress should not consider Federal financial involvement until all regulatory procedures are completed and the sponsors show conclusively that the Project cannot be financed privately. Should financial aid for the Project be requested, the Congress should evaluate alternative sources of natural gas as well. If the Congress decides to grant financial aid, it should evaluate all feasible alternatives for Federal financial involvement (not just loan guarantees).

RECOMMENDATION TO THE SECRETARY OF ENERGY

Decisions on the Project cannot be isolated from the Nation's total energy situation. This is especially true in light of developments since the first decision on this Project, the uncertainties noted in this report, and the President's July 16, 1979, Import Reduction Program.

The Department of Energy should analyze and propose how the Project fits in to the overall energy picture and show how the cost of Project gas relates to the cost of alternative sources.

GAO recommends that:

--The Secretary of Energy, within 60 days from the date of this report, provide the Congress an analysis showing how this Project now fits in with the overall national energy plan and strategy to satisfy the Nations' future energy needs. Items included in this analysis should include, for the Project and each feasible alternative, detailed information on the (a) amount of gas that would be supplied, (b) time frame for delivering the gas, (c) costs, and (d) impact of U.S. reliance on foreign energy and international implications.

--In addition, if the sponsors officially state that the Project cannot be privately financed or Federal financing assistance is requested, the Secretary of Energy should provide the Congress, within 90 days of that occurrence, his recommendation on the matter of Federal financial involvement.

The Secretary, in support of his recommendation, should provide a detailed analysis of the Project and alternatives which could secure or conserve a similar or greater amount of gas or equivalent amount of energy. The analysis should

--demonstrate why his recommendation is the best course of action and

--compare the benefits that each source could provide if it received the same amount and type of Federal financial assistance or an amount approximating that requested for the pipeline.

Using this information, the Congress could then make an informed decision on how best to invest Government funds to meet national energy needs.

GOVERNMENT AND COMPANY COMMENTS

GAO received lengthy comments on the draft of this report. (See app. II through IX.) Appendix X contains GAO's detailed responses to these comments.

Government

The Department of State believes that GAO is premature in discussing Federal financial assistance. In GAO's view, being alert to possible events is good public policy. Thus, GAO continues to recommend that a framework be established for Government analyses *if* Federal assistance is requested. (See app. IV.)

The Federal Energy Regulatory Commission and the Department of Energy (see app. II and III) object to the approach GAO uses in chapter 3 in discussing natural gas supply and demand. GAO uses the difference between estimated demand and supply from conventional domestic supplies. They suggest that the price of imported oil is a more analytically correct approach.

The Department of Energy did not comment on the substance of GAO's recommendations--only the timing.

GAO uses its approach to emphasize the need for indepth analyses of our energy situation in a future increasingly deficient in conventional energy sources. This concept is found in the President's Decision and Report to the Congress on the Alaska Natural Gas Transportation System and in the National Energy Plan (April 1977).

GAO does not accept that using the price of imported oil is more analytically correct. Although important, price is not the sole consideration in national energy policies.

The Department of the Interior focuses on economic issues that it thinks should be a part of this report. Such issues could be a part of the analyses that GAO recommends.

Federal Inspector for the Alaska Natural Gas Transportation System

The Federal Inspector was reluctant to provide detailed comments. However, he had reservations about some of GAO's analyses and recommendations.

Company

The Northwest Alaskan Pipeline Company, the Northern Natural Gas Company, and the Pacific Gas and Electric Company questioned some of the report's data but provided no alternative information.

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ABBREVIATIONS

ANGTA	Alaska Natural Gas Transportation Act
ANGTS	Alaska Natural Gas Transportation System
BCFD	billion cubic feet per day
Btu	British thermal unit
DOE	Department of Energy
EIA	Energy Information Administration
EPB	Executive Policy Board
FEA	Federal Energy Administration
FERC	Federal Energy Regulatory Commission
FPC	Federal Power Commission
GAO	General Accounting Office
IROR	Incentive Rate of Return
LNG	liquefied natural gas
MCF	thousand cubic feet
MMCFD	million cubic feet per day
NEB	National Energy Board
PG and E	Pacific Gas and Electric Company
PGT	Pacific Gas Transmission Company
TAPS	Trans Alaska Pipeline System
TCF	trillion cubic feet

CHAPTER 1

THE ALASKA HIGHWAY GAS PIPELINE PROJECT

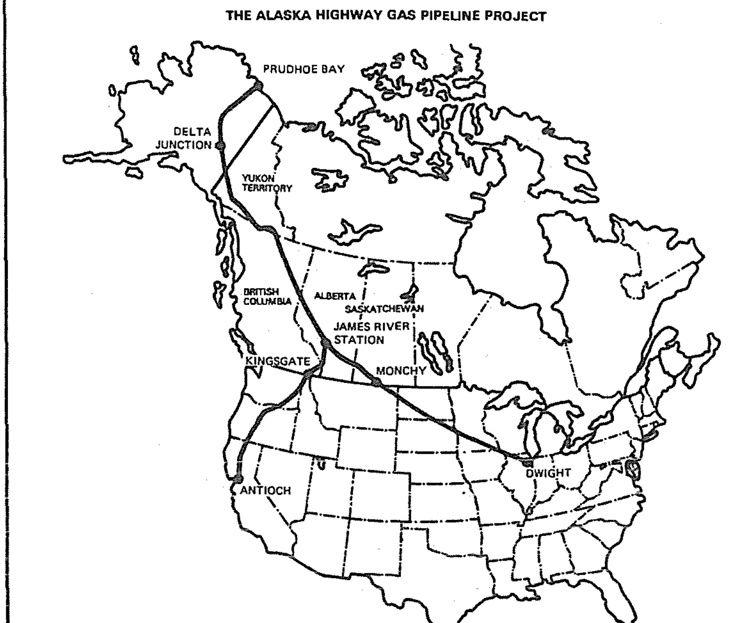
The Alaska Highway Gas Pipeline Project, a 4,800-mile overland pipeline system, is to transport natural gas from northern Alaska through Canada to U.S. markets. The Project's facilities are designed to handle an average daily volume of 2.4 billion cubic feet of natural gas, but it could be enlarged to accommodate additional capacity.

Although the original date to start delivering gas from Prudhoe Bay to lower 48-State U.S. markets was January 1, 1983, the Project's targeted on-line date is late 1984. Similarly, proposals to deliver Canadian gas to the Midwest and West in the winter of 1979-80 have been delayed. The sponsors' proposed in-service date for deliveries to the West is November 1980; deliveries to the Midwest are a year later--November 1981.

ITS ROUTE

The route (see map on p. 2) starts at Prudhoe Bay and parallels the Alyeska oil pipeline to Delta Junction, Alaska. At Delta Junction, the route follows existing rights-of-way eastward to the Alaskan/Canadian border. Once through the Yukon Territory, the route goes southeast through British Columbia to the James River Station in Alberta, where it divides into an Eastern and Western Leg. The Eastern Leg will deliver Alaskan gas to U.S. Midwestern and Eastern markets. It will cross the U.S./Canadian border near Monchy, Saskatchewan, proceed through Montana, North Dakota, South Dakota, Minnesota, and Iowa, and bring the gas just south of Chicago to Dwight, Illinois. The Western Leg will deliver Alaskan gas to the Northwest and California markets. It will cross the U.S./Canadian border near Kingsgate, British Columbia, proceed through Idaho, Washington, and Oregon, and end at Antioch, California.

The Project's sponsors proposed delivering Canadian gas to the U.S. markets about 2 years sooner than Alaskan gas by first completing the Eastern and Western Legs and later completing the remaining Project segments. They proposed that Canadian gas deliveries could reach as much as 1 billion cubic feet per day by the winter of 1979-80. The United States and Canadian Governments agreed that delivering Canadian gas to the U.S. markets in advance of on-line Alaskan gas was beneficial. The U.S. markets



SOURCE: DECISION AND REPORT TO CONGRESS ON THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM could be assured of short- and long-term Canadian gas availability while encouraging Canadian exploration for new reserves and stimulating expansion of its gas industry.

PROJECT SPONSORS

In March 1978, the Northwest Alaskan Pipeline Company and five other companies formed a partnership (the Alaskan Northwest Natural Gas Transportation Company) to plan, design, secure financing for, construct, own, and operate the Project's Alaskan segment and place the line in service on January 1, 1983. Northwest Alaskan is the operating partner. The table below lists the partners, parent companies, and proposed shipper companies involved in the Alaskan Northwest Natural Gas Transportation Company as of February 2, 1978.

Partner company	Parent company	Company proposing to ship gas through line
Northwest Alaskan Pipeline Company	Northwest Energy Company	Northwest Pipeline Corporation
Northern Arctic Gas Company	Northern Natural Gas Company	Northern Natural Gas Company
Pan Alaskan Gas Company	Panhandle Eastern Pipeline Company	Panhandle Eastern Pipeline Company
United Alaska Fuels Corporation	United Gas Pipe Line Company	United Gas Pipe Line Company
Calaska Energy Company	Pacific Gas and Electric Company	Natural Gas Corporation of California
Pacific Interstate Transmission (Arctic)	Pacific Interstate Transmission Company	Pacific Interstate Transmission Company

For the Western Leg, the Pacific Gas Transmission Company will build the pipeline from the Canadian border through Oregon where the Pacific Gas and Electric Company will finish construction into California. The Northern Border Pipeline Company, a partnership, will construct the Project's Eastern Leg. Northern Border's members are

--the Northern Plains Natural Gas Company, the operator, a subsidiary of Northern Natural Gas Company;

--the Northwest Border Pipeline Company, a subsidiary of Northwest Energy Company;

--the Pan Border Gas Company, a subsidiary of Panhandle Eastern Pipeline Company; and

--the United Mid-Continent Pipeline Company, a subsidiary of the United Gas Pipe Line Company.

Foothills Pipe Lines, Ltd., will build the Project's Canadian portion.

The Government is unable to attract additional sponsors for the Alaskan segment

The Alaskan Northwest Natural Gas Transporation Company's membership remains unchanged even though the Government took an action favorable to attracting new members to the partnership. The company's partnership agreement provides an incentive for members to join early by continually reducing the profits of those joining after the partnership's formation--March 1978. Although the Federal Energy Regulatory Commission modified the agreement to grant a 30-day penalty-free period starting June 30, 1978, and limited the reduction in profits in an action tending to attract new members, no additional members joined during the penalty-free period or subsequently, as of September 12, 1979.

In its comments on a draft of this report, the Federal Energy Regulatory Commission states that its action was not an active role in attracting parties to join the partnership. Rather, the intention was to provide "equitable and fair treatment of all potential partners." (See app. II.)

Since April 1978, two members have joined the Northern Border Pipeline Company 1/ and four have dropped out. Northwest Border and United Mid-Continent joined the partnership. Affiliates of the Columbia Gas Transmission Corporation and the Michigan Wisconsin Pipe Line Co., and subsidiaries of Natural Gas Pipeline Company of America and Texas Eastern Transmission Corporation dropped out. Some members dropped out because (1) they could not find consumer commitments for Alaskan gas reserves or (2) the Federal Energy Regulatory Commission would not allow them to recover pre-construction costs by imposing a special charge on their wholesale customers.

1/The company was reconstituted in Aug. 1978.

THE PROJECT IS DELAYED

The overall Project and Canadian gas deliveries are delayed. The January 1, 1983, date 1/ for delivering Prudhoe Bay gas to the U.S. markets is delayed to late 1984. The Western Leg's in-service date has been revised to November 1980; the Eastern Leg's in-service date is slated for November 1981.

The Western Leg proposal

On November 6, 1978, the Western Leg sponsors proposed to build only about 20 percent of the Western Leg outlined in the President's "Decision and Report to Congress on the Alaska Natural Gas Transportation System" 2/ and deliver Canadian gas--starting in late 1980--to southern, rather than central, California through a different pipeline route (see map on p. 6). Under this "pre-delivery arrangement," the companies plan to ship Canadian gas in advance of Alaskan gas by using existing facilities a much as possible. However, additional facilities will be required later on to transport Alaskan gas.

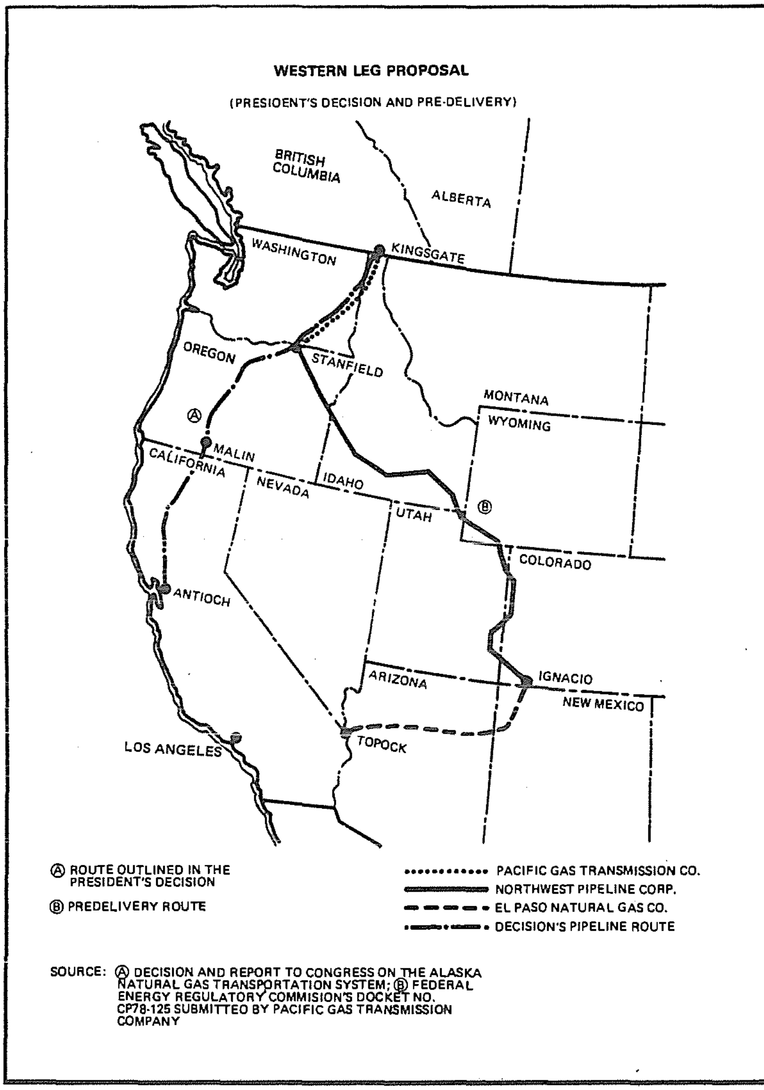
The Eastern Leg proposal

On January 26, 1979, the Northern Border Pipeline Company proposed building about 70 percent of the Eastern Leg for pre-delivering Canadian gas with a completion contingency once the Alaskan segment is completed. The line will initially extend from Port of Morgan, Montana, (near Monchy, Saskatchewan) to Ventura, Iowa, and is scheduled for completion in November 1981. The proposal defers completing the line to Dwight, Illinois, and building the additional facilities needed to transport Alaskan gas.

Whether the new targeted in-service dates are achievable will depend on how the issues discussed in chapter 2 are resolved.

1/Initial flow Oct. 1, 1981; full flow Jan. 1, 1983.

2/Executive Office of the President, Energy Policy and Planning, Sept. 1977.


WESTERN LEG PROPOSAL
(PRESIDENT'S DECISION AND PRE-DELIVERY)
BRITISH COLUMBIA
ALBERTA
WASHINGTON
KINGSGATE
OREGON
STANFIELD
MONTANA
WYOMING
Ⓐ
MALIN
CALIFORNIA
NEVADA
IDAHO
UTAH
Ⓑ
COLORADO
ANTIOCH
ARIZONA
IGNACIO
NEW MEXICO
TOPOCK
LOS ANGELES
Ⓐ ROUTE OUTLINED IN THE PRESIDENT'S DECISION
Ⓑ PREDELIVERY ROUTE
PACIFIC GAS TRANSMISSION CO.
NORTHWEST PIPELINE CORP.
EL PASO NATURAL GAS CO.
DECISION'S PIPELINE ROUTE
SOURCE: Ⓐ DECISION AND REPORT TO CONGRESS ON THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM; Ⓑ FEDERAL ENERGY REGULATORY COMMISION'S DOCKET NO. CP78-125 SUBMITTED BY PACIFIC GAS TRANSMISSION COMPANY

REVIEW SCOPE

We performed our examination of this Project primarily in Washington, D.C. During this assignment, we met with officials of the Federal Energy Regulatory Commission's Alaskan Gas Pipeline Office, the Executive Policy Board, and the Northwest Alaskan Pipeline Company. The report has been updated through September 12, 1979.

CHAPTER 2

IMPORTANT ISSUES REMAIN TO BE RESOLVED

Although the Government has provided incentives believed needed to expeditiously develop the Project, a Federal Inspector was not sworn in until July 13, 1979, and two important issues remain to be resolved which could lead to lengthy administrative and/or judicial review. In addition, the Alaskan sponsors have perceived unusually high risks of Project abandonment and posed questions about the Project's viability.

GOVERNMENT ACTIONS TO BRING THE PROJECT ON-LINE

The Government gave the sponsors an incentive to actively pursue development through the following sequence of events:

--The Alaska Natural Gas Transportation Act of 1976.

--The Administration's National Energy Plan of 1977.

--The 1977 U.S./Canadian agreement applicable to northern natural gas pipelines.

--The President's Decision of 1977.

--Congressional support in passing favorable gas pricing legislation in the Natural Gas Policy Act of 1978 which includes rolled-in pricing for the Alaskan gas, that is, allows the cost of Alaskan gas to be averaged with cheaper gas supplies, as part of its consideration of the President's National Energy Plan.

The Alaskan Natural Gas Transportation Act of 1976 (Public Law 94-586, Oct. 1976) established the decisionmaking process and deadlines for selecting a transportation system to deliver North Slope Alaskan natural gas to U.S. markets. The act expedited presidential and congressional participation to approve such a system and eliminated the potential delays inherent in the normal regulatory approach by establishing time frames and limiting the scope and timing of judicial review. The act stipulated that the President decide whether or not a transportation system delivering Alaska natural gas should be approved and, if so, designate the proposed system to the Congress.

In light of the then-existing energy situation, the act recognized the need for North Slope natural gas reserves. Congressional findings stated in section 2 of the act included (1) a natural gas supply shortage exists in the contiguous States, (2) large natural gas reserves in the State of Alaska could help alleviate this supply shortage, and (3) expeditiously constructing a "viable natural gas transportation system" to deliver Alaska natural gas to the lower 48-States was in the national interest.

The Administration's National Energy Plan of April 1977 stressed increasing our domestic gas supplies. Expecting decreased natural gas production, the Plan stated that the gap between demand and production in the lower 48-States would have to be filled from new sources, such as Alaskan gas. It also promoted a natural gas pricing structure to discourage consumption and, at the same time, encourage production. The Plan proposed to classify the gas as "old gas under a new contract" subject to a wellhead price ceiling of $1.45 per thousand cubic feet (inflation adjusted) and provided for the end user of the gas to pay the full (incremental) delivered price for Alaskan gas.

A September 1977 U.S./Canadian agreement provides further mechanisms to hasten Project completion. Under the agreement, each Government is to take measures to facilitate constructing the pipeline system to transport natural gas from Alaska and Northern Canada. This agreement calls for private financing of the Project. The agreement's timetable views Alaskan construction beginning January 1, 1980, main Yukon pipe laying starting January 1, 1981, and other construction in Canada to provide timely completion by January 1, 1983.

Furthermore, the President in his Decision, which he transmitted to the Congress on September 22, 1977, committed the sponsors to timely Project development. In the Decision, the President endorsed and recommended this Project over two alternative proposals and defined the route. Based on sponsor assurances and an administration financial analysis, he found that the Project could be privately financed. The President (1) opposed "novel regulatory schemes" to shift Project risks to consumers and (2) "explicitly rejected" Federal financing assistance.

The Federal Energy Regulatory Commission notes that the Decision includes the following condition dealing with financing: The successful applicant shall provide for private financing of the Project, and shall make the final arrangement for all debt and equity financing prior to the initiation of construction. It notes that congressional approval of the Decision gave the terms and conditions the force of law and, since the Congress approved this condition, it can only be changed by a further act of the Congress.

Finally, congressional intent for pricing Alaska natural gas provided the sponsors an incentive to actively pursue Project development. In March 1978, House and Senate conferees considering the National Energy Act agreed that Prudhoe Bay gas would be considered "old" gas at a $1.45 ceiling price per thousand cubic feet as of April 1977 with adjustments for inflation. By June 1978, the conferees agreed on rolled-in pricing for the gas. An August 1978 Senate report 1/ justified rolled-in pricing on the grounds that private financing otherwise would not be available. Also, according to this report, rolled-in pricing was to be the only Federal subsidy of any type--direct or indirect--to be provided.

With the signing of the Natural Gas Policy Act (Public Law 95-621) in November 1978, which was based, in part, on the proposed National Energy Act, the Project received a $1.45-per thousand cubic foot wellhead price (inflation adjusted) and rolled-in pricing for the gas. The adjusted price for this gas is $1.75 as of October 1979.

A FEDERAL INSPECTOR IS FINALLY ON THE JOB

Although the Government has provided various incentives and has taken various actions requested by the sponsors in an effort to expeditiously develop the Project, a Federal Inspector required by the Alaska Natural Gas Transportation Act was not sworn in until July 13, 1979, about 20 months after the Congress approved the Decision in November 1977. The Federal Inspector now is in a position to (1) create the Government/sponsor relationship intended to resolve concerns based on the Alaskan oil pipeline's construction and (2) develop and staff the Office of the Federal Inspector to provide a focal point for Federal involvement.

1/Senate Report 95-1126 of Aug. 18, 1978, section 208, p. 103.

As proposed when the President approved this Project, the Federal Inspector was to be the overall Project coordinator for the Government and principal point of contact on matters relating to Federal oversight. This proposal resulted from experiences during the Alaskan oil pipeline's construction where Federal agencies separately prescribed and enforced terms and conditions with minimal coordination.

The Executive Policy Board will advise the Federal Inspector on policy issues. According to Executive Order 12142 (June 21, 1979), the Executive Policy Board shall consist of the Secretaries of the Departments of Agriculture, Energy, Labor, Transportation, and the Interior; the Administrator of the Environmental Protection Agency; the Chief of Engineers of the United States Army; and the Chairman of the Federal Energy Regulatory Commission.

TWO KEY ISSUES REMAIN

In our opinion, two key remaining issues which are currently being considered by the Federal Energy Regulatory Commission and the Department of the Interior could lead to (1) lengthy administrative proceedings and/or (2) judicial review. These issues concern how the gas-conditioning costs will be treated and the requirements that will be included in the right-of-way agreements.

The Federal Energy Regulatory Commission rulemaking 1/ on the variable-rate-of-return mechanism presented in appendix I demonstrates the time and efforts required to resolve differences. The chronology of negotiations over the last year illustrates the difficulty in reaching mutually satisfactory resolutions to one of the many questions that must be answered before the Project is built.

Gas-conditioning costs

Before this Project can transport any Prudhoe Bay gas, the gas must be made to pipeline quality. The gas must be conditioned to remove impurities, compressed, and chilled.

The treatment of the conditioning costs can affect the gas' price and marketability--a key to the Project's viability and, thus, its ability to be privately financed--

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1/RM 78-12.

since the conditioning plant may cost about $2 billion. Conditioning costs would further increase the cost of Project gas. If the cost is added to the other already high costs, the gas will be harder to market. Alternatively, if the producers absorb some or all of the conditioning cost, the price to the user would be lower. However, the gas producers' margin between their costs and the maximum price allowed for the gas would be less, reducing their net return.

In Order No. 45 1/ (August 24, 1979), the Federal Energy Regulatory Commission concluded that natural gas producers in Alaska should be responsible for "conditioning" the gas for transport through the proposed Alaskan pipeline system. 2/ The three major producer interests in Prudhoe Bay reserves of natural gas are Exxon, Atlantic Richfield, and Standard Oil of Ohio.

The order concluded that the producers should be allowed to receive from purchasers the ceiling price specified by the Natural Gas Policy Act with the potential for one additional allowance. The Commission would allow applications for any extra costs incurred by the producers for removal of carbon dioxide to levels below three percent of total volume transported, should the Commission require it. In addition, the Commission will allow producers and pipelines to ask it for special relief if the order results in inequity or an unfair burden.

According to the Commission, the precise costs of preparing the gas for shipment, including carbon dioxide removal, are not yet known. However, the Commission will permit producers an allowance for carbon dioxide removal below 3 percent because, according to the Commission, a lesser amount of carbon dioxide will result in greater transportation efficiency, which will benefit the pipeline sponsors and customers rather than the producers. 3/

1/RM (rulemaking) 79-19.

2/On July 16, 1979, the President called for the producers to provide debt guarantees against cost overruns to make private financing of the gas pipeline possible.

3/The amount of natural gas liquids carried in the gas stream depends upon the carbon dioxide content of the gas as well as the pressure. Although the Commission established the pipeline pressure on Aug. 6, 1979, the carbon dioxide standard is to be resolved at a later date.

The order does not decide what the amount of the allowance should be or what conditioning costs will be. These depend on the facts of the particular cases still to come before the Commission under the normal application procedures.

The order is scheduled to become final in October 1979. However, petitions for rehearing may be filed. 1/

Stipulations to right-of-way agreements

Since the pipeline will be built on public lands, the State and Federal Governments will grant right-of-way agreements which give permission to use these lands. To protect the public interest in these lands, the agreements will include environmental and technical requirements in the form of stipulations that must be followed when building and operating the system.

A notice that the Government's proposed stipulations were available to the public was published for initial public comment on May 4, 1979. In our opinion, based on the Government's experiences with the oil pipeline, the Government may be less willing to negotiate concessions 2/ in this area. As a result, disagreements between the sponsors and the Government may lead to lengthy proceedings if the sponsors choose to negotiate.

SPONSOR-PERCEIVED RISKS OF ABANDONMENT

The Project's sponsors have estimated a one-in-three chance the Project will be abandoned in 1979. This estimate is almost three times higher than the 1978 estimate.

The sponsors reported 3/ in March 1979 to the Federal Energy Regulatory Commission that, as a pipeline, the Project has an unusually high risk of abandonment for

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1/On Aug. 31, 1979, the Commission scheduled a public hearing for Sept. 27, 1979.

2/The Department of the Interior does not look at the stipulations as a basis for making "concessions."

3/"Determining the Project Risk Premium for the Alaska Segment of the Alaska Natural Gas Transportation System, prepared by Northwest Alaskan Pipeline Company" (Mar. 7, 1979).

--technical,

--regulatory-political, and

--economic reasons.

The risk, they held, results from the Project's large size, high cost, and location. The sponsors thus pose questions about the Project's viability.

It should be noted that the sponsors prepared this report to justify a high risk premium for their investment. As a result, we present the information in this section of the report without accepting or rejecting what they said.

Technical risks

Technical problems the sponsors cited include (1) major design changes, (2) the need for coordinated development, and (3) gas availability uncertainty. Major design change risks arise partly because the sponsors have not resolved important design aspects for Arctic conditions. As a result, the sponsors said final Project designs could make the Project unexpectedly difficult, costly, or, at worst, infeasible.

The sponsors stated that if they adhere to their current schedule, they must proceed with preconstruction planning before they finish testing system designs. This may result in extensive design changes after construction begins.

Insufficient data and investigations can result in "drawing-board" solutions which later prove unsatisfactory--after construction begins. As the sponsors report,

> "The probability of geotechnical problems occurring during construction is high * * *. For example, unforeseen soil conditions might require a major realignment of the route in selected areas.
>
> "Similarly, major difficulties with equipment logistics or pipeline installations could lead to extended Project delays and major cost increases * * * the risks associated with execution of * * * plans will be high due to the harsh Artic environment and limited construction windows."

It appears to us that this Project may not be benefitting fully from experience gained in building the trans-Alaska oil pipeline. In a previous report 1/ we found that as much "site-specific" data as is economically practicable should be obtained before construction starts to minimize design-change costs. For this purpose also, technical and geological uncertainties should be thoroughly investigated.

In its comments on this report, the Department of Energy noted that

> "a large portion of the cost overruns on the Alaska Oil Pipeline, the Trans Alaska Pipeline System (TAPS), were attributable to the fact that the sponsors did not fully complete the development and testing of system design before construction began. As a result, geological and technical problems were encountered causing major changes to result in the construction phasing with consequent highly escalated costs."

In addition, it pointed out that there is a tremendous reservoir of technical and management material resulting from building and operating the TAPS pipeline: managerial shortcomings and problems in vertical and horizontal integration are documented for the record and could provide a valuable experience base for the Alaskan sponsors. 2/

Coordinating all Project segments and related activities in order to deliver Alaskan gas to lower 48-State markets at the earliest possible time is another potential problem reported by the sponsors. According to them, Project costs could rise significantly if all Project segments are not completed on schedule and close to budgeted costs. In addition, the gas-conditioning plant must be in place before the gas can flow.

Finally, owing to the short Prudhoe Bay reservoir production history and disappointing Alaskan drilling results--no new known reserves as of March 7, 1979--the

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1/"Lessons Learned From Constructing the Trans-Alaska Oil Pipeline" (EMD-78-52, June 15, 1978).

2/On July 9, 1979, the Alaskan sponsors noted that they may be able to acquire Alyeska subsoil and other data for $55 million but cannot make the expenditure unless the Federal Energy Regulatory Commission modifies Order No. 31. (See app. I.)

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sponsors stated that they are still not certain that 2 billion cubic feet a day of Alaskan gas will be available to the Project. This, they said, adds to the risk that the Project might eventually be abandoned.

Regulatory-political risks

Project sponsors believe that the Project is peculiarly vulnerable to adverse regulatory and political actions largely because it is a high-cost project passing through several political jurisdictions in two countries. Unacceptably high costs and Project interference could come, they suggested, from (1) terms and conditions attached to permits, (2) political demands, and (3) delays in Government decisions.

With respect to permit terms and conditions, the

> "Project Sponsors are exposed to an unusually large risk of unacceptable certificate conditions because the cost of the delivered gas will be high. Even if the conditions are not stringent, there are multiple jurisdictions making demands of the Project, and the scope and location of the Project will make compliance with these demands very expensive."

Political demands unrelated to Project permits are, in the sponsors' view, another threat to the Project stemming from multi-governmental jurisdictions. Particularly since the Project will pass through several jurisdictions having no consumer interest in the Project, some jurisdictions, the sponsors believe, may be tempted to make costly political demands on behalf of their citizens. For example, the jurisdictions might support native claims or special proposals to aid impacted communities.

In support of the above, the Department of Energy notes that at the TAPS post-mortem sessions following the opening of the system, dozens of interest groups attended the session

> "for the obvious purpose of planning the development of intensified demands on behalf of their constituents in construction of the natural gas pipeline."

Finally, the sponsors reported that the Project is so dependent on Government decisions that delays could force its abandonment. In addition, according to the sponsors, delay risks are greater for the Project, for unlike

> "* * * other pipelines, Government decisions may be delayed as a result of shifting national priorities * * *, inadequate cooperation at various levels (state v. Federal, agency v. agency, U.S. v. Canada), or the complexity of underlying issues * * *."

Economic risks

The Project sponsors fear that the expected costs of the technical and regulatory-political risks may induce prospective gas purchasers and Project investors to withhold their support from the Project.

The sponsors state that the

> "marketability risks that equity investors must assume are without precedent because of the high cost of delivering the gas to lower-48 markets and the expectation, supported by the TAPS experience, that there will be future real increases in this cost--increases that could reduce or eliminate the price advantage of natural gas over substitute fuels, notwithstanding rolled-in pricing."

Post 1979 risks

If the Project survives 1979 and required permits are eventually granted, the sponsors estimated that, during construction, abandonment risks will continue to be higher than normal for pipelines. Their probability of abandonment estimates diminished from 1 in 8 in the beginning to 1 in 100 in the final construction year. The sponsors attributed the higher-than-usual risks to such potential events as catastrophic occurrences, economically insolvable design and construction problems, restrictive stipulation interpretations, Government and citizen legal challenges, Canadian political conflict, running out of money, and supply contract cancellations.

Investors' 1979 attitude

The sponsors also reported in their March 1979 document "a high assessment of abandonment by potential investors, jeopardizing the Project financing plan." Their own abandonment probability estimates rose from about 1 in 8 in 1978 to about 1 in 3 (35 percent) in 1979. 1/ They ascribe the rise to (1) revised regulatory environment perceptions, (2) growing public awareness of obstacles, (3) optimistic reports concerning alternative natural gas sources, and (4) gas processing plant uncertainties.

Regulatory attitude

The sponsors perceived a change in regulatory attitude contrasting with the active Government support which led to Project approval when gas shortages were forecast. They said this perception led the sponsors in 1978 to curtail equity support during the first half of 1979. They cited the following as evidence: The Federal Inspector had not been appointed, 2/ the reorganization plan had not been implemented, 3/ and Government agencies had not been responsive to their requests for decisions or action.

Public doubts

The sponsors reported that "growing public awareness of the obstacles facing the project is causing the feasibility of [the Project] to be seriously questioned."

Examples they listed include a report to the Alaska State Legislature 4/ that the Project was "floundering" because of "marginal economics" and "abundant uncertainties

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1/On June 8, 1979, the Federal Energy Regulatory Commission in Order No. 31 (p. 74) rejected these probabilities as being unreasonably high and contradictory to assurances given to the President and the Congress at the time of the President's Decision, that the Project could be privately financed under the conditions imposed by the Decision.

2/The Federal Inspector was sworn in July 13, 1979.

3/By Executive Order 12142 of June 21, 1979, Reorganization Plan No. 1 of 1979, creating the Office of Federal Inspector for the Alaska Natural Gas Transportation System, became effective July 1, 1979.

4/The Alaska Highway Gas Pipeline: A Look at the Current Impasse, a Report to the Alaska State Legislature, Arlon R. Tussing and Connie C. Barlow, Jan. 12, 1979.

and risks." Another cited report 1/ for an Alaskan advisory board stated that

> "Regulatory delays, high transportation costs, and a general negative perception of the business climate in Alaska have resulted in an impasse over the matter of gas production and sale."

The sponsors concluded that

> "the spectre of TAPS delays, cost overruns, and regulatory, engineering and administrative problems never can be removed completely from the investment community's assessments of the Project risks."

Alternate sources

Publicity concerning possible alternate natural gas supplies have further undermined public confidence in the Project's future. The sponsors specifically mentioned optimistic reports about the potentially vast Canadian and Mexican natural gas supplies, the domestic surplus that unexpectedly developed in 1978, and optimism about potentially substantial lower 48-State reserves.

Supplemental segments

Uncertainties over constructing the gas processing plant and supplemental pipelines constitute the fourth reason why the sponsors concluded that abandonment risks rose in 1979.

THE SECRETARY OF ENERGY RAISES ANOTHER ISSUE--THE POSSIBILITY OF LOAN GUARANTEES

Although the sponsors have not finalized a private financing package or officially stated that they cannot do so, the Secretary of Energy, in response to a question from the Joint Economic Committee, recently raised the possibility of $2 billion to $3 billion in Federal loan guarantees for

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1/ A Current Perspective on Use of Natural Gas Liquids for Petrochemical Production in Alaska, prepared for the Royalty Oil and Gas Development Advisory Board of the State of Alaska by Bonner and Moore Associates, Inc., Jan. 10, 1979.

the Alaskan segment of this Project. In doing this, the Secretary and the Committee may have given potential investors including the Project's beneficiaries--the State of Alaska, gas transmission companies, and the gas purchasers--a reason to anticipate that the Government will bear some of the Project's financial burden without cost to them. It should be recognized, however, that without the enactment of specific legislation, the Department of Energy lacks authority to make loan guarantees to the Project.

The dialogue 1/ follows:

Question: Is there any action that the Federal Government can consider any option that we have, any sort of guarantee or any sort of appropriation, even, that might make it (the Project) feasible?

Secretary of Energy: Of course, the Congress, in approving the President's recommendation insisted, wrote in, that it should be privately financeable.

That is a decision that is, of course, reversible by the Congress. But the expectation has been for private financing.

I don't think that it is necessary to provide an appropriation, but certainly the Congress will not wish to reject out of hand the possibility of loan guarantees for the pipeline.

Question: How large would that kind of guarantee have to be, roughly; what is the ballpark?

Secretary of Energy: I think that if it is guaranteed for the first period of pipeline operations, that is the difficult period.

It should be a percentage guarantee of the cost of the pipeline.

1/Transcript of Proceedings, Hearing held before Joint Economic Committee, Annual Hearings on the Economy, Washington, D.C., Tuesday, Jan. 23, 1979, pp. 28-30.

Question: I am thinking of the potential liability to the Federal Government.

How big would it be?

Would it be a $2 billion, $3 billion, $4 billion guarantee? Would it be in that area? Bigger than that? Smaller?

Secretary of Energy: I think that one must look at the pipeline as several pipelines.

There would be no need, for example, for [an] American guarantee of a Canadian portion of that pipeline. The southern portion of the pipeline below the Canadian border that goes into Dwight, Illinois, would not be needed to (be) guaranteed because that is easily financeable.

So, one is dealing only with the component from the North Slope down to the Alaska-Canadian border.

That is the sum you mentioned of $2 or $3 billion, which indeed might be in the right ballpark.

Although the Secretary of Energy spoke of loan guarantees, other options, such as direct equity or debt investment should not be precluded out of hand. Loan guarantees have become popular because their supporters argue that the program is costless in the absence of a default. If the borrower repays the loan, the budgetary impact would be limited to administrative expenses. In case of default, however, the liability to the Government becomes substantial. Since loan guarantees could lead to further Federal financial involvement to ensure Project completion and operation if events force the sponsors to abandon the Project, better alternatives may exist to give the Government appropriate control over and a return on its investment, including possibly a management voice.

In addition, the suggestion for Federal financial involvement raises the question as to whether better alternatives will exist for investing Federal funds for additional gas production in the latter 1980s. The next chapter discusses this.

CHAPTER 3

ALTERNATIVES AND OPTIONS SHOULD BE EVALUATED BEFORE CONSIDERING FEDERAL FINANCIAL INVOLVEMENT

The Project offers a potentially significant domestic gas supply. Therefore, if its sponsors request Federal financing assistance because they cannot finance the Project alone, Project proponents will undoubtedly urge the Congress to quickly provide the needed assistance.

Reiterating his August 1977 condition that the Project is to be privately financed, the President on July 16, 1979, stated that participation from the Project's natural gas producers "* * * in the form of debt guarantees against cost overruns is required to make private financing possible." We do not assume that the oil companies involved will not as the President urged "* * * do their share to make progress on this pipeline possible." However, if they do not or other obstacles to private financing arise, we believe that the Congress needs to consider all its options before it responds to a request for Federal financial involvement in the Project.

If the sponsors seek Federal financial involvement, the Congress should consider the following questions.

1. Will alternative gas sources be available in the late 1980s to supply similar quantities of gas at similar or lower prices?

2. Will a satisfactory gas demand/supply balance in the late 1980s be achievable through (a) Government sponsored or directed restraints on demand and (b) tapping potential alternative gas sources?

3. Will Project gas in the 1980s reduce (a) our reliance on foreign energy and (b) our dollar outflows?

4. Do alternative forms of Federal financial involvement exist which may be superior to loan guarantees in giving the Government control over and a return on the public investment?

This chapter briefly discusses data and concepts relevant to these questions. While the data in this chapter are not our predictions, they do provide a point of departure. For example, we present the tables on pages 26 and 27 not as probabilities but as one of several possibilities.

Further, the data depend upon certain assumptions which time may or may not prove correct. One fundamental assumption in the chapter is that the Government will pursue programs and policies to restrain oil and gas consumption.

In addition, the chapter assumes that the Government will not unduly restrict proposals by private enterprises to augment U.S. gas supplies. Also, it assumes the Government will not begin any new programs for substantial financial assistance for developing unconventional sources of gas, an assumption that will need to be revised if the Congress adopts the President's July 16, 1979, import reduction program proposals. The President's program is oriented toward reducing oil imports. However, data and information presented in the program--such as potential production from unconventional natural gas sources amounting to 1 to 2 trillion cubic feet of gas per year in 1990--suggest that data in this chapter (including 1 trillion cubic feet of natural gas from unconventional sources in 1990) are not outside the realm of possibility.

This chapter presents an incremental approach to gas supply and demand in the 1980s to emphasize the need for indepth analyses of our energy situation in a future increasingly deficient in conventional energy sources. We believe it is not desirable to use, as absolute guidelines, such concepts as the country can use all the energy it can get or can use any energy source which will cost less than imported oil. Nonetheless, we believe that non-cost-related objectives, such as potential economic growth and the need to "back out" (that is, substitute for) foreign energy that would otherwise be imported, are proper considerations in making national energy decisions.

In its analyses, this chapter discusses potential impacts that may not prove to be substantial. This again is done in order to favor indepth analyses rather than oversimplified assumptions.

Finally, this chapter does not assume that the suggested analyses will be unfavorable to Federal financial involvement in the Project if it is needed.

ALTERNATIVES TO PROJECT GAS MAY BE POSSIBLE

The original Federal analyses in 1977 which supported the presidential and congressional actions to favor the Project were based, in part, on the rationale that Alaskan gas was needed immediately to help fill the 1980s gap between domestic natural gas production and demand. However, the energy situation has been altered since then in that it's possible that other sources might be tapped to supply or conserve similar quantities of gas at more reasonable prices. 1/ Conservation steps and domestic production from (1) intensified drilling in frontier areas and (2) unconventional sources might be less costly. In addition, nearby foreign energy sources (Mexico and Canada) and liquefied natural gas might offer gas supplies at less cost than that from the Project.

Further, the Project's gas may only minimally reduce our reliance on foreign oil or improve our dollar outflow for energy. Under the most favorable assumptions based on admittedly preliminary data, the Project's gas in 1985 could reduce energy imports equal to 425,000 barrels of oil a day but at about 20 percent more than the cost for imported oil ($23.50 per barrel in 1979 dollars). Similarly, the Nation's dollar outflow for energy (in 1979 dollars) could improve by up to $10 million a day ($3.7 billion annually). However, for this improvement the American consumer would initially pay American gas suppliers (in 1979 dollars) $12 million a day ($4.4 billion annually) for energy that might be available elsewhere for $10 million. Finally, if the gas stimulates new demand rather than substituting for existing uses, the Project's gas may not back out energy imports (that is, substitute for energy which would otherwise be imported).

THE LONG-TERM OUTLOOK FOR DOMESTIC NATURAL GAS PRODUCTION IS POOR

The general trend in total domestic natural gas output is for a steady decline through the end of the century, with

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1/The extent to which Alaskan gas might be more expensive than some or all supply increments economically usable in the 1980s is an open question not discussed in this chapter.

a temporary slowing from the 1980s to the mid-1990s. In the 1985-90 period, under a certain set of assumptions, demand for gas could exceed domestic natural gas production from 1 to 3 trillion cubic feet a year, even if Government inflation and gas-use policies restrain total demand. (See tables 1 and 2 on page 26.) 1/

While this Project could supply 800 billion cubic feet of gas a year to help close the 1985-90 gap, conservation and non-traditional domestic sources could possibly produce significantly larger amounts than have heretofore been anticipated. In addition, foreign sources could supply at least 2 trillion cubic feet yearly, assuming favorable Government policies (see table 3 on page 27). Some of these alternate sources might be available at less cost than Project gas.

CONSERVATION'S POTENTIAL IS LARGELY UNTAPPED

Although potential savings from energy conservation are much larger, 2/ a moderately successful program for commercial and residential conservation could reduce demand by 500 billion to 1 trillion cubic feet of gas a year by the late 1980s--a 5- to 10-percent decline in expected consumption. For example, a continuing program to keep thermostats in public buildings at a lower level, consistent with the President's original short-term contingency program submitted to the Congress March 1, 1979, 3/ could save an estimated 400 billion cubic feet of gas annually. Additional

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1/Some other possible scenarios are given by the American Gas Association in "The Future for Gas Energy in the United States," dated June 1979. For example, it forecasts an "economic" or "not restrained" demand reaching 25.2 to 27.7 trillion cubic feet of gas per year by 1990 and a supply of over 28 trillion cubic feet per year of gas from all sources "under an energy policy which encourages development of supplemental supplies" (p. 22). On page 13, it projects natural gas production from "conventional lower-48" sources amounting to 16 to 18 trillion cubic feet in 1985 and 15 to 17 trillion cubic feet in 1990.

2/See GAO report entitled "The Federal Government Should Establish and Meet Energy Conservation Goals" (EMD-78-38, June 30, 1978).

3/44 FR 12906-12917, dated Mar. 8, 1979.

Table 1

Domestic Natural Gas Supply

(estimated in trillions of cubic feet)

	1977	1985	1990
Lower 48-States	19.3	a/16.4	a/15.1
Frontier (outer continental Shelf and S. Alaska)	0.1	a/0.4	a/1.2
Alaska Highway Gas Pipeline	-	0.8	0.8
Total with the Project	19.4	a/17.6	a/17.1
Total without the Project	19.4	a/16.8	a/16.3

a/Assumes limited success from (1) intensified drilling following gas price deregulation and (2) new Outer Continental Shelf lease sales.

Table 2

U.S. Gas Demand

(estimated in trillions of cubic feet)

	1985	1990
Estimate No. 1 (1978) (note a)	18.7	17.6
Estimate No. 2 (1979) (note b)	19.0	19.0

a/Assumes a 3.1-percent real Gross National Product growth during the 1980s. Also, assumes phasing out of gas for industrial and electrical-utility boilers will be essentially complete by 1990.

b/Assumes a significant reduction in boiler gas use.

NOTE: In these tables, we are not predicting the future. Rather, we present one possibility which would reflect, on the conservative side, current assessments of both (1) energy difficulties facing the Nation and (2) potentials for future improvement.

Table 3

Potential Offsets To Demand/Supply Shortfalls

(in trillions of cubic feet)

	1985	1990
Domestic sources:		
Conservation (note a)	0.5 to 1.0	1.0
Intensified drilling (note b)	0.5	0.5
Unconventional sources (note c)	0.2 to 0.5	1.0
Foreign sources:		
Canada (note d)	1.0	1.0
Mexico (note e)	0.5 to 1.0	1.5
Liquefied natural gas (note f)	1.0 to 1.7	2.0

a/Includes only programs to get "more for less" by reducing waste and improving efficiency in the use of energy without causing economic decline, personal discomfort, or undue restrictions on freedom of choice. For example, the Federal Power Commission estimated in 1977 that a cost-effective $532 investment per household would create 200,000 to 220,000 jobs in the next 10 years and reduce residential gas use 1.13 trillion cubic feet a year. (Marquis R. Seidel, "The Costs of Cold Weather and the Conservation of Residential Heating Gas," Federal Power Commission, Feb. 28, 1977.)

b/Assumes a higher rate of success than table 1.

c/Assumes no special Government incentives and that the Government will not be unduly restrictive in issuing permits and licenses.

d/Assumes that existing contracts will remain firm.

e/Assumes a U.S.-Mexican agreement.

f/Assumes that the Government will change its present restrictive policies in granting licenses.

NOTE: In this table, the alternatives are significant--not the magnitudes. The data presented herein were derived from published sources, briefly from the oil and gas industry. In selecting data for preparing these tables we are not predicting the future. Rather, we present one possibility which would reflect on the conservative side current assessments of both (1) energy difficulties facing the nation and (2) potentials for future improvement.

reductions could come from such steps as improved home and building insulation, reduced commercial lighting, better thermostat control in private homes, and shorter retail store hours.

For maximum savings through conservation, perhaps our cheapest "source" of energy, the Government must develop a clear and consistent conservation program. Although crises, shortages, and price rises tend to reduce consumption, a successful program will depend, to a large extent, on consumers developing attitudes and habits which foster efficient energy use. Without such attitudes and habits, consumption tends to increase as consumers adjust to supply and price situations.

The Government's policy on fuel-switching illustrates the need for a clear and consistent program to conserve scarce domestic resources. When the Department of Energy forecasted in 1978 a trillion-cubic-foot natural gas "surplus" or "bubble," the Secretary of Energy abruptly adjusted the Government's program on fuel-switching. He advocated using the trillion cubic feet for such uses as boiler fuel in dual-fired facilities, that is, existing plants with the capability to use both oil and natural gas. In so doing, the Secretary treated an apparently temporary regional market imbalance as a real national surplus and, in addition, countered a well-defined gas conservation effort. The Secretary took the action (1) as "a major element of the response plan to the Iranian crisis" and (2) because "absence of markets for gas will lead to a reduced exploration and development, lower domestic gas supply, and higher energy impacts in the future."

This "bubble" cannot properly be treated as a surplus to the Nation at a time when domestic production has been exceeding new finds, resulting in steadily declining domestic reserves. Instead, the trillion cubic feet represents the difference between (1) the ability of certain regional areas to produce gas under existing field rules and (2) their ability to market their gas at this time. The Secretary chose to have this gas used as soon as possible for immediate short-term goals.

By seizing a short-term opportunity, the Secretary

--obscured longer term goals for domestic gas policy,

--added to public confusion over whether a Government energy policy exists,

--may have discouraged investigation of means to encourage (1) gas exploration and development other than by stimulating demand and (2) storage for the future, and

--may have adversely affected a desirable natural gas conservation trend.

For example, in 1978, the American Gas Association announced an advertising campaign to sell more natural gas. This could turn a so-called temporary "surplus" into permanent demand, intensifying future problems.

Intensified drilling may pay off

Intensified industry drilling programs in lower 48-State frontier areas following recent price rises might add at least an additional 500 billion cubic feet of gas annually to anticipated supplies by the late 1980s, even if drilling is only moderately successful.

Production may begin from unconventional sources

Annual gas production from unconventional sources might reach at least 200 billion cubic feet by 1985 and 1 trillion cubic feet by 1990. Sources could include gas from (1) Devonian shale; (2) synthesis, using coal and other fuels such as peat; (3) marginal resources such as tight sands, coal bed methane and, possibly, geopressurized water zones saturated with natural gas; and (4) agricultural crops, agricultural residues, food and wood-processing waste, and other biomass resources.

Modest amounts from these various unconventional sources could add up to the estimated total and production could conceivably be higher. For example, the Office of Technology Assessment estimates that about 1 trillion cubic feet of gas could become available from Devonian shale in 1990, 1/ and the Department of Energy estimates that

1/"Status Report on the Gas Potential from Devonian Shales of the Appalachian Basin," Office of Technology Assessment, Nov. 1977.

unconventional sources could provide 1.3 to 6.2 trillion cubic feet in 1990. 1/ Another study 2/ prepared for the Department of Energy estimates that 1.5 trillion cubic feet of gas would be available from tight sands in 1990. Finally, production from new technologies alone without "appropriate incentives" could yield 100 billion cubic feet of gas in 1985 and 500 billion in 1990, according to the gas industry.

In addition, unconventional sources could supply fuels which could, in part, substitute for gas. 3/ While none of these may develop as major supply sources, in total they could become significant.

Foreign gas sources are increasing

If the United States has to look to foreign sources in the 1980s (world-wide known gas reserves have been increasing), overland Canadian and Mexican natural gas and overseas liquefied natural gas could help meet the domestic supply shortage.

Canada

Canada could continue to export gas to the United States at its current rate of 1 trillion cubic feet a year. Although this supply was somewhat uncertain in the past, recent large discoveries in Alberta and the Canadian Arctic have led Canadian producers to push for additional sales to the United States. This might result in (1) continued supplies and (2) greater assurance of uninterrupted delivery.

However, future Canadian exports will depend on several factors, including Canadian Government policies, future gas discoveries and deployments, and construction of pipelines.

1/"Commercialization Strategy Report for Recovery of Natural Gas from Unconventional Sources," Draft Department of Energy report.

2/"Enhanced Recovery of Oil and Gas," Lewin and Associates, Inc., Feb. 1978.

3/See for example, "Conversion of Urban Waste to Energy: Developing and Introducing Alternate Fuels From Municipal Solid Waste" (EMD-78-38, Feb. 28, 1979).

For example, if, under existing policies, Canada will not consider its Mackenzie Delta gas in determining exports unless the Project is built to transport both Alaska and Mackenzie Delta gas south, Canadian exports to the United States may be affected.

Mexico

Mexico could supply 0.5 to 1.0 trillion cubic feet of gas a year by the mid- to late-1980s. 1/ Large discoveries of both oil and natural gas give Mexico the potential to become a major energy source for the United States.

However, the United States and Mexican Governments must agree on an export program and sale terms. For example, the Mexican national oil company agreed to supply several American companies 800 billion cubic feet of gas annually for 6 years at a price tied to distillate fuel oil price in New York Harbor (about $3 per thousand cubic feet at that time) but with no firm delivery guarantees. These terms were not acceptable to the U. S. Government and have not been approved. Since Mexican gas exports will depend, in part, on oil exports, Mexican gas supply estimates are uncertain until a U.S.-Mexican and other agreements are concluded. 2/

Other foreign countries

If the Government were to grant all pending plant construction proposals as of June 1978, the United States could import up to about 2 trillion cubic feet of liquefied natural gas a year by 1985. 3/ With growing world gas supplies, foreign countries might be able to supply at least 2 trillion

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1/See for example, "Mexico's Oil and Gas Policy: An Analysis," prepared for the Committee on Foreign Relations, United States Senate and the Joint Economic Committee, Congress of the United States by the Congressional Research Service, Library of Congress, Dec. 1978.

2/In late Sept. 1979, Mexico agreed to export 300 million cubic feet of natural gas daily at $3.625 per million Btu (as of Jan. 1, 1980). This price equates to about $21 per barrel for crude oil.

3/"Status of LNG Supplemental Gas Projects," American Gas Association Gas Supply Review, June 1978.

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cubic feet annually during the 1980s at prices competitive with Alaskan gas. For example, in early 1979, Algeria and Indonesia sold liquefied natural gas to American companies at a price equivalent to $12 to $18 a barrel of oil. At these prices, liquefied natural gas would cost less than the expected 1985 cost of Project gas (about $35 per barrel of oil equivalent in 1979 dollars).

PROJECT GAS MAY MINIMALLY AFFECT ENERGY IMPORTS

Project gas theoretically could reduce energy imports by about 5 percent in 1985. However, any reduction may be less than theoretical estimates because (1) substitution opportunities are limited, (2) users may not adopt voluntary import reduction measures, and (3) Government policies may encourage increased consumption instead of import reduction.

Gas may not substitute directly for imported energy

Project gas may not substitute for imported energy on a one-to-one basis since some users may not be able to make substitutions. For example, Alaskan gas can substitute for imported fuel only if it goes to consumers which are directly or indirectly dependent on foreign fuels. Also, gas can substitute for oil as a space heater or boiler fuel only if the user already uses oil and can economically shift to gas.

Users may not adopt needed substitution measures

As long as substitution measures continue to be voluntary, energy users may not take steps to reduce reliance on foreign energy sources. For example, a person burning oil in a boiler may not be willing to replace it with Project gas unless it is a good economic tradeoff.

Furthermore, changing price relationships may cause some users to shift from gas to oil or from non-imported fuels to gas or oil. For example, if gas will no longer be underpriced compared to oil, users may no longer accept gas supply interruptibility and storage difficulty and may shift to oil. Also, in theory at least, relative costs, availability, and environmental considerations could induce some users to substitute gas for coal, our most abundant domestic fuel source.

Finally, Project gas may induce people to start new enterprises, thereby creating new demands for energy instead of reducing imports. For example, by making it possible to extend gas lines into farm and ranch areas, Project gas may enable people to start new suburban residential developments or build new factories or electrical generating plants. Theoretically, enough new demand could be created to burn the Project's entire gas supply.

Government actions may stimulate gas demand

Government policies to (1) assure Project success and (2) encourage development of domestic gas supplies may increase total gas demand. Increases in demand may offset opportunities for reduced reliance on foreign energy sources.

The Government's commitment to the Project creates a political and regulatory interest in it. This interest may result in a desire to assure profitable markets for Project gas so that the Project is viable and its capacity is fully used. Thus, if new customers should be needed to support the market for Project gas, the Government may feel obligated to help create them. For example, the Government might relax environmental standards standing in the way of an activity that would use Project gas. Similarly, if Project revenues prove insufficient to provide adequate returns to investors or owners of the gas deposits, regulators may change the rules to allow revenues to increase.

A Department of Energy position that favors demand increases is the program to prevent "the shutting-in of domestic (gas) capacity or diminishing the domestic incentives for drilling" for gas. For this purpose, for example, the Secretary of Energy has recommended that the trillion cubic-foot gas surplus--which the Department of Energy forecast in 1978--be burned off by substituting gas for oil in dual-fired facilities whenever possible.

This position favors increasing existing demand so that it will continue to press on supplies, the implications of which warrant careful analysis. Opening lower 48-State markets to Alaskan gas will relieve pressure on lower 48-State supplies and discourage, at least in theory, drilling for gas there. To prevent this, the Secretary may have to recommend policies or support actions that will further increase gas consumption enough to absorb Alaskan gas. Such actions could stimulate total demand and further limit the gas' ability to substitute for foreign energy.

PROJECT GAS MAY MINIMALLY AFFECT THE BALANCE OF PAYMENTS

One objective of reducing energy imports is to improve the Nation's balance of payments. Energy imports, primarily oil, in the absence of the President's import reduction program might amount to 9 million barrels a day by the latter 1980s. If oil would then cost about $23.50 a barrel in 1979 dollars, Americans would pay foreigners up to $77 billion a year for this energy. This large dollar outflow could have serious adverse impacts on the dollar's international value and on America's cost of living and economic well-being.

By buying Project gas, based on admittedly preliminary data, the American public would pay in 1985 about $4.4 billion in 1979 dollars for energy that may be obtainable from foreign sources for $3.7 billion. However, whatever the Project gas cost will be, under conventional methods of utility regulation, the transportation portion of the cost would decrease annually as the Project investment is depreciated. Paying any extra amount may not buy the American public any significant improvement in its imbalance of international payments since (1) Project gas may minimally affect imports, (2) the purchase of Project gas would lead to some dollar outflow, and (3) part of the dollars paid to foreigners will flow back to the United States for goods and services.

As Project gas may not significantly reduce energy imports, it may not appreciably reduce the dollar outflow. To the extent that Project gas fails to stem the outflow, America's balance of payments will not improve.

Even if it could reduce imports on a one-to-one basis, Project gas could not decrease dollar outflows by $3.7 billion. This is because the Project would generate its own dollar outflows--mainly payments to Canadian companies transporting Alaskan gas through Canada. The preliminary estimated transportation payments to Canadian companies in the first delivery year would total about $1.4 billion, or 38 percent of what would be paid for a comparable amount of foreign energy. These payments are scheduled to decrease over the life of the Project. However, even under assumptions of no need for additional capital outlays for repairs and maintenance, estimated transportation payments would still amount to about $400 million in the Project's twentieth year. In addition, interest and dividend payments to foreign investors in, and owners of, (1) Alaskan gas 1/ and (2) American pipeline companies will cause the outflow of an unestimated amount of dollars. In addition, products and services purchased abroad will also lead to dollar outflows. Project construction and operations will thus lead to dollar outflows which will offset, at least in part, any savings from import reductions, limiting the potential improvement in the balance of payments.

Part of the dollars spent for foreign energy will return to the United States to pay for goods and services purchased by countries supplying the energy. A larger proportion may promptly return to the United States if the energy payments are made to developing countries rather than to industrial countries. For example, Mexico, which has in recent years been securing about two-thirds of its imports from the United States, needs a great variety of goods and services for its development. If the United States buys gas from Mexico, one logical place for Mexico to spend this money for industrial equipment and supplies is the United States. This would reduce some of the adverse impact that the energy imports have on America's balance of payments.

1/For example, the British Petroleum Company Limited is the majority shareholder in Standard Oil of Ohio.

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

After extensive studies and detailed proceedings, the President recommended and the Congress approved construction of the Project. This recommendation and approval specified that the Project could and would be privately financed. Federal financing assistance was "explicitly rejected."

When the possibility of $2 to $3 billion of loan guarantees to make the Project "feasible" was publicly discussed, we decided to concentrate our review on (1) the administration's current position with respect to Federal financial involvement and (2) if such involvement is proposed, whether further analyses are needed before an informed decision could be made on a proposal.

In this report, we conclude that:

1. The administration's official position on Federal financial involvement has not changed.

2. It is premature at this time to consider Federal financial involvement since (a) it is not known that help will be needed and (b) some important issues have not been resolved.

3. Pressure may build for the Congress to make decisions quickly if such involvement is requested because the Project offers a potentially significant domestic gas supply.

4. Further indepth analyses are needed before a decision on involvement can be made owing to (a) events occurring since 1977 and (b) uncertainties as to the future.

In this report, we have not attempted to determine whether it is in the national interest to build the Project or, if it is built, when construction should start. If the Project is privately financed and constructed without Federal financial involvement, these, of course, will not be public issues. Also, if Federal financial involvement is proposed, the Congress will need to consider what effect its various options would have on the construction of the Project and the role of northern Alaska gas in the national energy picture.

We have reached no conclusions on what the congressional decision should be on the question of Federal financial involvement. We believe that the analyses we recommend should help objective decisionmaking.

The Project's targeted on-line or in-service date has been delayed and the potential exists for further delay. The date for delivering Prudhoe Bay gas to lower 48-State markets has been changed from January 1, 1983, to late 1984. Similarly, proposals to deliver Canadian gas have been delayed from the winter of 1979-80 to (1) November 1980 for deliveries to the West and (2) November 1981 for deliveries to the Midwest.

Further delays are possible while remaining problems and issues are resolved. For example, two key remaining issues (allocating gas-conditioning costs and establishing environmental and technical stipulations) could lead to (1) lengthy administrative proceedings and (2) judicial review. Until these issues are resolved, we question whether a valid decision on private financing or Federal financial involvement can be made. As a result, we believe these matters should be completed before the Government considers any financial involvement.

A number of other uncertainties also exist. For example, although the sponsors have not officially stated that the Project cannot be privately financed, they have reported an unusually high risk of Project abandonment. The risk, they held, results from the Project's large size, high cost, and location. The Federal Energy Regulatory Commission does not agree with the sponsor's risk assessment.

The Alaskan sponsors estimate a 35-percent chance of abandonment in 1979--up from about 12 percent in 1978. The sponsors attribute the 1979 estimate to

--revised regulatory environment perceptions,

--growing public awareness of obstacles,

--optimistic reports concerning alternative natural gas sources, and

--gas processing plant uncertainties.

In addition, there may be more cost-effective alternatives which could secure or conserve a similar or greater amount of gas or the equivalent amount of energy in the 1980s. Among the potential alternatives are

--conservation steps,

--intensified lower 48-State drilling,

--liquefied natural gas, and

--unconventional domestic resources.

Also, while the Project offers a potentially significant future domestic gas supply, it is not now clear compared to alternatives (1) what the price of its gas will be, (2) to what extent it would reduce energy imports, and (3) what its international implications would be. For example, figures now indicate that in 1985, the American consumer would pay Project gas suppliers $4.4 billion (in 1979 dollars) annually for energy that might be available elsewhere for less.

In addition, the Secretary of Energy recently discussed the possibility of $2 to $3 billion in Federal loan guarantees for the Alaskan segment of this Project. This may have given potential investors a reason to anticipate that the Government will bear some of the Project's financial burden.

In any event, Federal loan guarantees, at this time, are inconsistent with (1) the President's 1977 Decision which (a) found that the Project could be privately financed and (b) "explicitly rejected" Federal financing assistance; (2) the U.S./Canadian agreement applicable to northern natural gas pipelines which calls for private financing; and (3) the Senate report which stated that rolled-in pricing was to be the only Federal subsidy of any type, direct or indirect, to be provided. Thus, without specific legislation, the Department of Energy lacks authority to make loan guarantees to the Project.

MATTERS FOR CONGRESSIONAL CONSIDERATION

At this time, Federal financial assistance has not been requested. However, in view of the above, we believe that if assistance is requested for the Project, the Congress should not consider Federal financial involvement until (1) all regulatory procedures are completed and (2) the sponsors show conclusively that the Project cannot be financed privately.

However, if the sponsors demonstrate the need for Federal financial assistance, the Congress should evaluate alternatives to Project gas, including the Secretary of Energy's report called for in our recommendation below, before it considers granting financial aid to the Project.

Finally, if the Congress decides to grant financial aid, it should (1) evaluate all feasible alternatives to Federal financial involvement (not just loan guarantees) and (2) ensure that the public interest is served and that the Government has an appropriate control over and return on its investment.

RECOMMENDATION TO THE SECRETARY OF ENERGY

Although this report concerns only the 800 billion cubic feet of gas the Project could supply annually, decisions on the Project cannot be isolated from the Nation's total energy situation. This is especially so in light of

--the energy developments since the first decision on this Project,

--the uncertainties noted in this report, and

--the President's July 16, 1979, Import Reduction Program, in which he urged the heads of the gas-producing companies to proceed with the financial assistance needed to build the Project.

In our opinion, the President is correct in stressing the need to explore a variety of alternate sources for supplying the Nation's future energy needs. However, at the same time, we would emphasize the importance of indepth benefit/cost analyses for determining the best action courses, both in-kind and amount.

We believe it is incumbent upon the Department of Energy to (1) analyze and propose how the Project fits in to the overall energy picture, (2) show how the cost of Project gas relates to the cost of alternative sources, and (3) evaluate the type of Federal financial involvement that could be used and the tradeoffs to be made. Using this information, the Congress could then make an informed decision on how best to invest Government funds to meet national energy needs.

Therefore, we recommend that:

--The Secretary of Energy, within 60 days from the date of this report, should provide the Congress an analysis showing how this Project now fits in with the overall national energy plan and strategy to satisfy the Nation's future energy needs. 1/ The analyses we recommend should provide a valuable input for congressional consideration of the President's Import Reduction Program that he announced on July 16, 1979. Items included in this analysis should include for the Project and each feasible alternative detailed information on

(1) the amount of gas that would be supplied,

(2) the timeframe for delivering the gas,

(3) the costs, and

(4) (a) the impact on our reliance on foreign energy and (b) the international implications.

--In addition, if the sponsors officially state that the Project cannot be privately financed or if Federal financial assistance is requested for the Project, the Secretary of Energy should provide the Congress, within 90 days of that time, his recommendation on the matter of Federal financing involvement. In support of his recommendation, the Secretary should provide a detailed analysis of the Project and cost-effective alternatives which might secure or conserve a similar or greater amount of gas or equivalent amount of energy. The Secretary's report should demonstrate why his recommendation is the best course

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1/The Department of Energy Organization Act (Public Law 95-91, Aug. 4, 1977) requires the Secretary of Energy to (1) provide an energy supply/demand projection as a part of the annual report and (2) develop a National Energy Policy Plan which would, in part, estimate energy supplies and evaluate trends in energy prices. While this analysis we recommend could be a part of the required Organization Act report or plan, the situation dictates a separate submission which focuses on the Alaskan gas issue.

of action. In addition to all items listed for the Secretary's first report, this analysis should evaluate

--the amount and kind of Federal financial involvement and

--the benefit to the public that the involvement would buy.

In addition, the analysis should compare the benefits that the alternative sources could provide if they received (a) the same amount and type of Federal financial assistance as the Project would receive or (b) an amount approximating that requested for the pipeline.

CHAPTER 5

AGENCY AND COMPANY COMMENTS AND OUR EVALUATION

In this chapter we attempt to highlight the major concerns that reviewers of the draft of this report noted. Appendices II through IX contain complete copies of the comments; our detailed responses to them are in appendix X.

DEPARTMENT OF STATE

The Department of State points out that it has no reason to expect that the Project will not be privately financed. It notes that the President proposed and the Congress approved the Project on the basis of private financing. In addition, a U.S./Canadian agreement requires private financing. (See app. IV.)

According to the Department, it is highly premature to assume (1) that private financing will not be available and (2) that the Congress needs to consider all of its options before dealing with a request for Federal financial assistance.

The Department's comment is misleading. The report states that the Congress needs to consider all its options only _if_ a proposal is made for Federal financial involvement.

We believe that being alert to possible events is not premature. Events have led to public discussion of a possible need for Federal financial involvement in the Project. We do not believe that it would be good public policy to be totally unprepared for this possibility.

If the sponsors request Federal assistance, Project proponents will undoubtedly urge the Congress to quickly provide the needed assistance. Thus, we have recommended a framework for Government action _before_ any request has been made.

FEDERAL ENERGY REGULATORY COMMISSION

The Commission's main comments relate to our use of the economic concept of a gap between domestic supplies of natural gas and total domestic demand for gas. Instead, they suggest that a more analytically correct approach is to think of all supplemental gas supplies as substitutes for oil, and all should be utilized that are less expensive than imported oil. (See app. II.)

The report uses a gap or incremental approach to emphasize the need for indepth analyses of our energy situation in a future increasingly deficient in conventional energy sources. The concept of this gap can be found in the President's Decision on this Project and the National Energy Plan of April 1977.

We do not agree with the Commission that all supplemental gas supplies should be treated alike except for cost. Each source, together with its socioeconomic, political, and national security impacts, is different. Therefore, decisions on each source must be made within the framework of a comprehensive national energy plan.

Such a plan must rest on a variety of considerations and must deal with (1) supply and demand and (2) the short-and long-term welfare of our country. Some considerations are

--national security,

--economic growth,

--inflation control,

--mutually supportive international relations,

--environmental quality,

--national productivity, and

--gas and other industry stability.

Thus, cost is an important consideration in energy policies but should not necessarily be controlling.

DEPARTMENT OF ENERGY

The Department disagrees with two statements we make concerning actions the Secretary of Energy took. They state that he did not (1) raise the possibility of loan guarantees or (2) abrubtly reverse the Government's policy on fuel switching. (See app. III.)

Since we cannot agree with the Department on the use of the phrase "raise the possibility," we have included the colloquy in which the Secretary discussed the possibility (see pp. 19 to 21). In this way, the reader can judge for himself.

We mention the change in the fuel-switching policy to point out the (1) relevance of indepth analyses and (2) the possibility of side effects from actions taken to reach a specific goal--such as oil import reduction. The report recognizes that the Secretary's action was taken as a trade-off between short- and long-term objectives. From a concerned public's viewpoint, however, the change was abrupt and may have undesirable impacts.

THE DEPARTMENT OF THE INTERIOR

Most of the Department's general comments focus on economic issues that it thinks should be in this report. This report stands on its own. However, such issues could be included in the analyses we recommend. (See app. VI.)

In its specific comments, the Department notes that it does not look at the proceedings for the right-of-way agreement as an opportunity for delay or as a basis for making concessions.

In our opinion, the Department, because of its environmental and other concerns, may be reluctant to make concessions in the stipulations. We suggest the possibility of lengthy proceedings only _if_ the sponsors choose to negotiate.

The Department was exceptionally late in providing its comments.

THE FEDERAL INSPECTOR FOR THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

The Federal Inspector was reluctant to provide detailed comments. However, he stated that he had reservations about some of GAO's analyses and recommendations.

He commented that the Project's economic and financial viability are still being evaluated by the free market. In his view, the marketplace should be given an opportunity to work its free will.

We agree that the marketplace should be given the opportunity to work its will before Federal assistance is considered and are pleased that the Federal Inspector is on the job.

NORTHWEST ALASKAN PIPELINE COMPANY

The Northwest Alaskan Pipeline Company expressed concerns over the report's "misstatements and inaccuracies" and articles concerning the draft in the Canadian press.

We specifically requested that the company provide any supporting data to correct the alleged, but unspecified, misstatements and inaccuracies. The company provided none.

NORTHERN NATURAL GAS COMPANY

The Northern Natural Gas Company states that substantially all the problems described relate to the Alaskan segment and believes that there should be additional discussion of the proposal to "pre-deliver" Canadian gas.

The report shows that the question of Federal financial involvement has been raised only for the Alaska segment. The analyses we recommend will require the comprehensiveness the company suggests.

PACIFIC GAS AND ELECTRIC COMPANY

The Pacific Gas and Electric Company commented (1) that the Project stands the danger of being "studied to death," and (2) that speculating on what should be done if the Project were unable to obtain private financing runs the risk of becoming a "self-fulfilling prophecy."

We see no danger that our recommendations will cause the Project to be studied to death. All present activities can continue without regard to the Department of Energy analysis that we suggest.

We did not initiate any actions to question the sponsor's ability to secure private financing. Such questions were raised elsewhere. In addition, we did not institute any suggestion that the Government should or should not get financially involved in the Project. Our prime concern is that the Government should be in a position to make an informed decision _if_ Federal financial assistance is proposed.

We believe that getting prepared for a prompt, informed decision on a public question is fully in the national interest.

FEDERAL ENERGY REGULATORY COMMISSION'S RULEMAKING TO DEVELOP A VARIABLE-RATE-OF-RETURN MECHANISM

The variable-rate-of-return mechanism for the Alaska Highway Gas Pipeline Project is being established through the regular rulemaking procedures used by the Federal Energy Regulatory Commission. In such rulemakings, the Commission first makes a specific proposal in a public notice. Then the Commission permits all interested parties to provide written comments on (1) the proposal and (2) the proposals submitted by the other interested parties. Sometimes the Commission also provides for oral arguments or other proceedings before issuing a final order.

THE COMMISSION'S PROPOSAL

On May 8, 1978, the Federal Energy Regulatory Commission proposed a variable-rate-of-return-on-equity based on how well the Project meets budgeted costs. The Commission proposed that a cost-performance ratio, the ratio of actual to projected costs, be used as a measure. If the performance ratio was 1.0, actual and projected costs would be equal. Similarly a 1.3 ratio would mean that actual costs exceed projected costs by 30 percent, and so on. Actual costs, however, would be adjusted for inflation and certain changes in scope.

THE SPONSOR'S RESPONSE

In their May 31, 1978, response, the Project sponsors contended that the initial proposal, if accepted as proposed, would preclude further sponsor investment, penalize equity capital contributed during a time of cost overruns, and make the entire financing plan infeasible by reducing the rate-of-return on Project equity. The sponsors noted that proceeding with financing would be virtually impossible unless (1) the equity rate-of-return were considerably above normal to compensate investors for their extraordinary risks; (2) the return were as certain as possible at the outset to attract investment; (3) and the rate were within a narrowly prescribed range, that is, not below the minimum level reasonable for this Project.

In June 1978, the sponsors added that the variable-rate-of-return should

--not apply to those portions in the contiguous 48 States, as such construction is conventional pipelining which involves conventional financing and no unusual cost overrun risks;

--not apply to all equity but be limited to varying the allowance permitted for funds used during construction;

--have limits established that are reasonable for Project investors as a practical consideration for securing necessary funds;

--not be used to reward or penalize cost changes outside the sponsors' control such as inflation, dictated scope changes or <u>force majeure</u> reasons; and

--recognize the effect the Government has on ultimate Project costs since governmental supervision "holds the potential for significantly higher costs."

Finally, the sponsors did not want the variable-rate-of-return tied to cost estimation. Since (1) the cost estimate forms the basis for the capital pool needed before construction begins and (2) the sponsors anticipate that lenders will insist on a commitment pool larger than the estimate to cover possible overruns, assembling the capital pool becomes increasingly more difficult as the cost estimate increases. Further, if the Commission holds that Project sponsors will be penalized by Government-caused cost escalations, the sponsors must consider this contingency when preparing their cost estimate.

In summary, the sponsors stated:

"Our efforts to pull from the comments the foregoing principles does not constitute the Partnership's 'wish list' for this rulemaking, with the partners willing and able to move forward if some--as opposed to all--are accepted by the Commission. As a simple statement of fact, we necessarily advise the Commission that inclusion of all of these principles are essential to a variable rate of return mechanism. They are essential, that is, if the project is to be built with private sector financing."

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THE COMMISSION'S SEPTEMBER REVISIONS

On September 15, 1978, the Commission revised its earlier proposal and

--removed the Western Leg from having a variable-rate-of-return;

--noted that, when established, the values may differ for the Eastern Leg and the Alaskan segment;

--defined the cost-performance ratio as the ratio of actual construction costs, including an allowance for funds used during construction (adjusted for inflation), divided by estimated construction costs (adjusted for scope changes); and

--determined that it will separately define what will be allowed as a scope change and the procedure to make any adjustment.

The Commission also provided an illustrative schedule to show how such a schedule could be structured, using a 17-percent rate of return at the 1.3 cost-performance ratio the President's Decision assumed likely to occur.

Rate-of-Return at Specific Performance Ratios

Performance ratio	Rate-of-return on equity (percent)
0.8	22.6
1.0	19.7
1.2	17.8
1.3	17.0
1.4	16.5
1.6	15.3
1.8	14.5
2.0	13.9
2.2	13.3
2.4	12.9

Translating the Commission's example performance ratio into dollar amounts makes the range of costs covered more meaningful. For example, if we inflate the 1975 Alaskan cost figure (assuming 5-percent annual inflation) to base the performance ratio on 1979 dollars, a $2.4-billion 1975 dollar amount becomes $2.9 billion in 1979 dollars. Using 1979 dollars as the basis, the rate-of-return-on-equity for the Alaskan segment would be:

--19.7 percent, at a $2.9-billion adjusted cost level;

--17 percent, at $3.8 billion;

--15 percent, at $4.8 billion; or

--12.9 percent, at $7.0 billion.

If actual and estimated costs after adjustment were equal (1.0 cost-performance ratio), the Commission would allow a 19.7-percent rate-of-return-on-equity. At a 1.67 ratio, the rate-of-return would equal the 15-percent rate that was used in cost-of-service calculations in the President's Decision. The 1.67 ratio was found reasonable in the Federal Power Commission's Recommendation to the President on this Project. Further, an adjusted cost over-run of 140 percent would reduce the return to 12.9 percent, slightly below the 12.94-percent average equity rate the Commission allowed in 1976 and 1977 on natural gas pipeline cases.

THE SPONSORS' OCTOBER RESPONSES

The Alaskan segment's sponsors state that the project will need Federal financial support and assistance if the Commission finalizes its revised mechanism

In October 1978, the Alaskan segment's sponsors said that they could not continue to advance substantial amounts of capital for the Project if the Commission implemented the existing variable-rate-of-return proposal. The Project requires large front-end expenditures for preplanning, engineering, design, and cost estimation. However, the sponsors will not advance the necessary funds until they are reasonably certain that (1) their funds will earn a "just and reasonable return" and (2) invested funds and the interest costs being accumulated on them will be recovered. Without this assurance, the sponsors state that Project work and the in-service date will be delayed again.

If Government-caused delays or other delays beyond the sponsors' control reduce the rate-of-return-on-equity, the sponsors say they will abandon their plan for private financing and limit their equity contributions. The sponsors state that private financing is out of the question if the Commission ties cost-performance to the March 1977 cost estimate, their original cost estimate. They state that under the very best circumstances they could not achieve less than a 60-percent overrun in constant dollars. They base this level of overrun on the combination of (1) the 31-percent cost overrun expected in the President's Decision, (2) including interest payments in the measurement, and (3) governmental delay.

Eastern Leg sponsors allege that the Commission's proposal jeopardizes delivering Canadian gas to the Midwest before the whole project is built

In comments filed in early October 1978, the Eastern Leg sponsors also noted that imposing a variable-rate-of-return mechanism on their segment would delay construction and result in lost gas supplies and increased costs. They stated that since the rate-of-return on the Eastern Leg may be different than the Alaskan segment's rate, there could be no financing plan until the Commission finalizes the rate schedule to be applied to the Eastern Leg. Further, the sponsors believe that the Commission's decisions, when made, will be "so controversial, time-consuming, and therefore delaying as to seriously reduce or eliminate any chance of early building." In the sponsor's estimation, using the variable rate on the Eastern Leg would mean a "crippling and most likely fatal delay" in bringing Canadian gas to the United States. Finally, they state that (1) the Commission's proposals have "thwarted" their filing an application for authorization to build and operate most of its segment and (2) continued delays in resolving the rate-of-return issue may further delay a filing.

The sponsors do not want the Commission to rely on the March 1977 cost estimate because they have not had a chance to update it. Further, changes have occurred since 1975, when the sponsors made their estimate. The sponsors state that new requirements involving new environmental laws, siting laws, scope changes, and different inflation rates combine to "mandate a reconsideration of 1975 assumptions."

THE COMMISSION'S DECEMBER REVISIONS

On December 1, 1978, the Commission reacted to the sponsors' concerns and modified the variable rate-of-return proposal. Specifically, they noted that (1) the March 1977 cost estimate would not be used as the basis for setting the variable rate-of-return and (2) the Commission intends to absolve the Project sponsors of responsibility for delays which are clearly the Government's fault. The Commission did not agree that applying a variable-rate-of-return mechanism to the Eastern Leg would cause delay.

After making some technical changes to the cost-performance ratio, the Commission noted that the cost estimate the sponsors submit prior to final certification will be used as the basis for determining the variable rate-of-return--not the March 1977 cost estimate. However, the Commission will compare this final estimate to the March 1977 estimate to see if the new estimate "materially or unreasonably" exceeds the earlier figure. Further, if overruns are less likely using the final estimate, the relationship between the cost-performance ratio and the rate-of-return allowed may be adjusted to reflect this difference.

The Commission does not intend to penalize the Project sponsors for delays beyond their control, particularly Government-caused delays. Delays prior to certification will not increase the cost-performance ratio or reduce the sponsors' rate-of-return. Penalties for delay would occur only for delays after the Commission grants a final certificate. The Commission intends to start determining the delays and cost increases beyond the Project sponsors' control and, thus, "absolve the project sponsors of responsibility for delays which are clearly the fault of the government."

The Commission does not believe that the variable-rate-of-return mechanism would substantially delay the Project as the Eastern Leg sponsors allege. Before the Commission sets a rate-of-return in a conventional pipeline certification proceeding, an applicant submits a proposed financing plan, cost estimates, proposed tariff, and other information affecting risks borne by investors. The only difference under the variable-rate-of-return mechanism, the Commission states, is that the Commission will set a range of rates-of-return rather than a single rate.

COMMISSION'S MODIFICATION
BETTER--BUT NOT ENOUGH

On December 19, 1978, the Alaskan segment's sponsors stated that the Commission's December 1 modification to the variable-rate-of-return proposal was a constructive improvement--but not enough to create sponsor and lender confidence. They insist that all issues and uncertainties surrounding this proposal need prompt and appropriate resolution.

If the Commission meets their requirements, the sponsors state that they "will have in place one of the many building blocks that must successively be put in place if private financing is to be achieved." However, they state that it would be misleading to suggest that the variable-rate-of-return mechanism is the sole determinant as to whether the Project will be, or can be, privately financed. They state:

> "The obvious truth--which we all must accept--is that private financing hinges upon prompt, supportive, consistent action by all elements of the United States and Canadian governments--day-by-day and issue-by-issue."

To assist Government officials in pinpointing specific actions required, on January 17, 1979, the Northwest Alaskan Pipeline Company supplied the Executive Policy Board with four listings of critical Government actions (and their required timeframes) necessary to complete the Project in the 1984-85 heating season. According to the company, the critical path

> "* * * is marked by a series of key government actions that must be taken in a timely manner. These actions are crucial for two reasons. First, many subsequent planning actions with substantial lead times (e.g., design, cost estimation) hinge on government decisions. Second, a favorable regulatory climate, substantiated by a record of timely and responsive government decisions, particularly on the key issues now pending, is a sine qua non for private sector financing.
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> * * * * *
>
> "The schedule is tight, largely due to the many * * * steps that must be taken in sequence to"

"obtain financing and to complete the filing with FERC in mid 1980 for a final certification of public convenience and necessity. We believe the schedule is achievable if there is the requisite determination and dedication of resources by all concerned. For our part, we pledge ourselves to make a maximum effort. From the Government, we seek a commitment to overcome obstacles and actively look for ways to help us get the job done. Government actions on a project of this magnitude, in order to be timely and responsive, sometimes must be taken under conditions promising less than complete certainty. We believe there should be acceptance of some degree of risk by the government, in acting promptly, in recognition of both the total risk assumed by the sponsors and of the urgency of this project from a national interest viewpoint."

THE COMMISSION'S FINAL REVISION?

On April 6, 1979, the Commission proposed to finalize its variable-rate-of-return proposal on June 1, 1979. The Commission raised its rates for the Alaskan segment and proposed rates for the Eastern Leg.

The Commission expects the Alaskan segment to be built at a 1.3 performance ratio (a 30-percent overrun); the Eastern Leg, at a 1.1 performance ratio. At these levels, the rate-of-return-on-equity would be 17.5 percent and 15.25 percent, respectively. (See pp. 48 and 49 for the Commission's earlier proposal.) The entire schedule follows.

Rate-of-Return at Specific Performance Ratios

Performance ratio	Rate-of-return on equity: Alaska	Rate-of-return on equity: Eastern leg
	(percent)	
0.8	23.44	17.97
1.0	20.35	15.98
1.1	19.23	15.25
1.2	18.29	14.65
1.3	17.50	14.13
1.4	16.82	13.70
1.6	15.72	12.98
1.8	14.86	12.43
2.0	14.18	11.99
2.2	13.61	11.63
2.4	13.15	11.32

COMMISSION ORDER NO. 31

On June 8, 1979, the Commission issued Order No. 31 to set the final rate-of-return-on-equity for the Alaska segment and the Eastern Leg. These rates were generally the same for the Alaska portion but were lowered for the Eastern Leg.

However, the Commission noted that the allowed rate-of-return for the Project is competitive with other investments in the gas industry and the economy in general. In addition, according to the Commission, if investors perceive a high probability of such large overruns that the realized rate-of-return will be low, then it would seem to follow that the projected costs and estimates of cost overruns have grown to such an extent since the President's Decision that constructing this Project still may not be in the public interest.

The Commission recognized that the issues related to this order were serious and complex. For that reason, the Commission stayed the effective date of the order for 60 days to afford interested parties the opportunity to apply for rehearing.

The sponsors file a motion for rehearing

On July 9, 1979, 1/ the Alaskan sponsors requested that the Commission reconsider the order. In their motion for rehearing, they stated:

> "On June 21, 1979, the Board of Partners, the governing body of the Alaskan Northwest Natural Gas Transportation Company, discussed and analyzed Commission Order No. 31 (June 8, 1979). The Board, by unanimous vote, concluded that (1) rehearing must be sought; (2) if Order No. 31 is not modified on rehearing, further equity support for the project after August 6, 1979 (the effective date of Order No. 31) will be limited to those funds necessary to discharge already-incurred obligations; and (3) until such time as the President, the Congress, or the courts correct the errors of Order No. 31 (if the Commission fails to do so), substantive work on the project will be held in abeyance."

The sponsors stated that expenditures prudent from the standpoint of the Project would not be made until the "Commission has resolved by appropriate final order, the Partnership's motion for rehearing * * *." Examples of expenditures that would not be made include (1) $55 million for Alyeska subsoil and other data and (2) $150 million for Alyeska work camps.

THE COMMISSION STAYS THE EFFECTIVE DATE OF ORDER NO. 31

On August 6, 1979, the Commission found it appropriate and in the public interest to grant rehearing for the purpose of further consideration. As a result the effective date is stayed and a new effective date shall be prescribed at such time as the Commission issues its order on rehearing.

1/Also on July 9, 1979, Northern Border Pipeline Company and Michigan Wisconsin Pipe Line Company filed separate applications for rehearing. On July 24, 1979, the Commission's staff filed for rehearing.

THE COMMISSION ISSUES ITS FINAL DECISION

On September 6, 1979, the Federal Energy Regulatory Commission issued its final order approving variable-rates-of-return for the Alaska and Eastern Leg segments of the Alaska Natural Gas Transportation System.

The order basically reaffirms the June 8 order, with a few clarifications and modifications.

The Commission stated that applications for rehearing presented no new facts or legal principles which warrant changes in the policies or principles in its June 8 order.

According to this order, the Alaskan sponsors stated that

> "* * * it now appears very clear that a reasonable cost estimate for the Alaskan segment of the project will exceed the March 1977 cost estimate by more than 30 percent."

According to the Commission, it interprets this statement to mean that a "major change" in the Alaskan segment has occurred since the President's Decision.

The order makes clear that the Project sponsors may elect to revise their cost estimate for the Alaskan segment as a basis for the variable-rate-of-return mechanism, rather than using the formula approach based on March 1977 costs contained in the President's Decision. The Commission stated that the base line for the mechanism will not be any less than the final cost estimate submitted by the sponsors. However, the order makes clear that the Commission will carefully review the final estimate and make adjustments, if necessary, before approval is granted.

The Commission stated its intention that the mechanism be applied to both phases of the Northern Border (Eastern lower U.S. leg) project if the Commission approves prebuilding of some facilities to transport Canadian gas. If that happens, the two phases would be considered as separate projects and the mechanism applied to each separately.

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

Mr. J. Dexter Peach
Director
Energy and Minerals Division
U.S. General Accounting Office
Washington, D.C. 20548

JUL 13 1979

Dear Mr. Peach:

We have read your draft report titled "The Alaska Gas Highway Pipeline Project: Status and Issues" (Code 008700) and offer the following comments from the Federal Energy Regulatory Commission (FERC). Our comments are intended to serve as a technical review of the analysis in the draft report. We do not offer herein any views concerning alternative energy supplies or plans. We expect that other agencies within the Department of Energy will provide you with comments on these issues and present the views of the Secretary of Energy on this report. Our comments will refer specifically to the main body of the report but are also applicable to the digest presented at the beginning of the report.

Chapter 1: The Alaska Highway Gas Pipeline Project

Our only comments on this chapter deal with the subsection titled "The Government is Unable to Attract Additional Sponsors for the Alaskan Segment." This section gives a misleading impression of the role of this agency in the regulation of the Alaska gas project. This section states that "[i]n June 1978, the Government tried to attract additional sponsors for the Alaska segment." The report is referring to an order issued by this Commission on June 30, 1978, concerning the partnership agreement submitted by the project sponsors for our approval as required by the President's Decision.

In the partnership agreement, there is a schedule that reduces the share of profits going to each member depending upon the date that the member joins the partnership. Although Northwest Alaska gave public notice of the opportunity of joining the partnership shortly before the date the profit discount was to go into effect, the Commission felt that the President's requirement of open ownership participation without discrimination would best be realized if the date for the initial discount in profit share was postponed for 30 days from the date of the Commission's order to allow additional members to join the partnership without penalty. The Commission's intention in this order was to provide equitable and fair treatment of all potential partners and not, as the draft report suggests, "to attract additional sponsors." This section of the report erroneously implies that this Commission took an active role in attracting parties to join the partnership. This was not the intent of the Commission order.

Chapter 2: Important Issues and Problems Remain to be Resolved.

This chapter states that the Federal Inspector for the project is not yet on the job and that two important issues remain to be resolved which could lead to lengthy administrative or judicial review. In fact, the Federal Inspector was nominated by the President several weeks ago.

In the Section titled "Government Actions to Bring the Project on Line", the report gives a history of past executive and legislative actions affecting the project. We note two important ommissions concerning government participation in financing.

The draft report refers to those sections of the President's Decision opposing novel regulatory schemes to shift project risks to consumers and rejecting federal financing assistance. The Alaska Natural Gas Transportation Act (ANGTA) calls for the President to submit terms and conditions for inclusion in the Congressional authorization for the project. Congressional approval of the President's Decision gave these terms and conditions proposed by the President the force of law. The fourth term and condition dealing with finance states that "the successful applicant shall provide for private financing of the project and shall make the final arrangements for debt and equity financing prior to the initiation of construction." Since Congress approved this condition, it can only be changed by a futher act of Congress. This fact is not made clear in the report.

Also the U.S./Canadian Agreement on Principles for the project calls for private financing both in the United States and Canada. The draft report should indicate that government participation in the financing would probably require an amendment or change to this agreement between the United States and Canada as well as an act of Congress.

The report discusses two key issues that remain unresolved. The first concerns treatment of gas conditioning and processing costs. The Natural Gas Policy Act gives the Commission discretion to increase the maximum lawful price for gas to compensate for conditioning and processing costs at Prudhoe Bay. On February 2, 1979, the Commission issued a notice of proposed rulemaking and statement of policy respecting the treatment of these production related costs for natural gas sold and transported through the System. Initial comments and reply comments from all interested parties have been received, and the Commission expects to issue an order concerning production related costs in the near future. The Commission's decision will be subject to judicial review but only under the expedited procedures required by ANGTA. We doubt that the resolution of this issue will be as lengthy as the draft report implies.

The draft report places a great deal of emphasis on the risk of abandonment given by the project sponsors. Though no source is given for these probabilities in the draft report, GAO Staff has indicated that they are taken from a paper prepared by the Northwest Alaskan Pipeline Company on March 7, 1979 titled "Determining the Project Risk Premium for the Alaska Segment of the Natural Gas Transportation System." This report was submitted to the Alaska Gas Project Office of this Commission which in turn distributed the report to all interested parties in the rulemaking dealing with the Incentive Rate of Return Mechanism. Though we invited the sponsors to provide supporting evidence or justification for these probabilities, the project sponsors in their written comments during the rulemaking provided no justification or support. As a result in Order No. 31, the Commission rejected these probabilities as being unreasonably high.

Chapter 3: Alternatives and Options should be Evaluated Before Considering Federal Financial Involvement.

Chapter 3 attempts to analyze the need for Alaska gas and whether it is in the public interest to build the Alaskan Natural Gas Transportation System. This is an issue that was studied at great length in hearings before this Commission and in the various reports submitted by government agencies and other parties to the President and the Congress pursuant to ANGTA.

The record before this Commission on the Alaska gas project consists of some forty-five thousand pages of transcript and about 1,000 individual exhibits. Also ANGTA called upon this Commission and other Government agencies to submit reports to the Congress and the President concerning the need or benefit of building the project. In addition to other subjects, the Act required the Commission to report to the President on "the projected natural gas supply and demand for each region of the United States and on the projected supply of alternative fuels available by region to off-set shortages of natural gas." This Commission submitted its Recommendation to the President on May 1, 1977. ANGTA called upon other federal agencies to submit reports to the President on a variety of subjects including regional natural gas requirements and the relationship of the proposed transportation system to other aspects of national energy policy. In response to this mandate, the Federal Energy Administration, the Department of Commerce, the Department of Interior, and the Department of Labor submitted a report to the President on June 30, 1977 titled "National Economic Impact of Alaskan Natural Gas Transportation Systems." The Federal Energy Administration, the Department of Commerce, the Department of Interior, (United States Geological Survey), the Department of Transportation, the Department of Treasury, and the Energy Research and Development Administration submitted the "Report of the Working Group of Supply, Demand, and Energy Policy Impacts of Alaska Gas" on July 1, 1977. Based on these reports and on additional analysis, the President's Decision concluded that the project was necessary and desirable and should be built as soon as possible. This decision was approved by Congress by joint resolution on November 8, 1977 (Public Law 95-158).

The President's Decision calls for the project sponsors to submit to this Commission a new cost estimate prior to the granting of the final certificate of public convenience and necessity. If this cost estimate "materially and unreasonably exceeds" the cost estimates submitted by the project sponsors to this Commission and the President in March of 1977, the Commission is not required to issue a final certificate of public convenience and necessity. Until these updated cost estimates are made available to this Commission and the public, or unless the cost of alternative energy supplies has declined since 1977, we doubt that any new report on this project is likely to result in conclusions substantially different from those contained in the President's Decision and approved by the Congress.

The analysis in Chapter 3 of the draft report centers on the concept that cheaper alternatives to Alaska gas may be available to U.S. consumers. This analysis contains a number of weaknesses or deficiencies that should be corrected in the final report.

The draft report projects the future demand and supply for natural gas, and thus estimates a gap or shortfall in gas supply through 1990. The draft report then attempts to determine the cheapest sources of natural gas to fill this gap or shortfall. The report speculates that certain other alternative sources of natural gas may be cheaper than Alaska gas and thus may be preferred over Alaska gas. This approach rests on the questionable assumption that there is a fixed demand for natural gas through the year 1990 that is independent of the price of natural gas or the price of alternatives such as imported oil.

For the foreseeable future, imported oil is likely to be the most important determinent of energy prices and is likely to be the source of energy that will increase or decrease in response to changing domestic energy conditions. Consequently, a more defensible approach to analyzing the need for Alaskan gas or any other supplementary source of natural gas is to compare the cost of the supplemental source with the future cost of imported oil. If, for example, Alaska gas over its lifetime is likely to be cheaper than imported oil, it is likely to be in the public interest to develop the project; and there should be little doubt or concern that gas demand will not be large enough to absorb this additional supply. If this nation should be blessed with an abundant supply of natural gas cheaper than the cost of imported oil, insufficient demand for gas is unlikely since natural gas can already substitute for oil in many industrial and utility applications. If other sources of natural gas such as Mexican gas or imported LNG are cheaper than Alaska gas, access to these sources does not reduce the need for Alaska gas that it is less expensive than imported oil.

The draft report depicts Alaska gas and other sources of supplemental supplies as alternatives to be substituted for each other. A more analytically correct approach is to think of all of these sources of supplemental gas supplies as substitutes for imported oil and all should be utilized that are less expensive than imported oil.

A major weakness of this draft is that the analysis of alternative supplemental gas supply sources as well as the analysis of the Alaska gas project do not give any references to the sources of cost and supply estimates. The draft report itself provides no supporting evidence or calculations showing how costs and supply estimates were arrived at. This makes it impossible for any interested reader to determine the validity of the cost and supply estimates given in this report.

In the brief undocumented comparisons of the cost of Alaska gas with other supplemental gas supplies, the draft report seems to use the first year cost of Alaska gas. This is very misleading since the cost of transporting Alaska gas will decline over time. Under conventional methods of utility regulation, depreciation reduces the rate base of the project, thus reducing capital charges that are included in transportation rates. After ten years the transportation charge (in real terms or constant dollars) will be less than half of the first year charge and after twenty years will be less than one fourth the first year charge. Sources of imported gas such as LNG or Mexican gas likely to be tied to the cost of oil and will increase over time.

Canadian gas exports to the United States is presented in the draft report as an alternative to the Alaska gas project. The report briefly mentions that additional discoveries in Alberta and the Canadian Arctic may allow Canadian authorities to permit continued or even increased exports of gas to the United States. In February of this year, the National Energy Board (NEB) of Canada published a thorough study of natural gas supply and demand in Canada and made a number of significant findings concerning the possibility of exports to the United States.

The report concluded that there is an exportable surplus and that Canada will be able to fulfill its current contracts to export gas to the United States. These existing contracts expire at various times over the next few years. Thus based upon existing export licenses, Canadian exports to the U.S. would decline from the current level of approximately 1.1 trillion cubic feet (TCF) per year to 0.3 TCF by 1990 and would cease entirely after 1995. However, the NEB concluded that the current surplus would allow export commitments to the United States to be increased by a modest 2 TCF or by an amount equal to two years of exports at the current level.

In addition to these specific findings concerning the size of the current surplus of gas in Canada, the NEB Report decribes a new policy with respect to the determination of the size of any gas surplus in Canada and thus the allowed exports to the United States. In particular, the report has determined that a future deliverability test is a key factor in determining the size of any exportable surplus. In order to determine that a specific reserve of gas is deliverable, there must be some method of transporting the gas to market. The substantial reserves of natural gas in the Mackenzie Delta of Canada will not be counted in the determination of the exportable surplus until Canada is assured that a transportation system will be available to move those supplies to market.

The Alaska Natural Gas Transportation System is a joint project between the United States and Canada to transport gas both from Alaska and the Mackenzie Delta. Thus the construction of the Alaska gas project would probably result in a finding by the Canadian Government that the Mackenzie

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Delta gas could be included in the calculation of exportable surplus. As a result exports of gas from Canada to the United States could be increased from what it would have been if the Alaska gas project had not been constructed. This draft report fails to recognize the important connection or linkage between the construction of the Alaska gas project and the potential for future exports of gas from Canada.

The last two sections of chapter 3 deal with the impact of the Alaska gas project on energy imports and on the balance of payments. These two sections attempt to show that Alaska gas would not reduce energy imports and would not improve the U.S. balance of payments. Again these are subjects that were explored at considerable length in reports to the President in 1977 by various government agencies. This draft report contains little in the way of hard analysis that would support these conclusions. The arguments given are strained and tenuous at best. We recommend that these two sections be substantially strengthened or else dropped from the final report.

Chapter 4: Conclusions and Recommendations.

We have no comments to offer on this chapter.

Appendix 1: Government Sponsor Negotiations to Develop a Variable Rate of Return Mechanism.

This appendix is a review of the Commission's development of an incentive rate of return mechanism as required by the President's Decision. We have two comments on this appendix. First the Commission in Order No. 31 issued subsequent to the preparation of the draft report resolves most of the outstanding issues concerning the incentive rate of return mechanism. With this order, the Commission feels that is has carried out the requirement in the Decision to develop a variable rate of return mechanism for this project. Such an incentive mechanism has not been attempted previously by this Commission or, to our knowledge, any other regultory agency in the United States. Consequently, the Commission had to develop an entirely new and complicated regulatory mechanism.

Our second comment concerns the way this appendix characterizes the procedures used by this Commission to develop the incentive rate of return mechanism. The title and format of the text describes this Commission's procedures as a series of negotiations or exchanges between the Commission and the project sponsors. This appendix makes it appear that the Commission and the project sponsors negotiated the details of this mechanism. This characterization is very misleading.

The rulemaking procedure used by this Commission to develop the incentive rate of return mechanism is well established and widely accepted. In a rulemaking, the Commission first makes a specific proposal in a public notice. A comment period is specified in the notice giving all interested parties the opportunity to provide written comments on the proposal. Later, all parties are allowed to offer reply comments and thus respond to the initial comments submitted to the Commission by other parties. After review of the initial and reply comments, the Commission may determine that further proceedings such as an oral argument are needed before issuing a final order. In the case of the incentive rate of return mechanism, the Commission instituted two rulemakings. The first rulemaking began on May 8, 1978 and ended with Commission Order No. 17 and developed the basic framework for the incentive rate of return mechanism. On April 6, 1979, the Commission instituted a second rulemaking to develop specific values for the parameters in the incentive rate of return mechanism. Again after an initial set of comments and a set of reply comments, the Commission issued Order No. 31 on June 8, 1979, specifing values for the parameters in the incentive rate of return mechanism.

In these two rulemakings over twenty interested parties filed comments with the Commission including the project sponsors, the staff of the Commission, various other natural gas pipelines, and the States of Alaska, California, and New York. To characterize this procedure as negotiations between the Commission and the project sponsors is quite misleading and ignores the important role played by other interested parties in the rulemakings.

In conclusion, the draft report contains a number of technical errors, and its analysis of specific issues concerning the Alaska gas project could be significantly strenthened. We hope that this report will be substantially improved before it is issued in final form. Thank you for the opportunity to comment on the draft report.

Sincerely,

Charles B. Curtis

Charles B. Curtis
Chairman

Department of Energy
Washington, D.C. 20545

July 12, 1979

Mr. J. Dexter Peach, Director
Energy and Minerals Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

We appreciate the opportunity to review and comment on the GAO draft report entitled "The Alaska Highway Gas Pipeline Project Status And Issues." Our views with respect to the text of the report and recommendations contained therein are discussed below.

Chapter 2

The report, in addressing private financing, does not explicitly distinguish between debt and equity financing in examining the question of the need for government involvement. It does examine the equity financing issue in relation to the variable rate of return. However, there is no mention of the fact that debt holders require a certainty of return on investment.

The report indicates a high probability of abandonment and the lack of certainty that 2 billion cubic feet a day will be available to the project, unless resolved, or guaranteed through tariffs. Both of these factors will prevent debt financing without a government guarantee. The report appears vaguely opposed to Government guarantee without stating a clear reason.

The report seems to require two considerations of Government involvement (1) return on investment and (2) a voice in management. Guaranties are a contingent liability. It is unclear, if this mechanism is used, whether the report is suggesting a return to risk bearing other than the typical user fee charged to a guaranty. Guaranties are not direct liabilities so there would be no return on investment.

It is also not clear why direct investment seems to be a requirement to obtain a voice in management. Management controls can be built-in through provisions in the guaranty instrument in the same way that any lender builds controls into loan documentation.

The report points out that the pipeline sponsors are proceeding with preconstruction planning before they finish testing system design. This mode of construction results in the risk of major design changes because the sponsors have not resolved important design aspects for Arctic conditions before construction. We note that a large portion of the cost over-runs on the Alaska Oil Pipeline, the Trans Alaska Pipeline System (TAPS), were attributable to the fact that the sponsors did not fully complete the development and testing of system design before construction began. As a result, geological and technical problems were encountered causing major changes to result in the construction phasing with consequent highly escalated costs.

The report indicates that the Alaska Highway Gas Pipeline project is not benefiting from the TAPS construction experience, both in terms of the geological data available and the project management and administrative requirements of such a major undertaking. From our knowledge, there is a tremendous reservoir of technical and management material resulting from the Alaska company's experience in building and operating the TAPS pipeline. The managerial shortcomings and problems in vertical and horizontal integration were documented for the record.

The report further indicates that, because the pipeline system will pass through a number of political jurisdictions, these jurisdictions may make costly economic and political demands on behalf of their constituents from the sponsor and the U.S. Government. We note that at the TAPS post-mortem sessions, held in Anchorage, Alaska, following the opening of the TAPS system, dozens of interest-groups from these jurisdictions attended the session for the obvious purpose of planning the development of intensified demands on behalf of their constituents in the construction of the natural gas pipeline.

Chapter 3

In regard to the loan guarantee program, the Secretary of Energy did not "raise the possibility" of loan guarantees for the Alaska gas pipeline project. In testimony before the Joint Economic Committee in January 1979, Senator Proxmire asked Secretary Schlesinger what level of loan guarantees might be appropriate to the project. Secretary Schlesinger responded to the effect that the principal area of risk was in the Alaska segments of the project and that \$2 to \$3 billion would appear to be an adequate level of guarantee.

The policy of the Administration continues to be as stated in the President's Report to Congress on Alaska Natural Gas Transportation Systems, September, 1977. A private financing is to be preferred to any form of Federal financial assistance.

The evaluative cost comparisons made throughout Chapter 3 appear to use as a basis of comparison the first or second year delivered cost of gas for the Alaska project.

Use of such a figure is misleading, particularly with respect to comparisons with imported energy projects. Under traditional rate making procedures, the Alaska project tariff in the early years is very high but will decline in real terms over time as the rate base of the project is depreciated. When the rate base is fully depreciated, the only charges in the tariff would be operating and maintenance expenses. On the other hand, imported oil or gas have only the prospect of continued real increases in price. To be accurate, therefore, any cost comparison must recognize the life-cycle annuity cost to the respective projects.

The Department of Energy agrees with the comments being filed in their response to GAO by the Department of Energy's Federal Energy Regulatory Commission (FERC) with respect to the "gap" theory of natural gas supply and demand. Projects that can supply domestic energy to the United States at a life cycle cost less than imported oil or imported natural gas are presumptively in the national interest even though other less expensive domestic supplies might also be available. As is further noted hereafter, the Alaska gas is superior in economic and national security terms to any other imported energy project whose prices would be tied to the cost of imported oil.

The Secretary of Energy has not "abruptly reversed" the Government's policy on fuel switching as stated in the report. The long-term policy to substitute this Nation's abundant coal resources for oil and natural gas in large stationary power plants is unchanged. In the short term, however, it is in the national interest to substitute available natural gas supplies for imported oil. To that end, temporary limited public interest exemptions have been issued to permit <u>existing</u> power plants to switch from oil to natural gas. These temporary exemptions are fully in accord with the provisions of the Fuel Use Act ("Coal Conversion") enacted by the Congress in 1978.

Increased natural gas use constitutes a major element of the response plan to the Iranian crisis. Further, there is no benefit to be gained by maintaining a surplus of gas in the producing states. Absence of markets for gas will lead to a reduced exploration and development, lower domestic gas supply, and higher energy imports in the future.

The Department of Energy's Energy Information Administration (EIA) survey referred to by the report was based on EIA Form 52. The analysis report issued by EIA in January 1979 indicated fuel switching of only 375 billion cubic feet or 0.375 trillion cubic feet over the entire period 1973-1978 instead of the "3.75 trillion cubic feet a year" referred to in the report. The EIA Form 52 survey relates only to permanent switching from gas to other fuels, and did not measure temporary alternative fuel use during the period of gas shortage.

The statement that "Wood and coal replaced 60 percent" of the 3.75 trillion cubic feet of natural gas supply reduction between 1973 and 1975 is in error. The data from Federal Power Commission (FPC) Form 69 and Federal Energy Administration (FEA) Form G-101 for 1976 and 1977 reflect 3.3 trillion cubic feet of natural gas curtailments of firm and interruptible users. Only 16 percent of those curtailments were reported to be replaced by coal. Wood was not separately identified, but it must be miniscule. Oil constituted 67 percent of the reported substitution. In reviewing the potential alternatives, the report fails to mention synthetic fuels, imported liquified natural gas, and possible offshore production of natural gas.

There is no evidence that would support the statement that "Mexico could supply 0.5 to 1.5 trillion cubic feet of gas a year through the 1980's," if the statement is intended to indicate the potential level of Mexican gas exports to the United States today. It is possible that gas exports by Mexico could reach 0.5 trillion cubic feet to 1.0 trillion cubic feet sometime during the 1980's but any projection is quite speculative. There is currently no agreement from gas sales in effect between the United States and Mexico. Further, Mexican production plans for oil or gas have not been established beyond 1982.

The statement that the "Mexican national oil company agreed to supply (natural gas) for $2.60 per thousand cubic feet" is not accurate. The Memorandum of Intentions between the Mexican national oil company and the United States pipelines specified that the price should be determined by reference to the distillate fuel oil price in New York Harbor. Today, that formula would provide for prices of $4.00 per mmbtu or more.

Mexican oil production and gas supply are not significantly dependent upon a "United States - Mexican oil agreement." A high percentage of

Mexico's oil exports come to the United States today, but the United States is not the only current or potential market for Mexican oil.

In theory liquified natural gas (LNG) projects could provide a gas at a cost that would rise over time in real terms to a lesser degree than the price of imported oil. Such projects involve substantial capital investment that is depreciated causing the rate base to decline in a manner similar to the Alaska gas project. Liquified natural gas cannot with any degree of confidence be characterized as a less expensive alternative to Alaska natural gas.

The Alaska natural gas need not be delivered to a consumer that otherwise would be directly dependent upon imported fuels for it to achieve a displacement of imported fuels. Any reduction of oil consumption in the United States will lead to a reduction of imported oil since that is the marginal supply.

Natural gas use constitutes a major factor in the response plan to the Iranian crisis. Further, there is no benefit to be gained by maintaining a surplus of gas in the producing states. Absence of markets for gas can lead only to a depression of exploration and development, lower domestic gas supply, and higher energy imports in the future.

Consumers will use natural gas if it is reliable and less expensive than alternative fuels. There is little reason to doubt that the long-run cost of imported oil will be higher than the cost of Alaska gas. Any marketability risk of possibly higher costs of the Alaska gas in the initial years of the project life can be overcome through rolled-in pricing provided by the Congress in the Natural Gas Policy Act, as well as by levelizing the tariff structure, if need be.

Maximization of the development of domestic energy resources is in the highest national interest of the United States. The Alaska gas project could deliver nearly 1.0 trillion cubic feet of natural gas equivalent to 425,000 barrels of oil per day to the lower-48 states by 1985. The project will have no significant impact on drilling for gas in the lower-48 states. Rolled-in pricing will prevent any significant adverse impact in the early years and, indeed, in the later years of the project life it could have the effect of encouraging development of other gas resources by providing a form of subsidy for such resources.

The report accurately notes that the Alaska project would involve some dollar outflows for the Canadian tariff. Such outflows will be small compared with the dollar outflow associated with imported oil or natural gas. Like the United States tariff, the Canadian tariff charges and dollar outflows will decline over time while the cost of imported energy will only continue to increase.

Natural gas purchases from Mexico could have a somewhat lesser adverse economic effect on the United States than purchases of imported oil from most other countries since Mexico is likely to purchase more quickly a higher percentage of United States goods and services than many other oil or gas exporting countries; but any import of energy creates a drain on the resources of the United States whether or not the dollar is quickly "recycled." It is clear that the Alaska gas project will be far superior to any imported energy project in these terms. In terms of real resource costs and benefits, the Alaska project will return many billions of dollars more to the United States over its life than any imported energy project. Reference could be made to the recent study contracted by DOE's Federal Energy Regulatory Commission on Alaska gas, A Review of Alaska Natural Gas Transportation Issues, May, 1979.

The subject draft report recommends that the Secretary of Energy provide Congress with a report within 60 days of the issuance of the final report. The 60 day time frame requirement is much too short an interval. It is requested that this time frame be extended.

We appreciate your consideration of the comments in the preparation of the final report and will be pleased to provide any additional information you may desire. Comments of an editorial nature have been provided to members of your staff.

Sincerely,

Edward R. Johnson
for Donald C. Gestiehr
Director
Office of GAO Liaison

DEPARTMENT OF STATE

Washington, D.C. 20520

August 3, 1979

Mr. J. Kenneth Fasick
Director
International Division
U.S. General Accounting Office
Washington, D.C.

Dear Mr. Fasick:

I am pleased to forward the attached comments on the draft report: "The Alaskan Gas Pipeline Project Status and Issues". The comments were prepared by the Deputy Assistant Secretary for International Resources and Food Policy.

We appreciate having had the opportunity to review and comment on the draft report. If I may be of further assistance, I trust you will let me know.

Sincerely,

Roger B. Feldman

Roger B. Feldman
Deputy Assistant Secretary
for Budget and Finance

Enclosure:
As stated

State Department Comments on Draft GAO Report, "The Alaska Highway Gas Pipeline Project Status and Issues".

Digest

Comments provided for Chapters 1, 2, and 3 apply to the issues summarized in the Digest.

Chapter 1

Page 1-5: The membership of the Northwest Alaskan sponsor partnership is likely to change. American Natural has announced its intention to negotiate an arrangement with the partnership. Others may follow in conjunction with the President's July 16 directive to DOE. The draft should be updated to reflect these changing circumstances.

Page 1-6: The draft does not provide a description of the reasons behind the fact that the project has been delayed, including the 18 months it took Congress to pass the Natural Gas Act of 1978 providing a wellhead price for Alaskan gas. Nor does it acknowledge the deliberative nature of the regulatory determination process, and the time required to take into account associated comments and rebuttals by the Project Sponsors and other interested parties. There is justifiable reasons to proceed deliberately. A project so enormous must be undertaken with full consideration for the risks and benefits, particularly in view of the TAPS experience. This time the effort will be to avoid making similar mistakes. This may require more time in the preconstruction stages of the project.

Chapter 2

Page 2-5: The Federal Inspector has been appointed by the President and confirmed by the Senate. This section of the report is thus overtaken by events and should be deleted.

Page 2-6: While the issues of gas conditioning costs and right-of-way stipulations are important considerations for the Project's viability, there is no evidence to conclude that they represent serious obstacles.

Certainly many "worst-case scenarios" can be developed to cast a pessimistic light on the Project. This brief, two page section of the report is far too shallow to deal with both of these important issues adequately and fairly.

Page 2-8: The report places undue emphasis on Project Sponsor's estimates of the risk of project abandonment. Various project-related interests are being brokered in 1979 as regulatory determinations are finalized, and permitting and approvals procedures go forward. In this atmosphere concern for the viability of the project is bound to be aroused. As the necessary regulatory decisions are concluded, and other related activities, such as establishing the Federal Inspector's operation, and concluding additional gas supplier contracts are accomplished, talk of abondonment will recede.

Page 2-9: Every major construction or manufacturing project carries a variety of risks. Technical and geological uncertainties will, of course, be thoroughly investigated. Project segments must, of course, be fully coordinated with related activities in order to complete the project on a timely basis and close to budgeted costs. There is no basis for the implication that obstacles are insurmountable.

Page 2-10: The Project was developed and approved by Congress on the basis of 26 trillion cubic feet-plus proven gas reserves under the North Slope. Its 25 year life cycle costs are based on those proven reserves. The draft report's questions concerning Prudhoe Bay production history and gas availability would appear beyond the scope of the Project as presented, i.e., the pipeline is designed to carry approximately 2.4 BCF/day for 25 years, or an amount well within the capacity of proven reserves to support.

Page 2-11: The draft report notes that the Project might be vulnerable to adverse regulatory and political actions because it passes through several political jurisdictions in two countries. Adequate protections have been provided to the Project by two international agreements negotiated with Canada--the Transit Pipelines Treaty and the Agreement on Principles Applicable to a Northern Natural Gas Pipeline: In addition to non-discriminatory treatment in Canada of the pipeline and its throughput, these agreements provide a broad range of general and specific assurances, as well as an incentive formula covering the U.S. role in constructing the Dempster line to access MacKenzie Delta gas, in which U.S. sponsorship of the Dempster link declines in proportion to any delays caused on the Canadian side.

Page 2-12: See above comments concerning abandonment risk.

Page 2-12: The comments concerning investor attitudes, like much of the analysis surrounding the issue of private financing, is based on premature assessments. It is clear that several important issues must be decided before the Project can be properly presented for consideration by the financial market. Those issues are being examined now and regulatory determinations will be finalized soon. Until then the draft report's assessments are premature.

Page 2-13: The comments on regulatory attitude are dated. The Federal Inspector is in place, the reorganization plan is being implemented, and both the President and involved government agencies are committed to expeditious treatment of the Project.

Page 2-13: Public awareness of the difficult decisions that are being made as the Project goes forward is not, of itself, detrimental. At the same time, the public is increasingly aware of the dangerous dependence of the United States on imported oil, and the renewed vigor with which domestic resources, like Alaskan gas, must be developed.

Page 2-15: The assertion that the Administration "raised the possibility" of $2-3 billion in Federal loan guarantees is incorrect. We understand that the Secretary of Energy, responding to a hypothetical suggestion during Senate hearings in January, indicated that a range of $2-3 billion in guarantees would be adequate--in the hypothetical circumstance suggested.

The Alaskan Gas Pipeline Project was proposed by the President and approved by Congress on the basis of private financing. The US/Canadian Agreement on Principles requires private financing. We have no reason to expect that this Project will proceed other than on those terms. Problems have had to be dealt with, and consequently delays have been encountered.

Page 2-15: The draft report makes the statement that "... a similar investment in coal gasification or other unconventional sources might yield a greater return for each incremental dollar invested". This assertion is highly speculative in our view and in any case requires substantially more detailed explanation and analysis if the concept of unconventional alternatives is to be retained in the study.

Chapter 3

Page 3-1: This chapter suffers most seriously from the problem of being premature. It is highly premature to assume: a) that private financing will not be available and, b) that Congress therefore needs to consider all its options before dealing with a request for Federal financial assistance.

The questions presented in the draft report for Congressional consideration have already been taken into account in the proceedings leading the Presidential Decision, and in testimony before the Federal Energy Regulatory Commission. In addition the Project sponsors must submit a new cost estimate to the FERC prior to granting of the final certificate of public convenience and necessity thus presenting another opportunity to weigh the balance of costs and benefits from the project.

Page 3-2: The fact that other supplies of gas may be available besides project gas does not in any way change the desireability of access to the 26 TCF of proven gas reserves under the Alaskan North Slope. The fact is that we can anticipate increasing real prices for imported oil with consequent impact on energy prices generally. Alaskan gas is likely to be substantially cheaper, over the life cycle of the project, than imported oil. Access to additional Canadian gas, or Mexican gas, or additional LNG would be helpful in and of themselves, but do not reduce the need for Alaskan gas that is less expensive than imported oil. Table 3 includes highly speculative figures for possible imports of foreign gas in the 1980's. The draft report contains no supporting evidence for these supply estimates nor for the cost analyses contained in this section. The cost comparisons appear to use the first year delivered cost of Alaskan gas as a basis of comparison. This is inappropriate because the depreciation formula for Project costs results in a declining real cost over time. Any accurate analysis must therefore base comparison of alternate projects on their life cycle annuity cost.

Page 3-7: The analysis confuses conservation and fuel switching. The key long-term element of the Government's policy on fuel switching is to substitute coal for oil and natural gas. Short term adjustments to that policy, including limited exemptions for industrial and utility use of natural gas, are appropriate. The analysis seems to overlook the fact that surplus gas supplies overhanging the market are not likely to encourage expanded exploration and development of additional reserves, indeed they may discourage it.

Page 3-9: The section on unconventional sources is undocumented, superficial and excessively speculative.

Page 3-10: Anticipated Canadian supplies are not adequately documented.

Page 3-10: The statement that "Mexico could supply 0.5 to 1.5 TCF of gas a year through the 1980s" is not substantiated. This would be 1.4 to 4.1 BCFD. Such numbers are highly speculative, especially since Mexican oil and gas production plans do not extend beyond the current Mexican presidential term ending in 1982. The reference to Pemex' offer of $2.60 per MCF is inaccurate. The 1977 Memorandum of Intentions between Pemex and six U.S. pipeline companies called for reference price based on the price of distillate fuel oil in New York Harbor -- about $4.50 per MCF at current prices. Mexican gas exports to the U.S. are not dependent on conclusion of a U.S./Mexican oil agreement.

Page 3-11: The conclusion that LNG imports in 1985 would be priced at the equivalent of $12 to $18 per barrel of oil ($2-$3 per MCF) is well off the mark. It overlooks the fact that these imports contain escalator linkages to the price of imported oil, and the possibility of their being renegotiated.

Pages 3-11 and 3-12: Since imported oil is the marginal supply element in the U.S. energy system, Alaskan gas will serve to backout imported oil, directly or indirectly, and/or to support U.S. economic growth. Statements in this section reflect a "no-growth" philosophy.

Page 3-14: This section on balance of payments costs for energy is inaccurate and out of date. Energy imports are not expected to be 12 million barrels a day in the late

1980's. Oil already costs more than the $18 per barrel figure used as its cost in 1979 dollars for the mid-1980's. The balance of payments costs (payments to Canadà) for transporting Alaskan gas is small compared to the negative effect on the U.S. economy of importing an equivalent amount of oil. These Canadian tariffs also are scheduled to decline over time.

<u>Chapter 4</u>: No comments.

57-087 O - 80 - 23

FEDERAL INSPECTOR
FOR THE
ALASKA NATURAL GAS TRANSPORTATION SYSTEM
Washington, D.C. 20503

July 30, 1979

Mr. J. Dexter Peach
Director
Energy and Minerals Division
U. S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Peach:

A copy of your draft report, "The Alaska Gas Highway Pipeline Project; Status and Issues" (Code 998700) was routed to my office as part of the distribution made to Agencies belonging to the Executive Policy Board (EPB) of the Alaska Natural Gas Transporation System (ANGTS). It is my understanding that comments, as requested, have been prepared by the various Agencies of EPB.

Based on the information currently available to me, I have serious reservations about some of your analyses and recommendations. I am reluctant at this time, however, to provide detailed comments for a number of reasons. First, many of the issues discussed in the report are related to decisions or negotiations of the Federal Energy Regulatory Commission, Department of the Interior and private companies which took place prior to my appointment as Federal Inspector and prior to the establishment of the Office of Federal Inspector. I was not privy to the rationale behind these discussions. Second, other issues raised by the draft report, especially the matter of economic and financial viability are still being debated or evaluated by forces of the free market. I think the marketplace should be given an opportunity to work its will.

As you can understand, the issues and questions raised in the report relative to the pre-construction, construction and initial operation of the ANGTS are of vital concern to me and my office. Please feel free to call on me if you have any questions or I can be of assistance.

Sincerely,

John T. Rhett

John T. Rhett
Federal Inspector

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply
Refer To:
AL01.0401

SEP 4 1979

Mr. Dexter Peach
Director, Energy and Minerals Division
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

We have reviewed your proposed Draft Report on the Alaska Highway Pipeline Project Status and Issues (Code 008700). Our comments fall into two categories: those which deal with this Department's specific responsibilities and those which are general in nature.

Specific Comments

-On page 2-7, it is suggested that proceedings for the Right-of-Way Agreements represent an opportunity for delay. It is unlikely that a delay will be caused by our schedule for issuing the Stipulations. We are scheduled to complete them before October of this year and this fits the companies' schedules. The Agreement and Grant of Right-of-Way documents are being prepared and will be ready for signature when the conditions of Section 28 of the Mineral Leasing Act are met.

-The Department does not look at the stipulations as a basis for making "concessions". There has been extensive discussion with the companies about the environmental and other concerns of the Department vis-a-vis the economics of the project.

-We differ with the conclusion implied on pages 2-8 and 2-9. We believe that the technology exists to build the pipeline in an environmentally acceptable, economical manner. However, we do have a number of major technical concerns in Alaska that must be resolved by the company before the pipeline can actually be constructed.

General Comments - The following is a list of omissions or changes that we suggest be considered before the final report is submitted to Congress.

The economics of the project have been extensively studied for several years and found to be generally acceptable. Recent increases in OPEC oil prices reinforce the justification. It is not apparent what purpose would be served by having the Secretary of Energy undertake another overview.

-The planned facility will have a capacity of 1.163 trillion cubic feet per year with additional capacity possible by looping.

-There is a strong possibility of additional gas being discovered in the north slope area that could be transported by this line.

-The report does not explore what is to be done with the gas in the event that there are no transportation facilities out of the region. Currently, under State Regulation, the gas is being reinjected at Prudhoe Bay. This is costly and consumes a portion of the gas in the process. There are limitations on the useful and non-wasteful continuation of reinjection which should be discussed.

-There is a misleading characterization on page 3-5. If it were obvious that LNG were an economic source of energy, the case against importing would have dissolved. If markets for the gas at incremental cost were apparent, LNG imports would have been authorized. Without some market constraint (such as full-cost or incremental pricing) LNG remains a suspect, unattractive source of fuel. With the appropriate market constraints, it may ultimately become an economical source.

-The economics on page 3-7 are confusing. We doubt that it could be demonstrated that energy users are indifferent to prices. What is it that is going to alter consumers preferences or habits? It sounds as if the authors are advocating forced conservation. This tends to be corroborated by first paragraph, page 3-12.

-The logic on page 3-12 is questionable. Supply does not create demand. Further, if the cost of the Alaskan gas (properly priced) were low enough to warrant increased economic activity, this would seem a desirable, rather than an undesirable, outcome.

-The discussion concerning the lack of impact on importation of OPEC oil is not entirely correct. It is not necessary for someone who burns foreign oil to directly substitute Alaskan gas for displacement of foreign oil to occur. The total energy imported with or without the Alaskan gas is the real basis for comparison.

-The investment tax credit has a substantial impact on the real rate of return on equity capital. We think that this impact should be considered and included in the appendix on the IROR, in order to accurately evaluate the financial prospects for this project.

-Your concerns about marketing may be overstated as most of the proven Prudhoe gas has already been marketed (with certain restrictions). Also, it is unlikely that the companies involved will start construction before they have distribution contracts and commitments.

-In evaluating this project, consideration should be given to its value as an energy "insurance policy" in the event of interruption of overseas' sources.

-Consideration of this marginal increase in supply as a constraint on the price of OPEC oil and/or LNG would be interesting.

-Of very special importance for the Congress to consider are the pre-built projects in the lower 48. These projects will provide Canadian gas at an early date and their import should be considered in an over-all evaluation of this entire project.

I hope the above comments will be beneficial to you in the preparation of the final report. If you have any questions or want elaboration, please contact Mr. William M. Toskey, 343-6932, the Department's Authorized Officer for this project.

William M

for Larry E. Meierotto
Assistant Secretary
Policy, Budget and Administration

NORTHWEST ALASKAN PIPELINE COMPANY

JOHN G. MCMILLIAN
CHAIRMAN OF THE BOARD

SUITE 901
1801 K STREET, N.W.
WASHINGTON, D.C. 20006
(202) 466-5850

July 10, 1979

Mr. Elmer B. Staats
Comptroller General
441 G Street, N.W.
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Staats:

Mr. J. Dexter Peach's letter of June 19, 1979 to Mr. Arthur J. Miller of Northwest Alaskan Pipeline Company transmitted for comment a purportedly confidential draft of a proposed Report entitled, "The Alaska Highway Gas Pipeline Project Status and Issues." The report contains so many misstatements and inaccuracies that the time and resources which would be required to comment on each cannot be justified in light of its premature release to the Canadian press.

The full extent of the damage and delay caused by the unethical and premature release of the draft to the press cannot be fully assessed at this time. We are enclosing for your information copies of articles from several newspapers to illustrate how an ill-conceived and misleading report can be further misinterpreted by the press. The impact of such articles with their inflammatory rhetoric, especially on the financial community, are particularly damaging to this vital energy project.

We believe the distortions, inaccuracies, and incompleteness of the already published and released report will be readily discernible to the careful reader, and that this will be our best defense against such irresponsibility. By copies of this letter, we are informing members of Congress and the Administration of our comments and opinions on this matter.

Very truly yours,

John G McMillian

John G. McMillian

GAO note: The supplementary newspaper articles referred to in these letters have not been reproduced.

A SUBSIDIARY OF NORTHWEST ENERGY COMPANY

 APPENDIX VIII

2223 Dodge Street
Omaha, Nebraska 68102
Telephone 402-348-4000

Northern Natural Gas Company

July 12, 1979
JCP:106:79

Mr. J. Dexter Peach
Energy and Minerals Division
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

In response to your request for comments on the General Accounting Office's draft report, "The Alaska Highway Gas Pipeline Project Status and Issues", my reply as Project Manager for the Northern Border Pipeline Company contains observations pertinent to the Eastern Leg of the Alaska Natural Gas Transportation System also known as the Northern Border Segment.

On January 26, 1979, Northern Border filed an application with the Federal Energy Regulatory Commission for permission to prebuild 809 miles of the Eastern Leg to transport 800 MMCFD of Canadian Gas to U.S. consumers beginning two to three years in advance of when Alaska gas will be available. This service proposed by Northern Border would begin in November, 1981, and continue for a period of 12 years, providing substantial volumes of gas to the Midwestern and Eastern U.S. markets. This proposed prebuilding or Phase I construction of the Northern Border System is predicated on the receipt of acceptable certificates and permits from both the United States' Federal Energy Regulatory Commission and the Canadian National Energy Board.

When Alaskan gas becomes available Northern Border will file additional applications requesting permission to expand its system by adding 308 miles of pipeline and more compressor stations to accommodate the combined volumes of Alaskan and Canadian gas volumes. This expansion of the Northern Border system will be timed to coordinate its completion with completion of the other segments of the total system.

Our basic comment on your draft is that substantially all of the problems described are peculiar to the Alaskan segment (or perhaps in some part the Canadian segment), and have little bearing on Northern Border's prospects for financing and construction in light of the "pre-build" proposal to

 APPENDIX VIII

transport Canadian gas. Had the FERC not chosen to impose the IROR mechanism on Northern Border, the financing and "pre-build" construction would have proceeded routinely upon issuance of satisfactory export-import licenses by the two governments, and a satisfactory Certificate by the FERC.

The only unusual obstacle Northern Border now faces is satisfactory resolution of the IROR mechanism. It still faces the "usual" obstacles of satisfactory "pre-build" authorizations from the two governments involved. Whether those obstacles will be overcome, and when, is peculiarly within the control of the two governments. However, given such action on a timely basis and acceptable terms, we have no concern over our ability to finance Northern Border privately and construct the "pre-build" segment on the projected time schedule (assuming the expected cooperation of the Federal Inspector during final design and construction). Neither would we have any concern, once the "pre-build" is completed, over our ability to finance privately and to construct timely the expansion required to accommodate Alaskan gas when it begins to flow.

We believe our presentation before the FERC should make it clear that only satisfactory regulatory approvals for the "pre-build" (including IROR in that context) are needed to bring Northern Border into being as a privately financed pipeline. This represents over 1100 miles of the 4800 mile total system, and an investment (for both Canadian and Alaskan gas) of approximately $2 billion.

Moreover, as our presentation to FERC documents, successful completion of the Northern Border "pre-build" will benefit the financing and construction of the Alaskan and full Canadian segments enormously. Further assistance will accrue from "pre-building" the Canadian southern segments and the Western Leg. The unit cost of transportation of Alaskan gas will decline significantly, and obviously financing requirements will be greatly reduced within the same time period.

We suggest addition of a comprehensive explanation of the effects of "pre-building" on completion of the entire Alaskan system, and re-examination of some concerns expressed in light of that expectation, and the recent OPEC price increases. Above all, it should be made clear that Northern Border can be and will be privately financed barring adverse regulatory actions in the U.S. or Canada.

Yours truly,

J. Conrad Pyle

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Project Manager

JCP/nj

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JOHN A. SPROUL
EXECUTIVE VICE PRESIDENT

July 12, 1979

Mr. J. Dexter Peach, Director
United States General Accounting Office
Energy and Minerals Division
Washington, D.C. 20548

Dear Mr. Peach:

This will reply to your June 19, 1979 letter which invited comment on the General Accounting Office draft report entitled "The Alaska Highway Gas Pipeline Project Status and Issues."

This response is made on behalf of Pacific Gas and Electric Company (PGandE) and Pacific Gas Transmission Company (PGT). As you are no doubt aware, PGandE, through its subsidiary Calaska Energy Company, is participating in the partnership that will build the Alaska portion of the Alaska Natural Gas Transportation System (ANGTS), and PGT and PGandE have been designated by the President to build the western delivery leg of the ANGTS. Thus, both companies take a keen interest in the subject matter of the draft report, and appreciate this opportunity to provide comments thereon.

In reviewing the draft we have, as you asked, taken care to prevent the report's premature release or unauthorized use, knowing that the publication of the preliminary draft, before it has been checked for inaccuracies and misleading statements could do unjustifiable harm to public and investor confidence in the Alaska Project. We were, therefore, dismayed to learn that, despite your caution, the draft, without the benefit of corrections, was the subject of some premature stories in the press. This is particularly unfortunate, for the draft in its present form is misleading to the public and to the Congress, and will do nothing to advance general understanding of the project, its promise, or its problems.

The Project has been approved and found in the national interest by the President and the Congress. The draft report gives scant attention to this fact and seems instead to proceed on the assumption that the national need for this new domestic energy supply should be restudied. The Project is in danger of being studied--and restudied--to death.

The draft report contains a great deal of superficial and completely unsubstantiated speculation about the possible availability of alternate energy supplies. This speculation covers ground which has been covered many times before. All of the mentioned alternatives are not truly alternatives to the Alaska Project but are instead other possible sources of energy that will in all likelihood be needed <u>in addition</u> to the Alaska Project, <u>if</u> they can be brought to fruition. Alternatives to the Project were considered and a decision has been made at the highest levels of our Government and the Government of Canada to move forward with the Project. The time for studies of alternatives is past.

If any study is necessary at this time, there should be an analysis of ways to clear government roadblocks and delays which are the single greatest threat to the Project's timely and economic completion. In our opinion the GAO's draft study should be revised to give close attention to this problem. The report could perhaps help to achieve the expressed will of the Congress that this Project be built if the report were to examine closely the delays and uncertainties caused by the governmental regulatory process, and to recommend ways of rectifying the situation.

The report spends a great deal of time speculating what should be done if the Project were unable to obtain private financing. This sort of speculation unnecessarily runs the risk of becoming a self-fulfilling prophecy. Investor and lender confidence are being eroded day by day by regulatory delays which raise the question of the U.S. Government's commitment to the Project. The draft report will cause further erosion of confidence. The partnership has stated its belief that the Project can be privately financed, but we will not know until we are allowed by government decisions to go forward. We do know that until that occurs, speculation about possible failure, especially from a responsible agency of the Federal Government, is to say the least, unnecessary and very much contrary to the national interest.

We sincerely hope that these comments, although general in nature, will aid your Office in its review and modification of the draft report. We stand ready to provide further information and assistance.

Very truly yours,

John A. Sproul

JOHN A. SPROUL

DEG:nw

AGENCY COMMENTS AND GAO'S DETAILED RESPONSES

FEDERAL ENERGY REGULATORY COMMISSION

Agency comment

"We have read your draft report * * * and offer the following comments from the Federal Energy Regulatory Commission (FERC). * * *."

Chapter 1

"Our only comments on this chapter deal with the subsection titled 'The Government is Unable to Attract Additional Sponsors for the Alaskan Segment.' This section gives a misleading impression of the role of this agency in the regulation of the Alaska gas project. This section states that '[i]n June 1978, the Government tried to attract additional sponsors for the Alaska segment.' The report is referring to an order issued by this Commission on June 30, 1978, concerning the partnership agreement submitted by the project sponsors for our approval as required by the President's Decision.

"In the partnership agreement, there is a schedule that reduces the share of profits going to each member depending upon the date that the member joins the partnership. Although Northwest Alaska gave public notice of the opportunity of joining the partnership shortly before the date the profit discount was to go into effect, the Commission felt that the President's requirement of open ownership participation without discrimination would best be realized if the date for the initial discount in profit share was postponed for 30 days from the date of the Commission's order to allow additional members to join the partnership without penalty. The Commission's intention in this order was to provide equitable and fair treatment of all potential partners and not, as the draft report suggests, 'to attract additional sponsors.' This section of the report erroneously implies that this Commission took an active role in attracting parties to join the partnership. This was not the intent of the Commission order."

GAO reponse No. 1

The report now reflects these Commission views.

Agency comment

Chapter 2

"This chapter states that the Federal Inspector for the project is not yet on the job and that two important issues remain to be resolved which could lead to lengthy administrative or judicial review. In fact, the Federal Inspector was nominated by the President several weeks ago."

GAO response No. 2

The report now notes that the Federal Inspector is on the job. He was sworn in July 13, 1979, about 20 months after Congress approved the Decision in November 1977.

Agency comment

"In the Section titled 'Government Actions to Bring the Project on Line', the report gives a history of past executive and legislative actions affecting the project. We note two important ommissions concerning government participation in financing.

"The draft report refers to those sections of the President's Decision opposing novel regulatory schemes to shift project risks to consumers and rejecting federal financing assistance. The Alaska Natural Gas Transportation Act (ANGTA) calls for the President to submit terms and conditions for inclusion in the Congressional authorization for the project. Congressional approval of the President's Decision gave these terms and conditions proposed by the President the force of law. The fourth term and condition dealing with finance states that 'the successful applicant shall provide for private financing of the project and shall make the final arrangements for debt and equity financing prior to the initiation of construction.' Since Congress approved this condition, it can only be changed by a further act of Congress. This fact is not made clear in the report."

"Also the U.S./Canadian Agreement on Principles for the project calls for private financing both in the United States and Canada. The draft report should indicate that government participation in the financing would probably require an amendment or change to this agreement between the United States and Canada as well as an act of Congress."

GAO response No. 3

The report now recognizes (1) that the agreement calls for private financing, (2) the fourth term and condition on financing, and (3) FERC's statement on the need for congressional approval. (See pp. 8 and 9.)

Agency comment

"The report discusses two key issues that remain unresolved. The first concerns treatment of gas conditioning and processing costs. The Natural Gas Policy Act gives the Commission discretion to increase the maximum lawful price for gas to compensate for conditioning and processing costs at Prudhoe Bay. On February 2, 1979, the Commission issued a notice of proposed rulemaking and statement of policy respecting the treatment of these production related costs for natural gas sold and transported through the System. Initial comments and reply comments from all interested parties have been received, and the Commission expects to issue an order concerning production related costs in the near future. The Commission's decision will be subject to judicial review but only under the expedited procedures required by ANGTA. We doubt that the resolution of this issue will be as lengthy as the draft report implies."

GAO response No. 4

We have no difference in fact. The actual time required will be determined as events unfold.

Agency comment

"The draft report places a great deal of emphasis on the risk of abandonment given by the project sponsors. Though no source is given for these probabilities in the draft report, GAO Staff has" "indicated that they are taken from a paper prepared by the Northwest Alaskan Pipeline Company on March 7, 1979, titled 'Determining the Project Risk Premium for the Alaska Segment of the Natural Gas Transportation System.' This report was submitted to the Alaska Gas Project Office of this Commission which in turn distributed the report to all interested parties in the rulemaking dealing with the Incentive Rate of Return Mechanism. Though we invited the sponsors to provide supporting evidence or justification for these probabilities, the project sponsors in their written comments during the rulemaking provided no justification or support. As a result in Order No. 31, the Commission rejected these probabilities as being unreasonably high."

GAO response No. 5

The report recognizes these facts; this section of the report is clearly attributed to the sponsors, and we neither accept nor reject what they said.

Agency comment

Chapter 3

"Chapter 3 attempts to analyze the need for Alaska gas and whether it is in the public interest to build the Alaskan Natural Gas Transportation System. This is an issue that was studied at great length in hearings before this Commission and in the various reports submitted by government agencies and other parties to the President and the Congress pursuant to ANGTA."

GAO response No. 6

This comment misstates the purpose and nature of the analysis in Chapter 3. Chapter 3 presents its "raison d'etre" as follows:

"The Project offers a potentially significant domestic gas supply. Therefore, if its sponsors request Federal financing assistance because they cannot finance the project alone project proponents will undoubtedly urge the Congress" "to quickly provide the needed assistance * * *. * * * We believe that the Congress needs to consider all its options before it responds * * *."

"If the sponsors seek Federal financial involvement, the Congress should consider the following questions."

The report then poses four questions relating to (1) alternative gas sources to supply similar quantities of gas at similar or lower prices, (2) the possibility of achieving a satisfactory gas demand/supply balance through restraints on demand or supplies from alternative sources, (3) the effect of project gas on reliance on foreign energy and dollar outflows, and (4) alternative forms of Federal financial involvement. The report then states that "this chapter discusses briefly, data and concepts relevant to these questions."

The chapter thus deals with the question of Federal financial involvement and not the "need for Alaska Gas" or "whether it is in the public interest to build the Alaskan Natural Gas Transportation System." We do not assume that it is certain that the Project sponsors will need or seek Federal financial aid or that, if aid is requested, the suggested analyses will be unfavorable to Federal financial involvement in the Project.

Agency comment

"The record before this Commission on the Alaska gas project consists of some forty-five thousand pages of transcript and about 1,000 individual exhibits. Also ANGTA called upon this Commission and other Government agencies to submit reports to the Congress and the President concerning the need or benefit of building the project. In addition to other subjects, the Act required the Commission to report to the President on 'the projected natural gas supply and demand for each region of the United States and on the projected supply of alternative fuels available by region to offset shortages of natural gas.' This Commission submitted its Recommendation to the President on May 1, 1977. ANGTA called upon other federal agencies to submit reports to the President on a variety of subjects including regional natural gas requirements and the relationship of the proposed transportation system to other aspects of" "national energy policy. In response to this mandate, the Federal Energy Administration, the Department of Commerce, the Department of Interior, and the Department of Labor submitted a report to the President on June 30, 1977, titled 'National Economic Impact of Alaskan Natural Gas Transportation Systems.' The Federal Energy Administration, the Department of Commerce, the Department of Interior, (United States Geological Survey), the Department of Transportation, the Department of Treasury, and the Energy Research and Development Administration submitted the 'Report of the Working Group of Supply, Demand, and Energy Policy Impacts of Alaska Gas' on July 1, 1977."

GAO response No. 7

We are familiar with the studies and proceedings which preceded the President's Decision and its approval by the Congress. The report in no way denigrates them.

However, no matter the intensity and quality of this previous work, too much has occurred since 1977 for us to assume that all prior findings and conclusions are necessarily still valid. At least where new initiatives are contemplated or new proposals made, we believe they should be reviewed in the light of the best information currently available.

Agency comment

"Based on these reports and on additional analysis, the President's Decision concluded that the project was necessary and desirable and should be built as soon as possible. This decision was approved by Congress by joint resolution on November 8, 1977, (Public Law 95-158)."

GAO response No. 8

The specific language used by the President in his Decision readily supports a conclusion that he found the project "desirable" (pp. 87 ff). The issue, however, is what you do under changed circumstances.

Agency comment

> "The President's Decision calls for the project sponsors to submit to this Commission a new cost estimate prior to the granting of the final certificate of public convenience and necessity. If this cost estimate 'materially and unreasonably exceeds' the cost estimates submitted by the project sponsors to this Commission and the President in March of 1977, the Commission is not required to issue a final certificate of public convenience and necessity. Until these updated cost estimates are made available to this Commission and the public, or unless the cost of alternative energy supplies has declined since 1977, we doubt that any new report on this project is likely to result in conclusions substantially different from those contained in the President's Decision and approved by the Congress."

GAO response No. 9

One conclusion in the President's Decision is that the Project could and should be built by private enterprise without any Federal financial involvement. In his Decision, the President "specifically rejected" Federal financing assistance. Therefore, a substantially different conclusion could be made if Federal financing aid is to be granted.

However, we do not believe that the Commission should prejudge that any new report on the Project is "likely" to result in the same or different conclusions. Consistent with this, our report recommends indepth analyses before action is taken on any proposal for Federal financial involvement in the Project, notwithstanding the President's 1977 Decision.

Agency comment

> "The analysis in Chapter 3 of the draft report centers on the concept that cheaper alternatives to Alaska gas may be available to U.S. consumers. This analysis contains a number of weaknesses or deficiencies that should be corrected in the final report.
>
> "The draft report projects the future demand and supply for natural gas, and thus estimates a gap or shortfall in gas supply through 1990."

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GAO response No. 10

The comment about projecting future demand and supply and estimating a gap or shortfall is misleading in that it suggests that the report makes a specific prediction. The report clearly states that "data in this chapter are not predictions" and that the chapter tables are presented "not as probabilities but as one of several possibilities." Further, the report states that "the data depend on certain fundamental assumptions which time may or may not prove correct."

We believe that the uncertainties of the future make specific predictions (whether optimistic or pessimistic) hazardous. These same uncertainties make continuing indepth analyses essential, which is a position this report takes.

The report uses a "gap" or "incremental" approach as the report states, "to emphasize the need for indepth analyses of our energy situation in a future increasingly deficient in conventional energy sources." As we discuss elsewhere in our responses to comments on this report, we have been taken to task for this approach. We believe the approach is appropriate for this analysis. Suffice it to say at this point that the concept of "gap" between domestic supplies of natural gas and total domestic demand for gas can be found in the President's Decision (pp. 87 ff), The National Energy Plan of April 1977 (pp. 16 ff), the American Gas Association's The Future for Gas Energy in the United States of June 1979, and elsewhere.

Agency comment

> "The draft report then attempts to determine the cheapest sources of natural gas to fill this gap or shortfall. The report speculates that certain other alternative sources of natural gas may be cheaper than Alaska gas and thus may be preferred over Alaska gas."

GAO response No. 11

This comment does not accurately reflect what is in the report. The report does not attempt to "determine" the cheapest sources "to fill this gap or shortfall." The report's statements on relative costs refer to current estimates of the cost of Alaska gas compared to "similar quantities of gas" from other sources. The report says that it is possible that some of these might supply, or conservation might "provide" such quantities at more reasonable prices.

The FERC comment also misleads when it states that the report says that because an alternate source is cheaper, it "thus may be preferred over Alaska gas," suggesting that we consider price alone as controlling. The report takes a different position. For example, it recognizes that the disadvantage of paying any extra money for Alaska gas might be offset at least in part by benefits in terms of reducing (1) imports of foreign energy and (2) dollar outflows.

As the report states, we believe that non-cost related objectives, such as (1) economic growth and (2) need to "back out" (that is, substitute for) foreign energy that would otherwise be imported are proper considerations in making national energy decisions.

Agency comment

> "This approach rests on the questionable assumption that there is a fixed demand for natural gas through the year 1990 that is independent of the price of natural gas or the price of alternatives such as imported oil."

GAO response No. 12

The report clearly shows that we have not made this assumption. For example, the data in chapter 3 tables are presented "not as probabilities but as one of several possibilities." Also, "the data depend on certain fundamental assumptions which time may or may not prove correct." The report mentions some of these assumptions. In addition, it points out that the American Gas Association has produced higher estimates of both demand and supply based on different assumptions.

We do not assume that there is a "fixed demand for natural gas" during any period. At the same time, we do believe that the demand for gas is not unlimited. In fact, we believe that under certain sets of circumstances, supply could exceed demand even in periods of shortage. Economic conditions, governmental regulations, technological limitations, and other factors could contribute to this result. For example, the current domestic gas "bubble" may be a temporary manifestation of this phenonenon.

Agency comment

> "For the foreseeable future, imported oil is likely to be the most important determinent of energy"

"prices and is likely to be the source of energy that will increase or decrease in response to changing domestic energy conditions. Consequently, a more defensible approach to analyzing the need for Alaskan gas or any other supplementary source of natural gas is to compare the cost of the supplemental source with the future cost of imported oil. If, for example, Alaska gas over its lifetime is likely to be cheaper than imported oil, it it likely to be in the public interest to develop the project; and there should be little doubt or concern that gas demand will not be large enough to absorb this additional supply. If this nation should be blessed with an abundant supply of natural gas cheaper than the cost of imported oil, insufficient demand for gas is unlikely since natural gas can already substitute for oil in many industrial and utility applications. If other sources of natural gas such as Mexican gas or imported LNG are cheaper than Alaska gas, access to these sources does not reduce the need for Alaska gas in that it is less expensive than imported oil."

"The draft report depicts Alaska gas and other sources of supplemental supplies as alternatives to be substituted for each other. A more analytically correct approach is to think of all of these sources of supplemental gas supplies as substitutes for imported oil and all should be utilized that are less expensive than imported oil."

GAO response No. 13

We have already discussed our belief that assumptions must be constantly tested against developments to ensure their continuing validity.

We do not agree that treating all supplemental gas supplies as substitutes for imported oil is a more analytical approach. Nor do we agree that all supplemental sources should necessarily be utilized just because they are less expensive than imported oil. Conversely, we do not believe that a supplemental source should not be utilized just because it is more expensive than imported oil.

The Commission's suggested approach cannot be more analytically correct since it treats all supplemental sources as being alike except for cost. This is not true. Each source, together with its socioeconomic, political, and national security impacts, is different. Therefore, decisions on each supplemental source must be made within the framework of a comprehensive National energy plan. Such a plan must rest on a variety of considerations and must deal with both supply and demand and with the long- and short-term welfare of our country. Some of these considerations are

--national security,

--economic growth,

--inflation control,

--mutually supportive international relations,

--environmental quality,

--national productivity, and

--gas and other industry stability.

Thus, cost is an important consideration in energy policies but should not necessarily be controlling.

Agency comment

"A major weakness of this draft is that the analysis of alternative supplemental gas supply sources as well as the analysis of the Alaska gas project do not give any references to the sources of cost and supply estimates. The draft report itself provides no supporting evidence or calculations showing how costs and supply estimates were arrived at. This makes it impossible for any interested reader to determine the validity of the cost and supply estimates given in this report."

GAO response No. 14

If the report were an attempt to predict conditions in 1985 and 1990--which it is not--this comment would be appropriate. The report clearly indicates that "the alternatives are significant--not the magnitudes." We have, however, noted our sources where appropriate.

We believe that it is incumbent upon the Department of Energy to keep the Congress supplied with the up-to-date, reliable energy data it needs. The data in this report indicate that further analysis is justified before making a decision on Federal financial involvement. The data are not sufficient for making that decision.

In this regard, we recommend that the Department of Energy provide such data to Congress on this Project and viable alternatives if Federal financial assistance is requested.

Agency comment

"In the brief undocumented comparisons of the cost of Alaska gas with other supplemental gas supplies, the draft report seems to use the first year cost of Alaska gas. This is very misleading since the cost of transporting Alaska gas will decline over time. Under conventional methods of utility regulation, depreciation reduces the rate base of the project, thus reducing capital charges that are included in transportation rates. After ten years the transportation charge (in real terms or constant dollars) will be less than half of the first year charge and after twenty years will be less than one fourth the first year charge. Sources of imported gas such as LNG or Mexican gas likely to be tied to the cost of oil and will increase over time."

GAO response No. 15

The report makes only such comparisons as are relevant to the question discussed in the report--whether further analyses are needed if Federal financial involvement is proposed. Therefore, there has been no need in the report for comprehensive cost comparisons. The report recognizes that accurate comprehensive information is needed for decisions. Furthermore, it is incumbent on the Department of Energy to compile and supply the energy data and analyses the Congress and the executive branch need.

Further, it is not clear at this time what the cost of Alaskan gas in the future will be in relation to imported oil or gas. A number of factors will influence the relationships, including

--possible legislation to amend existing natural gas policies, including those specifically applicable to the Project;

--future international energy agreements and arrangements;

--actual construction and operating costs of the Project; and

--availability and costs of alternative sources.

Because of such uncertainties as to the future, we recommend indepth analyses before a decision is made on Federal financial involvement in the Project.

Agency comment

"Canadian gas exports to the United States is presented in the draft report as an alternative to the Alaska gas project. The report briefly mentions that additional discoveries in Alberta and the Canadian Arctic may allow Canadian authorities to permit continued or even increased exports of gas to the United States. In February of this year, the National Energy Board (NEB) of Canada published a thorough study of natural gas supply and demand in Canada and made a number of significant findings concerning the possibility of exports to the United States.

"The report concluded that there is an exportable surplus and that Canada will be able to fulfill its current contracts to export gas to the United States. These existing contracts expire at various times over the next few years. Thus based upon existing export licenses, Canadian exports to the U.S. would decline from the current level of approximately 1.1 trillion cubic feet (TCF) per year to 0.3 TCF by 1990 and would cease entirely after 1995. However, the NEB concluded that the current surplus would allow export commitments to the United States to be increased by a modest 2 TCF or by an amount equal to two years of exports at the current level."

GAO response No. 16

The report discusses the possibility only of continuance of the "current" rate of 1 trillion cubic feet a year. It does not discuss increased exports.

We are aware of recent National Energy Board deliberations and actions. For the purposes of this report in looking at possible future sources of natural gas, we did not feel it realistic to adopt a "worst case" position, that is, that exports would decrease to zero as existing licenses expired. Nor did we believe that we should not look beyond the latest action since the National Energy Board will continue meeting from time-to-time to act on export applications. The numbers we use appear within the realm of possibility.

Agency comment

"In addition to these specific findings concerning the size of the current surplus of gas in Canada, the NEB Report describes a new policy with respect to the determination of the size of any gas surplus in Canada and thus the allowed exports to the United States. In particular, the report has determined that a future deliverability test is a key factor in determining the size of any exportable surplus. In order to determine that a specific reserve of gas is deliverable, there must be some method of transporting the gas to market. The substantial reserves of natural gas in the Mackenzie Delta of Canada will not be counted in the determination of the exportable surplus until Canada is assured that a transportation system will be available to move those supplies to market.

"The Alaska Natural Gas Transportation System is a joint project between the United States and Canada to transport gas both from Alaska and the Mackenzie Delta. Thus the construction of the Alaska gas project would probably result in a finding by the Canadian Government that the Mackenzie Delta gas could be included in the calculation of exportable surplus. As a result exports of gas from Canada to the United States could be increased from what it would have been if the Alaska gas project had not been constructed. This draft report fails to recognize the important connection or linkage between the construction of the Alaska gas project and the potential for future exports of gas from Canada."

GAO response No. 17

The report contains a statement relating to the linkage between Mackenzie Delta gas and the Project. However, because of the number of factors involved in export decisions, the report does not speculate on what would "probably" happen if the Project is or is not built.

Future Canadian exports will depend on such matters as Canadian Government policies, new Canadian discoveries, construction of pipelines, and internal gas demand. Thus, we believe that it is not now certain whether the Project will or will not be essential for continuing the current rate of Canadian exports.

Agency comment

"The last two sections of chapter 3 deal with the impact of the Alaska gas project on energy imports and on the balance gas would not reduce energy imports and would not improve the U.S. balance of payments. Again these are subjects that were explored at considerable length in reports to the President in 1977 by various government agencies. This draft report contains little in the way of hard analysis that would support these conclusions. The arguments given are strained and tenuou at best. We recommend that these two sections be substantially strengthened or else dropped from the final report."

GAO response No. 18

This comment misstates the purpose of the analysis in the last two sections of chapter 3. The analysis does not attempt to show that "Alaska gas would not reduce energy imports and would not improve balance of payments." The discussion indicates why we cannot assume that delivery of Alaska gas to the lower 48-States would automatically reduce imports by a comparable volume of foreign energy or reduce the outflow of dollars equal to the cost of that foreign energy.

Although the report finds that under certain conditions, Alaska gas might represent a small percentage of the import problem, that is not the significant thrust of these sections. The discussion relates to the rationale on a need to rely on indepth analysis rather than general assumptions.

Agency comment

Appendix I

"The appendix is a review of the Commission's development of an incentive rate of return mechanism as required by the President's Decision. We have two comments on this appendix. First the Commission in Order No. 31 issued subsequent to the preparation of the draft report resolves most of the outstanding issues concerning the incentive rate of return mechanism. With this order, the Commission feels that it has carried out the requirement in the Decision to develop a variable rate of return mechanism for this project. Such an incentive mechanism has not been attempted previously by this Commission or, to our knowledge, any other regulatory agency in the United States. Consequently, the Commission had to develop an entirely new and complicated regulatory mechanism.

"Our second comment concerns the way this appendix characterizes the procedures used by this Commission to develop the incentive rate of return mechanism. The title and format of the text describes this Commission's procedures as a series of negotiations or exchanges between the Commission and the project sponsors. This appendix makes it appear that the Commission and the project sponsors negotiated the details of this mechanism. This characterization is very misleading.

"The rulemaking procedure used by this Commission to develop the incentive rate of return mechanism is well established and widely accepted. In a rulemaking, the Commission first makes a specific proposal in a public notice. A comment period is specified in the notice giving all interested parties the opportunity to provide written comments on the proposal. Later, all parties are allowed to offer reply comments and thus respond to the initial comments submitted to the Commission by other parties. After review of the initial and reply comments, the Commission may determine that further proceedings such as an oral argument are needed before issuing a final order. In the case of the incentive rate of return mechanism, the"

"Commission instituted two rulemakings. The first rulemaking began on May 8, 1978 and ended with Commission Order No. 17 and developed the basic framework for the incentive rate of return mechanism. On April 6, 1979, the Commission instituted a second rulemaking to develop specific values for the parameters in the incentive rate of return mechanism. Again after an initial set of comments and a set of reply comments, the Commission issued Order No. 31 on June 8, 1979, specifing values for the parameters in the incentive rate of return mechanism.

"In these two rulemakings over twenty interested parties filed comments with the Commission including the project sponsors, the staff of the Commission, various other natural gas pipelines, and the States of Alaska, California, and New York. To characterize this procedure as negotiations between the Commission and the project sponsors is quite misleading and ignores the important role played by other interested parties in the rulemakings."

GAO response No. 19

The report now reflects that the variable-rate-of-return mechanism is being established through the Commission's regular rulemaking procedures and involves a variety of interested parties. It also shows that (1) the Commission, on June 8, 1979, issued Order No. 31 to set the final rate-of-return on equity; (2) the Alaskan and Eastern Leg sponsors, on July 9, 1979, filed motions for rehearing; and (3) on September 6, 1979, the Commission finalized the variable-rate-of-return mechanism.

DEPARTMENT OF ENERGY

Agency comment

Chapter 2

"The report, in addressing private financing, does not explicitly distinguish between debt and equity financing in examining the question of the need for government involvement. It does examine the equity financing issue in relation to the variable rate of return. However, there is no mention of the fact that debt holders require a certainty of return on investment."

GAO response No. 1

The Department is correct in stating that we do not distinguish between debt and equity financing. However, in discussing the Secretary of Energy's limitation of Federal involvement to just loan guarantees, we note that there are various options and that none should be arbitrarily precluded. An indepth analysis such as the one we recommend if Federal financial assistance is requested should be made. We would expect that the Secretary would explore all avenues for Federal financial involvement before making his recommendation on the best course of action.

Agency comment

> "The report indicates a high probability of abandonment and the lack of certainty that 2 billion cubic feet a day will be available to the project, unless resolved, or guaranteed through tariffs. Both of these factors will prevent debt financing without a government guarantee. The report appears vaguely opposed to Government guarantee without stating a clear reason."

GAO response No. 2

The report clearly shows that the estimates relating to "a high probability of abandonment" were made by the Alaskan sponsors, not by us. Also, the report makes no statements to justify the phrases "unless resolved, or guaranteed through tariffs," the meaning of which is not clear to us. Finally, the Department's interpretation that the report is "vaguely opposed to government guarantees" is in error. We take no position on that question.

Agency comment

> "The report seems to require two considerations of Government involvement (1) return on investment and (2) a voice in management. Guaranties are a contingent liability. It is unclear, if this mechanism is used, whether the report is suggesting a return to risk bearing other than the typical user fee charged to a guaranty. Guaranties are not direct liabilities so there would be no return on investment."

> "It is also not clear why direct investment seems to be a requirement to obtain a voice in management. Management controls can be built-in through provisions in the guaranty instrument in the same way that any lender builds controls into loan documentation."

GAO response No. 3

The report states that there may be better alternatives to give the Government appropriate control over and return on its investment. However, it takes no position as to the best alternative. Further, it recommends that the Congress should evaluate all feasible alternatives before it makes any decision on Federal financial involvement.

Although loan guarantees may not be direct liabilities, they do involve a financial risk. In the private sector, insurers are compensated for assuming such risks. We believe that the Government should be compensated for the risks it takes.

The report does not assume that direct investment is needed to obtain a voice in management.

Agency comment

> "The report points out that the pipeline sponsors are proceeding with preconstruction planning before they finish testing system design. This mode of construction results in the risk of major design changes because the sponsors have not resolved important design aspects for Arctic conditions before construction. We note that a large portion of the cost over-runs on the Alaska Oil Pipeline, the Trans Alaska Pipeline System (TAPS), were attributable to the fact that the sponsors did not fully complete the development and testing of system design before construction began. As a result, geological and technical problems were encountered causing major changes to result in the construction phasing with consequent highly escalated costs.
>
> "The report indicates that the Alaska Highway Gas Pipeline project is not benefiting from the TAPS construction experience, both in terms of the geological data available and the project"

"management and administrative requirements of such a major undertaking. From our knowledge, there is a tremendous reservoir of technical and management material resulting from the Alaska company's experience in building and operating the TAPS pipeline. The managerial shortcomings and problems in vertical and horizontal integration were documented for the record.

"The report further indicates that, because the pipeline system will pass through a number of political jurisdictions, these jurisdictions may make costly economic and political demands on behalf of their constituents from the sponsor and the U.S. Government. We note that at the TAPS post-mortem sessions, held in Anchorage, Alaska, following the opening of the TAPS system, dozens of interest-groups from these jurisdictions attended the session for the obvious purpose of planning the development of intensified demands on behalf of their constituents in the construction of the natural gas pipeline."

GAO response No. 4

These comments have been incorporated into the report. (See p. 15.)

Agency comment

Chapter 3

"In regard to the loan guarantee program, the Secretary of Energy did not 'raise the possibility' of loan guarantees for the Alaska gas pipeline project. In testimony before the Joint Economic Committee in January 1979, Senator Proxmire asked Secretary Schlesinger what level of loan guarantees might be appropriate to the project. Secretary Schlesinger responded to the effect that the principal area of risk was in the Alaska segments of the project and that $2 to $3 billion would appear to be an adequate level of guarantee."

GAO response No. 5

Since we cannot agree with the Department of Energy on the use of the phrase "raise the possibility," we have included the discussion from the official transcript of proceedings. In this way, the reader can be the judge. (See pp. 19 to 21.)

Agency comment

"The policy of the Administration continues to be as stated in the President's Report to Congress on Alaska Natural Gas Transportation Systems, September, 1977. A private financing is to be preferred to any form of Federal financial assistance."

GAO response No. 6

We note that the Department states that the Administration's position is as stated in the President's Decision and then states that a private financing is to be "preferred to any form of Federal financial assistance." The Department seems to misstate the Decision.

The President's Decision includes the following statements:

(1) The successful applicant shall provide for private financing of the project (p. 36).

(2) It is understood that the construction of the Pipeline will be privately financed (p. 50).

(3) As indicated by the terms and conditions in Section 5 of the Decision, the * * * project is required to be privately financed (p. 100).

(4) Federal financing assistance is also found to be neither necessary or desirable, and any such approach is explicitly rejected (p. 127).

Agency comment

"The evaluative cost comparisons made throughout Chapter 3 appear to use as a basis of comparison the first or second year delivered cost of gas for the Alaska project.

"Use of such a figure is misleading, particularly with respect to comparisons with imported energy projects. Under traditional rate making procedures, the Alaska project tariff in the early years is very high but will decline in real terms over" "time as the rate base of the project is depreciated. When the rate base is full depreciated, the only charges in the tariff would be operating and maintenance expenses. On the other hand, imported oil or gas have only the prospect of continued real increases in price. To be accurate, therefore, any cost comparison must recognize the life-cycle annuity cost to the respective projects."

GAO response No. 7

In the few places in Chapter 3 where these "evaluative cost comparisons" are made, the report specifically shows that they are made in 1979 dollars for the year 1985. The report also shows that, under conventional methods of utility regulation, the transportation cost for Alaskan gas is expected to diminish. The report also shows that the financial data used are "admittedly preliminary."

The report makes only such comparisons as are relevant to the question discussed in the report--whether further analyses are needed if Federal financial involvement is proposed. Therefore, there has been no need in the report for comprehensive cost comparisons. The report recognizes that accurate comprehensive information is needed for decisions. Furthermore, it is incumbent on the Department of Energy to compile and supply the energy data and analyses the Congress and the Executive Branch need.

It is not clear at this time (1) whether Alaskan gas will or will not be supplied to the lower 48-State markets without any "real increases" in price or (2) what the cost of Alaskan gas in the future will be in relation to imported oil or gas. A number of factors will influence the relationships, including

--possible legislation to amend existing natural gas policies, including those specifically applicable to the Project;

--future international energy agreements and arrangements;

--actual construction and operating costs of the Project, and

--availability and costs of alternative sources.

Because of such uncertainties as to the future, we recommend indepth analyses before a decision is made on Federal financial involvement in the Project.

Agency comment

"The Department of Energy agrees with the comments being filed in their response to GAO by the Department of Energy's Federal Energy Regulatory Commission (FERC) with respect to the "gap" theory of natural gas supply and demand. Projects that can supply domestic energy to the United States at a life cycle cost less than imported oil or imported natural gas are presumptively in the national interest even though other less expensive domestic supplies might also be available. As is further noted hereafter, the Alaska gas is superior in economic and national security terms to any other imported energy project whose prices would be tied to the cost of imported oil."

GAO response No. 8

As stated in our response to the letter from the Federal Energy Regulatory Commission, we do not agree with its comments with respect to the "gap" theory. Also, we believe that the Department of Energy should be in a position to demostrate convincingly to the Congress what action would be in the national interest. In essence, that is what the report recommends.

Agency comment

"The Secretary of Energy has not 'abruptly reversed' the Government's policy on fuel switching as stated in the report. The long-term policy to substitute this Nation's abundant coal resources for oil and natural gas in large stationary power plants in unchanged. In the short term, however, it is in the national interest to substitute available natural gas supplies for imported oil. To that end, temporary limited public interest exemptions have been issued to permit existing power plants to switch from oil to natural gas. These temporary exemptions are fully in accord with the provisions of the Fuel Use Act ('Coal Conversion') enacted by the Congress in 1978."

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GAO response No. 9

The report recognizes that this action was taken as a trade-off between short- and long-term objectives. However, we feel that from the point of view of the concerned public, the change was abrupt and may have had undesirable impacts.

We have not tried to evaluate whether, on balance, the results were good or bad. We mention the incident to point out the (1) relevance of indepth analyses and (2) the possibility of side effects from actions take to reach a specific goal, such as oil import reduction.

Agency comment

"Increased natural gas use constitutes a major element of the response plan to the Iranian crisis. Further, there is no benefit to be gained by maintaining a surplus of gas in the producing states. Absence of markets for gas will lead to a reduced exploration and development, lower domestic gas supply, and higher energy imports in the future."

GAO response No. 10

The report raises a question whether it could be possible to encourage domestic gas exploration and development without preventing "a surplus of gas." We believe that the Department of Energy should investigate whether there are ways to maintain gas reserves in a manner that will not discourage needed exploration and development--rather than assume that none exists.

Agency comment

"The Department of Energy's Energy Information Administration (EIA) survey referred to by the report was based on EIA Form 52. The analysis report issued by EIA in January 1979 indicated fuel switching of only 375 billion cubic feet or 0.375 trillion cubic feet over the entire period 1973-1978 instead of the '3.75 trillion cubic feet a year' referred to in the report. The EIA Form 52 survey relates only to permanent switching from gas to other fuels, and did not measure temporary alternative fuel use during the period of gas shortage."

"The statement that 'Wood and coal replaced 60 percent' of the 3.75 trillion cubic feet of natural gas supply reduction between 1973 and 1975 is in error. The data from Federal Power Commission (FPC) Form 69 and Federal Energy Administration (FEA) Form G-101 for 1976 and 1977 reflect 3.3 trillion cubic feet of natural gas curtailments of firm and interruptible users. Only 16 percent of those curtailments were reported to be replaced by coal. Wood was not separately identified, but it must be miniscule. Oil constituted 67 percent of the reported substitution. In reviewing the potential alternatives, the report fails to mention synthetic fuels, imported liquified natural gas, and possible offshore production of natural gas."

GAO response No. 11

The agency is correct. We discovered our error after we provided the draft for comment. We have deleted all references to this study.

Agency comment

"There is no evidence that would support the statement that 'Mexico could supply 0.5 to 1.5 trillion cubic feet of gas a year through the 1980's,' if the statement is intended to indicate the potential level of Mexican gas exports to the United States today. It is possible that gas exports by Mexico could reach 0.5 trillion cubic feet to 1.0 trillion cubic feet sometime during the 1980's but any projection is quite speculative. There is currently no agreement from gas sales in effect between the United States and Mexico. Further, Mexican production plans for oil or gas have not been established beyond 1982."

GAO response No. 12

This comment is misleading. At our meeting with Department of Energy and Federal Energy Regulatory Commission representatives, we pointed out our intention to (1) revise the data to "0.5 to 1.0 trillion cubic feet" to be consistent with Table 3 of the draft report and (2) make clear that the statement covered the mid- to late-1980s. Also, as the report shows, we stated that (1) the figures we use are possibilities and not predictions and (2) there is currently no gas sales agreement between the U.S. and Mexico. (See footnote 2 on p. 31.)

Agency comment

"The statement that the 'Mexican national oil company agreed to supply (natural gas) for $2.60 per thousand cubic feet' is not accurate. The Memorandum of Intentions between the Mexican national oil company and the United States pipelines specified that the price should be determined by reference to the distillate fuel oil price in New York Harbor. Today, that formula would provide for prices of $4.00 per mmbtu or more."

GAO response No. 13

The price of $2.60 represents the approximate price of the gas at the time the agreement was made. We have revised the report to show also the pricing formula that would have applied in the agreement.

Agency comment

"Mexican oil production and gas supply are not significantly dependent upon a 'United States - Mexican oil agreement.' A high percentage of Mexico's oil exports come to the United States today, but the United States is not the only current or potential market for Mexican oil."

GAO response No. 14

The report refers to the gas supply that might be available to the United States. Because much Mexican gas is associated with oil, the report points out a relationship between oil production and gas availability. We revised the text to make clear that Mexican gas availability to the United States will depend on oil export agreements with other countries as well as with the United States.

Agency comment

"In theory liquefied natural gas (LNG) projects could provide a gas at a cost that would rise over time in real terms to a lesser degree than the" "price of imported oil. Such projects involve substantial capital investment that is depreciated causing the rate base to decline in a manner similar to the Alaska gas project. Liquefied natural gas cannot with any degree of confidence be characterized as a less expensive alternative to Alaska natural gas."

GAO response No. 15

In discussing the potential of liquefied natural gas, the report points out the growing world natural gas reserves and some prices paid in early 1979 by American pipelines. It does not attempt a thoroughgoing analysis of the competitive, investment, and other factors which will influence in 1985, and thereafter, the relative cost of liquefied natural gas compared to (1) imported oil and (2) Alaska gas. We believe that establishing the facts with the required degree of confidence is the Department of Energy's duty.

Agency comment

"The Alaska natural gas need not be delivered to a consumer that otherwise would be directly dependent upon imported fuels for it to achieve a displacement of imported fuels. Any reduction of oil consumption in the United States will lead to a reduction of imported oil since that is the marginal supply."

GAO response No. 16

Our statement has not been limited to consumers who were "directly" dependent on imported fuels. The agency makes a valid point which may be an exception to the rule. However, if oil released by one consumer or group of consumers flows to another consumer or group not then using oil, it is theoretically possible that existing import rates will not be reduced.

For its purposes, the report deals with many questions on a theoretical basis. We believe that it is incumbent on the Department of Energy to develop and demonstrate what the facts are in practice.

Agency comment

"Natural gas use constitutes a major factor in the response plan to the Iranian crisis. Further," "there is no benefit to be gained by maintaining a surplus of gas in the producing states. Absence of markets for gas can lead only to a depression of exploration and development, lower domestic gas supply, and higher energy imports in the future."

GAO response No. 17

See GAO response No. 10 on page 112.

Agency comment

"Consumers will use natural gas if it is reliable and less expensive than alternative fuels. There is little reason to doubt that the long-run cost of imported oil will be higher than the cost of Alaska gas. Any marketability risk of possibly higher costs of the Alaska gas in the initial years of the project life can be overcome through rolled-in pricing provided by the Congress in the Natural Gas Policy Act, as well as by levelizing the tariff structure, if need be."

GAO response No. 18

This and the remaining Department of Energy comments which follow relate to matters discussed in the report on theoretical grounds. As we have said, we believe that the responsibility for establishing and demonstrating the facts in practice rests with the Department of Energy.

When the Department notes that consumers will use natural gas if it is reliable and less expensive than alternative fuels, it fails to mention that use-opportunities and reliability may depend on governmental programs and regulations, as well as other factors.

Although the Department may now have little reason to doubt that the long-run cost of imported oil will be higher than the cost of Alaskan gas, there are many uncertainties as to what the actual costs of Alaskan gas will be and future energy supplies and costs. As we state on page 141, because of uncertainties as to the future, we recommend indepth analyses before a decision is made on Federal financial involvement in the Project.

The Project's sponsors asserted a "marketability risk," among other risks, in a report to the Federal Energy Regulatory Commission to justify a high risk premium for their investment. That report notes on page 26 that the Commission in Order Number 31 rejected the sponsors' overall risk assessments as unreasonably high. Also, although the report does not attempt to evaluate the sponsors' risk statements, it mentions that rolled-in pricing and regulatory arrangements can adjust for possibly higher costs of Alaska gas.

Agency comment

"Maximization of the development of domestic energy resources is in the highest national interest of the United States. The Alaska gas project could deliver nearly 1.0 trillion cubic feet of natural gas equivalent to 425,000 barrels of oil per day to the lower-48 states by 1985. The project will have no significant impact on drilling for gas in the lower-48 states. Rolled-in pricing will prevent any significant adverse impact in the early years and, indeed, in the later years of the project life it could have the effect of encouraging development of other gas resources by providing a form of subsidy for such resources."

GAO response No. 19

Although undue reliance on foreign energy is contrary to the national interest, "maximization" of domestic energy resource development may or may not be. As we indicate in our response to the Federal Energy Regulatory Commission's comments, other national goals may affect the timing and extent of domestic development. (See pp. 138 and 139.) For example, budgetary or international relationships, at times, might favor energy imports under certain conditions.

Agency comment

"The report accurately notes that the Alaska project would involve some dollar outflows for the Canadian tariff. Such outflows will be small compared with the dollar outflow associated with imported oil or natural gas. Like the United States tariff, the Canadian tariff charges and dollar outflows will decline over time while the cost of imported energy will only continue to increase.

"Natural gas purchases from Mexico could have a somewhat lesser adverse economic effect on the

> United States than purchases of imported oil from most other countries since Mexico is likely to purchase more quickly a higher percentage of United States goods and services than many other oil or gas exporting countries; but any import of energy creates a drain on the resources of the United States whether or not the dollar is quickly 're-cycled.' It is clear that the Alaska gas project will be far superior to any imported energy project in these terms. In terms of real resource costs and benefits, the Alaska project will return many billions of dollars more to the United States over its life than any imported energy project. Reference could be made to the recent study contracted by DOE's Federal Energy Regulatory Commission on Alaska gas, A Review of Alaska Natural Gas Transportation Issues, May, 1979."

GAO response No. 20

We do not disagree that undue reliance on foreign energy may be harmful to the national interest. However, the validity of the statement that "any import of energy creates a drain on the resources of the United States whether or not the dollar is quickly 'recycled'" needs analysis. There may be advantages to the United States in importing some energy as there are benefits from international trade in other commodities. We, therefore, recommend indepth comparative analyses before a decision is made on Federal financial involvement in the Project.

Agency comment

> "The subject draft report recommends that the Secretary of Energy provide Congress with a report within 60 days of the issuance of the final report. The 60 day time frame requirement is much too short an interval. It is requested that this time frame be extended."

GAO response No. 21

Our recommendations reflect our sense of urgency in the matter.

DEPARTMENT OF STATE

Agency comment

Chapter 1

"Page 4: The membership of the Northwest Alaskan sponsor partnership is likely to change. American Natural has announced its intention to negotiate an arrangement with the partnership. Others may follow in conjunction with the President's July 16 directive to DOE. The draft should be updated to reflect these changing circumstances."

GAO response No. 1

The report describes the current status of the Project and does not speculate on companies joining or leaving the partnership.

Agency comment

"Page 5: The draft does not provide a description of the reasons behind the fact that the project has been delayed, including the 18 months it took Congress to pass the Natural Gas Act of 1978 providing a wellhead price for Alaskan gas. Nor does it acknowledge the deliberative nature of the regulatory determination process, and the time required to take into account associated comments and rebuttals by the Project Sponsors and other interested parties. There is justifiable reasons to proceed deliberately. A project so enormous must be undertaken with full consideration for the risks and benefits, particularly in view of the TAPS experience. This time the effort will be to avoid making similar mistakes. This may require more time in the preconstruction stages of the project."

GAO response No. 2

Since this part merely reports the current status of the Project's time "schedule," it should not be interpreted as criticism. In other portions the report describes major

(See GAO note on page 143.)

events which have taken place. In addition, it describes the proceedings involved in establishing the variable rate-of-return mechanism which "illustrates the difficulty in reaching mutually satisfactory resolutions to * * * questions that must be answered before the Project is built."

Agency comment

> Chapter 2
>
> "Page 10: The Federal Inspector has been appointed by the President and confirmed by the Senate. This section of the report is thus overtaken by events and should be deleted."

GAO response No. 3

The report appropriately notes that the Federal Inspector was sworn in on July 13, 1979, about 20 months after the Congress approved the Decision in November 1977. (See p. 14.)

Agency comment

> "Page 11: While the issues of gas conditioning costs and right-of-way stipulations are important considerations for the Project's viability, there is no evidence to conclude that they represent serious obstacles.
>
> "Certainly many 'worst-case scenarios' can be developed to cast a pessimistic light on the Project. This brief, two page section of the report is far too shallow to deal with both of these important issues adequately and fairly."

GAO response No. 4

In giving the current status of the Project, the report states and briefly describes two important issues remaining to be resolved. The report notes that these issues could lead to lengthly administrative and/or judicial review. Also, appendix I demonstrates the time required to resolve important issues. How this equates to "worst-case scenarios" is not clear, since we are merely presenting a factual summary of the current status.

Agency comment

"Page 13: The report places undue emphasis on Project Sponsor's estimates of the risk of project abandonment. Various project-related interests are being brokered in 1979 as regulatory determinations are finalized, and permitting and approvals procedures go forward. In this atmosphere concern for the viability of the project is bound to be aroused. As the necessary regulatory decisions are concluded, and other related activities, such as establishing the Federal Inspector's operation, and concluding additional gas supplier contracts are accomplished, talk of abondonment will recede."

GAO response No. 5

The report now shows that the Federal Energy Regulatory Commission, in Order Number 31, rejected the sponsors' risk evaluating as being unreasonably high. (See p. 26.)

Agency comment

"Page 14: Every major construction or manufacturing project carries a variety of risks. Technical and geological uncertainties will, of course, be thoroughly investigated."

GAO response No. 6

This assurance does not fully satisfy our recommendation, which urges that these uncertainties be thoroughly Investigated before construction starts. In addition, page 2 of the Department of Energy letter commenting on this report supports the need to complete the development and testing of system design before construction. (See app. III).

Agency comment

"Project segments must, of course, be fully coordinated with related activities in order to complete the project on a timely basis and close to budgeted costs. There is no basis for the implication that obstacles are insurmountable."

GAO response No. 7

In the report, we present the sponsors' statements. We do not suggest that the alleged obstacles are insurmountable.

Agency comment

"Page 15: The Project was developed and approved by Congress on the basis of 26 trillion cubic feet-plus proven gas reserves under the North Slope. Its 25 year life cycle costs are based on those proven reserves. The draft report's questions concerning Prudhoe Bay production history and gas availability would appear beyond the scope of the Project as presented, i.e., the pipeline is designed to carry approximately 2.4 BCF/day for 25 years, or an amount well within the capacity of proven reserves to support.

"Page 16: The draft report notes that the Project might be vulnerable to adverse regulatory and political actions because it passes through several political jurisdictions in two countries. Adequate protections have been provided to the Project by two international agreements negotiated with Canada--the Transit Pipelines Treaty and the Agreement on Principles Applicable to a Northern Natural Gas Pipeline: In addition to nondiscriminatory treatment in Canada of the pipeline and its throughput, these agreements provide a broad range of general and specific assurances, as well as an incentive formula covering the U.S. role in constructing the Dempster line to access MacKenzie Delta gas, in which U.S. sponsorship of the Dempster link declines in proportion to any delays caused on the Canadian side.

"Page 17: The comments concerning investor attitudes, like much of the analysis surrounding the issue of private financing, is based on premature assessments. It is clear that several important issues must be decided before the Project can be properly presented for consideration by the financial market. Those issues are being examined now and regulatory determinations will be finalized soon. Until then the draft report's assessments are premature.

"Page 18: The comments on regulatory attitude are dated. The Federal Inspector is in place, the reorganization plan is being implemented, and both the President and involved government agencies are committed to expeditious treatment of the Project.

"Page 18: Public awareness of the difficult decisions that are being made as the Project goes forward is not, of itself, detrimental. At the same time, the public is increasingly aware of the dangerous dependence of the United States on imported oil, and the renewed vigor with which domestic resources, like Alaskan gas, must be developed."

GAO response No. 8

The report clearly shows that the Alaskan sponsors made all the above claims in their document "The Project Risk Premium for the Alaska Segment of the Alaska Natural Gas Transportation System." (See p. 13.) Further, we have noted that the Federal Energy Regulatory Commission rejected the sponsors' abandonment evaluations. Since these statements were made in connection with regulatory proceeding we have avoided any judgment as to their merits.

Agency comment

"Page 19: The assertion that the Administration 'raised the possibility' of \$2-3 billion in Federal loan guarantees is incorrect. We understand that the Secretary of Energy, responding to a hypothetical suggestion during Senate hearings in January, indicated that a range of \$2-3 billion in guarantees would be adequate--in the hypothetical circumstance suggested."

GAO response No. 9

The report shows that the Secretary of Energy responded to a question from the Joint Economic Committee. Also, it gives that portion of the official transcript which covers the colloquy over the "possibility" of loan guarantees. (See pp. 19 to 21.)

Agency comment

"The Alaskan Gas Pipeline Project was proposed by the President and approved by Congress on the basis of private financing. The US/Canadian Agreement on Principles requires private financing. We have no reason to expect that this Project will proceed other than on those terms. Problems have had to be dealt with, and consequently delays have been encountered."

GAO response No. 10

This assessment may be correct. However, since the question of possible Federal financial involvement has been publicly raised in official quarters and elsewhere, we believe that it is incumbent on the Department of Energy to prepare itself for that contingency.

Some Department of State comments which follow are discussed in greater detail by the Federal Energy Regulatory Commission and the Department of Energy. Therefore, we refer to our responses to those agencies, rather than respond to State's briefer remarks. In addition, we comment specifically on certain State Department remarks.

Agency comment

Chapter 3

"Page 22: This chapter suffers most seriously from the problem of being premature. It is highly premature to assume: a) that private financing will not be available and, b) that Congress therefore needs to consider all its options before dealing with a request for Federal financial assistance."

GAO response No. 11

This comment is misleading. The report states clearly that the Congress needs to consider all its options only *if* a proposal is made for Federal financial involvement.

We believe that being alert to possible events is not being premature. As the report indicates, events have led to public discussion of possible need for Federal financial involvement in the Project. For this and other reasons, we believe it would be poor public policy to be totally unprepared for this possibility; instead, we have established a framework for Government action. As we state in this report, if the sponsors request Federal financing assistance, Project proponents will undoubtedly urge the Congress to quickly provide the needed assistance.

Agency comment

"Table 3 includes highly speculative figures for possible imports of foreign gas in the 1980's. The draft report contains no supporting evidence for these supply estimates nor for the cost analyses contained in this section."

GAO response No. 12

See our response to the Federal Energy Regulatory Commission on this point (response 14, pp. 99 and 100).

Agency comment

"The cost comparisons appear to use the first year delivered cost of Alaskan gas as a basis of comparison. This is inappropriate because the depreciation formula for Project costs results in a declining real cost over time. Any accurate analysis must therefore base comparison of alternate projects on their life cycle annuity cost."

GAO response No. 13

See our response to the Federal Energy Regulatory Commission on this point (response 15, pp. 100 and 101).

Agency comment

"The questions presented in the draft report for Congressional consideration have already been taken into account in the proceedings leading the Presidential Decision, and in testimony before the Federal Energy Regulatory Commission. In addition the Project sponsors must submit a new cost estimate to the FERC prior to granting of the final certificate of public convenience and necessity thus presenting another opportunity to weigh the balance of costs and benefits from the project."

GAO response No. 14

See our responses to the Federal Energy Regulatory Commission on these comments (response 7, p. 94; response 9, p. 95).

Agency comment

"Page 24: The fact that other supplies of gas may be available besides project gas does not in any way change the desirability of access to the 26 TCF of proven gas reserves under the Alaskan North Slope. The fact is that we can anticipate increasing real prices for imported oil with consequent impact on energy prices generally. Alaskan gas is likely to be substantially cheaper, over the life cycle of the project, than imported oil. Access to additional Canadian gas, or Mexican gas, or additional LNG would be helpful in and of themselves, but do not reduce the need for Alaskan gas that is less expensive than imported oil."

GAO response No. 15

See our responses to the Federal Energy Regulatory Commission on these comments (response 10, p. 96; response 13, pp. 98 and 99).

Agency comment

"Page 28: The analysis confuses conservation and fuel switching. The key long-term element of the Government's policy on fuel switching is to substitute coal for oil and natural gas. Short term adjustments to that policy, including limited exemptions for industrial and utility use of natural gas, are appropriate."

GAO response No. 16

The analysis treats "fuel switching" as a "conservation' measure. We see no confusion there.

See also our response to the Department of Energy on this comment (response 9, p. 112).

Agency Comment

"The analysis seems to overlook the fact that surplus gas supplies overhanging the market are not likely to encourage expanded exploration and development of additional reserves, indeed they may discourage it."

GAO response No. 17

See our response to the Department of Energy on this comment (response 10, p. 112).

Agency comment

"Page 29: The section on unconventional sources is undocumented, superficial and excessively speculative.

"Page 30: Anticipated Canadian supplies are not adequately documented."

GAO response No. 18

See our response to the Federal Energy Regulatory Commission on these comments (response 12, p. 97; responses 14 through 17, pp. 99 to 103).

Agency comment

"Page 31: The statement that Mexico could supply 0.5 to 1.5 TCF of gas a year through the 1980s is not substantiated. This would be 1.4 to 4.1 BCFD. Such numbers are highly speculative, especially since Mexican oil and gas production plans do not extend beyond the current Mexican presidential term ending in 1982. The reference to Pemex' offer of $2.60 per MCF is inaccurate. The 1977 Memorandum of Intentions between Pemex and six U.S. pipeline companies called for reference price based on the price of distillate fuel oil in New York Harbor--about $4.50 per MCF at current prices. Mexican gas exports to the U.S. are not dependent on conclusion of a U.S./Mexican oil agreement."

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GAO response No. 19

See our responses to the Department of Energy on these comments (responses 12 to 14, pp. 113 and 114).

Agency comment

"Page 32: The conclusion that LNG imports in 1985 would be priced at the equivalent of $12 to $18 per barrel of oil ($2-$3 per MCF) is well off the mark. It overlooks the fact that these imports contain escalator linkages to the price of imported oil, and the possibility of their being renegotiated."

GAO response No. 20

The report has not said that liquefied natural gas imports in 1985 would be priced at the equivalent of $12 to $18 per barrel of oil. It states that at a price equivalent to $12 to $18 a barrel of oil, liquefied natural gas would cost less than the 1985 cost of Project gas.

See also our response to the Department of Energy on this point (response 15, p. 115).

Agency comment

"Pages 32 and 33: Since imported oil is the marginal supply element in the U.S. energy system, Alaskan gas will serve to backout imported oil, directly or indirectly, and/or to support U.S. economic growth. Statements in this section reflect a 'no-growth' philosophy."

GAO response No. 21

It is gratuitous to charge that the "statements in this section reflect a 'no-growth' philosophy." They merely report that, to the extent that Alaskan gas stimulates new growth, it will not "back out" foreign energy then being imported. Nothing in the report suggests that new growth is undesirable.

See also our responses to the Department of Energy (response 16, p. 115) and the Federal Energy Regulatory Commission (response 18, p. 103).

Agency comment

"Page 34: This section on balance of payments costs for energy is inaccurate and out of date. Energy imports are not expected to be 12 million barrels a day in the late 1980's. Oil already costs more than the $18 per barrel figure used as its cost in 1979 dollars for the mid-1980's. The balance of payments costs (payments to Canada) for transporting Alaskan gas is small compared to the negative effect on the U.S. economy of importing an equivalent amount of oil. These Canadian tariffs also are scheduled to decline over time."

GAO response No. 22

This comment supports the report's conclusion that continuing indepth energy analyses are essential. The data used in the report reflect the understandings current at the time it was prepared and provided for comment. In fact, the oil cost of $18 a barrel was made at a time when the OPEC price was less than $15. The report has been updated consistent with more recent events.

FEDERAL INSPECTOR FOR THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

Inspector's comment

"Based on the information currently available to me, I have serious reservations about some of your analyses and recommendations. I am reluctant at this time, however, to provide detailed comments for a number of reasons. First, many of the issues discussed in the report are related to decisions or negotiations of the Federal Energy Regulatory Commission, Department of the Interior and private companies which took place prior to my appointment as Federal Inspector and prior to the establishment of the Office of Federal Inspector. I was not privy to the rationale behind these discussions. Second, other issues raised by the draft report, especially the matter of economic and financial viability are still being debated or evaluated by forces of the free market. I think the marketplace should be given an opportunity to work its will.

GAO response No. 2

The report does not suggest that the stipulations would be "a basis for 'making' concessions." It suggests that the the Government's overall Project coordinator and primary point of contact relating to Federal oversight. As the report also shows, we agree that the marketplace should be given the opportunity to work its will before Federal financial involvement is considered.

DEPARTMENT OF THE INTERIOR

Agency comment

"On page 13, it is suggested that proceedings for the Right-of-Way Agreements represent an opportunity for delay. It is unlikely that a delay will be caused by our schedule for issuing the Stipulations. We are scheduled to complete them before October of this year and this fits the companies' schedules. The Agreement and Grant of Right-of-Way documents are being prepared and will be ready for signature when the conditions of Section 28 of the Mineral Leasing Act are met."

GAO response No. 1

The report suggests the possibility of lengthy proceedings only *if* the sponsors choose to negotiate.

Agency comment

"The Department does not look at the stipulations as a basis for making 'concessions.' There has been extensive discussion with the companies about the environmental and other concerns of the Department vis-a-vis the economics of the projects."

GAO response No. 2

The report does not suggest that the stipulations would be "a basis for 'making' concessions." It suggests that the Department of the Interior, because of its environmental and other concerns, may be relunctant to make concessions in the stipulations.

Agency comment

"We differ with the conclusion implied on pages 14 and 15. We believe that the technology exists to build the pipeline in an environmentally acceptable, economical manner. However, we do have a number of major technical concerns in Alaska that must be resolved by the company before the pipeline can actually be constructed."

GAO response No. 3

As indicated in our responses to comments from the Federal Energy Regulatory Commission and others, the Alaskan sponsors--not GAO--made the risk-of abandonment evaluations in chapter 2. The report does not attempt to determine whether the technology exists to build the pipeline in an environmentally acceptable, economical manner. It states that technical and geological uncertainties should be thoroughly investigated; such investigations may be necessary to resolve the Department's unspecified major technical concerns in Alaska.

Agency comment

"The economics of the project have been extensively studied for several years and found to be generally acceptable. Recent increases in OPEC oil prices reinforce the justification. It is not apparent what purpose would be served by having the Secretary of Energy undertake another overview."

GAO response No. 4

We recommend further study only if Federal financial involvement is requested.

Agency comment

"The planned facility will have a capacity of 1.163 trillion cubic feet per year with additional capacity possible by looping.

"There is a strong possibility of additional gas being discovered in the north slope area that could be transported by this line."

GAO response No. 5

The report deals only with the natural gas proposed to be transported from Prudhoe Bay. It will be appropriate to consider additional supplies and total capacity of the Project in the detailed analyses we have suggested.

We are aware of U.S. Geological Survey and other estimates of potential natural gas resources in northern Alaska. The report does note that, so far, there have been no new discoveries outside of Prudhoe Bay. The analyses we suggest should take into consideration possibilities of additional supplies.

Agency comment

> "The report does not explore what is to be done with the gas in the event that there are no transportation facilities out of the region. Currently, under State Regulation, the gas is being reinjected at Prudhoe Bay. This is costly and consumes a portion of the gas in the process. There are limitations on the useful and non-wasteful continuation of reinjection which should be discussed."

GAO response No. 6

We do not assume that the gas will not be transported out of the region. That is beyond the report's scope. The issue is that indepth analyses are needed before a decision is made on Federal financial involvement.

Agency comment

> "There is a misleading characterization on page 27. If it were obvious that LNG were an economic source of energy, the case against importing would have dissolved. If markets for the gas at incremental cost were apparent, LNG imports would have been authorized. Without some market constraint (such as full-cost or incremental pricing) LNG remains a suspect, unattractive source of fuel. With the appropriate market constraints, it may ultimately become an economical source."

GAO response No. 7

We cannot identify any "misleading characterization." Apparently, the Department of the Interior refers here to the footnote relating to Government policies in granting licenses. The report indicates that quantities of LNG over and above what is now being imported might be brought to the United States if, among other developments, the Government granted licenses to applicants more freely than it does now. As indicated in the report, it deals with possibilities, not predictions. The fact is that LNG is now being imported and additional import applications have been filed.

Agency comment

"The logic on page 32 is questionable. Supply does not create demand. Further, if the cost of the Alaskan gas (properly priced) were low enough to warrant increased economic activity, this would seem a desirable, rather than an undesirable, outcome."

GAO response No. 8

The logic is consistent with views that latent natural gas demand could absorb substantially larger amounts of gas annually than is now consumed. Although we do not believe that this latent demand is unlimited, it seems probable that new gas supplies could stimulate additional demand. Further, the report does not state that increased economic activity is undesirable. It merely states that if new activity absorbs the Alaskan gas, the Alaskan gas probably would not reduce imports.

Agency comment

"The economics on page 28 are confusing. We doubt that it could be demonstrated that energy users are indifferent to prices. What is it that is going to alter consumers preferences or habits? It sounds as if the authors are advocating forced conservation. This tends to be corroborated by first paragraph, page 32."

GAO response No. 9

The Department of the Interior is unquestionably confused. Nothing in the report suggests that energy users are indifferent to prices. However, it is possible for consumers to adjust to energy price rises by responses other than reducing energy consumptions. For example, they may forego recreational expenditures rather than diminish their consumption. Also, consumers may, in some cases, need to be told how to conserve energy.

The report does not necessarily advocate forced conservation. The report recommends that the Government develop a clear and consistent conservation program directed to helping consumers develop conservation attitudes and habits.

Agency comment

"The discussion concerning the lack of impact on importation of OPEC oil is not entirely correct. It is not necessary for someone who burns foreign oil to directly substitute Alaskan gas for displacement of foreign oil to occur. The total energy imported with or without the Alaskan gas is the real basis for comparison."

GAO response No. 10

The report recognizes both direct and indirect substitution. Further, it suggests that detailed analysis is needed before it can be determined what total energy imports would be with or without the Alaskan gas.

Agency comment

"The investment tax credit has a substantial impact on the real rate of return on equity capital. We think that this impact should be considered and included in the appendix on the IROR, in order to accurately evaluate the financial prospects for this project."

GAO response No. 11

Appendix I illustrates the difficulty in reaching mutually satisfactory resolutions. It does not discuss the investment tax credit because this credit is not considered as a part of the Federal Energy Regulatory Commission's rulemaking.

Agency comment

"Your concerns about marketing may be overstated as most of the proven Prudhoe gas has already been marketed (with certain restrictions). Also, it is unlikely that the companies involved will start construction before they have distribution contracts and commitments."

GAO response No. 12

The Alaskan sponsors--not GAO--stated that marketability was a factor in their evaluation of abandonment risks.

Agency comment

"In evaluating this project, consideration should be given to its value as an energy 'insurance policy' in the event of interruption of overseas' sources."

GAO response No. 13

We recognize that "national security" is an important element in establishing national energy policies and should be considered in the indepth analyses we recommend.

Agency comment

"Consideration of this marginal increase in supply as a constraint on the price of OPEC oil and/or LNG would be interesting."

GAO response No. 14

It would be proper to evaluate this in the indepth analyses we recommend.

Agency comment

"Of very special importance for the Congress to consider are the prebuilt projects in the lower 48 states. These projects will provide Canadian gas at an early date and their import should be considered in an overall evaluation of this entire project."

GAO response No. 15

We agree.

NORTHWEST ALASKAN PIPELINE COMPANY

Company comment

"Mr. J. Dexter Peach's letter of June 19, 1979 * * * transmitted for comment a purportedly confidential draft of a proposed report * * *."1/

GAO response No. 1

Our policy is to provide parties having responsibilities concerning the subjects discussed in the draft an opportunity to comment on the draft. Consistent with this practice, we sent copies of the draft of this report to the companies and Federal agencies involved. Each copy had highlighted in red on the cover that the draft was restricted to official use and included the following language also in red:

"Recipients of this draft must not show or release its contents for purposes other than official review and comment under any circumstances. At all times it must be safeguarded to prevent publication or other improper disclosure of the information contained therein."

In addition, each copy contained a transmittal letter referring to the use limitations highlighted on the cover.

Company comment

"The report contains so many misstatements and inaccuracies that the time and resources which would be required to comment on each cannot be justified in light of its premature release to the Canadian press."

1/Mr. Peach is the Director of the Energy and Minerals Division, GAO.

GAO response No. 2

At our meeting with the company representative after receiving this letter, we specifically requested that the company provide any supporting data that would correct the alleged, but not specified, "misstatements and inaccuracies." The company provided none.

Company comment

> "The full extent of the damage and delay caused by the unethical and premature release of the draft to the press cannot be fully assessed at this time. We are enclosing for your information copies of articles from several newspapers to illustrate how an ill-conceived and misleading report can be further misinterpreted by the press. The impact of such articles with their inflammatory rhetoric, especially on the financial community, are particularly damaging to this vital energy project.
>
> "We believe the distortions, inaccuracies, and incompleteness of the already published and released report will be readily discernible to the careful reader, and that this will be our best defense against such irresponsibility. By copies of this letter, we are informing members of Congress and the Administration of our comments and opinions on this matter."

GAO response No. 3

On August 8, 1979, the company's Washington, D.C. press office informed us that it had obtained no articles concerning this report other than those provided with this letter. By comparing the draft copy we sent to them with those articles, the company could easily determine that the articles, in fact, did not disclose all the contents of the draft.

Substantial portions of one article related to opinions expressed to newspaper representatives by people outside our organization. Further, the articles correctly report that they were referring to a draft report which was not final.

NORTHERN NATURAL GAS COMPANY

Company comment

"On January 26, 1979, Northern Border filed an application with the Federal Energy Regulatory Commission for permission to prebuild 809 miles of the Eastern Leg to transport 800 MMCFD of Canadian Gas to U.S. consumers beginning two to three years in advance to when Alaska gas will be available. This service proposed by Northern Border would begin in November, 1981, and continue for a period of 12 years, providing substantial volumes of gas to the Midwestern and Eastern U.S. markets. This proposed prebuilding or Phase I construction of the Northern Border System is predicated on the receipt of acceptable certificates and permits from both the United States' Federal Energy Regulatory Commission and the Canadian National Energy Board.

"When Alaskan gas becomes available Northern Border will file additional applications requesting permission to expand its system by adding 308 miles of pipeline and more compressor stations to accommodate the combined volumes of Alaskan and Canadian gas volumes. This expansion of the Northern Border system will be timed to coordinate its completion with completion of the other segments of the total system.

"Our basic comment on your draft is that substantially all of the problems described are peculiar to the Alaskan segment (or perhaps in some part the Canadian segment), and have little bearing on Northern Border's prospects for financing and construction <u>in light of the 'pre-build' proposal</u> to transport Canadian gas. Had the FERC not chosen to impose the IROR mechanism on Northern Border, the financing and 'pre-build' construction would have proceeded routinely upon issuance of satisfactory export-import licenses by the two governments, and a satisfactory Certificate by the FERC."

"The only unusual obstacle Northern Border now faces is satisfactory resolution of the IROR mechanism. It still faces the 'usual' obstacles of satisfactory 'pre-build' authorizations from the two governments involved. Whether those obstacles will be overcome, and when, is peculiarly within the control of the two governments. However, given such action on a timely basis and acceptable terms, we have no concern over our ability to finance Northern Border privately and construct the 'pre-build' segment on the projected time schedule (assuming the expected cooperation of the Federal Inspector during final design and construction). Neither would we have any concern, once the 'pre-build' is completed, over our ability to finance privately and to construct timely the expansion required to accommodate Alaskan gas when it begins to flow.

"We believe our presentation before the FERC should make it clear that only satisfactory regulatory approvals for the 'pre-build' (including IROR in that context) are needed to bring Northern Border into being as a privately financed pipeline. This represents over 1100 miles of the 4800 mile total system, and an investment (for both Canadian and Alaskan gas) of approximately $2 billion.

"Moreover, as our presentation to FERC documents, successful completion of the Northern Border 'pre-build' will benefit the financing and construction of the Alaskan and full Canadian segments enormously. Further assistance will accrue from 'pre-buidling' the Canadian southern segments and the Western Leg. The unit costs of transportation of Alaskan gas will decline significantly, and obviously financing requirements will be greatly reduced within the same time period.

"We suggest addition of a comprehensive explanation of the effects of 'pre-building' on completion of the entire Alaskan system, and re-examination of some concerns expressed in light of that expectation, and the recent OPEC price increases. Above all, it should be made clear that Northern Border can be and will be privately financed barring adverse regulatory actions in the U.S. or Canada."

GAO response

The report identifies and discusses the Eastern Leg as a separate segment of the system. Also, it shows that the question of Federal financial involvement has been raised only in comments with the Alaska segment. Although we have limited our discussions in this report, the Department of Energy analyses which we recommend will require the comprehensiveness suggested by the Northern Natural Gas Company.

PACIFIC GAS AND ELECTRIC COMPANY

Company comment

"In reviewing the draft we have, as you asked, taken care to prevent the report's premature release or unauthorized use, knowing that the publication of the preliminary draft, before it has been checked for inaccuracies and misleading statements could do unjustifiable harm to public and investor confidence in the Alaska Project. We were, therefore, dismayed to learn that, despite your caution, the draft, without the benefit of corrections, was the subject of some premature stories in the press. This is particularly unfortunate, for the draft in its present form is misleading to the public and to the Congress, and will do nothing to advance general understanding of the project, its promise, or its problems."

GAO response No. 1

We note that the company does not identify specifically in what way the report was "misleading" or recommend specific revisions.

Company comment

"The Project has been approved and found in the national interest by the President and the Congress. The draft report gives scant attention to this fact and seems instead to proceed on the assumption that the national need for this new domestic energy supply should be restudied. The Project is in danger of being studied--and restudied--to death."

GAO response No. 2

In the report, we show that the Project was approved and found in the national interest by the President and the Congress. We recommend further study only in connection with a possibility that a proposal may be made to waive one condition of that approval. That condition requires that the Project be privately financed without any Federal financing assistance.

We see no danger that our recommendations will cause the Project to be "studied to death" or even delayed. All present activities can continue without regard to the Department of Energy analyses that we suggest.

Company comment

> "The draft report contains a great deal of superficial and completely unsubstantiated speculation about the possible availability of alternate energy supplies. This speculation covers ground which has been covered many times before. All of the mentioned alternatives are not truly alternatives to the Alaska Project but are instead other possible sources of energy that will in all likelihood be needed in addition to the Alaska Project, if they can be bought to fruition. Alternatives to the Project were considered and a decision has been made at the highest level of our Government and the Government of Canada to move forward with the Project. The time for studies of alternatives is past."

GAO response No. 3

These points are discussed in some detail in our responses to the Federal Energy Regulatory Agency and Department of Energy. Further, in discussing alternate energy supplies, the report is not seeking to identify alternatives to the Alaska Project. Instead, it seeks to identify options that the Congress may have if Federal financial involvement is proposed. The report does indicate that the United States will have to look to a variety of energy sources for its future gas supplies. It does not suggest that the Project will not be one of them.

Company comment

> "If any study is necessary at this time, there should be an analysis of ways to clear government roadblocks and delays which are the single greatest threat to the Project's timely and economic completion. In our opinion the GAO's draft study should be revised to give close attention to this problem. The report could perhaps help to achieve the expressed will of the Congress that this Project be built if the report were to examine closely the delays and uncertainties caused by the governmental regulatory process, and to recommend ways of rectifying the situation."

GAO response No. 4

Governmental efficiency, in general, and the processes with respect to the Project, in particular, have been receiving our continued attention. We note that both depend on the attitude and efforts of the interested parties as well as of the Government. For example, appendix I describes the procedures for determining the variable rate-of-return for the Project.

In addition, as pointed out by the Northwest Alaskan Pipeline Company in its statement to the Federal Energy Regulatory Commission on determining the Project risk premium for the Alaska segment of the Project, the general public and other third parties can affect rates of progress in public matters.

Company comment

> "The report spends a great deal of time speculating what should be done if the Project were unable to obtain private financing. This sort of speculation unnecessarily runs the risk of becoming a self-fulfilling prophecy. Investor and lender confidence are being eroded day by day by regulatory delays which raise the question of the U.S. Government's commitment to the Project. The draft report will cause further erosion of confidence. The partnership has stated its belief that the Project can be privately financed, but we will not know until we are allowed by government decisions to go forward. We do know that until that occurs, speculation

about possible failure, especially from a responsible agency of the Federal Government, is to say the least, unnecessary and very much contrary to the national interest."

GAO response No. 5

We did not initiate any actions to question the sponsors' ability to secure private financing. Such questions were raised elsewhere, including the Northwest Alaskan Pipeline Company's statement on determining Project risk premiums.

In addition, we did not institute any suggestion that the Government should or should not get financially involved in the Project. Although once that possibility was raised, there was a risk that it would become "a self-fulfilling prophecy," our prime concern is that the Government should be in a position to make an informed decision if Federal financial involvement is proposed.

We believe that getting prepared for a prompt, informed decision on a public question is fully in the national interest.

note: Page numbers referring to draft report were changed to correspond with those in this final report.

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BEFORE THE
UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
SUBCOMMITTEE ON
OVERSIGHT AND INVESTIGATIONS

Prepared Statement of Robert L. Pierce
President and Chief Executive Officer
of Foothills Pipe Lines (Yukon) Ltd.

October 15, 1979

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. Foothills is the parent organization for five subsidiary companies which have been designated by the National Energy Board and the Canadian Parliament to construct and operate 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 the Alberta Gas Trunk Line Company Limited ("AGTL"), a Canadian company which presently owns and operates a major gas transmission system in the Province of Alberta. AGTL owns fifty percent of the outstanding shares of stock in Foothills. The remaining fifty percent is owned by another Canadian Company, Westcoast Transmission Company Limited ("Westcoast"), which operates a major gas transmission system in the Province of British Columbia.

During the time available to me today, I would like to provide the subcommittee with a brief summary of the progress which has been made in Canada since the Fall of 1977, when the ANGTS was selected by the President and ratified by the Congress.

In that context, I will comment upon (1) significant Canadian legislative developments, (2) the progress of technical work which is being carried out by the Canadian sponsors, (3) the status of pertinent NEB proceedings, and (4) the outlook for privately financing the Canadian segment of the system. I will also discuss our proposal to "prebuild" a substantial portion of the system in order to export an additional 1.04 billion cubic feet of Alberta natural gas per day to the United States. Prior to addressing these matters, however, let me briefly cover some of the technical aspects of the system we are proposing to construct.

The Canadian segment of the system will extend from a point on the Alaska/Yukon Territory border, southeasterly along the Alaska Highway, to a bifurcation point in southern Alberta near the town of Caroline. From that point, a "western leg" will be constructed in a southwesterly direction to a point on the international boundary near Kingsgate, B.C., where there will be an interconnection with the system of Pacific Gas Transmission Company. Similarly, an "eastern leg" will be constructed in a southeasterly direction to a point on the international boundary near Monchy, Saskatchewan, where there will be an interconnection with the system of Northern Border Pipeline Company.

Under our current plans, the portion of the system between the Alaskan border and Whitehorse will be constructed of high pressure, 48" diameter pipe, which is the same size that is being used in Alaska. From Whitehorse to Caroline, however, we presently intend to use 56" pipe in order to provide sufficient capacity for the Canadian gas which is expected to come on stream when the Dempster Lateral is completed, connecting the system with reserves in the MacKenzie Delta and Beaufort Sea areas. The segment from Caroline to Kingsgate, B.C. would be constructed of 36" pipe, and the segment from Caroline to Monchy, Saskatchewan would be constructed of 42" pipe.

The Canadian portion of the ANGTS will have an initial capacity to transport approximately 2.0 to 2.4 billion cubic feet per day of Alaskan gas and 1.2 billion cubic feet per day of Canadian gas. With the addition of looping and compression, however, the system could ultimately transport as much as 3.2 billion cubic feet of Alaskan gas per day.

Our February 1979 capital cost estimate for the Canadian portion of the system was $5.768 billion for a late 1984 start-up, as compared with the original NEB target of $4.325 billion for a January 1983 start-up. This increase has been caused primarily by regulatory and legislative delays in the United States.

Foothills is doing everything possible to minimize its expenses without jeopardizing the current construction schedule. Unfortunately, however, the principal cause of cost increases is delay. Continuing delay makes any project more costly, particularly now, given the current inflation rate in North America and the spiraling cost of capital.

Notwithstanding the delays which have been incurred thus far, we are hopeful that a significant portion of the Canadian and U.S. segments can be "prebuilt" within the next two years to permit an export to the United States of approximately 1.04 billion cubic feet per day of additional Alberta gas. If this proposal is approved in a timely fashion by the appropriate Canadian and American regulatory bodies, we believe it would accomplish the following:

1. It would reduce the capital costs of a significant portion of the system; in short, prebuilding now, rather than later, is a hedge against inflation;

2. It would spread out the total construction period, thereby giving the project sponsors a great deal of flexibility in determining how and when to approach the capital markets.

3. It would serve to reduce the ultimate total cost of service for Alaskan gas;

4. It would improve the earnings and the cash flow of the project sponsors, thereby strengthening their financial position as they continue their work to complete the total system; and

5. It would domonstrate that the large diameter, high-pressure pipeline can be installed and safely operated without major cost overruns or schedule delays.

Let me turn now to the progress which has been made in Canada during the past two years on both the entire project and the prebuild phase. On April 5, 1978, approximately five months after Congressional ratification of the Presidential Decision, the Canadian Parliament passed the 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 certificates of public convenience and necessity authorizing five Foothills subsidiaries to construct and operate the Canadian portions of the system; it established procedures and standards for the filing and review of Foothills' tariffs; and it limited 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 has already issued final terms and conditions on technical requirements for the system, and its final terms and conditions on socio-economic and environmental matters are expected to be issued in the near future.

The National Energy Board has also worked assiduously to expedite the Canadian regulatory process. Among other things:

--It has issued a proposed approach to the incentive rate of return mechanism which was envisioned by the Agreement in Principal between our two countries;

--It has issued orders on the proposed mainline and prebuild tariffs of Foothills, as well as the method for regulation of the cost of service contracts; and

--It has completed hearings on the application of Pan-Alberta to export in excess one billion cubic feet of gas per day to the United States through the "prebuilt" portions of the system.

The Board has also established an expedited schedule for all remaining matters affecting the ANGTS, including proof of financing and the finalization of its approach to the incentive rate of return.

At the company level, Foothills has made a substantial amount of progress in the technical work which must be completed prior to the commencement of construction. Detailed location work is essentially complete for the entire system; design work is in an advanced stage for the entire system, and almost complete for the prebuild portions; geotechnical and geothermal studies are continuing in the Yukon at a high level; frost heave studies are continuing at our facilities in Calgary; and additional pipe burst tests are scheduled for next month. On the bottom line, we are doing the job we set out to do five years ago; if there is delay in this project, you can rest assured that it will not be caused by anything within the reasonable control of our company.

Based upon our continuing studies and the progress which has been made in Canada, Foothills and its two owners, AGTL and Westcoast, remain optimistic about the Alaska natural gas transportation system. We all are convinced today--as we were four years ago--that the project is in the best economic interests of both the United States and Canada. We are also convinced that the project should be privately financed without any form of direct governmental participation.

Notwithstanding our optimism, I would be remiss if I failed to emphasize that our companies are seriously concerned about the costly and time-consuming delays which have been caused by legislative and regulatory proceedings in the United States. We are concerned not only with those delays which have already ensued, but with those which--if the past is an indicator--may occur in the future.

As private companies, we have the financial strength to continue reasonable expenditures on the project, to make a substantial investment in the project's equity, and to attract the debt financing which is required for its completion, provided that we have satisfactory contractual arrangements with shippers of substance which are perceived as such by the investment community. We cannot, however, be placed in the untenable position of flowing millions upon millions into this project, year after year, without assurance that the project will commence construction on a timely basis and be completed, and that, upon completion, we will be allowed a fair and reasonable return on our investment.

Based upon our experience thus far, the sponsors now beleive that at least two things should occur soon if we are to continue funding the project at the present rate. First, we must be assured that the money which we invest will be recouped in the event the project is not completed because of problems occuring in the United States. Secondly, we must be satisfied that, once the system is completed, we will be allowed to earn a fair and reasonable return on our investment.

In closing, let me assure you that the Canadian companies remain fully committed to the private financing and early completion of the Alaska natural gas transportation system. We estimate that Foothills' sponsors, AGTL and Westcoast, will have spent 125 million dollars on this project as of December 31, 1979; and we intend to continue our financial support, but we can do so only for so long as it is reasonable.

I thank you for the opportunity of appearing here today. If there are questions from members of the subcommittee, I will be happy to answer them.

Robert L. Pierce

NINETY-SIXTH CONGRESS

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October 23, 1979

Mr. Robert Pierce
President and Chief Executive Officer
Foothills Pipelines (Yukon) Ltd.
1600 Bow Valley Square #2
205 Fifth Avenue, S.W.
Calgary, Alberta T2P2W4

Dear Mr. Pierce:

As I indicated at the beginning of the hearings on the Alaska Natural Gas Transportation System, I am providing you with some written questions. Your responses will be included in the record. The Subcommittee would appreciate answers to the following questions:

1. Will portions of the Canadian line have to be above ground because of frost heave problems?

2. Will construction of the line be delayed until the technical and engineering problems associated with frost heave are resolved?

3. What is the status of the proposed Dempster Highway lateral?

4. What further approvals are necessary to construct the Dempster lateral?

As you will recall, Congressman Clausen requested a specific list of U.S. regulatory and legislative actions which delayed progress on the pipeline system as well as a comparable list of Canadian legislative and/or regulatory requirements. He also requested that you provide the Subcommittee with a list of the Committees of Parliament which have an interest in, or jurisdiction over the pipeline.

October 23, 1979
Page two

It is requested that your response to these questions be sent to the Subcommittee as soon as possible in order to make the complete hearing record available to the public in a timely manner.

Thank you for appearing before the Subcommittee. Your testimony was most helpful and informative.

Sincerely,

HAROLD RUNNELS
Chairman
Oversight and Investigations
Subcommittee

jgh

FOOTHILLS PIPE LINES (YUKON) LTD.

ROBERT L. PIERCE
PRESIDENT AND CHIEF EXECUTIVE OFFICER

1600 BOW VALLEY SQUARE II
205 - FIFTH AVE. S.W. BOX 9083
CALGARY, ALBERTA T2P 2W4
PHONE (403) 237-1577

December 3, 1979

Mr. Harold Runnels, Chairman
Oversight and Investigations
Subcommittee
Committee on Interior and
Insular Affairs
U.S. House of Representatives
Washington, DC 20515

Dear Chairman Runnels:

Our apologies for the delay in replying to your letter of October 23, 1979, but unfortunately it was not received until November 28, 1979. It must have come to me by pony express.

I am pleased to respond to your questions.

1. Question: Will portions of the Canadian line have to be above ground because of frost heave problems?

Answer: We do not anticipate that portions of the Canadian line will be installed above ground in the manner of Alyeska. There are several alternative mitigative measures available such as variations of backfill replacement, insulation, heat tracing and embankment installation, none of which involve this type of installation. The extensive research that is presently going forward at Fairbanks, Alaska; Calgary, Alberta; and Beaver Creek, Yukon is designed to enable the choice of the most cost effective mitigative measures for the various conditions that will be encountered.

2. Question: Will construction of the line be delayed until the technical and engineering problems associated with frost heave are resolved?

   Answer: We do not anticipate that construction of the line will be delayed. Research into the phenomena of frost heave is much more advanced than certain published statements would seem to indicate. We expect to complete the necessary research and select appropriate mitigative measures (fully acceptable to the various regulatory agencies) well before physical construction is scheduled to take place in the area of west Yukon, where frost heave may be a potential problem.

3. Question: What is the status of the proposed Dempster Highway lateral?

   Answer: Foothills Pipe Lines (Yukon) Ltd. has filed with the National Energy Board an application for permission to construct the proposed Dempster lateral. This application was filed before July 1, 1979 in accordance with an agreement between Foothills and the Canadian government.

4. Question: What further approvals are necessary to construct the Dempster lateral?

   Answer: The next step would be for the Department of Indian and Northern Affairs, who have jurisdiction in the area, to refer the Company's environmental impact statement to an environmental assessment review panel set up within the Department of Environment. This has not yet been done. The applications would also be scheduled by the National Energy Board for public hearing. There has been no indication to the Company of what the timing for such a hearing may be.

Mr. Harold Runnels
December 3, 1979
Page Three

The Company's application suggested that the Dempster lateral be scheduled for construction in the two-year period following construction of the Alaska Highway Gas Pipeline Project.

I believe that the information requested by Congressman Clausen, concerning the U.S. regulatory and legislative actions, has already been forwarded to the Subcommittee. I also believe that you have been informed concerning the two standing committees of Parliament which have jurisdiction over northern pipeline development.

I trust the above information will be adequate for your purposes. It was a pleasure to appear before your Subcommittee. Please let us know if we can be of further assistance.

Yours sincerely,

Robert L. Pierce

Robert L. Pierce

RLP:vad

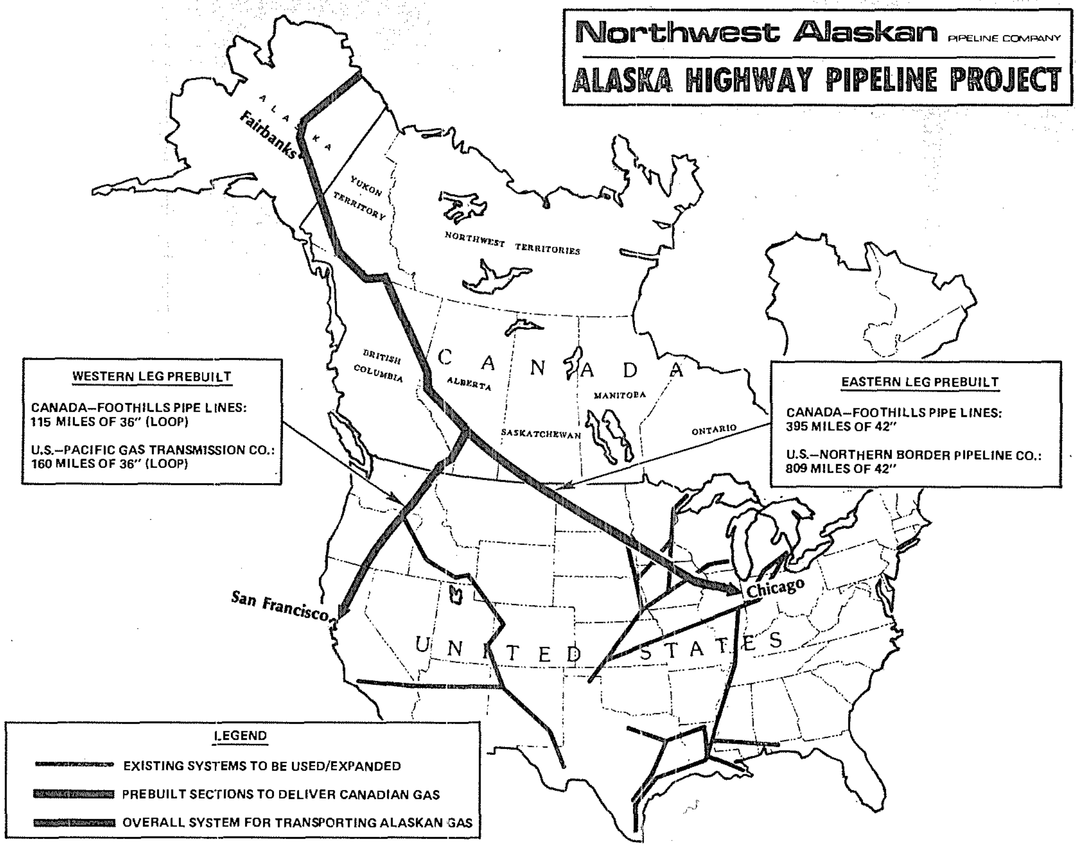
ALASKAN NATURAL GAS TRANSPORTATION SYSTEM

STATUS AND OUTLOOK

PREPARED STATEMENT OF
JOHN G. McMILLIAN
OCTOBER 15, 1979

BEFORE THE

U.S. HOUSE OF REPRESENTATIVES
SUBCOMMITTEE ON OVERSIGHT AND SPECIAL INVESTIGATIONS
OF THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS



Northwest Alaskan PIPELINE COMPANY
ALASKA HIGHWAY PIPELINE PROJECT
ALASKA
Fairbanks
YUKON TERRITORY
NORTHWEST TERRITORIES
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
ONTARIO
CANADA
UNITED STATES
San Francisco
Chicago
WESTERN LEG PREBUILT
CANADA–FOOTHILLS PIPE LINES: 115 MILES OF 36" (LOOP)
U.S.–PACIFIC GAS TRANSMISSION CO.: 160 MILES OF 36" (LOOP)
EASTERN LEG PREBUILT
CANADA–FOOTHILLS PIPE LINES: 395 MILES OF 42"
U.S.–NORTHERN BORDER PIPELINE CO.: 809 MILES OF 42"
LEGEND
EXISTING SYSTEMS TO BE USED/EXPANDED
PREBUILT SECTIONS TO DELIVER CANADIAN GAS
OVERALL SYSTEM FOR TRANSPORTING ALASKAN GAS

SUBCOMMITTEE ON OVERSIGHT AND SPECIAL INVESTIGATIONS
OF THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
U.S. HOUSE OF REPRESENTATIVES

PREPARED STATEMENT OF

JOHN G. McMILLIAN

OCTOBER 15, 1979

My name is John G. McMillian, and I am Chairman and Chief Executive Officer of Northwest Energy Company of Salt Lake City, Utah. I hold similar positions in Northwest Pipeline Corporation and Northwest Alaskan Pipeline Company. Both Northwest Pipeline and Northwest Alaskan Pipeline Company are wholly-owned subsidiaries of Northwest Energy Company. I am also Chairman of the Board of Partners of the Alaskan Northwest Natural Gas Transportation Company. This Partnership has assumed the rights of Alcan Pipeline Company, designated by the President of the United States and ratified by Congress to construct and operate the Alaskan segment of the Alaska Natural Gas Transportation System (ANGTS). The Partnership consists of six of the major U.S. natural gas companies, including affiliates of Panhandle Eastern Pipe Line Company, Northern Natural Gas Company, United Gas Pipe Line Company, Pacific Lighting Corporation, Pacific Gas and Electric Company, and Northwest Energy Company.

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Under the Partnership Agreement, Northwest Alaskan is the operator of the Alaskan segment of the ANGTS. As operator, Northwest Alaskan has responsibility for managing the design, construction and operation of the Alaskan segment of the ANGTS on behalf of the Partnership. In addition, Northwest Alaskan is responsible for the filing of necessary government authorizations, permits and certificates on behalf of the Partnership.

Introduction

I understand that the Committee seeks information on the current status of the ANGTS and the outlook for its future. I welcome the opportunity to discuss these matters with the Subcommittee and to respond to any questions which the Committee might have.

In 1976, Congress directed in the Alaska Natural Gas Transportation Act of 1976 (ANGTA) that the President decide upon the best route for transporting Alaskan natural gas to the lower 48 states, and select the person to construct and operate the system. Congress further directed, in Section 9 of ANGTA, that all federal authorizations, permits, certificates and approvals necessary or related to ANGTS were to be expedited and given priority consideration.

In September 1977, the President reached his decision. Pursuant to ANGTA, this decision was reviewed by Congress, which supported it in all respects.

The ANGTS is an integrated series of natural gas segments that will jointly operate to bring natural gas from the Prudhoe Bay region of Alaska's North Slope southward through Canada to markets within the lower 48 states. The total system authorized by the Canadian and U.S. governments consists of 4,800 miles of pipeline ranging in size from 36 to 56 inches plus other related facilities. The initial capacity of ANGTS will be sufficient to facilitate the transportation of up to 2.4 billion cubic feet per day of Alaskan gas and 1.2 billion cubic feet per day of Canadian MacKenzie-Delta gas for Canadian markets. The ultimate capacity for Alaskan gas is 3.2 billion cubic feet per day.

The ANGTS is a monumental undertaking, both in terms of the physical work involved, and in terms of the financial resources, manpower, and material which it will employ. It is an undertaking which cannot succeed without broad support from private industry, from all levels of government, and indeed from the public itself. Accordingly, to develop and maintain the consensus of support which the project must have requires that those of us dedicated to successful, timely, and economic completion of the project engage in full and frank analysis of where we stand and where we must go, in public discussions such as these. We cannot--and we do not propose that we should--build the Alaska Natural Gas Transportation System in isolation from the processes of government. We have maintained, and will maintain, open lines of communication with the Congress, with the Federal Inspector, the affected agencies of the federal and state governments, and the public at large.

In pursuit of this policy of openness which I regard as essential, I would like to report to you today at some length on the Alaska Natural Gas Transportation System. At the outset, and as a predicate for everything else which I will submit, let me first underscore my unshakable conviction that the Alaska Natural Gas Transportation System is a project essential to this nation's future. The Alaska system must be built, and it will be built. It is only through ANGTS that the U.S. economy can gain access to a major domestic energy supply source, at a regulated price, through proven technology. A recent study done by ICF, Incorporated, for FERC showed that the net national economic benefit for the project ranged from $10.4 billion to $23.5 billion.

I do not regard the Alaskan project as competitive with any other major energy project; certainly, I do not believe that the country can, or should, consider that it must make a choice of one--and reject others--of the apparent options of Alaskan gas, Canadian gas, Mexican gas and synthetic gas. It may well be that the nation requires all of these energy sources. Whatever the merits of other projects, not all of which are familiar to me, I suggest that the merits of the Alaskan project cannot be questioned.

I so conclude because, leaving aside such major considerations as those of the employment opportunities which the Alaskan project will open for the American work force, and particularly for minority businesses; the tax revenues which the project will generate for the federal government and for the states through which the pipeline operates; and the enormous revenues which will be generated for Prudhoe Bay gas producers when a market for their natural gas is provided (which revenues, hopefully, will be devoted to additional exploration and development of domestic oil and gas, resources) the Alaskan Natural Gas Transportation System, is a "must."

In a very real sense, while the benefits enumerated (which will inure to thousands of firms and individuals) are most significant in the context of providing stimulus to the U.S. economy, still these tremendous benefits pale in comparison to what the ANGTS means to the United States from the standpoint of energy policy and energy security.

This Subcommittee needs no advice from me concerning the implications of U.S. dependence on imported oil. This Subcommittee needs no testimony from me to emphasize the balance of payments and national security consequences of our continued dependence on OPEC for the energy necessary to drive the U.S. economy.

The Alaskan gas project represents this country's best single hope for combating increased reliance on OPEC. Through access to the domestic energy supplies available in the far north, we have a means of providing a vital fuel and feedstock for the U.S. which is not subject to OPEC pricing, nor to OPEC withholding.

In short, I am here to say again what I have stressed repeatedly for the past three years--that the Alaska Natural Gas Transportation System is, and must be, the energy project of highest priority to the United States as a whole.

You have heard, as most certainly I have heard, that there are some who question whether the Alaskan system can be privately financed. I would speak to this question during the course of my remarks but as a preliminary matter, consider the significance of the fact that only one real question remains about this mammoth project at this time. It is significant that no one questions the technology to build the system. It is significant that no one questions the compatibility of the system with protection of environmental values. It is significant that no one questions the need for Alaskan gas in the lower 48 states. It is significant that no one questions the ability of the U.S. and Canadian governments to work together to resolve several remaining regulatory matters and to monitor construction all in furtherance of the project. It is significant that no one questions the ability of U.S. and Canadian pipeline companies to work together to construct and operate the system.

What I am suggesting to you is that the events which have transpired since Congress enacted the Alaska Natural Gas Transportation Act of 1976 have operated to underscore the wisdom of Congress in the passage of the legislation, the wisdom of the President's Decision and Report implementing ANGTA, and the wisdom of the Administration's and the Congress's commitment to timely, cost-effective completion and operation of the system.

The situation today, then, is one where I believe it accurate to say that a broad, near universal, consensus has developed in complete support of the concept of an overland pipeline transportation system which will link the vast energy reserves in the far north with markets in the lower 48 states. What remains to be done is the implementation of the decision which has been jointly reached by the President, the Congress, and private enterprise that the Alaska Natural Gas Transportation System be built as quickly as possible.

While we have encountered some problems and obstacles in our efforts to implement the decision to build ANGTS, we have observed a significant acceleration in governmental decisions during the last several months and believe we are now on a track that will permit implementation of definitive financing and commencement of construction.

Permit me to highlight just a few of the positive developments which have occurred since the Congress ratified and approved the President's Decision in favor or a joint U.S./Canadian overland pipeline transportation system:

** The Congress enacted, and the President signed, the Natural Gas Policy Act of 1978; this was an essential building block for the Alaskan project because it settled the question of an appropriate price for Prudhoe Bay natural gas, determined that Alaskan gas would be sold on a "rolled-in" rather than on an incremental basis, and determined that previously contracted-for volumes of Canadian gas which are moved through prebuilt portions of ANGTS would also be sold on a rolled-in basis.

** The President has submitted and the Congress has approved a reorganization plan establishing the Office of the Federal Inspector to coordinate federal government activities on the project and oversee our planning and construction activities. This was also an essential building block in putting the project together because of the enormous potential for delays engendered through our having to deal with multiple agencies and departments of government without clear lines of responsibility and authority for pursuit of timely, cost-effective completion of the project. The Federal Inspector took office in July, and it has been our observation that he has moved quickly to establish his office and his authority to carry out the government's obligations. While we may not always be in agreement, we believe that the Federal Inspector will be fair and is intent, just as we are, on completing the project efficiently and quickly.

** Two strong and vital partnerships have been forged to bring the Alaskan section and Eastern Leg into reality. An existing company has joined to expand its system for the Western Leg. Effective January 31, 1978, the Alaskan Northwest Natural Gas Transportation Company, a partnership composed of affiliates of six major U.S. pipeline companies, was formed to plan, design, construct and operate the Alaskan segment of ANGTS. Effective on March 9, 1978, the Northern Border partnership was reconstituted with affiliates of four major U.S. pipeline companies as general partners, with this partnership to undertake the responsibilities for planning, design, operation and construction of the Eastern Leg of ANGTS. Pacific Gas and Electric Company and its affiliate, Pacific Gas Transmission Company will plan, design, construct and operate the Western Leg of ANGTS.

** Specific plans have been put together, and necessary governmental filings have been made, to implement the joint U.S./Canadian proposal that large volumes of natural gas temporarily surplus to Canadian needs be exported to the United States through prebuilt southern portions of ANGTS as a means of facilitating the final completion and operation of the overall system; the Canadian government, together with the President, have made clear their support of prebuilding, and I believe we can rely upon the statements of the Canadian position that substantial additional exports of Canadian gas presently surplus to Canadian needs may be exported if these exports will function in aid of the overall project. We are well into the process of securing necessary governmental approvals and authorizations in both the United States and Canada.

** What we believe to be a truly significant amount of preliminary planning, design, and field work has been completed for all segments of the system; this work has been supported wholly by the at-risk investments of the participating U.S. partners of funds now totaling over $100 million. Our Canadian partners have invested a similar amount toward planning for the Canadian portion of the system.

** Extensive work with involved federal agencies and departments has already taken place, and many governmental actions which are essential to progress on the project have been received. For example, FERC has issued its final order establishing rates of return and the mechanism for the incentive rate of return required by the President's <u>Decision</u> to assist in controlling cost overruns. This same order approved, with certain modifications, the cost of service tariff, the document defining the terms and conditions for payment for transportation service, and which is the primary financing document when operations have commenced to assure repayment to debt and equity investors. The Commission also recently issued its order which assigns the cost responsibility for certain gathering and gas conditioning costs to prepare the gas for transportation in the pipeline. Finally, in August the Commission issued a final order approving the pipeline size, design pressure and capacity of the Alaskan segment. All of these orders were essential to finalizing the financing plan and investment cost estimate. Earlier this summer, the Department of the Interior gave its provisional approval for the general routing of the Alaskan segment. The general context of the provisional approval centers on DOI's expression that the proposed alignment is a valid basis for future planning and design.

** The three major producers who control over 80% of the gas supply in the Prudhoe Bay field have now committed their reserves to eleven of the major natural gas companies in our industry.

Even with this progress, there are still many obstacles which must be overcome before ANGTS is a reality. My concern for these obstacles that lie ahead does not stem from any lack of confidence in what we propose to do. This, we believe, is in all respects precisely what the President and the Congress have instructed us to do, namely, to plan, design, construct and operate the ANGTS in a timely, cost-effective, efficient manner. Rather, my concern stems from the difficult experiences of the past two years in obtaining from the government the requisite decisions on a timely basis. Fortunately, the recent turnaround of these difficulties, as evidenced by the decisions rendered in the last few weeks and the vigor with which the Federal Inspector has commenced his work, are signals that our frustrating delay is now over, and I look forward with confidence to accelerated progress and accomplishments.

Against the backdrop of those introductory comments, I would like to report on various aspects of the project which I believe will be of interest to the Subcommittee. By general subject matters, the areas that I will address are the following:

(1) Who is providing equity support for the project, who may do so, and what has been the extent and nature of project expenditures to date?

(2) What work have the project sponsors accomplished since the date of the Congressional ratification of the President's Decision and Report?

(3) What is the status of the effort to import additional Canadian natural gas by prebuilding southern portions of the ANGTS?

(4) What activities have taken place between the project sponsors and various government agencies and departments, and what problems have been encountered?

(5) Is Alaskan gas marketable?

(6) What is the present schedule of the project?

(7) How much will the project cost?

(8) Can the project be privately financed?

I will address each of these matters in turn.

1.

Equity Support for the Project

As already mentioned, two partnerships have been formed: the Alaskan Northwest group to undertake the Alaskan segment of the total system, and the Northern Border group to build the Eastern Leg of the total system in the lower 48. An existing company and its affiliate will expand existing facilities for the Western Leg in the lower 48.

We have recognized from the beginning the need to have the participation and support of several of the major natural gas companies in our industry. The six companies who are now partners in the Alaskan segment delivered a total of 3.2 trillion cubic feet of gas to customers ranging from California to New York. This volume represents 16% of total natural gas used in the United States. In addition to these companies, five other major companies in the industry have acquired a commitment for Alaskan gas. I recently sent a letter to to these companies encouraging them to consider entry into the partnership. Attached as Exhibit A is a copy of that letter.

It is significant to note that the existing partners are willing to make a substantial sacrifice in order to attract new partners. The present partnership agreement, as approved by FERC, provides for profit discounts to be applied to late arriving participants with the discount on profits increasing as time passed and successive levels of risk are put behind us. This provision was included to guard against the possibility that a relatively small number of partners would be required to step forward at the inception of the project and take all of the risks incident to early participation, only to be met with a demand at a later date, after the project risks had been successfully surmounted, that more parties be admitted on the same terms and conditions as the original participants. Nevertheless, the existing partners have agreed, subject to FERC approval, to modify this provision in order to admit new partners at this time, when the financing plan is being developed. We are hopeful that this demonstration of encouragement will result in several additions to the partnership.

The Northern Border partnership posed other problems. The Subcommittee will recall that the Northern Border group, as constituted at the time of the Presidential Decision, included some U.S. pipeline companies that were not prepared to move forward with the project as it was envisioned by the President and Congress. Both Northwest and United, however, shared the views of Northern and Panhandle, two of the original Northern Border partners, as to the conceptual approach to the prebuilding of the Northern Border system and later completion of the total Northern Border system. Accordingly, negotiations resulted in a reconstitution of the Northern Border partnership, with active participants who were prepared to move forward immediately. The remaining members of the old Northern Border partnership agreed to assume an inactive status, but retained certain rights to reenter the partnership upon the occurrence of stipulated events.

More importantly, however, TransCanada Pipe Lines Limited, the third major Canadian pipeline company to become involved in the Canadian portion of the project has now requested membership in the Northern Border partnership. Detailed negotiation of the terms and conditions of its entry into the partnership are nearly completed. This entry will provide added strength to the project and particularly the prebuild phase.

Both the Alaskan Northwest and Northern Border partnerships in recognition of the desirability of broadening the base of sponsor-company participation are dedicated to the principle that membership should be available on a non-discriminatory basis, subject only to the need to protect the legitimate rights and interests of those companies which have come forward at the outset and placed substantial funds at risk over the past year.

Turning to the nature and extent of partnership expenditures, I attach, as Exhibit B, a copy of the financial statement of Alaskan Northwest through June 1979. To give the Subcommittee some indication of where, and for what purposes, partnership funds have been expended, I attach also, as Exhibit C, copies of filings with FERC which show expenditures by category of expense.

2.

Project Activities

Our technical progress and accomplishments are structured into six (6) major areas:

(1) Project Management,

(2) Research and Testing Programs,

(3) Engineering Development and Analysis,

(4) Field Engineering Studies,

(5) Construction Planning, and

(6) Technical Data Acquisition.

From mid-1977 through early 1978, we evaluated the top U.S. project management-construction firms that had appropriate credentials, proper experience of key personnel particularly in far north construction, and proven records in recent megadollar engineering and construction ventures. From these indepth evaluations, Fluor Engineers and Constructors (Fluor) was selected as project management contractor (PMC) in April 1978.

In addition to Fluor, we have employed several other firms that will work under Fluor's overall direction. We believe we have captured the best available talent and experience in Arctic construction to apply to our project. Exhibit D attached is a descriptive summary of these firms.

Our current project management objectives are to develop a definitive engineering design and detailed project cost estimate to be filed in mid-1980 for the final FERC certificate and to execute the technical programs required to place the Alaskan pipeline segment in service during the 1984-85 heating season.

We have several long-term, major research and testing programs underway, as joint ventures with our Canadian counterparts:

** Full scale frost heave tests have been in progress for four years at a test facility in Calgary, and tests are continuing to measure heave rates and ice formations. Construction of the more comprehensive, multimillion dollar Fairbanks frost heave facility was recently completed to measure heave and test our special pipeline designs for various frost heaving soils along the pipeline route.

** An additional program of in-situ frost heave tests for 1979 and 1980 has started by installing four test sites along the pipeline route to measure the frost susceptibility of large grain soils. The in-situ testing program will be expanded in 1980 to include other freeze plate tests and freeze back tests. These tests will supplement the laboratory soil heave tests to provide design data with actual ground conditions.

** Full-scale pipe burst tests on line pipe has been completed with the British Gas Institute. A new test site especially designed for Alaskan Highway pipeline site conditions is nearing completion near Rainbow Lake in Northern Alberta. The purpose of these tests is to determine the optimum design for ductile fracture control.

** A series of "model tests" on small diameter pipe is 50% complete at Battelle Laboratories to research the effects of frozen earth backfill on ductile fracture propagation.

** Weld electrode testing will begin later this year in a joint venture between US and Alberta Gas Trunkline Limited. These will be tests of promising new electrode materials. The tests also include an evaluation of full-scale pipe welds subjected to high-stress field bending.

** We are participating in a welding quality research program being conducted by the National Bureau of Standards, under the auspices of the Department of Transportation. We are currently manufacturing samples of rolled plates and finished line pipe, to Alaskan project specifications, for the Bureau's testing next year.

Our engineering developmental and analytical work is applied to a broad range of important aspects of the project. Each piece of work is a major accomplishment in the overall progress of our project and deserves separate and special attention.

** Specifications have been developed for the 48-inch main line pipe, and quotations have been solicited from world-wide sources. Specifications for major valves, fittings, and compressor components have been prepared.

** Station control hardware and software concepts have been established to guide equipment selection and development of control logic.

** Current computer programs are being refined to accommodate a wide range of operating conditions for performing elastic and inelastic stress analyses of the buried pipeline, especially in permafrost areas.

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** About 1,000 hydraulic simulation studies have been performed to evaluate the major variables of system design and analysis--initial throughput and capacity buildup, alternative pipeline diameters and operating pressures, gas temperature control, variations in gas composition, potential turbine/compressor equipment, and effects of seasonal patterns of ambient and subsurface temperatures. The results of these studies have been used for the following analyses and evaluations:

- Optimum economic design of the pipeline system,

- Optimum number and location of compressor stations,

- Compression and refrigeration horsepower requirements,

- System reliability and load factor analysis,

- Alternative refrigeration processes, and

- Waste heat recovery with combined cycle compression for auxiliary power and refrigeration.

** Gas conditioning studies, analysis of natural gas liquids recovery, and economic evaluations of various CO_2 levels have been conducted to determine the optimum pipeline gas composition.

** A mathematical model of thermal transient flow has been developed specifically for the characteristics of our pipeline system, and computer programming of this model is under development by a leading consultant in this field.

** A special transient heat transfer flow is under development to complement the the thermal transient flow program.

** An empirical system of frost heave prediction is a long-range objective, intended for pipeline monitoring and remedial action during the operating life of the pipeline. The first stage of this empirical prediction is currently under development for application during the design phase, and will be based on the heave-ranking of soil types found along the pipeline route.

Field engineering studies performed to date include the following:

** Detailed alignment sheets and small scale topographic maps have been developed from recently completed orthophotography of the entire Alaskan pipeline corridor.

** The entire route has been color photographed as an aid to construction and restoration planning.

** Terrain unit maps have been developed from geotechnical reconnaissance and interpretation.

** Over 150 soil samples were collected and are being analyzed from the geotechnical drilling program south of Delta Junction this Spring. These samples supplement the 200-plus samples that were taken during the initial exploration program. Additional soil samples are being collected in the northern part of the system with this Fall's drilling program.

** Approximately 200 miles of the route have been surveyed for permafrost delineation by resistivity methods.

** Subsurface temperature measurements have been taken monthly for about two years at sixty locations along the route south of Delta Junction.

** Hydrological studies have been made on the entire route, and data continue to be taken from surveys and aerial and on-site measurements.

** Material site locations have been identified and investigated south of Delta Junction and sites north of Delta Junction to Prudhoe Bay are currently being evaluated as part of the Fall field programs.

** All major river and floodplain crossings have been investigated and reported on by engineering and environmental consultants.

** Soils classification studies are underway for improved identification of the potential frost heave areas along the route.

** Special studies and reports have been made on ditch stability and potential seismic fault areas.

The significant early accomplishments in construction planning are as follows:

** An explosive testing program was conducted in Alaskan soils to establish feasible and safe blasting and excavation criteria, especially for areas of close proximity to the Alyeska oil pipeline.

** Negotiations have been completed for our acquisition of the TAPS pipeline and station construction camps. Bed space in the pump station camps is being utilized this year for the geotechnical drilling program.

** Work plans have been developed for project logistics programs, including a transportation system plan.

** Quality assurance and quality control plans and procedures have been drafted and are under detailed development.

** An equipment and spare parts support plan for execution contractors has been prepared.

** Descriptions of mobilization activities have been drafted and reviewed with federal and state agencies and affected firms in the private sector.

We have made thorough searches and evaluations of all major available sources of technical and environmental data, studies, and reports relevant to the project. Specifically, we have quantitatively examined four sources of information:

** A major consulting firm with considerable TAPS project experience has indexed the publicly available information on arctic engineering and environmental studies and reports.

** The El Paso Alaska project data has been reviewed and indexed.

** Approximately 200 useful Arctic Gas studies and reports have been acquired and are catalogued in our technical library. These documents represent a multimillion dollar assemblage of research and development work on large-diameter, high-pressure, chilled-gas pipeline technology for arctic regions.

** The total technical information package offered by the TAPS owners was intensively reviewed over a six-week period last year by a team of our engineers and TAPS-experienced engineering and environmental consultants. We have acquired the use of this data which has now largely been received, and detailed analysis is underway to maximize our use of this information accumulated during construction of the oil pipeline.

3.

Status of Canadian Imports Related to Prebuilding

In 1978, we requested and received conditional approval from FERC to import 1.04 billion cubic feet per day of Canadian gas that is currently in excess of Canadian needs. This proposal would provide vitally needed gas supplies in advance of the availability of Alaskan gas and would make possible early construction of southern portions of the ANGTS. This prebuilding phase of the project has several advantages for the overall project, and we are pleased that it continues to receive the complete support of the United States and Canadian governments. The major advantages are:

** To provide additional gas supply as early as late 1980, four years in advance of delivery of Alaskan gas,

** To spread out demand for materials and labor by constructing about 30% of the pipeline system in advance, and

** To reduce the cost of Alaskan gas when connected, by avoiding inflationary impact for the facilities built in advance, spreading costs over greater gas volumes and depreciating the prebuilt facilities for four years.

- The application necessary to receive all final approvals from FERC have been filed and hearings are in progress. Some of the Canadian gas would be delivered through a prebuilt portion of the Western Leg of the ANGTS, and we expect approvals for this could be received by year-end. The portion to be delivered through the prebuilt portion of the Eastern Leg is expected to be finally approved by April 1980.

The Canadian export approval is expected to be received by year-end. The Canadians are concerned that before the gas is exported from Canada they be assured that the overall project is proceeding to be completed. Therefore, we welcome opportunities, such as this, to demonstrate the continuing interest of Congress that the system selected by the President and ratified by Congress in 1977 is needed and that all appropriate actions should be taken to expedite its completion.

4.

Governmental Activities and Related Problems

In describing the government activities, I will concentrate upon the activities with which we have been involved at the Department of the Interior and the Federal Energy Regulatory Commission during the past two years. Quite obviously, as I am sure the Subcommittee is aware, there are many more federal agencies and departments with which the project sponsors must deal in order to secure all necessary permits, certificates, rights-of-way, and other authorizations. We also will continue to work with the environmental community to assure that environmental concerns are given responsible consideration in the design and construction of the system. Certainly, I do not intend to slight the other government offices with which we have dealt and continue to deal when I limit my comments to Interior and FERC, but rather it is the constraints of time which force me to do so. If, of course, the Committee has specific questions with respect to any other agencies, I will endeavor to respond.

A. Department of the Interior

We have worked with Interior in two areas principally. First, stipulations have been drafted to be attached to the right-of-way on federal lands to be granted for the pipeline, which stipulations spell out in great detail the terms and conditions governing pipeline design and construction. Secondly, the question of proximity has been addressed, that is, at what distance from the oil pipeline is the gas pipeline to be constructed from the Prudhoe Bay field to the point south of Fairbanks, Alaska, where the gas pipeline will divert from the oil pipeline to follow the Alaska Highway. I will report on each of these problem areas in sequence.

- (1) Right-of-Way Stipulations

Our involvement with government officials concerning stipulations commenced in January 1978. The Department of the Interior chaired an interagency working group, with representatives of the State of Alaska included. The starting point for the government's deliberation was the extensive body of stipulations that were attached to the right-of-way grant for the Trans Alaska (oil) Pipeline (TAPS). About 200 separate requirements are included in the TAPS stipulations, which are categorized as (1) general, (2) environmental, or (3) technical. The stipulations are important because they become binding legal obligations upon acceptance of a right-of-way across federal lands.

Over the past 20 months, we devoted many thousands of man-hours to meetings and discussions with government officials to arrive at stipulations sufficiently definitive to permit preparation of a reliable cost estimate. We simply cannot accept open-ended or ill-defined requirements that could later be subjectively interpreted by government officials to require major additional expenditures. While we still do not have an agreed upon body of stipulations, major progress has been made. We still have several significant concerns which have not yet been resolved. While we are hopeful of a favorable outcome, we must reserve our final judgment on this matter for the time being.

(2) The Proximity Issue

In July 1977, Northwest submitted its formal application to Interior for a right-of-way grant across federal lands in Alaska. The proposed pipeline route generally followed the TAPS pipeline (at a separation distance of 60-80 feet) from Prudhoe Bay to Delta Junction. On page 7 of the President's Decision, it was noted that Alyeska Pipeline Service Company, representing the TAPS owners, contended that a 100-200 foot separation is needed where trench blasting would be used and that "additional studies will determine the minimum distance...."

Northwest completed trench blasting field tests in the fall of 1977, witnessed by government and Alyeska representatives. In January 1978, Northwest reported the test results and engaged in dialogue with government officials. In August 1978, a government interagency committee endorsed Northwest's trench blasting criteria and concluded that controlled blasting can be conducted safely at 6080 feet of separation of TAPS.

On December 18, 1978, after completing field reconnaissance, Northwest formally requested Interior to issue a "provisional" approval for its intended pipeline route. In late March, a process was set into motion by Interior to respond to this request, and a relatively high level of activity was initiated by Interior. An Interior letter of

June 13, 1979, provided Northwest a response that was generally very supportive as previously indicated, but there are important questions which remain to be worked out. For example, Interior has proposed a realignment of the pipeline in several sections, totaling 173 miles out of 540 miles from Prudhoe Bay to Delta Junction, Alaska. In addition, certain technical questions were raised which we are in the process of answering. Our schedule requires substantial resolution of these matters by the end of this year, to the extent necessary for subsequent issuance of a right-of-way grant. The Alaskan partnership recently approved a supplemental budget of over $4 million in the remainder of 1979 in order to address proposed route changes and other matters raised in Interior's June 13 letter.

B. Federal Energy Regulatory Commission

As I am sure the Subcommittee appreciates, the rules under which the FERC must operate preclude direct communications between the project sponsors and individual FERC Commissioners on matters which are under adjudication by the Commission. The Commission has, however, established an Alaska Gas Project Office and has provided in a number of instances by specific order that the Director of the Alaska Project Office work directly with the project sponsors on technical issues in advance of the time that any such issue moves into an adjudicatory posture.

The Commission is, I believe, genuinely supportive of the project. Within the past two months, the Commission has issued a number of very significant orders relating to the project. These orders were needed before we could begin to resolve some of the fundamental issues affecting design, financing, and construction.

We have not always been in agreement with the Commission on the pace of its proceedings dealing with the project, nor with the details of every order it has issued. But a number of our major concerns have been recently alleviated by the Commission resolving--on a generally acceptable basis--such important matters as the rate of return for equity investors, an incentive rate of return mechanism which the Commission believes will help control project costs, the tariffs for the project, the design and capacity specifications for the Alaskan segment, and the allocation of production-related costs between sellers and buyers of Prudhoe Bay gas.

These have all been difficult and troublesome matters for the Commission, where it was necessary for the Commission to perform a delicate balancing of interests between the project sponsors, gas consumers, gas producers, the pipeline purchasers who will be shippers over the Alaskan system, the State of Alaska, and other interested parties. The Commission has not given us all that we sought, but we understand the necessity for compromise and we are proceeding at this time based on what the Commission has done thus far.

I must note, however, that not one of these crucial orders, which were issued in August and September of 1979, is yet final. Some are subject to rehearing by the Commission, and each is subject to judicial review under the terms of the Alaska Natural Gas Transportation Act of 1976. Certain other parties are seeking changes in or revocation of some of these orders, and they all, of course, remain uncertain until they become final.

We look forward to continued support from the Commission in our endeavors. While we do not expect the Commission to always agree with us, or even to respond as quickly as we would desire, we anticipate that the Commission will act reasonably, responsibly, and promptly on matters vital to our progress.

There are several such matters still awaiting action at the FERC which we hope will soon receive the Commission's attention. First, there is the "tracking" mechanism, that must be established by the Commission, which would permit natural gas pipeline companies shipping gas through the ANGTS to recover from their customers charges for the gas and for transportation on all segments of the system. The Commission addressed this issue in its September 6, 1979, order, and indicated its acceptance of the concept that there must be an uninterrupted flow of revenue from the consumer to the the project investors once the ANGTS is completed and commissioned for operations. It is necessary to project financing that this concept be formalized in approved tariffs of the shipping companies, and we trust that the Commission will resolve this matter appropriately at an early date.

Second, is the need for the Commission to establish a means whereby the Commission will audit and approve project expenditures on regular intervals, beginning now and continuing over the construction life of the project. We believe that this process of regular and periodic review and approval is directed by the President's Decision, and we filed, some months ago, necessary applications with the Commission to institute such proceedings. It is extremely important that the Commission respond to our request in the near future, particularly in view of the accelerating expenditures which both partnerships have undertaken.

There are other significant matters which await Commission action which are of a more technical nature, such as the determination of an appropriate format for the partnerships to report costs, the technical and environmental stipulations which will be embodied in the FERC Certificate of Public Convenience and Necessity issued to the partnerships, the Equal Employment Opportunity and Minority Business Enterprise policies and procedures to be employed on the project, and procurement policies and procedures. These are matters which, we recognize, take time if they are to be handled properly. As I indicated, we look forward to working constructively with the Commission in the ongoing work which must be performed.

5.

Is Alaskan Gas Marketable?

Northwest commissioned Jensen & Associates, an internationally recognized consulting firm of Boston, Massachusetts, to undertake a study of the marketability of Alaskan gas, given the unique provisions of the Natural Gas Policy Act of 1978 (NGPA), relating to price treatment and marketing of Alaskan gas on a rolled-in, rather than incremental basis.

Attached, as Exhibit E, is a copy of the Jensen & Associates report which has recently been completed. As the Subcommittee reviews this study, certain significant conclusions will emerge.

(1) Alaskan gas represents a proven and dependable source of supply; in constrast, the supply of oil available to the U.S. economy will be restricted by U.S. policies, placing an absolute limit on the amount of foreign oil which will be imported.

(2) Alaskan gas has a regulated base field price, established by NGPA; in contrast, even if there are energy supplies available to compete in the marketplace with Alaskan gas, these energy supplies will be regulated only by such world oil prices as may be set by the OPEC cartel.

(3) The rapidly escalating cost of OPEC oil, now averaging over $20 per barrel, assures the marketability of Alaskan gas.

(4) There is anticipated to be a more than sufficient demand for natural gas to absorb all volumes transportable through the ANGTS over the life of the project.

(5) Even against the most conservative assumptions, which were employed in the Jensen study, Alaskan gas is clearly marketable and will, in fact, be saleable in the U.S. energy markets throughout the life of the project.

The conclusions of the Jensen study are fully supported by a recent FERC sponsored study. In May 1979, the Commission released "A Review of Alaska Natural Gas Transportation System Issues," a detailed study prepared by ICF Incorporated under contract with the FERC. A copy of the ICF study is appended as Exhibit F.

I must, at this point, note what must already be obvious to the Subcommittee in connection with its consideration of the marketability of Alaskan gas. Marketability will be, in large part, a function of transportation costs; transportation costs are, in turn, largely a function of the capital costs of the system. As in so many areas, the government can, by the nature and timing of its decisions, help control the marketability of Alaskan gas.

6.

What Is the Present Schedule for the Project?

The original project plan, as embodied in the Agreement on Principles with Canada, was for the system to be completed to enable initial operation by January 1, 1983. Due to a combination of the lengthy debate in Congress in passing the Natural Gas Policy Act of 1978 and delay in receipt of agency decisions, we revised the schedule in 1978 to a system completion date of November 1, 1984. Our ability to meet that schedule was contingent upon receiving several decisions from FERC and DOI in the period from February to May of 1979. Those decisions were not received until several months later which has affected the level of field programs that we could fund during the past summer season. As a result, we have been reviewing our schedule in detail to determine whether it could still be met. We have determined that we could meet the November 1984 in-service date based upon several critical assumptions. We recently transmitted this schedule to the Federal Inspector, and Exhibit G attached is a copy of that transmittal.

Project Costs

I have reserved for the end of my statement two issues--projects costs and financeability. I have done so because it is necessary to cover other subject areas first in order to provide a reasonable degree of understanding of the difficulties which the project sponsors continue to face in these two areas. Let me deal first with project costs for the Alaskan segment.

In March of 1977, Northwest's predecessor, Alcan Pipeline Company, filed with the FPC an estimate of the capital costs of building the Alaskan segment of the ANGTS. This estimate reflected the then reasonable expectation that the Alaskan segment could be built for $3 billion in escalated dollars exclusive of any allowance for funds used during construction. The March 1977 cost estimate was based upon facts then known and was predicated on the assumption that the pipeline would be built conventionally, in close proximity to the crude oil pipeline, and utilizing the oil pipeline's workpad. At the time of the March 1977 estimate, there were work camps, a communications network, and a substantial infrastructure which had been used in constructing the oil pipeline, and it was our assumption that it would be possible for the gas pipeline construction workforce to move in to the recently vacated TAPS camps and obtain the advantage of the then-existing infrastructure. This March 1977 estimate was valid when made, under the circumstances which then existed.

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The passage of nearly three years has, unfortunately, invalidated certain of the assumptions which underlay the March 1977 cost estimate including nearly a two-year delay in the in-service date. We know that an estimate prepared today will be substantially higher, given changing facts and circumstances, and given our present awareness of the extraordinary degree of federal oversight and federal involvement which will exist in our planning, design and construction activities.

We have been working on a continuing basis to refine and update our cost estimate for the Alaskan segment of ANGTS. Our latest estimation work indicates that the Alaskan segment will cost in the range of $5 billion in escalated dollars exclusive of any allowance for funds used during construction. I believe this cost estimate to be realistic, given the areas of uncertainty that still exist.

We will be able to prepare a reliable cost estimate for this pipeline system under Arctic construction conditions once we finally know the approved alignment and construction mode to be approved by the government.

For these reasons, this recent estimate of the costs of the Alaskan segment must be considered with the caveat that we believe the project can be built for the dollars shown, if the government will move promptly to render the necessary decisions and issue the necessary authorizations, permits, certificates and rights-of-way, and if the government does not impose unreasonable requirements upon us.

While the magnitude of the ANGTS is emphasized by the magnitude of the capital costs which we presently envision, I would urge the Subcommittee to the realization that even though the capital costs are high, the cost of service which we anticipate through the total system remains quite reasonable. For example, on the assumption that capital costs will be as reflected in our newest estimate, the transportation cost of service, when combined with the price which must be paid in the field, still yields a delivered cost of Alaskan gas to the U.S. gas consumer within the range of $5 per MMBtu initially and declining in constant 1978 dollars due to depreciating fixed costs to about $3.50 per MMBtu in 1990. In contrast, the OPEC oil price will be increasing in real dollars and is expected to be limited in supply, under import restrictions. As clearly shown by the Jensen & Associates study referred to above, Alaskan gas can, and will be, saleable in the lower 48 states.

8.

Can the ANGTS Be Privately Financed?

If the Subcommittee puts the question to me, "Can the ANGTS be privately financed?", my answer is an unequivocal "Yes." If the Subcommittee poses the question, "Will the ANGTS be privately financed?", my answer is an equivocal "It should be." I am not playing games with words. I have no question at all concerning the ability of private capital markets to fund the Alaska Natural Gas Transportation System, if they are willing to do so. Whether they will be willing depends on their perception of the risks involved in construction and even more importantly, the risks in obtaining required government approvals and regulatory support in an expeditious and appropriate manner.

The construction risk concern can be dealt with. While there is a tendency to think of the ANGTS as a total homogeneous whole, this impression is demonstrably not valid. The Western Leg is readily built as an expansion of an existing operating company, Pacific Gas and Electric Company and its affiliate, Pacific Gas Transmission Company. The Eastern Leg involves only routine conventional construction by Northern Border with no unusual risks. A substantial portion of the Canadian system is adjacent to existing systems and is also typical standard construction that the Canadians perform within budget every year. Of the remaining Canadian system in the Yukon territory, the terrain and geotechnical conditions are largely uncomplicated. The only complex section presenting significant construction challenges is in Alaska, which requires about 40% of the expenditures for the total ANGTS. Although this section is more difficult, it does not present the unknown obstacles faced by the Alaskan oil line. We have the benefit of the Alyeska experience, a developed right-of-way to follow, existing technology to utilize, and relatively proven construction techniques to employ.

Even though we can demonstrate that there are no construction risks except in Alaska and that those, under our circumstances, are acceptable, the Alaskan section will present an obstacle to private financing, so long as the following two factors continue to exist: (1) there remains an uncertainty in financial circles that the support of the U.S. government for the project cannot be translated into responsible and timely government decisions because of procedural and organizational barriers; and (2) the principal project beneficiaries, the State of Alaska, the Prudhoe Bay gas producers, and the major gas transmission companies, will not provide their required significant financial support. The resolution of these two factors is essential to successful private financing.

While we have been disappointed in the time taken for specific government action during the past two years, we are again encouraged with the recent FERC decisions that have been made and with the establishment of the Office of the Federal Inspector. These key decisions and the positive impetus of the Federal Inspector should begin to eliminate the concern in the financial community about government inaction and delay. The dedication to the timely completion of the system that has been demonstrated by the highest levels of our government, including the Congress, the President, the Vice President, the Federal Inspector, the Secretary of the Department of Energy, and the Secretary of the Interior, is, of course, vital to our success. We trust that this dedication will continue and will become reflected in necessary governmental actions.

The President, in his Decision, recognized that without strong support from the project beneficiaries--the Prudhoe Bay gas producers, the State of Alaska and the gas transmission companies--private financing probably cannot be realized.

Here again we have experienced inaction and delay, particularly with respect to the producers and the State.

When the Alaskan partnership was formed by interested gas transmission companies to build the Alaskan segment of the project, several interstate pipelines decided to withhold their financial participation until some of the project uncertainties have been resolved. The recent FERC decisions, together with the conclusion of gas sales commitments by the three major producers, should cause these companies to join the partnership and participate in the Project. It is expected that their joinder, together with other gas transmission companies who have indicated an interest to participate, will provide all the support that is needed from this group of beneficiaries.

There has also been some positive action by the gas producers in the past few weeks. The President, in his July energy speech to the nation, identified our project as a way to replace nearly 700,000 barrels of imported oil per day and instructed the Secretary of Energy to call in the producers and get them involved in the pipeline financing. Several meetings resulted, and we have recently had the opportunity to present a summary of our work to date and future plans to technical representatives of the producers. These are, of course, just preliminary steps, and we have, as yet, no indication of what the producers may be willing to do. Nevertheless, we remain confident that they will make a substantial positive contribution because of the very large benefits they will obtain from the completion of the project and the sale of their North Slope gas. If these producers are paid the NGPA ceiling price for pipeline quality gas delivered into the ANGTS system, they will realize nearly 50 billion in 1979 dollars. In view of this, it is clearly appropriate, as the President indicated in his Decision, that the Prudhoe Bay gas producers should provide financial support for the project, or some form of protection against cost overruns through a guarantee of some portion of the system's debt. Congress apparently agreed with the President with its ratification of the Decision.

Regarding the State of Alaska, we must confess to a sense of frustration. While the State is the principal beneficiary of this project and will realize more direct and indirect benefits from its construction and the sale of the Prudhoe Bay gas than anyone else, we have been unable to develop any positive programs with the State which would materially assist in the development of a financial plan to move the project forward. As a consequence, we have been compelled to withdraw certain initiatives that we proposed for the State of Alaska participation and to attempt to develop new arrangements for discussion and possible implementation. While we have been disappointed to date, we do expect that the State will ultimately participate in an appropriate manner because of its obvious self-interest, and we will, therefore, continue to work on other proposals with State leaders which may be more acceptable to them.

I recently met with Governor Hammond who assured me that he will work with the State Legislature to develop meaningful State financial participation to assist the project.

Another important aspect in achieving private financing is the public service responsibility to build the total project for the lowest possible cost consistent with high standards of safety and reliability. We have worked many hundreds of hours with our financial advisors and other interested parties, in our efforts to put together a private financing plan to accomplish these goals in accordance with the will of the Administration and Congress. We have had preliminary discussions with major lending institutions, both in the United States and abroad. We have explored in the Far East and in Europe the possibility of Japanese and European financial participation. We have also received information from domestic and foreign suppliers concerning their abilities and requirements to supply major components for the project. It is too early and our discussions too tentative for us to reach any conclusions concerning where the best value can be obtained for the American consumer, in terms of lower capital cost, high quality materials and low debt costs. We realize that there are many considerations and interests that are involved and must be reviewed in developing procurement policies. We will, therefore, develop our procurement policies and procedures in close coordination with the Federal Inspector, FERC, and counterpart regulatory authorities in Canada to insure that our procurement activities are endorsed by responsible U.S.and Canadian officials prior to their implementation.

CONCLUSION

We strongly believe in the Alaska Natural Gas Transportation System. We believe it is without question our nation's single most important domestic energy project. I have personally devoted a substantial portion of my time and energy to the development of this project for the last few years, and I will continue to work to make it a reality. Those of us involved in the project need your help, just as we need the help of the whole federal structure to complete successfully the largest single enterprise ever undertaken. It can be done.

I know that the Subcommittee is vitally interested in the project, its progress and its problems. I thank you for the opportunity of appearing here today and would welcome the opportunity to report to the Subcommittee periodically as we develop the project. This concludes my prepared remarks, and I stand ready to respond to such questions as the Subcommittee might have and to provide such additional information as the Subcommittee may require.

EXHIBIT A

Page 1 of 3

The following parties received the attached letter:

Mr. Bernard Clark
Chairman and Chief Executive Officer
Columbia Gas System Inc.
20 Montchanin Road
Wilmington, Delaware 19807

Mr. William M. Elmer
Chairman
Texas Gas Transmission
P. O. Box 1160
Owensboro, Kentucky 42301

Mr. George F. Kirby
Chairman, President and
Chief Executive Officer
Texas Eastern
P. O. Box 2521
Houston, Texas 77001

Mr. E. T. Robinson
Chairman
Transwestern Pipeline Company
P. O. Box 2521
Houston, Texas 77001

Mr. Arthur R. Seder, Jr.
Chairman
Michigan-Wisconsin Pipeline Company
1 Woodward Avenue
Detroit, Michigan 48226

EXHIBIT A

Page 2 of 3

NORTHWEST ALASKAN PIPELINE COMPANY

JOHN G. MCMILLIAN
CHAIRMAN OF THE BOARD

SUITE 801
1801 K STREET, N.W.
WASHINGTON, D.C. 20006
(202) 466-5850

September 20, 1979

Following resolution by the FERC of incentive rate of return and tariff issues, Alaskan Northwest Natural Gas Transportation Company, the Partnership designated and selected by the President and the Congress as having responsibility for the construction and operation of the Alaskan segment of the Alaskan Natural Gas Transportation System is moving forward with its plans for 1980 and the years following. In addition, we have recently received renewed support from the President and through his efforts the producers are seriously considering financial assistance.

On behalf of the Partnership, I wish to renew our invitation to discuss your company's joinder of the Partnership.

As a company which has successfully negotiated for a position as a prospective purchaser of Prudhoe Bay natural gas, your firm obviously has a deep interest in the timely completion of the transportation system necessary to move that gas to your markets. Accordingly, your participation in the Partnership endeavor is a matter which you will undoubtedly wish to consider at an early date, and I take this opportunity of assuring you that the partnership will welcome your participation.

You have previously been furnished a copy of the Partnership Agreement and you are familiar with the FERC's approval of that Agreement. While the Commission has approved the use of a 2% discount in the allocation of Partnership profits to partners joining after June 30, 1978, the Board of Partners has determined as a matter of policy that the Partnership will seek from the Commission a waiver of the discount provisions for those companies joining the Partnership in the immediate future. It is contemplated that Commission approval would be sought for a waiver of the discount provisions for those partners admitted to the Partnership within the next 30 to 45 days, but that the discount provisions would thereafter be applied without exception. The Board of Partners has concluded that partners joining the Partnership at this time should be in a position to support the ANGTS project in its entirety, including the prebuilding phase, and that those partners joining the Partnership should, within a reasonable period of time after joining the Partnership, contribute sufficient amounts of capital to the Partnership to equalize the cash expenditures from the effective date of the Partnership of the new partners with those of the old partners. The cash expenditures through September 1979 total $50 million and have been shared equally by six partners.

If you are interested in discussing admission to the Partnership within this framwork, I would be pleased to meet with you at your convenience. As I am sure you appreciate, significant decisions are being made by the Partnership at every meeting, and to the extent that it is important to you to participate in planning the project, I urge your early consideration of the question of admission.

If you have any questions at all, please do not hesitate to call me.

Very truly yours,

John

John G. McMillian
Chairman
Board of Partners
Alaskan Northwest Natural Gas
Transportation Company,
A Partnership

EXHIBIT B

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

FINANCIAL REPORT TO BOARD OF PARTNERS

JUNE 1979

August 21, 1979

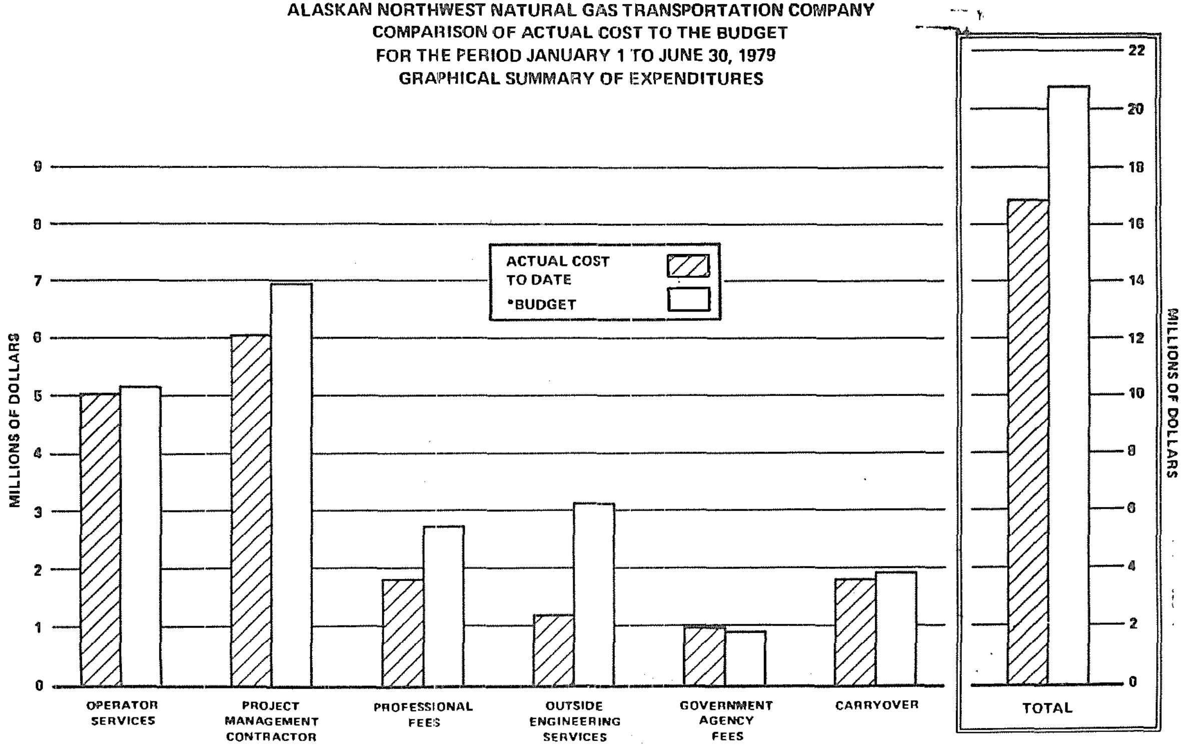
ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPAN

FINANCIAL REPORT TO BOARD OF PARTNERS

JUNE 1979

PAGE

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY
COMPARISON OF ACTUAL COST TO THE BUDGET
FOR THE PERIOD JANUARY 1 TO JUNE 30, 1979
GRAPHICAL SUMMARY OF EXPENDITURES



*GRAPH EXCLUDES BUDGETED CONTINGENCY AMOUNT OF $ 2.8 MILLION.

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY
JUNE 1979 KEY STATISTICS

(Dollars in Thousands)

	CURRENT MONTH	SIX MONTHS ENDING JUNE 30, 1979	INCEPTION TO DATE
EXPENDITURES:			
CAPITALIZED COSTS	$3,610	$16,881	$ 97,428
ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION	2,033	11,189	32,976
TOTAL	$5,643	$28,070	$130,404
BUDGETED CAPITALIZED COSTS	$3,744	$23,613	
CAPITALIZED COSTS OVER (UNDER) BUDGET	(134)	(6,732)	
PARTNERSHIP NET INCOME	$2,030	$11,343	
CASH POSITION:			
CASH AND TEMPORARY CASH INVESTMENTS AT JUNE 30, 1979	$3,257		
CAPITAL CONTRIBUTION REQUEST FOR JULY	3,480		
TOTAL CASH AVAILABLE	$6,737		

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

COMPARISON OF ACTUAL COST TO THE BUDGET FOR THE PERIOD JANUARY 1 TO JUNE 30, 1979

JUNE 1979

SUMMARY

(Thousands of Dollars)

		BUDGET PERIOD ENDING JUNE 30, 1979		
DESCRIPTION	JUNE ACTUAL EXPENDITURES	ACTUAL EXPENDITURES	BUDGET	OVER (UNDER) BUDGET
OPERATOR SERVICES	$1,362	$ 5,019	$ 5,179	$ (160)
PROJECT MANAGEMENT CONTRACTOR	621	6,107	6,950	(843)
PROFESSIONAL FEES	793	1,815	2,730	(915)
OUTSIDE ENGINEERING SERVICES	535	1,198	3,114	(1,916)
GOVERNMENT AGENCY FEES	162	984	915	69
CONTINGENCY	-	-	2,812	(2,812)
SUBTOTAL	3,473	15,123	21,700	(6,577)
CARRYOVER	137	1,758	1,913	(155)
SUBTOTAL	3,610	16,881	23,613	(6,732)
ESTIMATED TERMINATION COSTS	-	-	3,300	(3,300)
TOTAL	$3,610	$16,881	$26,913	$(10,032)

NOTE: ESTIMATED TERMINATION COSTS, as defined in the Partnership Agreement, are "contractual commitments which will accrue in the event of Project suspension" as of June 30, 1979.

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

COMPARISON OF ACTUAL COST TO THE BUDGET FOR THE PERIOD JANUARY 1 TO JUNE 30, 1979

JUNE 1979

OPERATOR SERVICES

(Thousands of Dollars)

DESCRIPTION	JUNE ACTUAL EXPENDITURES	BUDGET PERIOD ENDING JUNE 30, 1979		
		ACTUAL EXPENDITURES	BUDGET	OVER (UNDER) BUDGET
SALARIES AND EMPLOYEE EXPENSES	$ 892	$3,243	$3,576	$(333)
EQUIPMENT USE	217	841	646	195
OFFICE AND COMPUTER RENTAL	84	457	430	27
OFFICE SUPPLIES AND UTILITIES	44	255	307	(52)
EQUIPMENT PURCHASE	37	21	55	(34)
INSURANCE	24	30	42	(12)
OTHER EXPENSE	64	172	123	49
TOTAL	$1,362	$5,019	$5,179	$(160)

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

COMPARISON OF ACTUAL COST TO THE BUDGET FOR THE PERIOD JANUARY 1 TO JUNE 30, 1979

JUNE 1979

PROJECT MANAGEMENT CONTRACTOR

(Thousands of Dollars)

DESCRIPTION	JUNE ACTUAL EXPENDITURES	BUDGET PERIOD ENDING JUNE 30, 1979 ACTUAL EXPENDITURES	BUDGET	OVER(UNDER) BUDGET
FLUOR	$ 764	$3,919	$3,797	$ 122
FIELD DATA PROGRAMS:				
DRILLING PROGRAM	70	817	1,063	(246)
FROST HEAVE SOIL CLASSIFICATION	33	176	239	(63)
ALL OTHERS	4	221	325	(104)
SUBTOTAL	107	1,214	1,627	(413)
FROST HEAVE TEST FACILITY CONSTRUCTION	151	512	200	312
LESS: ESTIMATED RECEIVABLE FROM CANADIAN SPONSORS	(688)	(688)	-	(688)
SUBTOTAL (SEE NOTE)	(537)	(176)	200	(376)
FROST HEAVE TEST FACILITY OPERATION (SEE NOTE)	36	84	127	(43)
ENVIRONMENTAL PROGRAMS	67	273	194	79
SYSTEMS DEFINITION:				
GEOTECHNICAL	20	243	240	3
PIPELINE DESIGN	70	200	300	(100)
ALL OTHERS	72	318	300	18
SUBTOTAL	162	761	840	(79)
CONSTRUCTION PLANNING	7	7	25	(18)
PROJECT MANAGEMENT	15	25	140	(115)
TOTAL	$ 621	$6,107	$6,950	$(843)
CARRYOVER:				
FLUOR	$ 2	$ 2	$ 10	$ (8)
FROST HEAVE CONSTRUCTION (SEE NOTE)	(93)	1,043	1,136	(93)
HOLOSONICS	(25)	30	60	(30)
ORTHO PHOTOGRAPHY	73	472	507	(35)
ADJUSTMENT TO 1978 ACCRUED COSTS	30	61	-	61
TOTAL	$ (13)	$1,608	$1,713	$(105)

NOTE: Costs related to the FROST HEAVE TEST FACILITY CONSTRUCTION and OPERATION are being shared with Foothills Pipe Lines (Yukon) Ltd. Upon completion of construction, Foothills will be billed its share of construction costs. The RECEIVABLE FROM CANADIAN SPONSORS FOR SHARED TESTS AND PROJECTS of $3,638 thousand on the Balance Sheet represents the approximate amount of Foothill's share of costs incurred from inception through June 30, 1979.

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

COMPARISON OF ACTUAL COST TO THE BUDGET FOR THE PERIOD JANUARY 1 TO JUNE 30, 1979

JUNE 1979

PROFESSIONAL FEES

(Thousands of Dollars)

DESCRIPTION	JUNE ACTUAL EXPENDITURES	BUDGET PERIOD ENDING JUNE 30, 1979		
		ACTUAL EXPENDITURES	BUDGET	OVER (UNDER) BUDGET
EXECUTIVE	$ 89	$ 106	$ 30	$ 76
TREASURY	140	393	885	(492)
CONTROLLER	17	92	76	16
PROJECT GROUP	103	121	416	(295)
ADMINISTRATION	24	67	96	(29)
LEGAL	288	735	867	(132)
REGULATORY, ENVIRONMENTAL AND CIVIC AFFAIRS	122	234	313	(79)
PUBLIC RELATIONS	10	67	47	20
	$793	$1,815	$2,730	$(915)
CARRYOVER - ADMINISTRATION	$150	$ 150	$ 200	$ (50)

NOTE: Agreements with two Financial Advisors specify additional fees contingent upon the successful financing of the Project. As of June 30, 1979, these contingent fees totaled approximately $575 thousand.

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

COMPARISON OF ACTUAL COST TO THE BUDGET FOR THE PERIOD JANUARY 1 TO JUNE 30, 1979

JUNE 1979

OUTSIDE ENGINEERING SERVICES

(Thousands of Dollars)

DESCRIPTION	JUNE ACTUAL EXPENDITURES	BUDGET PERIOD ENDING JUNE 30, 1979 ACTUAL EXPENDITURES	BUDGET	OVER (UNDER) BUDGET
PIPE BURST TEST	$532	$1,146	$2,674	$(1,528)
FROST HEAVE TEST	-	8	355	(347)
PROJECT PAPERS	-	33	60	(27)
COST/SCHEDULE CONSULTANTS	-	-	25	(25)
CAMP EVALUATION	1	9	-	9
ALIGNMENT STUDY	2	2	-	2
	$535	$1,198	$3,114	$(1,916)

NOTE: PIPE BURST TEST COSTS are being shared with Foothills, who is overseeing construction and operation. The Partnership will be billed for its share of construction costs at a future date. From inception through June 30, 1979, $2,179 thousand in costs have been accrued in ACCOUNTS PAYABLE AND ACCRUED LIABILITIES on the Balance Sheet as the Partnership's estimated share of costs.

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

COMPARISON OF ACTUAL COST TO THE BUDGET FOR THE PERIOD JANUARY 1 TO JUNE 30, 1979

JUNE 1979

GOVERNMENT AGENCY FEES

(Thousands of Dollars)

DESCRIPTION	JUNE ACTUAL EXPENDITURES	BUDGET PERIOD ENDING JUNE 30, 1979		
		ACTUAL EXPENDITURES	BUDGET	OVER (UNDER) BUDGET
FEDERAL GOVERNMENT:				
BUREAU OF LAND MANAGEMENT	$ 49	$172	$254	$ (82)
FISH AND WILDLIFE	35	287	254	33
SUBTOTAL	84	459	508	(49)
STATE OF ALASKA:				
DEPARTMENT OF NATURAL RESOURCES (OFFICE OF PIPELINE COORDINATOR)	46	347	165	182
DEPARTMENT OF ENVIRONMENTAL CONSERVATION	10	44	80	(36)
FISH AND GAME	22	134	162	(28)
SUBTOTAL	78	525	407	118
TOTAL	$162	$984	$915	$ 69

NORTHWEST ALASKAN PIPELINE COMPANY

P.O. BOX 1526
SALT LAKE CITY, UTAH 84110
801-534-3600

August 21, 1979

TO: Calaska Energy Company
Northern Arctic Gas Company
Northwest Alaskan Pipeline Company
Pacific Interstate Transmission Company (Artic)
Pan Alaskan Gas Company
United Alaska Fuels Corporation

The accompanying balance sheet of Alaskan Northwest Natural Gas Transportation Company as of June 30, 1979, and the related statements of income, changes in partners' equity, and changes in financial position for the month of June, 1979, and for the six months ending June 30, 1979, have been compiled from the books and records of the Company.

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY
BALANCE SHEET
AS OF JUNE 30, 1979

(Thousands of Dollars)

ASSETS	
NATURAL GAS TRANSMISSION PLANT, UNDER CONSTRUCTION	$130,404
CASH AND TEMPORARY CASH INVESTMENTS	3,257
RECEIVABLE FROM CANADIAN SPONSORS FOR SHARED TESTS AND PROJECTS	3,638
	$137,299
PARTNERS' EQUITY AND LIABILITIES	
PARTNERS' EQUITY:	
CONTRIBUTIONS PAID IN	$103,585
RETAINED EARNINGS	25,660
TOTAL PARTNERS' EQUITY	129,245
CURRENT LIABILITIES:	
ACCOUNTS PAYABLE AND ACCRUED LIABILITIES	7,295
PAYABLE TO OPERATOR (NORTHWEST ALASKAN PIPELINE COMPANY)	759
	$137,299

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

STATEMENT OF INCOME

(Thousands of Dollars)

	JUNE 1979	SIX MONTHS ENDING JUNE 30, 1979	TWELVE MONTHS ENDING JUNE 30, 1979
ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION:			
EQUITY COMPONENT	$2,030	$11,343	$20,299
DEBT COMPONENT	3	(154)	(437)
	2,033	11,189	19,862
INTEREST INCOME (NET OF INTEREST EXPENSE)	(3)	154	437
NET INCOME - ALLOWANCE FOR EQUITY FUNDS USED DURING CONSTRUCTION	$2,030	$11,343	$20,299

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

STATEMENT OF CHANGES IN PARTNERS' EQUITY

(Dollars in Thousands)

	PARTNERS						
MONTH ENDING JUNE 30, 1979	CALASKA ENERGY COMPANY	NORTHERN ARCTIC GAS COMPANY	NORTHWEST ALASKAN PIPELINE COMPANY	PACIFIC INTERSTATE TRANSMISSION CO. (ARCTIC)	PAN ALASKAN GAS COMPANY	UNITED ALASKA FUELS CORP.	TOTAL
PARTNERS' CONTRIBUTIONS PAID IN:							
BEGINNING OF MONTH	$16,027	$16,158	$25,618	$16,237	$16,225	$6,570	$ 95,835
DURING THE MONTH	1,125	1,125	1,125	1,125	1,125	1,125	6,750
END OF MONTH	17,152	17,283	26,743	17,362	17,350	7,695	103,585
RETAINED EARNINGS:							
BEGINNING OF MONTH	3,904	3,944	6,809	3,968	3,964	1,041	23,630
NET INCOME FOR MONTH	336	339	544	341	340	130	2,030
END OF MONTH	4,240	4,283	7,353	4,309	4,304	1,171	25,660
PARTNERS' EQUITY	$21,392	$21,566	$34,096	$21,671	$21,654	$8,866	$129,245
SIX MONTHS ENDING JUNE 30, 1979							
PARTNERS' CONTRIBUTIONS PAID IN:							
BEGINNING OF SIX MONTH PERIOD	$15,132	$15,263	$24,723	$15,342	$15,330	$5,675	$ 91,465
DURING SIX MONTH PERIOD	2,020	2,020	2,020	2,020	2,020	2,020	12,120
END OF SIX MONTH PERIOD	17,152	17,283	26,743	17,362	17,350	7,695	103,585
RETAINED EARNINGS:							
BEGINNING OF SIX MONTH PERIOD	2,364	2,390	4,276	2,405	2,404	478	14,317
NET INCOME FOR SIX MONTH PERIOD	1,876	1,893	3,077	1,904	1,900	693	11,343
END OF SIX MONTH PERIOD	4,240	4,283	7,353	4,309	4,304	1,171	25,660
PARTNERS' EQUITY	$21,392	$21,566	$34,096	$21,671	$21,654	$8,866	$129,245
PARTNERS' PERCENTAGE FOR ALLOCATION OF JUNE NET INCOME	16.5462%	16.6868%	26.8094%	16.7716%	16.7585%	6.4275%	100.0000%

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

STATEMENT OF CHANGES IN FINANCIAL POSITION

(Thousands of Dollars)

	JUNE 1979	SIX MONTHS ENDING JUNE 30, 1979	TWELVE MONTHS ENDING JUNE 30, 1979
SOURCE OF FUNDS:			
PARTNERS' CONTRIBUTIONS PAID IN	$ 6,750	$12,120	$32,670
APPLICATION OF FUNDS:			
ADDITION TO NATURAL GAS TRANSMISSION PLANT, UNDER CONSTRUCTION - NET OF ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION	$ 3,613	$16,727	$34,876
CHANGE IN WORKING CAPITAL	3,137	(4,607)	(2,206)
	$ 6,750	$12,120	$32,670
CHANGE IN WORKING CAPITAL REPRESENTED BY:			
INCREASE (DECREASE) IN CASH AND TEMPORARY CASH INVESTMENTS	$ 3,336	$(4,383)	$(2,321)
INCREASE IN RECEIVABLE FROM CANADIAN SPONSORS FOR SHARED TESTS AND PROJECTS	688	688	3,638
DECREASE (INCREASE) IN AMOUNTS DUE OPERATOR (NORTHWEST ALASKAN PIPELINE COMPANY)	301	(92)	235
INCREASE IN OTHER LIABILITIES	(1,188)	(820)	(3,758)
	$ 3,137	$(4,607)	$(2,206)

EXHIBIT C

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Alaskan Northwest Natural Gas Transportation Company) Docket No. CP78-123, et al.

SUPPLEMENTAL APPLICATION OF
ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY
FOR AN ORDER APPROVING PAST EXPENDITURES AND
TO ESTABLISH PROCEDURES FOR CONTINUING AUDIT AND
APPROVAL OF FUTURE EXPENDITURES
AND MAJOR COMMITMENTS

Alaskan Northwest Natural Gas Transportation Company (the Partnership), pursuant to the Alaska Natural Gas Transportation Act of 1976 (ANGTA), the Natural Gas Act, and the Commission's Order Vacating Prior Proceedings and Issuing Conditional Certificate of Public Convenience and Necessity issued December 16, 1977, hereby renews its application for an order approving for inclusion in rate base, actual expenditures made prior to August 1, 1978, and further requests a similar order for expenditures from August 1, 1978 through June 30, 1979 1/ for activities necessary to place the Alaskan section of Alaska Natural Gas Transportation System (ANGTS) in service. The expenditures are reflected in the capital accounts of each Partner, Northwest Alaskan Pipeline Company (Northwest), Northern Arctic Gas Company (Northern), Pan Alaskan Gas Company (Pan Alaskan), Calaska Energy Company (Calaska) 2/, Pacific Interstate Transmission Company (Arctic), [Pacific], and United Alaska Fuels Corporation (United). The Partnership also renews its request that the Commission establish procedures to review and approve, on a continuing basis at regular quarterly intervals, completed activities and both actual and conditionally-committed expenditures necessary to place the Alaskan section of the ANGTS in service.

In support thereof, the Partnership would show as follows:

1/ The pre-August 1, 1978 expenditures were the subject of a filing dated February 2, 1979. The Commission has taken no formal action with respect to that submittal. The Partnership delayed the filing of its request with respect to expenditures incurred since August 1, 1978 with the expectation that the Commission would act promptly on the previously filed expenditures and issue an order indicating the procedure to be followed. This supplement application is filed to request resolution of these matters.

2/ Calaska is successor to the interests of Natural Gas Corporation of California and the interests of Natural Gas Corporation of California were transferred to Calaska as of November 28, 1978.

I.

Background

In its application of February 2, 1979, a copy of which is attached, the Partnership set forth at some length the reasons for its request that a regular audit and rate base approval mechanism be put into effect and that the expenditures already made up to August 1, 1978 be certified for inclusion in rate base. Further, the Partnership petitioned the Commission to create a procedure whereby certain major commitments could be reviewed in a provisional manner prior to actual expenditure of funds. The Partnership herewith incorporates that presentation into the instant application.

The Commission has not published notices of the February 2, 1979 application.

On April 18, 1979, the Chairman issued Administrative Order No. 4 directing the Chief Accountant to commence an audit of ANGTS expenditures through July 31, 1978, and such other audits as the Chief Accountant deems necessary. The Chairman cited as a reason for the action the need for the timely inspection and auditing of the Partnership books. Although Administrative Order No. 4 mentions the February 2, 1979 filing, the Order is not directly responsive to all of the requests made therein, nor has the Commission addresssed the concerns of the Partnership in any other order, opinion, regulation, or proceeding. The Partnership has fully cooperated with the audit of the Chief Accountant.

On May 17, 1979, the Public Service Commission of New York (NYPSC) filed a motion for clarification of Administrative Order No. 4 that the Chief Accountant was not empowered by the Order to approve on behalf of the Commission the inclusion in rate base of any Partnership expenditure. No notice of the NYPSC motion was issued by the Commission. By letter, dated June 21, 1979, NYPSC reminded the Commission of its motion and requested a response. To date, the Commission has not acted on the NYPSC motion.

Also subsequent to the initial application, the Congress approved a modified version of the limited executive reorganization plan envisioned by the President's Decision. 3/ A Federal Inspector has been appointed and confirmed by the

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3/ On May 31, 1979, Congress approved Reorganization Plan No. 1 of 1979 which was prepared by the President and transmitted to Congress on April 2, 1979, pursuant to the provisions of Chapter 9 of Title 5 of the United States Code. Such Plan established an Office of the Federal Inspector for Construction of the Alaska Natural Gas Transportation System.

Senate. Pursuant to the authorizing legislation, the Commission's enforcement responsibilities under the Natural Gas Act, ANGTA, and the Decision were transferred to the Federal Inspector. It is unclear precisely what this action means in terms of jurisdiction over the auditing function now being performed by the Commission's Office of the Chief Accountant.4/

II.

Original and Supplemental Authorization Requested

A. In its February 2, 1979 filing, the Partnership was seeking review and approval of approximately $64.8 million of preliminary construction expenditures prior to August 1, 1978, including approximately $31.8 million attributable to expenditures of the Gas Arctic Group who are now members of the Partnership, $17.8 million expended by Northwest to prosecute its successful application, and $15.2 million of Partnership costs.

From August 1, 1978 through June 30, 1979, the Partnership has spent $32.7 million ($15.8 million for August 1, 1978 through December 31, 1978 and $16.9 million for January 1, 1979 through June 30, 1979). 5/ The details concerning these expenditures are set forth in Exhibits Z-7 and Z-8 appended hereto. These expenditures and the expenditures in the exhibits appended to the original application (Exhibits Z-1, -1, -3) were all reasonable and necessary to proper planning for, and design of, the Alaskan segment of the Alaskan Natural Gas Transportation System, and securing all necessary governmental authorizations, permits, certificates, and rights-of-way. All of such expenditures are properly includable in the capital accounts of the respective partners, as well as in the rate base of the Partnership's pipeline project.

B. The Partnership renews its request that the Commission institute a procedure whereby regular audits and rate base decisions will be conducted and made. The Partnership respectfully suggests a quarterly review and approval during the preliminary construction and construction periods of the project.

4/ See p. 4, infra.

5/ These figures do not include AFUDC, the rate for which remains to be determined in Order No. 31, Docket No. RM78-12, issued June 8, 1979, applications for rehearing pending. (See mimeo pp. 35-40.) (On August 6, 1979, the Commission indicated that it had not yet concluded its deliberations on the issues raised in the applications for rehearing. Therefore, the Commission stated that it was appropriate and in the public interest to grant rehearing of Order No. 31 for the purpose of further consideration, and also appropriate to stay the effective date of Ordering Paragraph (A).) With AFUDC, the appropriate amounts are $23.2 million and $28.1 million, respectively.

C. Lastly, the Partnership again raises for the Commission's consideration the suggestion that upon request of the Partnership, the Commission include within its quarterly review certain major financial commitments of the Partnership that are covered by an executed contract for which payment would become due at some future date. Approval by the Commission would be provisional only, subject to later audit and final approval for rate base.

The Partnership stands ready to make available its books and records at the convenience of the Commission to permit such reviews and field audits as may be required to issue the order(s) requested herein.

III.

Justification for the Authorization Requested

The legal authority underlying the Commission's ability to grant the requested rate base approval and establish the suggested procedures is detailed at pages 5-9 of the February 2 application and will not be repeated here. We note, however, that the role of the Federal Inspector with respect to the matters at issue has not been defined. Neither the Commission nor the Federal Inspector have addressed this point, and the Partnership urges immediate consideration of this most important matter. As the Commission stated to the Congress in its Comments on the President's Decision:

> ...the Federal Inspector mechanism contemplated in the President's Report, by establishing a method of judging the prudence of costs incurred on a current basis, should provide investors as well as consumers with greater confidence...(Comments at p. 45).

The Commission itself, or together with the assistance of the Federal Inspector, clearly has the authority, in fact the obligation, to establish a process whereby preliminary and construction expenditures of the Partnership can be audited and a decision made near to the time of the expenditures as to whether rate base treatment is appropriate. We urge the Commission to take the steps necessary to achieve these results.

IV.

Argument

Preliminary construction and construction phase auditing and precompletion rate base determinations are not common Commission practice. It is clear, however, from the Alyeska experience that such procedures are essential for the Partnership The President's Decision is rife with references to the need to avoid the cost overruns experienced in Alyeska, the lack of effective monitoring, and the adverse impact on consumers of possibly unnecessary costs. 6/ The solution mandated by the Decision is an on-going monitoring, review, and audit process that will ensure the prudence of current decision-making.

The benefits of this course of action are substantial. Expedited decision-making will avoid future insurmountable administrative problems for all concerned, uncertainty will be reduced, problem areas can be pinpointed early, cost consciousness will be fostered, and lenders and potential equity contributors will be encouraged by the positive regulatory environment the suggested process would produce.

The Partnership stands ready to work with the Commission and the Federal Inspector to develop a detailed methodology for handling these important matters at such time as the Commission commences a procedure in response to the instant application. Two points, however, are of paramount importance at this time. The Commission must reach an accord with the Federal Inspector, and the Commisson must initiate action at once.

The amount of money being spent to develop the Project is substantial and growing. The President's Decision does not require that these expenditures be at risk for rate base purposes until some future rate case is inaugurated after the commencement of service. Rate base determinations should be made now and continue to be made throughout the preliminary construction and construction phases. The law and good public policy demand no less.

V.

The names, titles and mailing addresses of the persons to whom all correspondence and communications concerning this application should be addressed are as follows:

Darrell B. MacKay
Vice President
Northwest Alaskan Pipeline Company
Suite 901
1801 K Street, N.W.
Washington, D.C. 20036

6/ The Partnership expresses no opinion with respect to the issues now pending in Trans Alaska Pipeline System, Docket No. OR78-1. It only seeks to note the controversy joined in that docket over whether all of the experienced costs should be included in the rate base.

*Cuba Wadlington, Jr.
Director, Regulatory Affairs
Northwest Alaskan Pipeline Company
Suite 901
1801 K Street, N.W.
Washington, D.C. 20036

*Rush Moody, Jr., Esquire
Akin, Gump, Hauer & Feld
Suite 400
1333 New Hampshire Avenue, N.W.
Washington, D.C. 20036

WHEREFORE, the Partnership respectfully requests that the Commission issue an order pursuant to ANGTA, the Natural Gas Act, and the President's Decision, giving final approval to the expenditures described herein, as well as those expenditures described in the initial application, for ultimate inclusion in the rate base for the Alaskan section of the Alaska Natural Gas Transportation System. The Partnership further requests that the Commission establish procedures for continuing audit and approval of actual and conditionally-committed expenditures.

Respectfully submitted,

Rush Moody, Jr.
AKIN, GUMP, HAUER & FELD
Attorney for Alaskan Northwest
Natural Gas Transportation Company,
A PARTNERSHIP

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* Designated to receive service in accordance with Section 1.17(c) of the Rules of Practice and Procedure.

Exhibit Z-7

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY
ACTUAL EXPENDITURES FOR THE PERIOD
AUGUST 1, THROUGH DECEMBER 31, 1978

1.	OFFICE EQUIPMENT	$ 67,000	
2.	TRANSPORTATION EQUIPMENT	(5,000)	
			62,000
3.	OPERATOR SERVICES		
	Salaries and Related Benefits	2,097,000	
	Employee Expenses	393,000	
	Office Supplies	73,000	
	Equipment Use	279,000	
	Recruitment and Relocation	429,000	
	Rents	410,000	
	Other	645,000	
			4,326,000
4.	OUTSIDE SERVICES		
	Legal	503,000	
	Executive	349,000	
	Finance	348,000	
	Regulatory, Environmental and Civic Affairs	85,000	
	Administration	71,000	
	Public Relations	51,000	
	Engineering	8,982,000	
	Other	5,000	
			10,394,000
5.	GOVERNMENT AGENCIES		
	Federal:		
	Bureau of Land Management	307,000	
	Fish & Wildlife	156,000	
	State of Alaska:		
	Office of Pipeline Coordinator	296,000	
	Environmental Conservation	50,000	
	Fish & Game	165,000	
			974,000
	Subtotal		15,756,000
6.	AFUDC		7,395,000
	Total Actual Expenditures Including AFUDC 1/		$ 23,151,000

1/ This total includes AFUDC but the Partnership does not seek, through this application, approval of the AFUDC rate inasmuch as the Commission will determine this issue in Docket No. RM78-12, Order No. 31, issued June 8, 1979 applications for rehearing pending (see mimeo pp. 35-40). Rehearing for the purpose of reconsideration granted August 6, 1979.

Exhibit Z-8

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY
ACTUAL EXPENDITURES FOR PERIOD
JANUARY 1, THROUGH JUNE 30, 1979

1.	OFFICE EQUIPMENT	$ (9,000)	
2.	TRANSPORTATION EQUIPMENT	30,000	
			$21,000
3.	OPERATOR SERVICES		
	Salaries and Related Benefits	2,434,000	
	Employee Expenses	413,000	
	Office Supplies	53,000	
	Equipment Use	841,000	
	Recruitment and Relocation	395,000	
	Rents	457,000	
	Other	405,000	
			4,998,000
4.	OUTSIDE SERVICES		
	Legal	735,000	
	Executive	106,000	
	Finance	485,000	
	Regulatory, Environmental & Civic Affairs	234,000	
	Administration	217,000	
	Public Relations	67,000	
	Engineering	9,034,000	
			10,878,000
5.	GOVERNMENT AGENCIES		
	Federal:		
	Bureau of Land Management	172,000	
	Fish & Wildlife	287,000	
	State of Alaska:		
	Office of Pipeline Coordinator	347,000	
	Environmental Conservation	44,000	
	Fish & Game	134,000	
			984,000
	Subtotal		16,881,000
6.	AFUDC		$ 11,189,000
	Total Actual Expenditures Including AFUDC 1/		$28,070,000

1/ This total includes AFUDC but the Partnership does not seek, through this application, approval of the AFUDC rate inasmuch as the Commission will determine this issue in Docket No. RM78-12, Order No. 31, issued June 8, 1979 applications for rehearing pending (see mimeo pp. 35-40). Rehearing for the purpose of reconsideration granted August 6, 1979.

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding in accordance with the requirements of Section 1.17 of the Rules of Practice and Procedure.

Dated at Washington, D.C., this 14th day of August, 1979.

Cuba Wadlington, Jr.

Cuba Wadlington, Jr.

AFFIDAVIT

District of Columbia: ss

Cuba Wadlington, Jr., being first duly sworn, deposes and says that he is Director, Regulatory Affairs, for Northwest Alaskan Pipeline Company, that he has read the foregoing Application, that the statements contained therein are true and correct to the best of his knowledge, information and belief, and that he is authorized to file same with the Federal Energy Regulatory Commission.

Cuba Wadlington Jr.

Cuba Wadlington, Jr.

SUBSCRIBED AND SWORN TO before me this 14th day of August, 1979.

Saida A. Sheelan

My Commission Expires August 1, 1981.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Alaskan Northwest Natural Gas Transportation Company	)))	Docket No. CP78-123, et al.

APPLICATION OF
ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY
FOR AN ORDER APPROVING PAST EXPENDITURES AND
TO ESTABLISH PROCEDURES FOR CONTINUING AUDIT AND
APPROVAL OF FUTURE EXPENDITURES AND
MAJOR COMMITMENTS

Alaskan Northwest Natural Gas Transportation Company (the Partnership), pursuant to the Alaska Natural Gas Transportation Act of 1976 (ANGTA), the Natural Gas Act, and the Commission's Order Vacating Prior Proceedings and Issuing Conditional Certificate of Public Convenience and Necessity issued December 16, 1977, hereby applies for an order approving, for inclusion in rate base, expenditures made prior to August 1, 1978 1/ for pre-construction activities necessary to place the Alaskan section of the Alaska Natural Gas Transportation System in service. These expenditures are reflected in the capital accounts of each Partner, Northwest Alaskan Pipeline Company (Northwest), Northern Arctic Gas Co. (Northern), Pan Alaskan Gas Company (Pan Alaskan), Calaska Energy Company (Calaska), 2/ Pacific Interstate Transmission Company (Arctic) [Pacific] and United Alaska Fuels Corporation (United). The Partnership also requests that the Commission establish procedures to review and approve, on a continuing basis at regular quarterly intervals, completed activities and both actual and conditionally committed expenditures necessary to place the Alaskan section of the Alaska Natural Gas Transportation System in service.

1/ Partnership expenditures from August 1, 1978 through December 31, 1978 will be submitted to the Commission for review and approval as soon as practicable.

2/ Calaska is successor to the interests of Natural Gas Corporation of California and the interests of Natural Gas Corporation of California were transferred to Calaska as of November 28, 1978.

In support thereof, the Partnership would show as follows:

I.

Background

The Commission initiated a new phase of the proceedings contemplated in ANGTA by its order dated December 16, 1977, issuing a Conditional Certificate of Public Convenience and Necessity as mandated by the Decision and Report to Congress on the Alaska Natural Gas Transportation System issued by the President of the United States on September 22, 1977, and approved by the Congress on November 22, 1977. 3/

Subsequently, on June 30, 1978, the Commission transferred the Conditional Certificate of Public Convenience and Necessity from Alcan Pipeline Company to the Partnership.

II.

Basis for Authorization Requested Herein

A. In the Decision and Report, the President provided that certain "general terms and conditions shall be appropriately incorporated into any certificate, right-of-way, lease, permit or authorization directed to be made by any Federal Officer or agency" (Section 5, page 26). Among such general terms and conditions is the requirement that the Partnership must "submit to the FPC (FERC) for approval on a timely basis all components of construction work in progress." (Finance Condition, page 37; emphasis added.) The order requested herein is necessary to implement this mandate.

B. In the Commission's order issued December 16, 1977, the Commission recognized that it would have either exclusive or coextensive jurisdiction over the President's terms and conditions concerning finance matters, which included the condition described above. Further, the Commission adopted the Partnership's suggestion that quarterly progress reports are appropriate. Thus, the Commission has already moved toward implementation of the above-cited requirement of the Decision and Report and has recognized that authorization of the type requested herein is appropriate.

3/ Pub. L. 95-158, 91 Stat. 1268.

C. In its Notice of Succession in Interest and Application for Transfer of Certificate of Public Convenience and Necessity filed April 19, 1978, the Partnership indicated that it "...stands ready to report to the Commission, or its Delegate, on all matters relating to the Alaskan Natural Gas Transportation System, and particularly the status of preconstruction planning, funds expended to date, budgeted and anticipated costs for the balance of 1978, financial planning, and system engineering and design. Such other information and reports as the Commission, or its Delegate, may desire will, to the extent of the Partnership's abilities, be furnished in such form and manner as the Commission, or its Delegate may direct. The Partnership requests the institution of a mechanism for review and approval of cost expenditures and budgets for the Project on a regular and recurring basis."

D. The General Partnership Agreement 4/ (the Agreement) envisions Commission review and approval of actual expenditures. The relevant provisions are found in Sections 4.1.1, 4.1.2, 4.1.3 and 4.1.4, which provide a procedure for determining the Qualified Expenditures 5/ of each Partner. Northwest's Qualified Expenditures are $19,163,000; those of Northern are $9,587,790; those of Pan Alaskan are $9,655,128; those of Calaska are $9,456,744; and those of Pacific are $9,667,221. 6/ All of these are expressly subject to review and approval by FERC.

In summary, there is ample basis in the <u>Decision and Report</u> and in prior Commission orders, as well as the Partnership Agreement, for the Commission to consider and grant this application.

4/ Reviewed by the Commission and approved in its Order issued June 30, 1978 (Docket No. CP78-123).

5/ Expenditures to acquire information, knowledge, studies, tests, computer programs or governmental authorizations by any Partner or corporate affiliate of a Partner, in the course of activities reasonably related to the selection of a transportation system for the delivery of Alaskan natural gas, if such expenditures were made by such Partner or corporate affiliate prior to January 31, 1978.

6/ The totals shown include an interest component on funds spent.

III.

Authorization Requested

A. The Partnership requests that the Commission review and verify (1) the expenditures made by each Partner incurred prior to the formation date of the Partnership which have been determined to be "Qualified Expenditures" and therefore appropriately included in the Partners' capital accounts; and (2) $15,174,000 in expenditures of the Partnership for the period of February 1, 1978, through July 31, 1978. The Partnership further requests that the Commission, by order, approve acceptance of all such expenditures for inclusion in rate base, subject only to "completion and commissioning of operation of the system," a necessary precondition specified on page 38 of the Decision. Exhibit Z-1 attached hereto shows in detail the amounts and purposes for which "Qualified Expenditures" were made by Northwest. Exhibit Z-2 attached hereto shows in detail the amounts and purposes for which "Qualified Expenditures" were made by Northern, Pan Alaskan, Calaska and Pacific. Exhibit Z-3 attached hereto shows in detail the amounts and purposes for which Partnership funds were expended from February 1, 1978 through July 31, 1978.

B. The Partnership also requests that the Commission institute procedures to audit and approve actual expenditures on a continuing quarterly basis throughout the pre-construction and construction periods of the project.

C. In addition to the audits and approvals of actual expenditures made, the Partnership also requests the Commission to include within the scope of its reviews, upon specific request of the Partnership, certain major financial commitments that are covered by an executed contract for which payment may be due at some future date subject to certain conditions having been met. 7/ In such cases, the Partnership requests that the Commission by order give provisional approval to the obligation or conditional expenditure, subject to later audit and approval by the Commission

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7/ The project management contract, the project labor agreement, agreements for purchase or use of Alyeska camps and/or data, and the contracts for purchase of line pipe are expected to have sufficient impact on project costs to warrant advance regulatory review.

of actual expenditures made. No commitments of this nature are included in the period from February 1 through July 31, 1978.

The Partnership stands ready to make available its books and records at the convenience of the Commission to permit such reviews and field audits as may be required to issue the order requested herein.

IV.

Justification for the Authorizations Herein Requested

A. Qualified Expenditures

Prior to the formation of the Partnership, substantial funds were expended by the individual companies, or their affiliates, for reasonable and necessary expenditures related to the ultimate construction and operation of the Alaskan segment of the Alaskan Natural Gas Transportation System. Because the factual circumstances surrounding the expenditures made by Northwest differ from the factual background and circumstances relating to the expenditures by Northern, Pan Alaskan, Calaska, and Pacific, each category of pre-Partnership expenditures is treated separately:

1. Pre-Partnership Expenditures of Northwest. Northwest, through its predecessor company, Alcan Pipeline Company, was the original applicant for the route and pipeline proposal ultimately selected by the President and the Congress under the terms and conditions of the Alaska Natural Gas Transportation Act. The reasonable and necessary costs to Northwest of presenting to the Federal Power Commission, and later to the President and the Congress, the Alaska Highway Project through the date of formation of the Partnership, was $19,163,000, including interest. The details of these expenditures are set forth in Exhibit Z-1 and such expenditures were reasonably and prudently made as necessary to the preparation and presentation of Northwest's application for a certificate of public convenience and necessity, Northwest's presentation to the President and the Congress for selection of the Alaska Highway Project as the desired route, and selection of Northwest as the company to construct the Alaskan segment of the ANGTS. All of such expenditures are appropriate for inclusion in the capital account of Northwest as a Partner, and inclusion in the rate base of the Partnership pipeline project.

2. <u>Pre-Partnership Expenditures of Others</u>. Northern, Pan Alaskan, Calaska and Pacific made expenditures prior to the formation of the Partnership through their membership and participation in the Gas Arctic/Northwest Project Study Group (Gas Arctic). Gas Arctic was the result of a combination of two groups which had begun studies long before any other study group was formed, and before any of the subsequent applicants for a certificate of public convenience and necessity to transport Alaskan and Canadian gas to lower U.S. 48 markets made any indication that they would file an application. The total paid by participants in the Gas Arctic Study Group through January 31, 1978 was approximately $154.8 million. The costs were shared by as many as 26 participants, and after a number of participants had withdrawn, the group narrowed to 15 members. Each of these 15 members had paid in $8,020,533 (Canadian) through January 31, 1978.

Included in the expenditures of the Gas Arctic Group were the following major categories of costs:

Engineering & Construction Planning	$65.8 million
Environmental Studies and Research	18.6 million
Finance, Accounting, Legal and Other Advisors	16.7 million
General and Administrative	31.2 million
Sociological	4.3 million

The expenditures for the items listed above include basic research such as that done with respect to an Arctic ditcher, metallugical questions, cost effects, slope stability, the environmental impact on fish, mammals, birds and vegetation, and training programs which might be used in connection with the use of native labor in the project. In addition, substantial amounts were spent developing computer models to be used in engineering and financial analysis, and some of these are currently in use.

The knowledge and information developed by the Gas Arctic Study Group will be useful and of significant importance to the Alaska Highway Pipeline Project. The design and construction of the Alaska project will be materially aided by the basic research which was performed into environmental and engineering issues, and the development of computer analysis techniques which resulted from Study Group activities and expenditures. Relevant portions of the information, data, and computer programs developed will be, as a consequence of the Partnership's approval of the "Qualified Expenditures" of Northern, Pan Alaskan, Calaska and Pacific, available to the Partnership for its continuing use in development of the project.

It must be emphasized that the Arctic Gas Project and the Alaskan Highway Pipeline Project were considered as alternatives by governmental authorities at all levels of the decision-making process in both the United States and Canada prior to the time of the President's Decision and Report in September of 1977. If only a single applicant had proposed an Alaska Natural Gas Transportation System, that applicant would nonetheless have been legally compelled at substantial cost to develop and present information on alternative routes, and such costs would clearly have been includable in the rate base of the authorized project. The costs presented here by the Partners who were members of the Study Group were just as necessary to the decision-making process as the costs of the hypothetical single applicant, and should be afforded the same regulatory treatment.

In accord with the Partnership Agreement, the pre-formation expenditures of Northern, Pan Alaska, Calaska, and Pacific have been reviewed by the Board of Partners and a determination made with respect to whether such constituted "Qualified Expenditures." An extract from the Board of Partners' minutes relating to this is appended to this application as part of Exhibit Z-2.

The nation and U.S. gas consumers have benefited from the thorough analysis of transportation alternatives which the Partners' "Qualified Expenditures" made possible. The hearing process before the Federal Power Commission, and the subsequent Presidential selection of a route that is preferable from an environmental and economic standpoint, were materially advanced by the efforts of Northern, Pan Alaska, Calaska and Pacific. Therefore, it is appropriate that those companies who continue to participate in the development of this project to connect Alaskan natural gas be allowed to include those costs as part of the rate base of the Alaskan portion of the system. These costs, although significant in relation to the revenues and assets of each sponsoring company, will be less than one percent of the total investment in the Alaskan system.

The details of the pre-Partnership expenditures by Northern, Pan Alaska, Calaska, and Pacific are set forth in Exhibit Z-2 appended hereto. The pre-Partnership expenditures of the four Partners named above were clearly reasonable and necessary to the Partnership pipeline project, and are properly includable in the capital accounts of each such Partner, and in the rate base of the Partnership pipeline project.

B. Partnership Expenditures

The six Partners who have funded the Partnership's preconstruction activities since the formation date of the Partnership have provided $21,769,000 in funds which were expended prior to August 1, 1978. 8/ The details concerning such Partnership expenditures are set forth in Exhibit Z-3 appended hereto. All of such expenditures were reasonable and necessary to proper planning for, and design of, the Alaskan segment of the Alaska Natural Gas Transportation System, and securing all necessary governmental authorizations, permits, certificates, and rights-of-way. All of such expenditures are properly includable in the capital accounts of the respective partners, and properly includable in the rate base of the Partnership's pipeline project.

C. "Provisional Approvals"

With respect to the request for "provisional approval" of certain contractual obligations and conditional expenditures, we believe that the Commission has the authority to take such action, which would be entirely consistent with Sections 9(a) and (b) of ANGTA, and the provisions of the President's Decision calling upon the Partnership to "submit

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8/ This total includes AFUDC but the Partnership does not seek, through this application, approval of the AFUDC rate inasmuch as the Commission has stated its intention to determine this issue in Docket No. RM78-12, Order No. 17-A, issued January 17, 1979. Expenditures, without AFUDC, through July 31, 1978, total $15,174,000.

to the FPC (FERC) for approval on a timely basis all components of construction work in progress." The spirit of the latter requirement reasonably can be construed to include certain major potential expenditures covered by an executed contract for future conditional payment. The Partnership does not in any way expect to seek provisional approval for all future expenditures. Rather, it would make such a request on a selective basis where it appears that such an approval would materially reduce uncertainty, and have a correspondingly salutatory effect on the Partnership's ability to obtain private financing. It is presently contemplated that such major cost items as the project management contract, the project labor agreement, contracts for line pipe, and contracts for the acquisition and/or use of Alyeska camps and data will be of sufficient magnitude and will have sufficient impact on project costs, to warrant advance regulatory review and approval.

V.

Argument

It is essential that the audit and approval process for determination that the expenditures of Alaska Natural Gas Transportation System reasonably and necessarily made be implemented on a current and continuing basis. The magnitude of ANGTS is such that delayed review and approval of expenditures will pose insurmountable administrative problems for the Commission and the sponsors. Periodic, and frequent, review and approval of expenditures will reduce the task to manageable proportions; uncertainty will be reduced; and potential problem areas can be promptly identified and necessary corrections made. The authorizations and procedures suggested here will materially enhance cost consciousness on the part of the government, the sponsors and all interested parties.

Further, it is important that the Commission create a positive regulatory environment in order to help assure realization of private financing of this major undertaking. Banks and other potential institutional lenders are carefully observing the regulatory climate surrounding the early stages of project implementation and a prompt, and favorable, consideration of this application will help reassure not only the sponsors themselves, but also potential lenders, that all that the government can possibly do to reduce uncertainty and support this critically important project is being done.

The sponsors of the Alaskan segment of the ANGTS have already exposed themselves to substantial risk by the advancement of pre-construction dollars in pursuit of a project still beset by major uncertainties and delays. Reassurance to the project sponsors that their faith in the regulatory process has not been misplaced is important at this juncture, particularly in view of the continuing uncertainties which surround the incentive rate of return procedures under consideration in Docket No. RM78-12.

One final reason exists for the Commission's prompt and affirmative action on this application: such action will serve as tangible evidence to those pipeline companies not presently members of the Partnership that their previous Gas Arctic expenditures may reasonably be considered as appropriate for inclusion in the Partnership's rate base if those companies, or any of them, decide on active participation in support of the project as a partner. The Partnership clearly needs a broader base of membership and equity support, and favorable early action on this application by the Commission would be a positive inducement to other prospective partners who have also expended substantial sums in the development and presentation of alternative systems for North Slope gas transportation to join the Partnership.

VI.

The names, titles and mailing addresses of the persons to whom all correspondence and communications concerning this application should be addressed are as follows:

Darrell B. MacKay
Vice President
Northwest Alaskan Pipeline Company
1801 K Street, N.W.
Suite 901
Washington, D. C. 20006

Jack D. Bachman, Esquire
General Counsel
Northwest Alaskan Pipeline Company
P. O. Box 1526
Salt Lake City, Utah 84110

Rush Moody, Jr., Esquire
Vinson & Elkins
1101 Connecticut Avenue, N.W.
Suite 900
Washington, D. C. 20036

WHEREFORE, the Partnership respectfully requests that the Commission issue an order pursuant to ANGTA, the Natural Gas Act, and the President's Decision, giving final approval to the expenditures described herein for ultimate inclusion in the rate base for the Alaskan section of the Alaska Natural Gas Transportation System. The Partnership further requests that the Commission establish procedures for continuing audit and approval of actual and conditionally committed expenditures.

Respectfully submitted,

Rush Moody, Jr.

Rush Moody, Jr.

Vinson & Elkins
1101 Connecticut Avenue, N.W.
Suite 900
Washington, D. C. 20036
(202) 862-6500

ATTORNEYS FOR
ALASKAN NORTHWEST NATURAL GAS
TRANSPORTATION COMPANY,
A PARTNERSHIP

VERIFICATION

THE DISTRICT OF COLUMBIA §

I, DARRELL B. MacKAY, being first duly sworn on his oath, deposes and says:

That he is Vice President of Northwest Alaskan Pipeline Company and is duly authorized to make this affidavit, that he has read the foregoing and is familiar with the contents thereof, and that the facts and allegations contained therein are true and correct to the best of his information, knowledge and belief.

Darrell B. MacKay

Darrell B. MacKay

Subscribed and sworn to before me this 2nd day of February, 1979.

Notary Public

My Commission Expires:
MY COMMISSION EXPIRES JAN. 1, 1984

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding in accordance with the requirements of § 1.17 of the Rules of Practice and Procedure.

Dated at Washington, D.C. this 2nd day of February, 1979.

Rush Moody, Jr.

Rush Moody, Jr.

Exhibit Z-1

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY
NORTHWEST ALASKAN PIPELINE COMPANY
QUALIFIED EXPENDITURES 1/

1.	FILING FEE	$1,671,000	
2.	OFFICE EQUIPMENT	144,000	
3.	TRANSPORTATION EQUIPMENT	30,000	$1 ,846,000
4.	COMPANY SERVICES		
	Salaries and Related Benefits	1,347,000	
	Employee Expenses	697,000	
	Office supplies	210,000	
	Equipment Use	1,631,000	
	Recruitment and Relocation	28,000	
	Rents	107,000	
	Other	247,000	
			4,267,000
5.	OUTSIDE SERVICES		
	Legal	3,415,000	
	Executive	188,000	
	Finance	1,524,000	
	Regulatory, Environmental & Civic Affairs	96,000	
	Administration	99,000	
	Public Relations	89,000	
	Engineering	5,996,000	
	Other	153,000	
			11,560,000
6.	DEPARTMENT OF INTERIOR		165,000
	Sub-Total		17,838,000
7.	AFUDC 2/		1,325,000
	Total Qualified Expenditures Including AFUDC		$19,163,000

1/ Expenditures made prior to January 31, 1978.
2/ Includes only an interest component on funds spent.

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY
GAS ARCTIC/NORTHWEST PROJECT STUDY GROUP-NOW ANNGTC PARTNERS
QUALIFIED EXPENDITURES 1/

	Total	Partners: Pan Alaska Gas Co.	Partners: Calaska Energy Co.	Partners: Pacific Interstate Trans. Co.	Partners: Northern Arctic Gas Co.
1. GENERAL & ADMINISTRATION					
Direct Operations	$ 5,275,777	$1,330,009	$1,292,140	$1,331,582	$1,322,046
Indirect Operations	1,126,398	283,962	275,877	284,297	282,262
	6,402,175	1,613,971	1,568,017	1,615,879	1,604,308
2. OUTSIDE SERVICES					
Legal	1,626,919	410,142	398,464	410,627	407,686
Executive	156,299	39,402	38,281	39,449	39,167
Finance	968,765	244,223	237,269	244,512	242,761
Regulatory, Environmental & Civic Affairs	5,711,181	1,439,774	1,398,779	1,441,475	1,431,153
Administration	501,939	126,537	122,935	126,687	125,780
Public Relations	657,171	165,671	160,954	165,867	164,679
Engineering	13,917,264	3,508,505	3,408,608	3,512,652	3,487,499
	23,539,538	5,934,254	5,765,290	5,941,269	5,898,725
3. TERMINATION AND CLOSE-OUT COST	1,562,191	393,824	382,611	394,290	391,466
4. GOVERNMENT AGENCIES	66,165	16,680	16,205	16,700	16,580
5. OTHER COSTS	208,898	52,663	51,163	52,725	52,347
Sub-Total	31,778,967	8,011,392	7,783,286	8,020,863	7,963,426
6. AFUDC 2/	6,587,916	1,643,736	1,673,458	1,646,358	1,624,364
Total Qualified Expenditures Including AFUDC	$38,366,883	$9,655,128	$9,456,744	$9,667,221	$9,587,790

1/ Expenditures made prior to January 31, 1978.

2/ Includes only an interest component on funds spent.

Exhibit Z-2

Exhibit Z-2

Extract from the Minutes of a meeting of the Board of Partners, Alaskan Northwest Natural Gas Transportation Company, a Partnership, held November 28-29, 1978:

* * *

"(10) The Board of Partners next considered the qualified expenditures of the partners other than Northwest Alaskan. By letter dated November 15, 1978, a copy of which is appended, Calaska Energy Company requested that its capital account be credited with the total of $9,456,744 pursuant to Section 4 of the Partnership Agreement; a similar request, by letter dated November 16, 1978, a copy of which is appended to these minutes, was made on behalf of Pacific Interstate Transmission Company, with the requested capital account credit for that partner being $9,667,221. A similar request on behalf of Pan Alaskan Gas Company, by letters dated September 27 and November 27, 1978, copies of which are attached to these minutes, requested capital account credit for that partner of $9,655,128. A similar request on behalf of Northern Arctic Gas Company by letter dated November 27, 1978, a copy of which is appended to these minutes, requested capital account credit for that partner of $9,587,790.

"Prior to the meeting of November 28-29, those partners requesting capital account credit for qualified expenditures had submitted to all partners substantiation for the amounts claimed, and had further tendered in support of the request for capital accounts credit summary reports prepared by Arthur Andersen & Co. under dates of October 5, 1977 and November 10, 1978. Copies of these reports are appended to these minutes.

"The Board of Partners discussed fully and completely the nature of the expenditures made, the value to the Partnership of such expenditures, and the reasonableness and necessity of the amounts expended. It was noted that the prior expenditures by Calaska, Pan Alaskan, Pacific Interstate, and Northern Arctic encompassed basic research into environmental and engineering issues, and the development of computer analysis techniques which will be of material benefit to the Partnership's activities. It was further noted that the expenditures by Partners other than Northwest were made in conjunction with the study of an alternative route for the movement of Alaskan gas to the lower 48 states, and such expenditures, if not made by the Arctic gas participants, would have been required of the Partnership prior to final approval of the Alaskan Highway routing; the expenditures relating to an alternative route were of significant benefit to the governmental decision-making process in both the United States and Canada.

Exhibit Z-2

"Mr. McMillian made inquiry as to whether the materials developed as a result of the claimed qualified expenditures would be made available to the Partnership, and he was assured that Northwest and the Partnership would have the benefit of such.

"Mr. McMillian reported that Northwest had made a detailed study of the available Canadian Arctic gas design information, and had concluded that there were a number of items of information and data which would be of extreme value to the Partnership in its ongoing efforts; the results of Northwest's preliminary evaluation of the specific gas design information which should prove to be of value to the Partnership is set forth on the appended list denominated "List of Canadian Arctic Gas Design Information," and each item on this listing refers to specific data and/or information which the Partnership will review to insure that no duplication of expenditures for design and research occurs.

"On motion of Mr. McMillian, seconded by Mr. Smith, the Board of Partners unanimously approved the requests of Calaska, Pacific Interstate, Pan Alaskan and Northern Arctic for inclusion in the respective capital account of each such partner the qualified expenditures submitted on behalf of each such partner; in connection with this approval, it was the expressed determination of the Board of partners that the expenditures made by each of such partners was reasonable and necessary to the conduct of the business of the Partnership, that such expenditures were prudently incurred, and that the Partnership received full value, in an amount at least equal to the amounts credited to the capital accounts pursuant to the instant approval. The Board of Partners further determined that the expenditures claimed by each of the four partners named were expenditures to acquire information, knowledge, studies, tests, computer programs or governmental authorizations by one or more of such partners or corporate affiliates of such partners, in the course of activities reasonably related to the selection of a transportation system for the delivery of Alaskan natural gas, and that each such expenditure was made by such partner or corporate affiliate prior to the formation date of the Partnership."

Exhibit Z-3

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY
ACTUAL EXPENDITURES FOR THE PERIOD
FEBRUARY 1, THROUGH JULY 31, 1978

1.	OFFICE EQUIPMENT	$ 470,000	
2.	TRANSPORTATION EQUIPMENT	27,000	
			$ 497,000
3.	COMPANY SERVICES		
	Salaries and Related Benefits	2,158,000	
	Employee Expenses	345,000	
	Office Supplies	129,000	
	Equipment Use	887,000	
	Recruitment and Relocation	307,000	
	Rents	444,000	
	Other	315,000	
			4,585,000
4.	OUTSIDE SERVICES		
	Legal	1,459,000	
	Executive	253,000	
	Finance	996,000	
	Regulatory, Environmental & Civic Affairs	251,000	
	Administration	466,000	
	Public Relations	178,000	
	Engineering	5,902,000	
	Other	73,000	
			9,578,000
5.	GOVERNMENT AGENCIES		
	Federal Bureau of Land Management	471,000	
	State of Alaska:		
	Fish & Game	26,000	
	Office Pipeline Coordinator	17,000	
			514,000
	Sub-Total		15,174,000
6.	AFUDC		6,595,000
	Total Actual Expenditures Including AFUDC 1/		$21,769,000

1/ This total includes AFUDC but the Partnership does not seek, through this application, approval of the AFUDC rate inasmuch as the Commission has stated its intention to determine this issue in Docket No. RM78-12, Order No. 17-A, issued January 17, 1979.

ALASKA HIGHWAY PIPELINE PROJECT

TECHNICAL CONSULTANTS

Gulf Interstate Engineering Company

Gulf Interstate Engineering Company (GIEC) specializes in worldwide design and management for all types of pipelines. They have experience including engineering and management of gathering systems, pipelines, compressor and pump stations, terminals, processing and storage facilities.

They have established a project staff at the Project Management Contractor's headquarters in Irvine, California, for the design of Alaskan segment. This staff is composed of 12 highly qualified engineers with a combined total experience of 154-man years, which include 50-man years of Arctic experience. The Arctic experience is provided by four (4) engineers with Alyeska experience, and four (4) Canadian, and one (1) Russian engineer.

As the pipeline design contractor, GIEC is responsible for the overall pipeline design which will incorporate technical data and criteria that is produced by other project consultants and subcontractors.

GIEC to date has produced conceptual designs for typical crossings of roads, rivers, fault zones, the Alyeska Pipeline and for trench configurations and bouyancy control. They have assisted in producing reports regarding Department of Interior suggested reroutes and various technical studies.

Michael Baker, Jr., Inc.

Michael Baker, Jr., Inc. (Baker) is one of the larger engineering design firms in the United States, and offers a wide range of engineering and surveying services to industries and the government on projects of varying magnitude.

Throughout its 38-year history, Baker has been known for its leadership as a competent and dependable engineer on civil projects. With an average staff of approximately 1,000 employees representing the many disciplines of engineering, Baker is capable of undertaking and successfully completing large projects in keeping with the most demanding schedules of its clients.

For more than 30 years, Baker has provided engineering and surveying services on projects in Alaska. Baker has maintained an office in Fairbanks, Alaska continuously since 1970, and, through that office, has provided in excess of three million technical hours of services as a major Civil Engineering Contractor on the TAPS Project.

In September, 1978, Baker was engaged by Northwest Alaskan Pipeline Company and its Project Management Contractor, Fluor Engineers and Constructors, Inc., to provide Pipeline Design Consultant Services on the Project.

By subsequent amendments, the scope of Baker's services has been expanded to include Civil Design Engineering Services on the project.

Civil Design Engineering responsibilities include preliminary engineering, design and developmetn of construction plans and specifications for:

- ° Construction Zone Clearing and Grading
- ° Work Pad
- ° Right-of-Way Excavation and Embankments
- ° Erosion Control and Restoration
- ° Airports
- ° Access Roads
- ° Temporary Facilities
- ° Material (Borrow) Sites
- ° Spoil Disposal Sites

Major work completed to date includes:

- ° Design Consultation to PMC
- ° Photo Identification and Field Reconnaissance of Prospective Material Sites
- ° Preparation of Material Site Exploration Plans, Delta-South
- ° Civil Design Plan for FERC Filing
- ° Civil Design Criteria (Preliminary)
- ° DOI Reroutes - Analysis of Civil Aspects - Quantity Comparisons

Northern Technical Services

Northern Technical Services (Nortec) is an Alaska based consulting firm offering professional services in engineering, oceanographic, environmental and earth sciences, with specific expertise in the analysis and solution of problems unique to the arctic and sub-arctic environs. The professional staff and associates currently number approximately 30 people with over 150-man years of arctic and subarctic experience.

Nortec has six people presently assigned to the Project. Three are conducting field hydrographic surveys and three are preparing data analysis and input for river crossing design support.

Responsibilities on the project include surface water runoff analyses and groundwater analyses in support of the buried, chilled gas pipeline design. To date a two volume document entitled "River and Floodplain Design Considerations and Processes" has been prepared. This document details the work planned in support of the river crossing design effort. In addition, weather and runoff records have been updated and the results incorporated into the analysis of nine selected streams between Delta Junction and the Alaskan/Canadian Border. The Basic Stream Analysis report for these nine streams is nearing completion.

R&M Consultants

R&M Consultants (R&M) is an Alaskan based engineering and earth science organization formed to provide consulting services to industry and government. R&M is a multi-discipline organization with special expertise in geotechnical engineering and geology. The firm has the capabilities to provide project geotechnical services from the Anchorage, Fairbanks and Juneau offices in Alaska as well as from Project Management Contractor's office in Irvine, California. As a major geotechnical firm, R&M provides a unique arctic and subarctic technical background and experience, much of which has been attained through extended involvement in the trans-Alaska pipeline system.

Project responsibilities include performance of consultation on geotechnical matters, including evaluation and interpretation of geotechnical conditions, establishment of geotechnical design criteria and preparation of recommendations concerning specific design and construction problems. These efforts also include identification of pipeline route and compressor station conditions, classification and characterization of soil properties and development of the project geotechnical information system.

R&M has been involved from the early inception of the project, participating in routing studies and formal filing hearings. The routing studies included major drilling programs conducted in 1976 and 1979. Interpretation of route soil conditions along this segment has been presented in the form of terrain unit maps, boring records and laboratory test summary reports. Additional alignment geotechnical assessment and criteria reports have also been prepared in anticipation of resolving routing questions and submittal of the FERC filing.

EXHIBIT E

THE MARKET OUTLOOK FOR ALASKAN NATURAL GAS

September 1979

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

C O N F I D E N T I A L

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EXECUTIVE SUMMARY

INTRODUCTION

Jensen Associates, Inc. has been asked by Northwest Alaskan Pipeline Company (NAPLINE) to analyze the marketability of "rolled-in" Alaskan natural gas and to establish its competitiveness both with other gas sources and with alternate fuels. It is important to recognize that this study was commissioned to review the commercial--as distinct from the policy--aspects of Alaskan gas utilization. As such, major national policy issues in the decision to develop an initially high-cost U.S. gas source, such as security of supply, balance of payments, and national cost/benefit relationships were deemed to be beyond the scope of this assignment. The study was to pay particular attention to the short/medium term, defined as the period of construction and early operation of the pipeline. The period of major interest of this study, therefore, is the decade of the 1980s.

SUMMARY AND CONCLUSIONS

The market environment for natural gas in the United States has undergone a major structural transformation over the past decade. The industry entered the 1970s with a record of rapid and stable growth only to see its expectations falter in the face of shortages of low-cost conventional gas supply. It successively encountered the problem of shortage allocation, a search for gas supplements, a restructuring of the market through user conservation, major legislation which altered its regulatory climate, and, finally, a deterioration in the fortunes of competitive fuels, particularly, fuel oil. While forecasts of the future of gas markets made in 1979 bear little resemblance to projections made ten years earlier, we believe that it is possible to lay out the market prospects for high-cost gas supplements with greater confidence today than has been possible for several years. We believe the market prospects for Alaskan gas are excellent at the cost levels anticipated in this report.

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Several of the recent changes in the natural gas market environment have served to cast doubt on the prospective attractiveness of high-cost gas supplements. Demand is much less today than was anticipated even five years ago, since a substantial degree of user conservation has already taken place and more is expected. Natural gas prices have risen rapidly and still greater increases are expected as a result of Natural Gas Policy Act (NGPA) wellhead pricing provisions and the price implications of supplementary supply. But gas supply has also failed to live up to earlier expectations so that a shortfall of conventional supply still remains. More importantly, however, the Iranian revolution and the resulting OPEC oil price increases have signalled the end of an implicit policy whereby oil imports are used by default as the U.S. energy supply of last resort. As long as imported oil is constrained from displacing gas markets, we believe that the demand for gas supplements to augment conventional supply will remain strong.

Our projections are based on an anticipated excess demand for natural gas—a "gas gap"--over and above likely gas supply. Thus, despite our conservative projections of growth in demand (because of our expectation of continuing conservation), supplements are needed to offset expected continued decline in conventional supplies. Our estimates of potential demand, expected supply, and the resulting "gap" are summarized in Table 1. Even with Alaskan supply we expect a growing gap to 1990. In our view, the combination of accelerating oil prices with the various actions of administrative policy to limit oil imports will virtually insure that U.S. natural gas will retain markets which oil could otherwise serve. Thus, we believe the gas gap projection is realistic in the context of energy policies and economics of the 1980s and it virtually assures that Alaskan gas--rolled-in as permitted under the NGPA--will be marketable.

TABLE 1

U.S. NATURAL GAS
POTENTIAL SUPPLY AND DEMAND
(Trillion Cubic Feet)

	Actual		Forecast		
	1972	1977	1980	1985	1990
Total Potential Demand	24.5	24.2	23.6	24.3	24.7
Total Foreseeable Supply[a/]	24.5	20.6	19.0	19.4	19.2
Excess Demand (or Gap)	-	3.6[b/]	4.6	4.9	5.5

a/ Including Alaska.

b/ Includes some demand which switched on the basis of price.

Source: Jensen Associates, Inc.

I. THE MARKET FOR ALASKAN NATURAL GAS DURING THE 1980s

From the end of World War II until the beginning of the 1970s, the United States natural gas industry enjoyed a long period of rapid market growth in comparative stability. The 1970s have been a period of continuing market uncertainty for natural gas as it became the first of the major energy sources to grapple with shortage allocation and pricing in the face of limited supply. Two major changes in the structure of gas markets, first to shortage and then back to seeming surpluses, have been generally apparent since 1970. In our view, the gas industry entered still a third transition of market outlook with the Iranian revolution and resulting OPEC oil price response in late 1978. This new market environment for natural gas--the fourth discrete pattern in this decade--is based on a new political and economic urgency for the U.S. to minimize oil consumption and to utilize natural gas wherever it is the most reasonable alternative to oil. We see no real end to the emerging pattern of gas demand in excess of foreseeable supply as long as imported oil will be constrained from displacing gas markets. As a result, we believe that a strong market demand has been created for Alaskan gas, as well as for imported Canadian, Mexican, LNG and other supplementary supplies which help contain the growth of oil imports.

Our projections are based on the expectation of a "gas gap" or excess demand for natural gas above and beyond foreseeable supply. Market economists will argue that excess demand can only exist in the presence of price regulation since in a free market prices would rise to clear the market and eliminate the potential shortage. We cannot disagree with that premise but recognize that some form of residual price controls remain on natural gas despite the "deregulation" nomenclature applied to the Natural Gas Policy Act of 1978. However, it is important to understand that much of the clearing which would take place in the presence of full deregulation, or allocation--such as curtailment and prohibition of certain uses--without it, would result in increased U.S. oil demand. In our view, this clearing of natural gas markets in favor of oil was actually in the process of taking place in late 1978 with the relative price action of industrial oil and natural gas at that time;

it was reinforced by incremental pricing provisions of the NGPA which were, in part, designed to assure that such clearing would occur by the 1985 target date of new gas deregulation. This has now all been changed by the international oil crisis, precipitated by the Iranian revolution and confirmed by OPEC oil price action. If rapidly accelerating oil prices do not insure that U.S. natural gas will retain markets which oil could otherwise serve, the various actions of Administration policy to put a lid on oil imports will certainly do so. We doubt that any FERC administration of incremental pricing will be allowed to shed gas load in favor of oil on the basis of price alone. Thus, we believe that the projection of excess demand or a "gap" is realistic in the context of energy policies and economics of the 1980s.

Table I-1 summarizes our projections of potential gas demand, gas supply, and gap for 1980, 1985, and 1990, compared to 1972 and 1977 actuals. Compared to 1972 the gas industry shed some load in plants which had switched to alternate fuels by 1977 and this demand is separately identified and forecast. Most of the industrial load not served in 1977 that was served in 1972 has switched to oil. We believe that the market pressures for this load to return to gas, as well as the market pressures for new industrial load to go to gas are strong. Compared to our total potential demand, we have a widening gap with and without Alaskan gas. The 1977 "gap" was in part a voluntary switching to other fuels, such as oil, at a time when industrial gas and oil prices were approaching historic parity levels. The projected "gaps" are in the face of an expectation of rising real prices for oil.

The four discrete periods of market structure for natural gas in the U.S. have each provided a different perspective from which to judge the outlook for high-cost gas. Since public perceptions of the nature of the gas market have not always kept up with the rapid changes which have actually occurred, gas policy arguments are frequently advanced which are no longer supported by the present reality of the marketplace. In order to understand why the present gas market outlook is strong, and should remain so, it is important to distinguish the characteristics of this market from the ones which preceded it.

TABLE I-1

SUPPLY AND DEMAND FOR U.S. NATURAL GAS
(Trillion Cubic Feet)

POTENTIAL GAS DEMAND	Actual 1972	Actual 1977[a]	Projected 1980	Projected 1985	Projected 1990
Markets Served in 1977					
Residential[b]	5.2	4.9	5.1	5.1	5.3
Commercial[b]	2.6	2.7	2.6	2.6	2.8
Industrial (Served in 1977)	8.8	6.7	6.2	6.0	5.7
Electric Power (Served in 1977)	4.1	3.0	2.9	2.8	2.6
Other (Including Field Use & Storage)	3.8	3.3	2.8	2.7	2.5
Subtotal	24.5	20.6	19.6	19.2	18.9
Markets Not Served in 1977					
Industrial (Not served in 1977)	-	1.0	1.0	0.9	0.9
Industrial (Demand from new plants)	-	-	0.6	1.8	2.7
Electric Power (Switched from gas)	-	2.6	2.4	2.4	2.2
Subtotal	-	3.6	4.0	5.1	5.8
Total Potential Demand	24.5	24.2	23.6	24.3	24.7
EXPECTED GAS SUPPLY					
Total Supply (Excluding Alaska)	24.5	20.6	19.0	18.7	18.1
SHORTFALL					
"Gap" (Without Alaska)	-	3.6[c]	4.6	5.6	6.6
"Gap" (With Alaska)	-	3.6	4.6	4.9	5.5

a/ 1978 data on the sectoral breakdown of gas markets is not yet available. Gas supply in 1978 was 20.5 tcf compared to the 20.6 tcf shown for 1977.

b/ Includes all Residential and Commercial load whether served or not in 1977.

c/ Includes some demand which switched on the basis of price.

Source: Jensen Associates, Inc.

We identify the four market environments as follows:

1. Growth--up to 1971. The pre-shortage period of rapid market growth at regulated prices, which was effectively ended by widespread pipeline curtailments in 1971-72.

2. Shortage--1972-1977. The period when the fuels market was adapting to worsening gas supply during a time when runaway international oil prices had made gas an even more attractive industrial fuel than it had been earlier. This period was probably over by mid-1977, although public recognition of the change was slow in coming.

3. Returning Balance--1977-1978. A combination of reduced growth and conservation had nearly eliminated excess gas demand; converging gas and oil price levels had nearly cleared natural gas markets (and contributed to talk of a "gas bubble") by the time of the passage of the Natural Gas Policy Act in the Fall of 1978. Before Iranian oil disruptions, the combination of incremental pricing and wellhead price increases under the NGPA, presented the real possibility of a still further shift of potential gas demand to oil.

4. International Oil Crunch--1979 on. The rapid escalation of oil prices as a result of the OPEC response to Iranian shortages has begun to drive oil customers back to gas. The new competitive fuel price relationships--and government pressures to reduce oil imports--have now created a return to and perpetuation of the excess demand conditions which prevailed from 1972 to 1977. We believe that international oil shortages and shortage-inspired oil pricing were likely in the late 1980s in any event; the loss of substantial Iranian production has simply advanced the timing on the crunch. As a result, we do not expect a collapse of oil pricing at some future time followed by a shift of potential gas demand back to oil. In our view, the demand for gas should remain strong from here on (barring a major recession) and provide a market for high-cost gas.

THE EVOLUTION OF GAS MARKETS

Approximately one-half of the natural gas produced in the United States in 1978 was consumed in industry and power generation. Although a portion of this demand was for premi... ...plications such as process and feedstock use, much of it was sold in competition with coal and industrial fuel oil in markets which bear little resemblance to the classic natural monopolies for which utility regulation of electricity, telephone, water and municipal gas was designed. There is no fundamental reason why only gas can satisfy these markets, although much fuel burning equipment designed solely for gas has often proved costly to convert. It is the size of these markets and role of available gas supply and competitive fuel pricing which most distinguishes the evolution of the four gas market periods during the 1970s.

The growth period began after World War II with the construction of the interstate pipeline networks. From the time of the Phillips decision on wellhead price regulation in 1954 through the 1960s, gas was subject to price regulation--while coal and oil were not. At first, gas demand was not constrained by supply shortages and grew rapidly at the expense of the other industrial fuels. The concept of "rolled-in" high-cost gas had no meaning during this period, for enough new gas was generally available to prevent shortage in the price-controlled interstate market; and surpluses of gas to the needs of the intrastate market kept intrastate prices near interstate parity.

The change in this pattern of gas market development came with the first indications of emerging gas shortage. The pessimistic AGA Natural Gas Reserves Report for 1968 provided the first quantitative evidence of trouble. From 1969, when it was issued, through 1971, when widespread pipeline curtailment began, natural gas demand began to undergo a very marked change in pattern. Traditional forecasts, which made the twin assumptions of freely available gas supply and stable prices relative to competing fuels, began to provide estimates of gas demand which exceeded the supply that most forecasters could possibly foresee. Forecasts then began to anticipate a "gas gap." This was another way of projecting what economists term "excess demand" for gas in the industrial and power generation markets, where supply and demand could not clear naturally because of price regulation. The gap which we anticipate in the eighties--and which created the potential demand for high-cost gas--is structurally quite different from the one which many foresaw ten years ago. The earlier gap was based on very optimistic estimates of future gas market share and resulting demand against an uncertain supply. The present gap represents a need to supplement a reduced expectation of Lower 48 gas supply in meeting a reduced and conservation-limited market. An analysis of one of the earlier gas gap estimates shows the way the changes have occurred.

The 1972 report of the Gas Requirements Committee of the gas industry included the last traditional forecast of requirements, ". . . of the market need for gas under conditions of adequate supplies of gas and market conditions which would remain essentially unchanged from those existing at the time of the forecast."1/ The report, however, shifted to a consumption basis, defined as ". . .usage primarily based on the availability of supply."2/ The forecast of 1980 requirements in the GRC report was 35.8 tcf (including field use) while the consumption--or supply--estimate was 27.1 tcf. This represented a "gap" or unmet demand of 8.7 tcf.

The period from 1972 onwards was characterized by growing natural gas pipeline curtailments and increasing industrial shortages. The excess demand for price-regulated natural gas made industrial and power generation demand--like residential and commercial demand--largely inelastic or relatively insensitive to the price of alternate fuels. Forecasts of future natural gas consumption made during this shortage period were essentially forecasts of anticipated supply. The implicit assumption was that any supply which would be available in the future would be needed, still leaving excess demand.

1/ "Future Gas Consumption of the United States," Volume 5, November 1973, Future Requirements Committee, Page 52.

2/ Op. cit., page 2.

The concept of rolled-in, higher-cost natural gas supply was a product of this era of excess demand. Projects for high-cost supplemental gas, such as imported LNG or oil-based SNG were rolled-in or averaged during the period with lower price-regulated domestic gas, thereby increasing gas costs to all customers. In an environment of excess demand where regulated prices were below market clearing levels, utilities lost no significant portion of their market from rolling in the high-cost gas evenly to all customers.

During this period of shortage, however, the market for gas went through a major, and largely unforeseen, structural change with substantial user conservation. The 1972 GRC report foresaw an 1980 requirement of 35.8 tcf, a consumption (supply) of only 27.1 tcf, and a resulting gap of 8.7 tcf. Our estimate of 1980 potential demand (similar to requirements) from a 1979 perspective is only 23.6 tcf--a full 12.2 tcf below GRC's earlier requirements projection. We still see a gap, however, since our supply projection of only 19.0 tcf falls short of potential 1980 demand by 4.6 tcf. The magnitude of the reduction in demand is illustrated by the fact that our present estimate of 1980 requirements is even less than GRC's expected 1980 consumption--or supply--level. It is not fair to conclude, however, that had GRC's forecast of 1980 supply been correct, the market would now be awash in gas. The gas industry clearly reduced market share in most of its markets during the period of shortage, largely through foregoing growth in customers, but also through fuel switching. By contrast, oil increased its market share substantially in pivotal industrial markets. This is a development which administration policy--reinforced by international oil pricing trends--seems less likely to permit in the future than it did in the 1972-1977 period.

It is now clear that the foregoing of growth in new load by the gas industry together with substantial residential, commercial, and industrial conservation kept fuel switching--either enforced through curtailments or voluntary through price action--to a minimum. Our estimates indicate that total industrial fuel switching away from gas was only 1.03 tcf during the shortage period from 1972 to 1977. Fuel switching in power generation uses was an estimated 1.14 tcf over the same period. However, most of the power generation switching did not add to oil requirements, as industrial switching did, since much of it entailed higher utilization of available coal and nuclear capacity to offset lower utilization of gas-fired capacity. Our switching analyses for both industrial and power generation are contained in Chapter II of this report.

The end of the natural gas shortage period was marked by an improved balance between gas supply and demand which first became evident as the market recovered quite quickly from the seemingly severe gas shortage of the winter of 1976-1977. As individual pipelines and distributors with improved supply began to try to recapture markets which they had lost, many discovered that much of the market had disappeared through conservation as our market figures demonstrate. From mid 1977 to late 1978, the earlier shortage appeared to give way--in some regions, at least--to spot surpluses, leading to discussion of a perceived "gas bubble." In our view the "gas bubble" is the result of a significant reduction in demand coupled with a short-term increase in gas deliverability without a commensurate improvement in underlying proved reserves. It is not the result of a more optimistic long-term supply outlook, nor does it eliminate the need to emphasize continued improvement in basic gas supply.

The outlook for gas markets would have been complicated by the passage of the NGPA, which provided for higher wellhead gas pricing and incremental pricing to industrial users at a time when oil prices had been steady to declining in real terms. It was the apparent intent of Congress that incremental pricing of natural gas clear the market of enough excess demand so that the transition to new gas price deregulation would be an orderly one by 1985. Our supply/demand analysis studies suggest that the market was much nearer to clearing levels in 1978 than the drafters of the Act ever envisioned, and that a price-sensitive industrial market might well have been unable to support wellhead price levels at NGPA ceiling prices in the period well before 1985 deregulation. This conclusion was based on a pre-Iran outlook for international oil prices. It also appeared likely to us, based on earlier oil price forecasts, that by 1982 or 1983 the effect of adding high-cost gas supply to the system would have been similar whether it was incrementally priced or rolled in—as Alaskan gas is entitled to be under the NGPA.

At that point, any increase in industrial prices would have caused loss of industrial markets and forced a higher portion of utility cost of service to be borne by the residential, commercial, and exempt industrial customers. Thus, unless there were to be a rate "tilt" away from price-sensitive industrial markets, an increase in high cost gas supply would have significantly reduced the markets for gas.

In our view, the consequences of the Iranian revolution to international oil markets have permanently altered the market environment for natural gas. The focus of natural gas policy embodied in the NGPA—and arising out of the shortage environment of 1972-1977--was to manage excess demand for natural gas prior to moving toward freer post-1985 markets. These policy goals were to be accomplished by (1) initial regulation of intrastate gas prices; (2) liberalized wellhead prices; (3) a 1985 target for new gas deregulation; and (4) the use of incremental pricing to force non-exempt industrial gas to approach market clearing levels. Price competition for industrial gas and the potential for loss of gas markets to oil are a logical part of such a policy direction.

With the international oil crisis, the new thrust of overall energy policy has shifted to the management of the net demand for OPEC oil. A significant erosion of natural gas markets in favor of imported oil is inconsistent with the new policy direction. We doubt, therefore, that the administration of incremental pricing will be allowed to shed industrial gas markets in favor of expanded oil use. The shift in policy direction is exemplified by the program--originally promoted by the Department of Energy and subsequently embodied in National Energy Plan II--to encourage the use of gas to displace oil in dual-fuelled industrial facilities. The heavy emphasis in NEP II on higher cost synfuels is further evidence that administration policy does not intend to let the availability of international oil at comparatively favorable prices become a barrier to supplemental energy projects. While this intention does not of itself create markets for gas supplements, it does offer an indication of the likely direction of government policy responses to a loss of gas markets to imported oil.

In the new market environment for natural gas, escalating oil prices have played the most direct market role. Between mid-summer 1978 and mid-summer 1979, contract cargo and terminal prices for distillate and residual fuel oil have risen between 45-60 percent in major industrial markets in the United States. Spot prices have in many cases more than doubled. Thus, despite the rapid increase in wellhead gas prices under NGPA, gas price increases have failed to keep pace with oil price increases. While hard statistical information which would measure the extent of the fuel switching from oil to gas is difficult to obtain at this early stage, there are some indications that a significant degree of economic switching is occurring. The most direct evidence is in the residential sector where distribution utilities in the Northeast have been inundated with requests for oil furnace conversions. In this fuel pricing environment where new attachments have been encouraged by government policy and stimulated by escalating oil prices, we believe the potential excess gas demand conditions of 1972-1977 have been reestablished.

In our pricing and market analyses, we have identified a phenomenon--which we term "cascading"--when regulators, operating under NGPA, are faced with the dilemma of either permitting industrial load shedding or selectively tilting higher gas costs towards residential, commercial, and exempt industrial loads. In certain circumstances, exempt users are better off with the rate increase which results from cascading the cost consequences beyond the non-exempt group, than they would be from absorbing the higher cost of service of reduced industrial sales absent the gas supply.

The rapidly escalating oil prices we project in this report still call for some cascading as incrementally priced gas to non-exempt industrials reaches alternative fuel ceiling levels; in all cases, however, the exempt load is relatively better off than it would be without the Alaskan gas supply. As a result, we do not see incremental pricing regulations as a barrier to the marketing of Alaskan gas.

THE ROLE OF PRICE

As the existing high value premium market for residential, commercial, and premium industrial uses declines through the influence of conservation, a greater portion of the potential demand for natural gas will be concentrated in new industrial loads or existing industrial and power generation loads where price is an important determinant of demand. No examination of the commercial viability of the Alaska gas pipeline would be complete without an explanation of the effects of rolling in Alaskan gas upon these price-sensitive gas consumers.

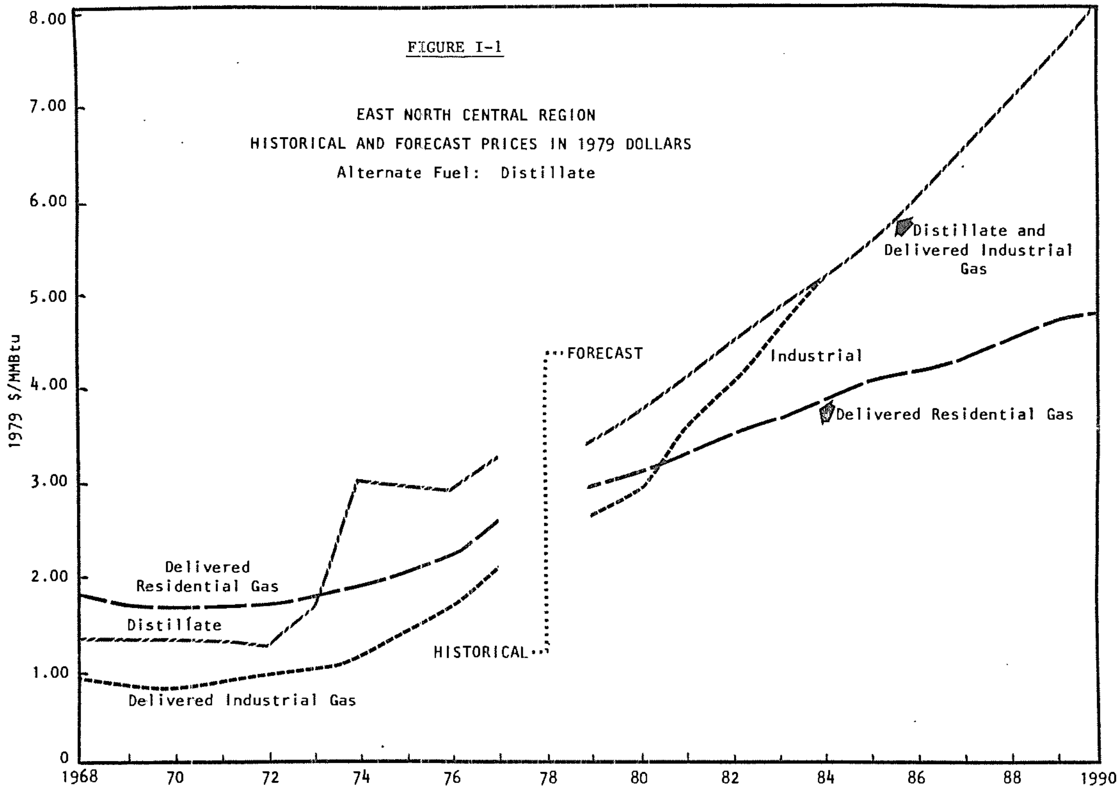
The price sensitivity of this demand has been further accentuated by the passage of the NGPA with its provision for incremental pricing to non-exempt industrial loads. Initially, an incremental surcharge will apply to non-exempt industrial boiler fuel uses under Rule 1 and later it may be extended to a much wider group of industrial users under Rule 2. That portion of the price of a broad group of gas categories which exceeds the threshold level defined in Section 203c is to be passed through to industrial users subject to a limitation (or cap) set by the Federal Energy Regulatory Commission (FERC) at the appropriate alternate fuel cost. The alternate fuel cost suggested in Section 204e (I) would be the price of No. 2 fuel oil per million Btu's to be paid in the region by industrial users. The cap may, however, be reduced to the level of No. 6 fuel oil if the Commission determines that significant conversion of industrial users away from natural gas will occur at the higher price.

The Commission issued a rulemaking proposal (RM79-21) on May 11, 1979 according to which three alternative ceilings would limit the gas price to non-exempt industrial boiler fuel users. The ceilings would be calculated from weighted averages of No. 2, low-sulfur No. 6, and high-sulfur No. 6 fuel oil. According to this proposal, non-exempt industrial boiler fuel facilities which are "technically able and legally permitted" to burn low or high-sulfur No. 6 fuel oil could, by certifying this fact, qualify for the presumably lower price ceilings based upon their alternate fuel.

It is not yet certain that this three-tier proposal will be put into effect by the Commission as a part of either Rule 1 or Rule 2. It is quite clear to us, however, that in the setting of the appropriate cap level, FERC has the power to bring about a substantial reduction in industrial demand by forcing gas prices to the level at which users would switch to alternatives. Our experience suggests that it is extremely difficult to estimate the shape of the industrial demand curve without detailed and intensive field analysis and that the curve varies significantly from region to region. Nonetheless, it is possible using some simplifying assumptions to test the maximum effect which the incremental pricing provisions might have upon industrial demand, and the related effects upon the market for Alaskan natural gas, should regulatory policy actually permit gas to clear in favor of oil.

The regulatory innovations introduced by the Natural Gas Policy Act of 1978--including the incremental pricing provisions thereof--are occurring in a complex economic environment. On the one hand, the price of natural gas delivered to industrial users gradually rose relative to the prices of fuel oils from 1974 to 1978, so that by the time the Act was passed, the industrial gas price in some regions was already at or near the price of alternate fuels. If a ceiling on industrial gas prices had been set at the then current level of No. 6 fuel oil, the foreseeable increases in average costs of incremental gas supplies would soon have brought industrial gas prices to ceiling levels in most parts of the country. On the other hand, the rapid increases in imported crude oil prices since January 1, 1979, the decision to decontrol domestic crude oil prices by September 1981, and the expectation that world oil markets will be tighter in the early 1980s than had previously been foreseen, all suggest that the industrial alternative fuel costs--and hence the ceilings on incrementally-priced gas to industrial customers--will continue to rise.

To illustrate the marked change in market environment which has taken place, we have shown a history and forecast of delivered prices for both the East North Central and Pacific regions, where we expect a significant portion of the Alaskan gas market interest to be concentrated. Figures I-1 through I-4 provide such a history and forecast of pricing in the two regions. One figure in each region shows the price projections on the assumption that distillate fuel is the cap price applicable to all non-exempt industrial facilities (and that the market will support such a price level for non-exempt gas load without significant loss of load). The second figure for each region is based on a residual fuel cap.



Source: Jensen Associates, Inc.

FIGURE I-1

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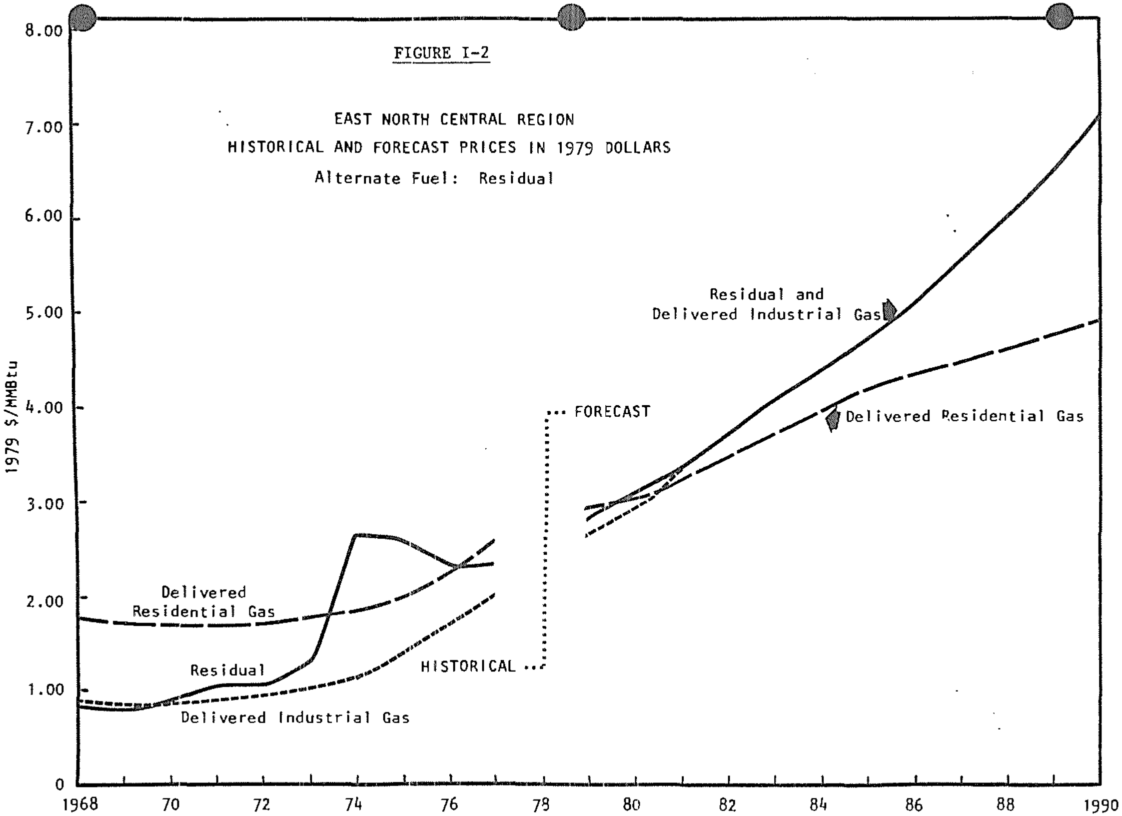

Source: Jensen Associates, Inc.

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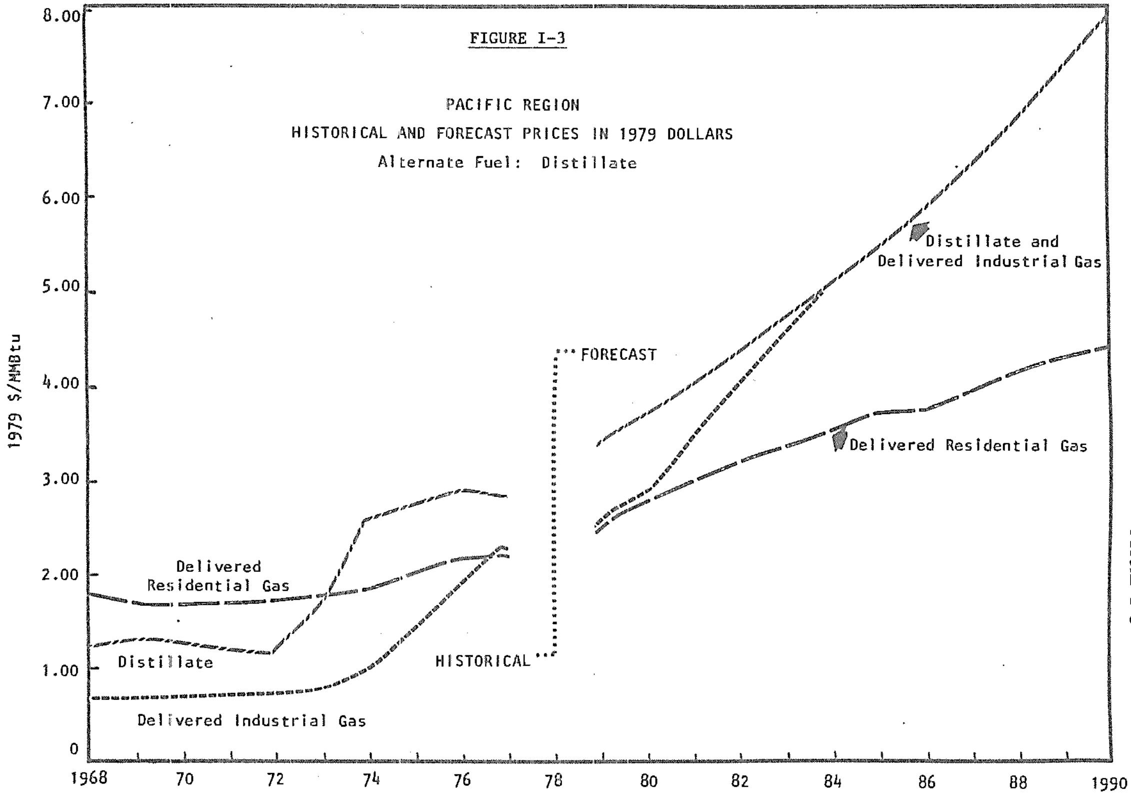
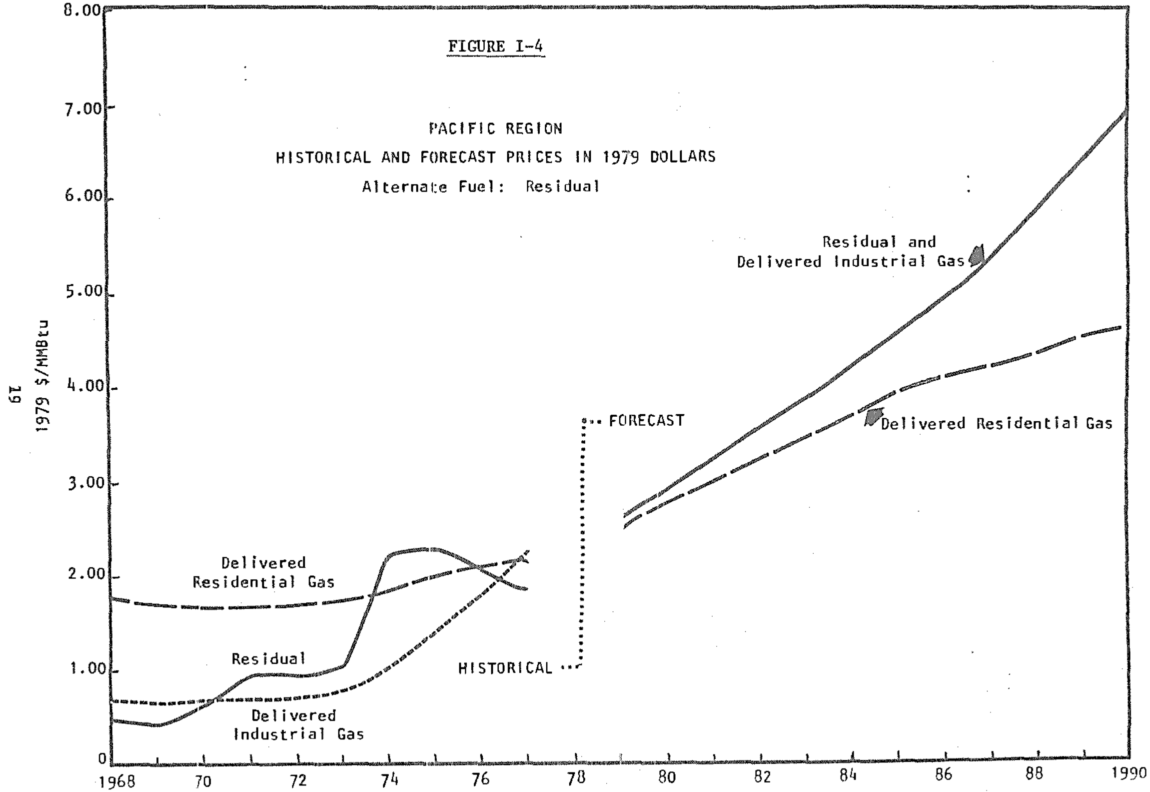
FIGURE I-2



Source: Jensen Associates, Inc.

FIGURE I-3



Source: Jensen Associates, Inc.

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FIGURE I-4

Underlying all four figures is the assumption that all non-exempt industrial users within a region are subject to the same cap. This is a simplifying assumption to permit an analysis of the maximum and minimum impact of incremental pricing. The four figures make the further assumption that when faced with surcharges in excess of cap, FERC and state regulatory commissions will be more interested in preserving the cost-of-service contribution of industrial load than they will be in seeing the industrial market collapse. They will, therefore, permit cascading of surcharges in excess of cap to exempt industrial, residential, and commercial loads.

Although the precise shapes of the curves differ from region to region and between alternate fuels, the patterns are similar. For both regions, industrial gas was delivered to users at near parity with residual fuel oil in the stable pre-1970s market period. It was thus priced well below distillate. The first pipeline curtailments began in each region in 1971. Concerns about the gas shortage led companies in a number of sections of the U.S. to plan and build oil-based SNG plants about 1970-71. The East North Central region was an especially important area for these high-cost gas plants. Late 1973 and early 1974 brought the dramatic OPEC instigated rises in international oil prices which are evident in all four figures. The SNG plants which had been planned on the assumption of comparatively low-cost hydrocarbon feedstock came onstream in 1973 and 1974. Although most SNG projects had anticipated that SNG would be higher-cost gas than conventional supply and would have to be rolled in, few planners anticipated the very high demonstrated actual cost of SNG when the plants began operation. But, as is evident in Figures I-1 to I-4, competitive oil prices rose even more dramatically and the roll-in of high-cost gas did not prejudice the competitive posture of industrial gas compared to oil.

From 1974 to the end of 1978, however, the situation was quite different. Oil prices did not show major increases, while industrial gas prices continued a steady rise. For these regions, like most of the U.S., industrial gas prices rose more rapidly than residential gas prices. In part, this was intentional as public utility commissions, like the California P.U.C., experimented with lifeline and other consumer protection rate designs. Another partial explanation is that utilities and their regulatory commissions found it easier to pass on a disproportionate share of higher gas costs to the industrial load in their cost-of-service rate hearings.

The NGPA has institutionalized this practice through the mechanism of incremental pricing. In the forecast portion of Figure I-1, we anticipate that the industrial delivered gas price will continue to rise until the cap (in this case, the price of distillate oil) is reached in 1984, assuming that loads are not selectively shed before the distillate price cap is reached. The forecast in Figure I-2, where residual oil is treated as the alternate fuel, shows a similar pattern, with the industrial gas price rising to equivalency with the residual fuel price by 1981. In both cases, traditional relationship of industrial to residential gas prices is reversed before the industrial gas price reaches cap. That is, delivered industrial gas will exceed residential gas in price beginning in 1981, regardless of which alternate fuel is used to determine the industrial cap.

Once the cap is reached--at whatever level the cap is set--we would anticipate that public utility commissions will selectively permit a higher portion of the cost of service to be picked up by residential loads in order to protect total gas volumes. The alternative would be to permit industrial prices to exceed cap which would force load shedding. However, the share of any increase in gas cost which thus "cascades" onto residential customers is small in the East North Central region, rising by 1990 to 44¢/mcf if distillate is the cap, and to 82¢/mcf if residual fuel is the cap. This is insufficient by itself to accelerate the rate of increase of the residential gas price above recent (1974-79) experience.

Rolled-in Alaskan gas adds very little to residential gas cost in the East North Central region. The maximum amount added is 19¢/mcf in 1985. The amount added to the residential price by Alaskan gas declines after 1985 because the tariff of the pipeline system from the North Slope to the Lower 48 States diminishes as capital costs are amortized.

The presence of Alaskan gas has, in fact, a moderating effect upon residential rate increases. By allowing pipelines and distributors to reduce curtailments and provide larger gas volumes to industrial customers, Alaskan gas permits the incremental pricing surcharge account to be spread over the greater volume, thereby reducing the "cascade" (mentioned above) onto residential bills. For example, the incremental pricing cascades of 44¢/mcf and 82¢/mcf in 1990 would have been $1.29/mcf and $1.46/mcf respectively in the absence of Alaskan gas.

The pattern of interfuel competition in the Pacific region, particularly California, has historically been somewhat different from the East North Central. The absence of coal as an industrial and power generation fuel has meant that competition between gas and residual fuel has tended to dominate the gas markets in that area. In California (the largest market in the Pacific region), experiments with tariff structures that tilt the cost structure started to lose a significant portion of its market share, because industrial gas and residual fuel prices were already at comparable prices in 1978.

The rise of fuel oil prices in late 1978 and early 1979 has changed the picture completely. Once again, the delivered industrial gas price is below alternate fuel prices and incremental pricing surcharges may be billed to non-exempt industrial consumers without immediately reaching the cap level.

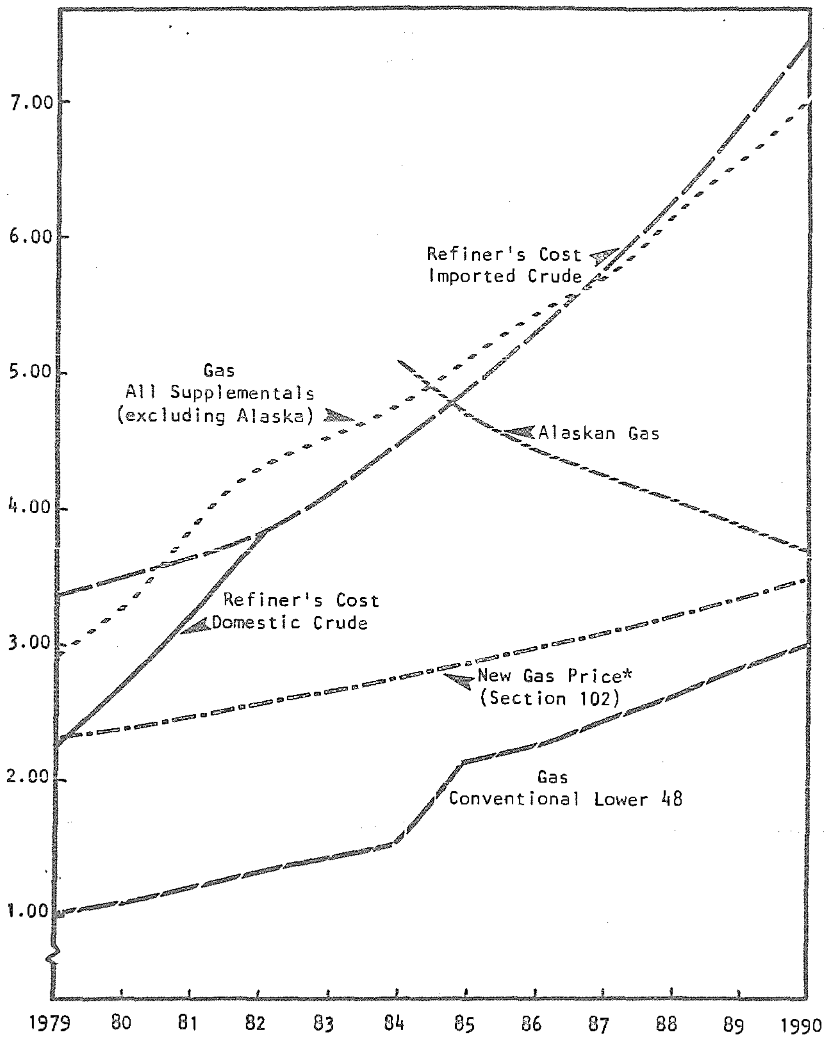
The effects of rolling-in Alaskan gas upon future fuel price relationships in the Pacific region are similar to those already discussed in the East North Central region. Alaskan gas adds a small amount to the residential gas price in the first few years of Alaskan gas availability, but the amount thereafter diminishes. During those years when the industrial gas price is at cap level (whichever alternate fuel is used to determine the cap), the presence of Alaskan gas serves to reduce the dollar amount which would otherwise cascade onto residential consumers' bills.

THE OUTLOOK FOR OIL AND GAS PRICES

Since the price relationships between oil and gas are so important to this study, the price conclusions of the report have been laid out here in some detail. Figure I-5 summarizes our projections of selected oil and gas prices. The oil price estimates shown are for the refiner's

FIGURE I-5

GAS WELLHEAD PRICES COMPARED WITH
REFINER'S CRUDE ACQUISITION COST
(1978 Dollars per Million Btu)



*Extrapolated after 1985 deregulation.

Source: Jensen Associates, Inc.

acquisition cost of domestic and imported crude oil. The domestic oil price distinction disappears with full oil price deregulation in 1981.

Delivered prices of gas in this study have been developed on a cost-of-service basis, utilizing the maximum wellhead prices permitted by the NGPA or as escalated by contract or government policy in the case of supplementals. For new gas prices which are to be decontrolled in 1985, we have made the simplifying assumption that they will continue to rise at the same rate as that permitted prior to deregulation. In a market economy where imported oil is the "swing" fuel, natural gas prices would be established (in the absence of wellhead price regulation) on a netback basis from alternative oil price competition. We think it unlikely that competition at the wellhead will set lower prices than NGPA prices shown here in the period of 1980 to 1985. After 1985, when deregulation is to take place, it is quite likely that new gas prices for categories of gas covered by Section 102 (and also Section 103) of the NGPA will rise more rapidly than the stringent extrapolation of pre-1985 price trends used here.

Figure I-5 shows estimates of the composite price of all conventional Lower 48 gas, Alaskan gas, and all other supplemental supplies. Most supplemental gas prices will--it now appears--be escalated directly or indirectly to international oil prices. They, thus, rise rapidly in an escalating oil price environment. Our estimates of Mexican gas prices assume that they will be tied to East Coast distillate prices as initially proposed by Pemex; we also assume that Canadian prices will move to distillate parity when the Mexican gas is initially imported. We have utilized an estimate of Alaskan laid-in prices from NAPLINE after reviewing them for consistency with our other estimates.

The marketability of Alaskan natural gas depends, to a great extent, upon perceptions of the future course of crude oil and petroleum product prices. Pipelines which consider contracting to purchase Alaskan gas will make such a commitment with greater confidence if they believe that their markets will not be threatened by an increased supply of international oil at weakening competitive prices. These perceptions, in turn, are strongly conditioned by past and present circumstances in international crude oil markets.

Until the early 1970s, producing governments argued for higher oil prices but singly or collectively were not able to push up oil prices to any significant extent. In 1971, the world market situation began to change, giving the producing countries greater leverage to challenge existing oil pricing mechanisms. The dramatic increases in international oil prices in late 1973 and early 1974 represented the end of an era of cheap international oil. From that time until the recent Iranian revolution, despite the development of some surplus producing capacity in international markets, OPEC has been able to control price levels for the Arabian Light marker crude in slack markets. It has also been able to exert considerable influence over pricing of other crudes without establishing formal allowances for quality and location.

In tight markets such as those which resulted from the 1973 oil embargo, or the 1978 loss of Iranian production, OPEC has been far less cohesive, with price "hawks" going for whatever the traffic will bear. The symptoms of price formation in tight markets has been remarkedly similar. Spot market prices for products in Rotterdam and other trading markets soar. Spot crude oil price trading develops at elevated levels as well. OPEC hawks seek to take advantage of spot crude oil prices by diverting contract volumes to the spot market, which if it does not cool the market, leads OPEC to meet to try to hammer out a new coordinated price structure at higher price levels. If that meeting does not reduce the market pressure, the whole cycle starts up again from the new higher base. There were two major OPEC price increase meetings during the 1973 embargo shortages, and there have been three (as of July 1979) since the Iranian crisis.

OPEC's ability to resist price declines during periods of slack demand relative to physical producing capacity remains strong. On the other hand, the will of member countries to restrain price increases to OPEC-mandated levels during periods of tight supply is now subject to some doubt. The loss of Iranian crude oil production last winter may have been a temporary phenomenon, but it has led to substantially higher price levels. A repeated loss of production, in Iran or elsewhere, could bring about again a situation in which OPEC loses control of the pricing mechanism as prices rise through market forces alone.

The patterns of price formation which have been in evidence during the Iranian crisis could then recur. We believe that even if there are no further interruptions of Iranian production this year, the possibility of a repetition of recent events at some time during the 1980s should be a consideration in any energy-related investment decision. We believe that international oil price levels will rise in real terms even if their course may at times appear erratic.

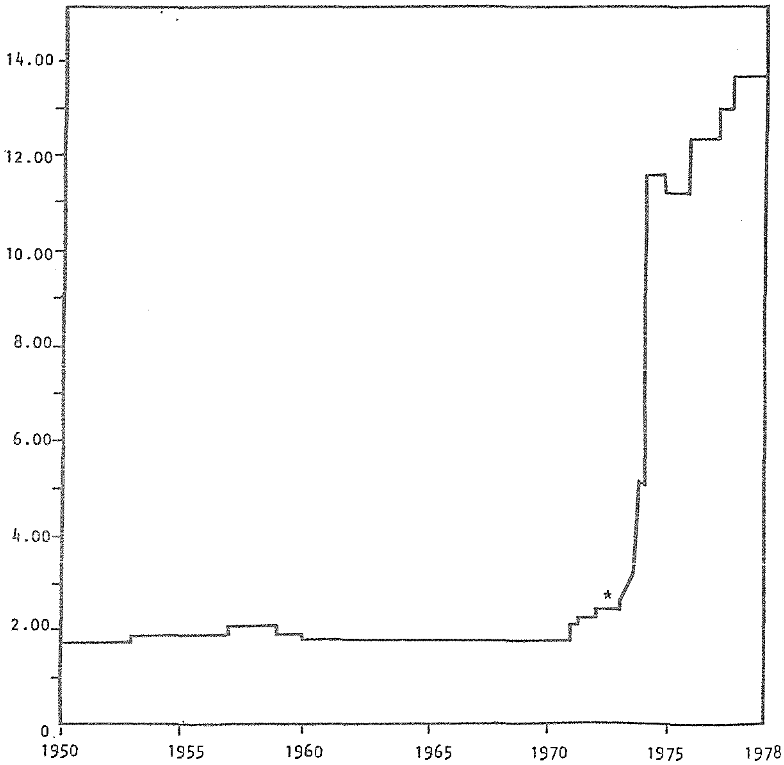
Evolution of World Oil Prices

The OPEC price increase from October 1973 to January 1974 (see Figure I-6) represented a break from the relatively stable oil prices of the 1950s and 1960s. The enormous price increase--nearly fourfold on an f.o.b. basis--led in the U.S. to energy conservation measures by private energy users and a flurry of governmental policy initiatives. Far less dramatic, however, was the almost steady decline in real crude oil prices from 1974 until early 1979. Worldwide inflation, and particularly the rising prices of the goods and services exported by the industrialized countries, rapidly eroded the purchasing power of a barrel of OPEC crude oil, as shown in Figure I-7. By the end of 1978, the real price of Arabian Light crude oil had fallen to 73 percent of its early 1974 level.

The individual OPEC member countries viewed this loss of purchasing power with varying degrees of concern. Countries with large populations and extensive development plans tended to be more concerned than were those with fewer domestic opportunities to invest oil revenues. The

FIGURE I-6

POSTED PRICE
ARABIAN LIGHT CRUDE OIL
1950-1978
(Dollars per Barrel f.o.b. Ras Tanura)



* At the same time that OPEC government participation in the ownership of oil production facilities was rising in 1973 and 1974, attention became focused upon the official selling price rather than the posted price. Official selling prices are 93 percent of the posted prices shown here for years since 1973.

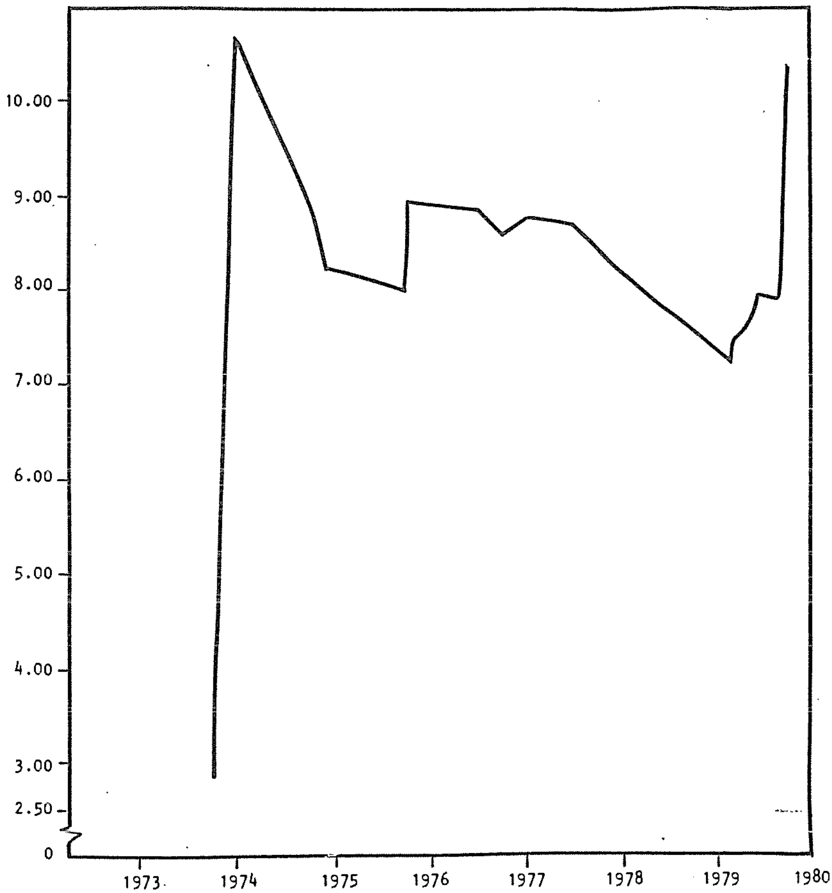
Source: Jensen Associates, Inc.

FIGURE I-7

REAL PRICE IN 1973 DOLLARS OF

ARABIAN LIGHT CRUDE OIL

(Dollars per Barrel f.o.b. Ras Tanura)



Note: the "real price" shown here is calculated by dividing the official government sale price of Arabian Light crude oil by the IMF index of export unit values for 14 industrial countries, converted to a 1973 base.

Source: Jensen Associates, Inc.

former group of countries tended to be the "hawks" who argued within the councils of OPEC for higher oil prices, while the latter group were more easily persuaded of the economic injuries which higher prices might bring to the oil-importing industrialized world.

A major test of policy influence in OPEC between hawks and doves occurred at the 1976 meeting in Doha, Qatar, when member countries disagreed on the appropriate price level and operated for six months with a two-tiered price system. Although the outcome of that test was partially inconclusive, it did not clearly demonstrate what many observers expected, namely, that Saudi Arabia, with its large reserves and spare producing capacity, could unilaterally set lower prices.

A number of factors coincided in late 1978 to reverse the trend of declining real prices of imported crude oil. Iranian crude oil production was interrupted by a general strike and fell, by December, to one-third of the September level. Spot market crude oil prices soared. The Iranian government, whose naturally "hawkish" views on oil pricing had been moderated on previous occasions in exchange for political support and weapons sales by oil importing countries, now was fighting for its survival and could not play a strong role within OPEC. The value of the dollar—the currency used for denominating oil prices--had fallen substantially over the previous 18 months, diminishing further the value of oil revenues to OPEC countries and eroding the value of their holdings of assets in the U.S. Moreover, the economies of the industrialized world appeared to be in a stronger condition than they had been since the recession of 1975; arguments that an oil price increase would halt economic recovery no longer had as much influence as they once had.

The OPEC decision at Abu Dhabi in December 1978, to raise the price of Arabian Light marker crude by an average of 10 percent during 1979 (14.5 percent per year-end to year-end) was, in our view, most importantly a signal of the end of the erosion of purchasing power. Events since the Abu Dhabi meeting have strengthened this conclusion. Individual OPEC member countries, influenced by high spot market crude oil prices, attached various surcharges to their official sales prices. Even Saudi Arabia began to charge the scheduled fourth-quarter price increases on current production and attached a surcharge to one of its less visible crudes. A special OPEC meeting in March endorsed the accelerated timing of the marker crude price increase but left the surcharges as a matter of individual country discretion. The July meeting raised the marker price to $18 per barrel, an increase of 42 percer year, but left an additional $5.50 which others would charge in surcharges and differentials.

These events have placed Arabian Light marker crude somewhat out of line (when quality is taken into consideration) with other internationally traded crude streams. In our projections, we have assumed that the official price of the marker crude will hold at $18 per barrel for 1979 and have projected future increases from that point. At the moment, that projection appears to be low.

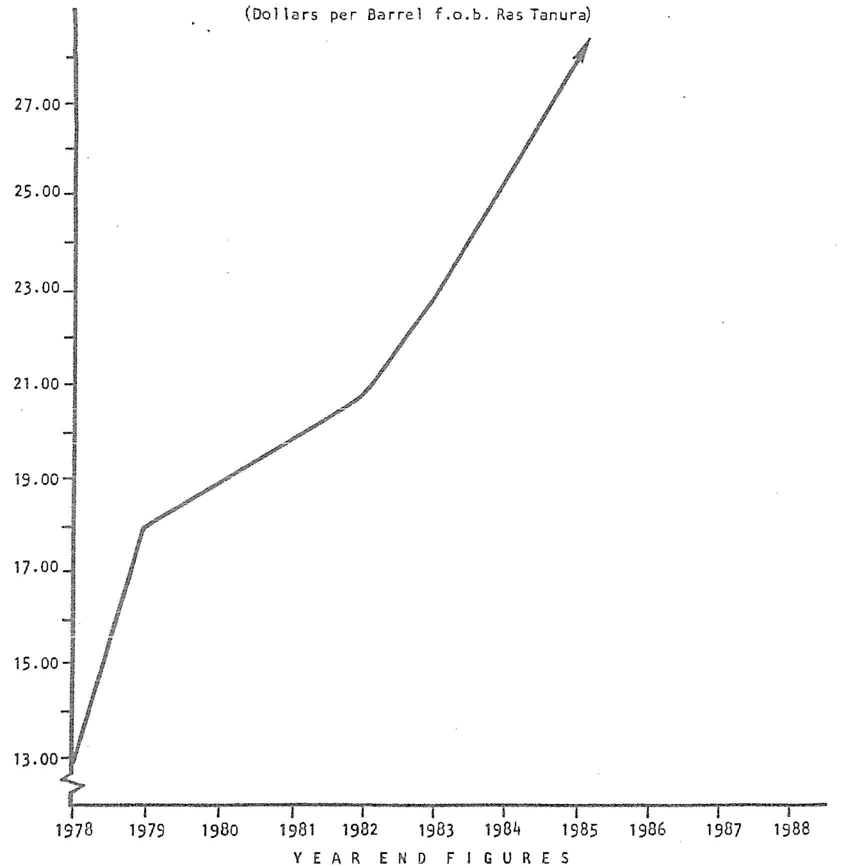
The rate of increase in real crude oil prices during the early 1980s may be accelerated by short-term events similar to the interruption of Iranian exports. On the other hand, it is unlikely that the real price will be allowed to fall for even as much as a twelve-month period. Only a significant downturn in economic activity in the oil importing nations could bring about such a decline.

It is the view of Jensen Associates that international crude oil prices will rise during 1980 through 1982 at a real rate of about 5 percent per year. This assumes a continuation of Iranian production at present levels. Although the capacity and willingness of OPEC countries to increase production levels is limited, we believe that moderation of demand (primarily through conservation measures, but also possibly through a slower rate of economic growth) in the oil importing countries will serve to weaken the pressure for more rapid oil price increases for the next two or three years. Thereafter, as Figure I-8 indicates, a different set of forces may take over leading to an acceleration of marker crude price increases.

Worldwide demand for OPEC crude oil production will probably not test OPEC <u>physical</u> production capacity (except during short-term situations like the Iranian shutdown) until 1987 or 1988. Nevertheless, we believe that international crude oil markets will begin to reflect the coming

FIGURE I-8

FORECAST PRICE (1979 DOLLARS)
ARABIAN LIGHT CRUDE OIL
(Dollars per Barrel f.o.b. Ras Tanura)



Source: Jensen Associates, Inc.

tightness sometime earlier, perhaps as early as 1983. Partly, this will occur because of the political decisions of individual OPEC countries against expansion of production facilities, and partly, it will result from growth in economic activity and resultant growth in energy demand in the rest of the world. At that point, Jensen Associates anticipates a discontinuity in the long-run trend of oil prices. (See Figure I-8.) Beginning in about 1983, the rise in real crude oil prices may be expected to accelerate to perhaps 10 percent per year for the remainder of the decade. In our analytical work, we place a limit to real oil price increases starting in 1990. The limit is purely arbitrary, reflecting more an unwillingness on our part to believe that oil prices can continue to increase at compound rates of 10 percent than any specific foreseeable limit to the rises.

Crude oil prices paid by refiners in the U.S. are, of course, only partially influenced by international markets. Most domestic crude oil is price-controlled at the wellhead, and thus the weighted average cost of crude oil to refiners is somewhat below the price of imported crude. Imported crude, itself, is a mixture of various crude qualities from a variety of sources. Domestic crude oil price controls will be gradually relaxed from June 1979 through October 1981, when they will be completely removed. As for the imported crude oil mix, this is expected to change over time to include a larger fraction of North Sea and Mexican crudes. This will reduce the average transportation distance, but we believe that the benefits of this locational advantage will be mainly captured by the producers. Thus, the weighted average cost of imported crude is expected to increase at about the same rates as Arabian Light marker crude.

From projections of crude oil prices, an estimate of delivered industrial oil prices, such as were used in Figures I-1 to I-4, requires separate judgments about trends in tanker rates, refinery margins for both No. 2 and No. 6 oil, and product transportation and distribution margins. These factors are reflected in our final figures.

II. U.S. NATURAL GAS DEMANDS

Since natural gas curtailments began affecting the patterns of natural gas consumption in the early 1970s, the markets for natural gas have changed substantially. The necessity of coping with a natural gas shortage dominated the first half of this decade to such a degree that concern with the degree of demand for natural gas became secondary. The rapid price increases during this period for all fuels created an increased awareness among consumers of the need to find ways of using energy more efficiently. In addition, the threat of gas curtailments forced many industrial users of gas to install alternate fuel capability and made the industrial market for natural gas increasingly price-sensitive. Since 1974, a body of Federal and state legislation has been passed which restricts the future use of natural gas in selected applications. All of these factors are expected to affect substantially the demands for natural gas in the future. The following analysis considers the implications of these developments in the residential/commercial, industrial and electric power sectors.

RESIDENTIAL AND COMMERCIAL

The natural gas shortage did not affect the existing residential and commercial markets as severely as it affected the industrial and power generation sectors. Nonetheless, actual residential sales declined between 1972 and 1977. Total residential demand in 1977, when corrected for weather variations, was actually 2.9 percent below sales in 1972.

The long-term changes in demand between 1972 and 1977 arose from two counteracting forces—customer growth and conservation. Potential customer growth was inhibited by the advent of pipeline curtailments which resulted in restrictions being imposed on new customer attachments in most regions of the country. In many cases, the moratoriums applied only to new spaceheating customers. In the more adversely affected areas—particularly the East—state and utility company policies precluded any new customer attachments. The effect of the partial and full restrictions, however, was often the same. If utility company policy required the customer to absorb either the cost of main extension, service piping, or both, the operating cost advanta[illegible] [illegible]tural gas were frequently eroded sufficiently by the higher installati[illegible] [illegible] to render gas unattractive for non-spaceheating applications. Although some growth in demand from new customers did occur between 1972 and 1977 (261 bcf or 5 percent), the rate was significantly below the utility industry experience prior to the supply shortage. Conservation, on the other hand, acted to reduc[illegible] the impact of this growth by 411 bcf. The cumulative effects of both customer growth and conservation are shown in Tables II-1 and II-2.

It is apparent that conservation has played the primary role in reducing residential demands. Since 1972, the U.S. average reduction in per meter normalized consumption has been 7.9 percent (through 1977), while some regions have experienced conservation levels that approach 17 percent. Several factors account for this rise in conservation effort and decline in demand. Certainly, public awareness of the potential for conservation has fostered changes in individual consumption patterns. Secondly, exhortations by public officials to conserve energy has likely prompted some patriotic response in reduced demand. The most significant influence, however, has been the upward movement in gas prices. Between 1972 and 1977, residential gas prices rose 96 percent while the consumer price index increased only 45 percent indicating a real gas price (adjusted for general inflation) increase of more than 35 percent. (See Table II-3.) The typical consumer response to this rise in prices has been a reduction in demand.

Three methods have been employed to reduce gas consumption--comfort changes such as thermostat setback, structural changes such as insulating attics, and fuel switching such as replacing a gas range with an electric range.

Comfort changes are simple, immediate responses to higher gas costs but their permanence has not yet been determined. Since consumer behavior is affected more by the total utility bill than by cost per mcf, factors such as a very warm or very cold winter will affect the magnitude of any

TABLE II-1

TOTAL U.S.
RESIDENTIAL SECTOR
NATURAL GAS MARKET CHANGES
1972 - 1977
(Bcf)

1972 Actual	5,173.3
1972-1977 increase due to growth in customers	+260.5
1972-1977 decline due to conservation	-410.9
1972-1977 adjustment for weather	-113.5
1977 Actual	4,909.4

Source: Jensen Associates, Inc.; Gas Requirements Agency.

TABLE II-2

TOTAL U.S.
RESIDENTIAL MARKET CHANGES
NATURAL GAS
1972 - 1977
(Percent)

Between 1972 and	Conservation	Customer Growth	Weather	Total
1977	- 7.9%	+ 5.0%	- 2.2%	- 5.1%
1976	- 6.5%	+ 4.8%	+ 0.1%	- 1.6%
1975	- 3.3%	+ 3.9%	- 4.3%	- 3.7%
1974	- 4.2%	+ 3.2%	- 4.5%	- 5.5%

Source: Jensen Associates, Inc.

TABLE II-3

U.S. AVERAGE RESIDENTIAL ENERGY COSTS

(Dollars per million Btu)

	1972	1977	Percent Change	Annual Percent Change
Gas	$1.19	$2.33	+ 96%	+14.4%
Electricity	$6.72	$11.07	+ 65%	+10.5%
(¢/kwh)	(2.3¢)	(3.8¢)		
Relative Prices (Ratio of electricity to gas price)	5.65	4.75	(15.9%)	(3.4%)
Consumer Price Index (1967=100)	125.3	181.5	+ 45%	+ 7.7%

Source: AGA Gas Facts;
E.E.I. Statistical Year Book;
U.S. Bureau of Labor Statistics;
Jensen Associates, Inc.

demand reduction resulting from comfort changes. Structural changes, however, are quite different in their effect on demand. Insulating attics, installing storm windows and/or using day/night thermostats result in permanent demand reductions.

The pattern of the commercial sector has been quite similar to that of residential. The data for commercial use lacks statistical continuity because of inconsistencies in customer definitions caused by reclassification of customers and changes in metering policies. As a result, it was not possible to make a quantitative assessment of changes in the commercial market comparable to the one undertaken for residential demand. However, in regional field work, Jensen Associates has found commercial conservation levels to be slightly higher than in the residential sector. In part, this stems from the ability of commercial customers to reap larger volume savings with relatively simple efforts. Schools present a good example. By reducing the air change in school buildings to the legal requirements and only replacing the air when the buildings are occupied, school systems have registered savings in spaceheating as much as 40 percent.

Although the initial level of conservation in the commercial sector is somewhat larger than for residential, the potential for improving the energy efficiency in commercial buildings is more limited than it is for single family homes. For this reason, the conservation level ultimately achieved in the commercial sector is expected to be lower than that forecast for residential consumers. As a result, commercial consumption per customer should decline at a slightly slower rate than the residential use per customer.

The achieved conservation measured here (7.9 percent residential through 1977, somewhat higher for commercial) represents only a small portion of the potential which exists with present technology. Spaceheating usage in existing homes could be reduced an average of 25 percent through the use of existing conservation measures. Additional savings (as much as another 25 percent) are expected to accumulate from well-advanced research in new appliance design and the modification of existing furnaces. This currently unrealized conservation is expected to influence residential and commercial gas demands significantly in the future as gas prices are expected to rise faster than the general price level.

As the moratoriums on new customer attachments are removed, the gas market share in new construction is expected to recover from its abnormally low levels of recent years. Electric heat pumps will likely increase their share of the new home market, but principally at the expense of other forms of electric heat. The growth in demand from new customers is projected to more than offset the reductions in consumption resulting from conservation. As a result, total residential/commercial demands (summarized in Table II-4) are forecast to increase by 0.5 tcf between 1977 and 1990.

These estimates are lower than many other projections of residential/commercial demand. The differences lie primarily in the treatment of conservation. Our forecasts are based on the conviction that average residential/commercial consumption per customer will decline substantially in the future as a result of efforts to reduce household energy costs. It is evident from Table II-3, however, that the changes in consumption patterns were initially modest. But recently, the decline in per capita usage has become more pronounced. It would appear that this shift has not yet been reflected in a number of other residential and commercial demand forecasts.

INDUSTRIAL GAS

In the industrial sector, curtailments have generally been assumed to be the dominant factor in determining consumption levels of natural gas. The Gas Requirements Committee estimated 1977 firm and interruptible industrial curtailments at 1,561 bcf. Curtailment data do not, however, accurately reflect unsatisfied gas demands. Interstate pipeline curtailments may be offset by distribution companies through self-help measures such as intrastate production, supplemental gas projects, and direct purchases from producers. In addition, gas demands may decline as a result of conservation or the price-induced substitution of alternate fuels for gas.

TABLE II-4

TOTAL U.S.

RESIDENTIAL & COMMERCIAL GAS DEMANDS & CONSERVATION

1977 - 1990

(Billion cubic feet)

	1977	1980	1985	1990
U.S. Residential and Commercial Gas Demand	7595	7625	7750	8085
Residential Conservation (1972 Base Year)	8%	15%	24%	31%

Source: Jensen Associates, Inc.

Actual U.S. industrial gas sales in 1977 were 2,144 bcf lower than in 1972. Given the GRC curtailment estimate, this suggests that something more than curtailments affected demand. Three factors have been isolated as major influences on demand: changes in the level of business activity, conservation, and fuel switching.

The U.S. economic performance between 1972 and 1977 was dominated by the prolonged recession which lasted from the first quarter of 1974 until the second quarter of 1975. Pre-recession output levels were not reached again until the first quarter of 1976. This generally sluggish business activity restricted the growth of industrial gas demand to 1,569 bcf for the period. The economic recovery, which began in the second quarter of 1975, was not evenly distributed geographically. Using man hours worked in manufacturing as a regional indicator,[1/] it is apparent that the eastern half of the country suffered more severely from the recession and recovered more slowly from it. As a result, the East experienced only a modest increase in business activity from 1972 to 1977. During this same period, the economic recovery in the western half of the nation was generally vigorous.

These differences in growth were also evident in comparing the interstate and intrastate markets. Although the distinction is somewhat imprecise, we have used the West South Central[2/] (WSC) region as a proxy for the intrastate market and the remaining lower 44 states as representative of the interstate market. In the absence of any other market changes (other than business activity) interstate demand for gas in the industrial sector would have grown 677 bcf (+ 13 percent) between 1972 and 1977. In comparison, the West South Central region would have experienced an increase of 891 bcf (+ 25 percent). The growth in expected

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1/ There are several regional economic indicators to choose from. These include value added in manufacturing, personal income in manufacturing, etc. Because of wide variations in inflation rates within the industrial sector, man hours worked in manufacturing was selected for the regional analysis as it corresponded most closely with the results developed in the regional field studies performed by Jensen Associates, Inc.

2/ The West South Central region is comprised of the three largest gas producing states--Texas, Louisiana, and Oklahoma--and the state of Arkansas.

natural gas demand in the West South Central region was influenced by such fuel-intensive industries as refining and petrochemicals. However, even excluding these industries from the analysis, the expected increase in demand exceeded 21 percent.

In actuality, industrial gas consumption declined between 1972 and 1977, not only in the somewhat sluggish interstate market, but also in the West South Central. The major factor in this decline was industrial conservation. There are two general motivations behind industrial conservation efforts: energy price increases and natural gas curtailments (actual and threatened).

Between 1972 and 1977, average industrial gas prices in the U.S. more than tripled; in the West South Central they increased more than six-fold. In real terms (after removing the effects of inflation), the increases are still substantial, ranging from 124 percent in the interstate market to slightly under 320 percent in the West South Central region. The general response to such large price increases has been a decline in demand. Total U.S. industrial gas conservation amounted to 2,687 bcf in 1977 or a reduction of 30 percent as shown in Table II-5. These cost-induced conservation practices vary from simple, low-cost changes in operating procedures to major process changes or heat recovery projects that can require large capital expenditures. Given the variety of industrial uses of gas, it is impractical to attempt to present an exhaustive discussion of industrial conservation practices. Several examples from the Jensen Associates' industrial field interviewing program are illustrative.

Simple, inexpensive conservation practices are typically developed in response to the high cost of energy. For instance, in the case of heat treatment furnaces, ovens, or kilns with low utilization rates, improved scheduling may result in operating continuously for a few days per week rather than intermittently throughout the week. This allows several days of cool-down each week and a resultant fuel savings. Other savings may be achieved from a change in process, as in the shifting of a metal cleaning operation from a hot detergent bath to an ambient temperature acid bath.

TABLE II-5

TOTAL U.S.

INDUSTRIAL NATURAL GAS CONSUMPTION

1972 - 1977

(Bcf)

	Volumes	Percent
1972 Actual	8,815	--
1972-1977 change due to change in business activity	+1,569	+18%
1972-1977 decline due to industrial conservation	-2,687	-30%
1977 fuel switching	-1,026	-12%
1977 Actual	6,671	-24%

Source: Jensen Associates, Inc.; Gas Requirements Agency.

A significant share of the conservation to date has been the result of these relatively simple modifications. Creative plant engineers will undoubtedly continue to devise inexpensive ways to reduce energy costs but much of the more obvious waste has now been eliminated. Future conservation, however, will increasingly require larger expenditures.

The higher capital-cost conservation projects, while perhaps promising substantial energy savings, require careful evaluation along with other potential corporate investments. Because of the competition for limited capital budgets, these projects typically are implemented gradually. Heat recovery systems are among the most frequently considered options for using energy more effectively, as significant amounts of usable energy are discharged from buildings and processes. The installation of waste heat exchange equipment in petroleum refining and petrochemical processing units are but two examples. In the case of in-plant warm air, the modification of exhaust systems within plants to concentrate air removal from specific areas where fumes are produced reduces the wintertime fuel requirements for heating make-up air. These types of projects represent a smaller portion of the achieved industrial conservation through 1977 but the major portion of future energy savings will likely result from similar efforts.

The balance of the reduction in industrial gas consumption was due to fuel switching. As in conservation, the two primary motivations were actual and anticipated curtailments, and higher gas prices. It is not possible to quantify the degree to which each of these influences prevailed without extensive field interviews. As an approximation, it seems reasonable to attribute fuel switching in the interstate market to curtailments. In the West South Central region, higher gas prices were likely the dominant consideration, inducing switches to residual oil by refineries and heavy industry. Regardless of the stimulus, however, the entire volume attributed to fuel switching (1,026 bcf) for the U.S. is substantially lower than the Gas Requirements Committee estimate of industrial curtailments (1,561 bcf) in 1977. In the interstate market, effective curtailments (after accounting for business activity and conservation) were only 642 bcf. This suggests that the unsatisfied demand for gas, even at the current regulated prices, is significantly smaller than is generally assumed.

In the interstate market, curtailments required industries to shift to alternate forms of energy or shut down operations. These forced conversions to other energies have simplified industrial fuel choice decisions in the short term, particularly for lower priority users. The large segment of the industrial sector which has already invested in alternate fuel capability (including existing interruptible customers as well as conversions forced by curtailment) now only needs to examine operating costs differentials and product quality premium values when choosing fuels.

By far, the major alternative to gas is oil, as shown in Table II-6. Large plants, particularly those which have major boiler loads, tend to use residual oil while smaller plants and those with lower steam-raising needs prefer light fuel oils. Figure II-1 shows the alternate fuels substituted for gas in 1977. Of particular interest is the negative role coal played during this period--actual coal consumption declined outside the major producing states. Despite the nearly universal opinion of industry that oil is a substantially less secure source of energy than coal or electric power, there are compelling reasons why oil is the major substitute for curtailed gas.

Competition in the marketplace forces industrial consumers of energy to select an alternate fuel that will impose the smallest cost penalty for the loss of natural gas. The need to minimize costs also requires that conversions be simple enough to keep installation downtimes as brief as possible and that the capability to use gas be retained to take advantage of changing supply and favorable price situations.

Where gas and oil capabilities already exist, there has been little incentive to add still another alternative. Where new facilities have been added, energy source decisions appear to be based on short range considerations, indicating that market competition is playing its expected role. The more important influences in selecting an alternate fuel appear to be: relative simplicity of conversion in terms of capital investment and operating downtime; relative as-burned costs of the Btu's

TABLE II-6

TOTAL U.S.

INDUSTRIAL FUEL SWITCHING 1977

BILLION CUBIC FEET GAS EQUIVALENTS

BASE YEAR 1972

Fuel	Volumes	Percent
Residual Oil	+515	+50%
Distillate Oil	+361	+35%
Refinery Gas	+103	+10%
Other	+ 36	+ 4%
Coal	+ 11	+ 1%
Subtotal	+1026	+100%
Natural Gas	-1026	-100%
Net Fuel Switching Between Fuels	0	0%

Source: Jensen Associates, Inc.; Gas Requirements Agency.

FIGURE II-1

INDUSTRIAL FUEL SWITCHING AWAY FROM NATURAL GAS 1972-1977

(Billion Cubic Feet Equivalents)

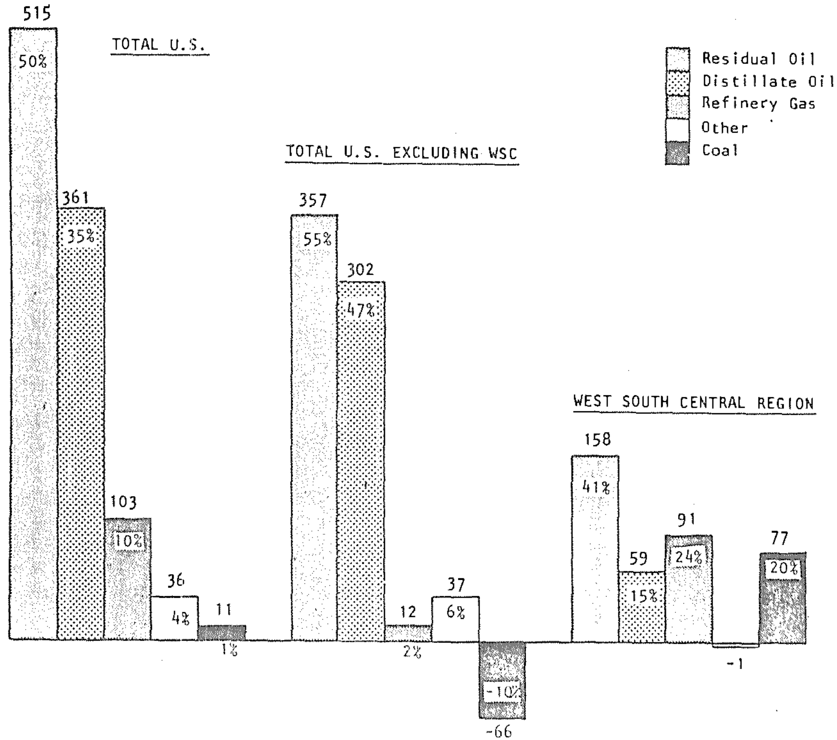


FIGURE II-1

consumed; and retention of gas burning capability. Long-term supply dependability is not a primary factor.

Thus far, conversions to oil appear to more nearly satisfy industrial needs than coal or electric power. In opting for electric equipment, the ability to use gas is normally lost. Although the purchase price of coal is frequently less than oil, the higher investment and operating costs for coal and the major plant downtimes typically required, appear to more than offset this initial advantage. Other problems associated with conversions to coal are the major space requirements for its handling, storage and preparation, and environmental concerns. Most increases in coal use by industry are expected to be associated with new facilities because only in rare cases can gas-fired industrial equipment be converted to coal.

Legislation provides additional stimulus for fuel switching. Portions of the National Energy Act (NEA) could have substantial negative impact on industrial demand for natural gas. Most prominent are the proposals for boiler conversions to coal and incremental pricing of higher cost gas. The Powerplant & Industrial Fuel Use Act (FUA) is an attempt to shift industrial (and electric utility) boilers from gas and oil to coal by legislative fiat rather than through the creation of economic incentives. As a result, industrial reluctance to shift to coal may be expected. The industrial portion of the Act is summarized below.

> <u>New Major Fuel Burning Installations (MFBI)</u>
>
> New MFBI boilers would be prohibited from burning oil or natural gas. Non-boiler usage at new MFBIs would be subject to a case by case prohibition. Exemptions would be allowed for process use, cogeneration facilities, and for compliance with environmental laws.
>
> <u>Existing MFBIs</u>
>
> Existing MFBIs using more than 300 mcf per day must switch from oil and natural gas use if they are economically and technically capable.

Since almost 2 tcf of total U.S. industrial consumption in 1976 is estimated to have been burned under boilers, the potential impact of the legislation is significant. The actual effect of the legislation on the industrial market, however, hinges upon the executive interpretations of the proposed 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 share of gas-coal fired boilers among existing industrial boilers.

The incremental pricing provisions of the NGPA provide the economic incentives for industrial boiler conversions that are lacking in the coal conversion program. However, in an effort to prevent load shifting to petroleum products, the bill sets a ceiling on industrial gas prices which is equivalent to the prevailing petroleum alternate fuel price (either No. 2 oil or residual oil depending on the market). The net effect of the ceiling is to limit the economic penalty incurred by industrial gas users who chose not to convert their existing facilities to coal.

The forecast of U.S. industrial gas demand is shown in Table II-7. There are a number of important assumptions inherent in these estimates:

- Industrial activity is assumed to grow at an average 4 percent per year from 1977 to 1990.
- Industrial energy growth is expected to increase only 2 percent annually as substantial increases in fuel costs result in an additional 16 percent conservation in the industrial sector by 1990.
- The Powerplant and Industrial Fuel Use Act (FUA) will be strictly applied and no new MFBIs will be permitted to use natural gas. If no restrictions were imposed on the fuel choices of these MFBIs, industrial gas demand in 1990 could be 10 percent higher. In the most likely event, some natural gas usage will be permitted in the non-boiler applications of new MFBIs, thereby increasing the demands shown in Table II-7.
- Natural gas is assumed to maintain its price advantage over oil in those geographic regions where industrial gas is presently priced below industrial oil. As a result, gas market shares are projected to return to the pre-shortage levels in those markets where gas is legally permitted to compete.

While the incremental pricing provisions of the NGPA are intended to keep gas prices no higher than regional alternate fuel prices (to prevent load shedding), there is substantial executive flexibility in the implementation of these provisions. Since a large segment of the industrial

TABLE II-7

INDUSTRIAL DEMANDS FOR NATURAL GAS

1977 - 1990

(Bcf)

	Actual	Potential		
	1977	1980	1985	1990
Demand from plants currently using natural gas	6671	6220	6020	5730
Demand from existing plants that have switched from natural gas to an alternate fuel	1037	970	940	900
Demand from new plants (excluding MFBIs)	--	630	1800	2740
Total Industrial Demand	7708	7820	8760	9370

Source: Gas Requirements Agency;
Jensen Associates, Inc.

market is dual-fueled (and, therefore, sensitive to the relative prices of gas and alternate fuels), should gas price ceilings be set above the principal regional alternate fuel (either distillate or residual oil), a significant shifting of industrial load away from natural gas could occur.

While the industrial demand (shown in Table II-7) is expected to increase 1.7 tcf (1.5 percent per year) to 9,140 bcf in 1990, consumption could rise by 2.7 tcf (2.6 percent annually) in 1990 if sufficient gas supplies are available. Table II-7 shows the forecast volumes of industrial natural gas demands from three segments of the industrial market. The demand for gas from plants currently using natural gas is projected to decline 10 percent by 1990 due to additional conservation. Plants that have shifted from natural gas to an alternate fuel in the period from 1972 to 1977 are projected as having potential gas demands for several reasons. The majority of this switching occurred in the interstate market where gas curtailments were the motivating force. Secondly, the switching which was precipitated by gas prices rising above alternate fuel prices (such as was the case in Texas) remain as a potential demand depending on the price of gas relative to alternate fuel. DOE has recently issued a report[1/] which suggests that 298 bcf of industrial natural gas demand has permanently shifted away from natural gas to an alternate fuel as perceived by the pipeline and utilities which previously supplied them. While the 86.5 bcf (29 percent of the total), which shifted to coal and electricity, is probably lost demand, the remainder, which shifted to liquid fossil fuels (predominantly residual oil), could shift back to natural gas where there is an economic advantage for doing so. The cancellation of a gas contract or the removal of gas meters and equipment does not preclude the customer from switching back to gas later on. As a result, all of the fuel switching away from natural gas is categorized as a potential gas demand, although these volumes will decline throughout the forecast period due to additional

1/ Reduction in Natural Gas Requirements Due to Fuel Switching--April, 1973 - March, 1978.

conservation. The final component of industrial demand is growth in natural gas demands due to increases in manufacturing activity. Industrial output is projected to rise more rapidly than energy consumption because new plants are expected to be significantly more efficient than existing facilities.

ELECTRIC POWER SECTOR

Two factors dominate market changes for gas in the electric utility sector in the 1972-1977 period--environmental restrictions on fuel use and supply curtailments. The environmental issue was strongest in the interstate markets where its effect was to increase potential demand at a time when supplies available to this market were declining. Table II-8 illustrates the changes in electric utility fuel consumption. Note that the oil, coal and nuclear data shown in Table II-8 represent only the incremental changes in those fuels since 1972. If the gas industry had captured all of the increases in fossil fuel generation of electricity between 1972 and 1977, electric utility consumption of natural gas would have been 6.4 tcf. However, this would have required a substantial increase in the share that natural gas captured of the growth. In the period 1967 to 1971, when gas sales for electric power peaked, the gas industry cornered only 25 percent of the incremental market. Whether environmental restrictions on coal consumption would have brought about such a major shift in markets became a moot issue when interstate curtailments began.

Natural gas curtailments quickly became the major influence in the interstate gas market for electric power; the latter generally was assigned a low priority under the allocation systems developed. Electric utility consumption of natural gas declined in the interstate market by by 968 bcf (49 percent) during the five-year period (1972-1977) due to curtailments. During this time, the loss in generation output produced by gas was compensated for by major increases in coal and nuclear-based electricity with oil providing only a minor share.

In the West South Central region, where natural gas has long been the dominant fuel used for power generation, unregulated intrastate prices

TABLE II-8

TOTAL U.S.

ELECTRIC UTILITY NATURAL GAS CONSUMPTION

1972 - 1977

(Trillion Btu)

	Volumes	Percent Change	
1972 Actual	4,086		
1977 Actual	3,275		
1972 - 1977 Decline	(811)	(20%)	
1972 - 1977 Net change in other fuels	**Volumes**	**Percent Share**	**Percent Share**
Oil	+680	22%	13%
Coal	+2,456	78%	47%
Total Fossil Fuel	+3,136	100%	60%
Nuclear	+2,098		40%
Total Increase in other fuels	+5,234		100%

Source: Jensen Associates, Inc.;
U.S. Bureau of Mines;
U.S. Department of Energy.

assured sufficient gas supplies to increase the consumption of electric utilities by 179 bcf (8.9 percent higher than 1972). The s tantial growth, however, was principally for coal and oil. The rapid increases in intrastate prices beginning in 1973 did have a dampening effect on demand as a number of utilities, when faced with higher prices upon contract expiration, began shifting to other fuels. The major influence in the future, however, both in the interstate and intrastate markets, may be the conversion of electric power generation from gas and oil to coal.

The coal utilization provisions of the Energy Supply and Environmental Coordination Act of 1974 (ESECA), as amended by the Energy Policy and Conservation Act (EPCA) and, most recently, by the Powerplant and Industrial Fuel Use Act (FUA), are regulatory forces expected to cause the displacement of gas in the electric utility sector over the long term. In particular, Federal policy prohibiting the construction of new generating capacity based on gas or oil as the primary fuel means that utilities must look to other energy sources to fuel new generating capacity. Exemptions to this prohibition may be obtained on the basis of lack of an alternative fuel supply, site limitations, environmental requirements or lack of adequate capital. However, the exemption process places the burden of proof on the utilities themselves and considers exemption requests in the light of stated national energy policy goals of reducing oil imports and shifting power generation to coal and other fuels from a gas and oil basis.

The displacement of gas--largely by coal and nuclear--does not assume an accelerated retirement of existing gas-fired capacity or even the conversion of these boilers to a solid fuel. Gas displacement in power generation is expected to occur when more efficient, new, solid-fuel plants are utilized as primary or baseload capacity and existing gas units are shifted to a shoulder or peaking mode of operation. Thus, although the generating capacity of gas-fired plants will not decline appreciably, the demand for power from these facilities will fall off disproportionately, thereby reducing the demand for gas in plants which currently use gas.

The long-term displacement of gas in the electric utility sector is expected to occur at a pace largely influenced by the economics of competitive fuels and by overall electricity demand growth. Thus, for example, conditions which find gas (or oil) prices escalating more rapidly than solid fuels and the annual demand for electricity continually increasing may be expected to hasten the displacement process. Conversely, conditions of less favorable solid fuels economics relative to gas (or oil), coupled with little or no growth in electricity demand, will retard the displacement process.

Other provisions in FUA were originally designed to hasten the displacement process by limiting the quantities of gas that could be used by electric utilities in existing gas-fired facilities in the period to 1990 and thereafter. However, the Energy Regulatory Administration has incorporated into FUA a public interest exemption (renewable up to five years) allowing utilities to take advantage of the "gas bubble" surplus and to displace imported oil in existing generating facilities. Thus, in the short term, some utilities (located where the economics of competitive fuels favor gas) will increase their gas consumption from recent years' levels as they shift from oil to gas.

Table II-9 shows the total potential demand for natural gas in plants that currently consume gas as well as plants that have the capability of burning gas but which have been using oil as an alternate fuel, either as a result of curtailment, competitive fuel prices, or Federal regulation. The projections for natural gas demand in plants that are now using gas are based on the substitution of coal, nuclear and other (non-oil) generation for gas. However, expected additions to generating capacity are likely to be insufficient to enable utilities to meet the FUA requirement that utilities reduce gas consumption by 1990 to an amount no greater than 20 percent of their 1976 gas consumption. As a result, the forecast assumes that exemptions to compliance with the Fuel Use Act will be granted on either economic or environmental grounds.

The demand projections for utilities which have dual oil/gas burning capabilities but have been using oil are indicative of the total additional share of the power generation market which gas could capture assuming availability of supplies and a competitive price relative to

TABLE II-9

U.S. ELECTRIC UTILITY DEMAND FOR NATURAL GAS

1977 - 1990

(Billion cubic feet)

	Actual	Projected		
	1977	1980	1985	1990
U.S. Electric Utility consumption of natural gas in plants currently using gas	3016	2861	2753	2591
Potential U.S. Electric utility consumption of natural gas in plants capable of burning gas but using oil an an alternate fuel	2578	2446	2353	2214
Total Potential Demand	5594	5307	5106	4805

Source: Gas Requirements Agency; Jensen Associates, Inc.

residual oil. As already mentioned, a portion of the demand in dual-fired plants is already shifting to gas from oil under the public interest exemption. Over the period of the forecast, the total potential gas demand in dual-fired plants is also expected to decline due to shifting of these plants from baseload to shoulder and peaking status in a manner similar to the expected changes in plants currently using gas.

III. GAS SUPPLY FORECAST LOWER 48 STATES

SUMMARY FORECAST

Conventional gas production in the Lower 48 States is expected to decline by 5.0 tcf, or 26 percent, between 1978 and 1990. However, gas imports and other supplemental supplies are expected to hold the decline of total supplies to only 1.3 tcf, or 6 percent, during this 12-year period. As shown in Table III-1, forecast supplemental gas supplies to the Lower 48 will be inadequate to offset the expected decline in production, causing an overall drop in supply from present levels. Gas supplements, including pipeline imports and Alaskan North Slope gas, are projected to increase from the 1978 level of 1.4 tcf to 5.1 tcf by 1990. Details of this forecast by Jensen Associates are discussed in the following sections.

LOWER 48 STATES PRODUCTION FORECAST

Lower 48 gas production is expected to continue declining over the forecast period but at a reduced rate during the 1980s. General assumptions reflected in the Lower 48 production forecast of Table III-1 are that wellhead prices will be decontrolled in 1985; offshore leasing will progress reasonably in the Gulf of Mexico during the next 10 to 15 years; and Atlantic and Pacific leasing will keep pace with area exploration plans.

More specifically, the Lower 48 production forecast is based on the judgment that oil and gas well drilling rates will continue to increase but at a slower rate through 1985 and then remain near constant through 1990. Finding rates for both non-associated gas and associated/dissolved gas will decline slowly from current levels through 1990. Under these assumptions, annual reserve additions will increase about 2 tcf between 1978 and 1985, then decline 1.0 tcf per year by 1990. Since reserve additions are expected to be below current production rates, production will have to decrease in coming years. A reversal of the production decline and steady production increases thereafter would require much larger reserve additions than those forecast.

TABLE III-1

LOWER 48 STATES SUPPLY FORECAST

1977 - 1990

(tcf)

Source:	1977	1978	1980	1985	1990
Production	19.3	19.1	17.2	15.2	14.1
Canadian Imports	1.0	1.0	1.0	1.4	1.4
Mexican Imports	Nil	Nil	Nil	0.7	0.7
LNG Imports	Nil	0.1	0.4	0.8	1.0
SNG - Oil Feed.	0.3	0.3	0.4	0.5	0.6
Coal Feed.	0	0	0	0.1	0.3
Non-Alaskan Supply	20.6	20.5	19.0	18.7	18.1
Alaskan Supply	0	0	0	0.7	1.1
Total Supply	20.6	20.5	19.0	19.4	19.2

Source: Jensen Associates, Inc.

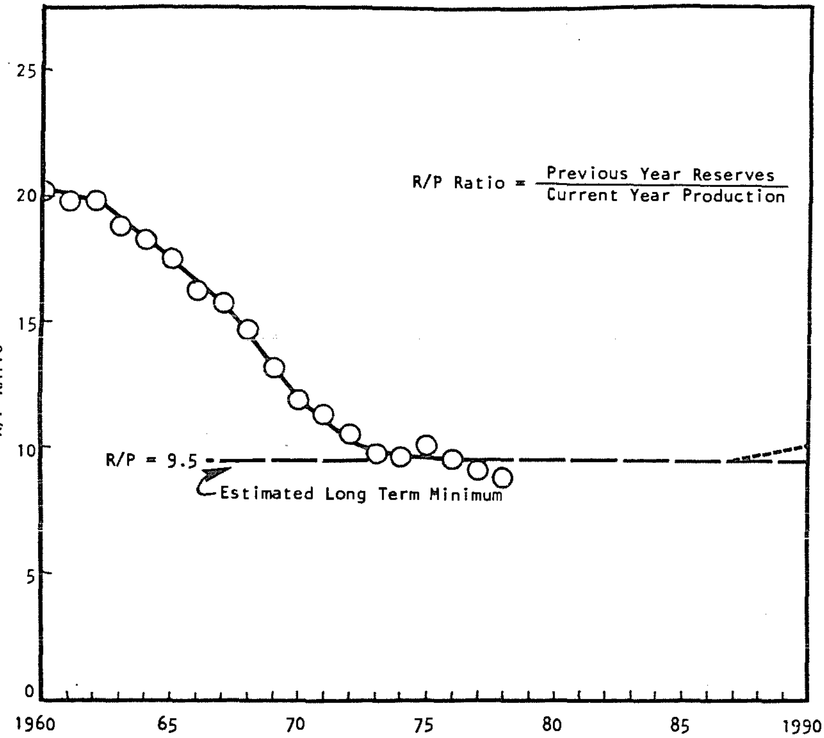
Although Lower 48 reserve additions reached 11.8 tcf in 1977 and 10.6 tcf in 1978, more than one-half of the new gas for these past two years was found from developmental drilling in known gas and oil fields. This type of drilling augments supply, but it does not increase the discovery base from which future production must come. Exploratory drilling to locate new fields resulted in reserve additions of 2.1 tcf in 1977 and 1.7 tcf in 1978. Another type of exploratory drilling--to locate new productive strata in known fields--added another 2.2 tcf to reserves in 1977 and 2.0 tcf in 1978.

Figure III-1 shows that the reserves/production (R/P) ratio for the Lower 48 declined and approached a value of 10 between 1960 and 1976, then dropped to 9.6 in 1977 and 9.3 in 1978. Clearly, this ratio is the averaged performance of all producing reservoirs combined: some wells are exhausted in three years while others produce steadily for thirty. Moreover, the observed relationship between reserves and production rates cannot be expected to remain static under certain conditions, although the inertia of the more than 150,000 producing gas wells, which represent the major portion of the 169 tcf of proved reserves in the Lower 48, will make any change in the R/P ratio a gradual one.

A continuation of the recent low rate of gas reserve additions relative to production levels will raise the average age of producing reservoirs and eventually lower their average depletion rate, causing an increase in the R/P ratio. Conversely, large and sustained additions of new reserves will reduce the average age of U.S. gas reservoirs and should result in a small decline in the observed R/P ratio, particularly if high delivery rate reservoirs are developed. In addition, any significant changes in gas production economics could result in more or less effort to extract gas from proved reserves. While production remained near constant from 1975 through 1978, the concurrent drop in the R/P ratio to 9.3 suggests that gas reservoirs were produced more rapidly to meet abnormal winter weather conditions--possibly in response to the higher real prices available for gas. Thus, recent production data are not judged to indicate a reversal in long-term production decline. This forecast is based on continuation of an observed minimum R/P ratio which is expected to hover near 9.5 until the mid-1980s, then slowly climb back

FIGURE III-

R/P RATIO HISTORY
LOWER 48 STATES NATURAL GAS



Source: Jensen Associates, Inc.
American Gas Association

to 10 by 1990. Cumulative reserve additions of 164 tcf for 1978 through 1990 are required to support the Lower 48 gas production rates forecast. The estimated non-speculative resource base from which these additions must be proved was estimated to be about 600 tcf at the end of 1976.

CANADIAN GAS IMPORTS

Canada is presently experiencing a gas surplus. Phased price increases in recent years have stimulated Canadian exploratory drilling while simultaneously reducing demand domestically. Drilling in 1977 to locate additional reserves rose 13.3 percent from 1976 levels, with 80 percent of all Canadian well completions occurring in Alberta Province, Canada's major gas producing area. Proved reserves stood at 53.0 tcf in 1970 and at year-end 1978 were 66.1 tcf. Until expansion of eastern Canadian markets occurs, the upward revisions in proved reserves in western Canada may be expected to encourage gas exportation to the United States. Canada's National Energy Board has departed from its 1977 policy of reduced gas exports and is expected to allow limited escalation of gas exports if reserves continue to be added. Although no specific export project has been approved as yet, increases in U.S. imports from Canada are estimated at slightly over 1 bcf per day.

Our estimates anticipate an increase from current levels of 1.0 tcf per year to reach 1.1 tcf in 1981 and 1.4 tcf annually from 1982 through 1990. These estimates are based on the assumption that the Alaskan Gas project is completed as planned, including the proposed pre-build phase of the project. Official Canadian policy advocates the construction of the line together with the Dempster Lateral to tie in gas from the Mackenzie Delta and (possibly) the Beaufort Sea. Without some assurance of pipeline access to its own frontier gas reserves, Canada would be less willing to commit present Alberta surpluses to U.S. markets. Development of the Mackenzie Delta and other northern Canadian gas reserves, including Arctic Islands gas, should help sustain total export levels in the latter half of the 1980s.

MEXICAN GAS IMPORTS

In recent years Mexico has embarked on an ambitious hydrocarbons exploration and development program. Proved gas reserves are currently estimated at 65 trillion cubic feet with probable reserves proje an additional 72 trillion cubic feet. Most of Mexico's gas is foun conjunction with oil and must be flared or reinjected when the crude oil is produced because gathering and delivery systems and markets have not yet been developed. Construction has been completed for a 685-mile gas pipeline from the Chiapas-Tabasco oil and gas fields in the south-eastern isthmus area to northern Mexico. Initially, two branches of the gas pipeline were planned. The Monterey leg for internal gas consumption was completed, while a Reynosa branch to tie into existing U.S. pipelines was not. Six U.S. companies signed a letter of intent with Pemex, Mexico's national oil company, for gas imports at a price tied to No. 2 fuel oil delivered at New York Harbor. However, the tying of Mexican gas prices to world oil prices was rejected by the U.S. Department of Energy, and plans for the northerly U.S. pipeline leg have been suspended by Pemex. The alternatives to selling the gas in the U.S. now appear to be the limited markets available by pipeline or to make the substantial capital investment required for LNG exportation.

Renewed negotiations (as of August 1979) between the U.S. and Mexican governments have proved to be complex and difficult, and have broken down on more than one occasion. Nevertheless, we believe that a gas pricing accommodation will be reached by the U.S. and Pemex and that by 1984 annual deliveries will total 0.7 tcf. Limited pipeline and gas treatment capacity is expected to keep Mexican imports at this level through 1990. But even if the initial contract with Pemex is for a short duration, such as the previously drafted six-year term, renewals are expected, due to the continuing lack of attractive alternatives for Mexico.

This level of export is small compared to our total projected gas gap. Thus, we do not foresee a situation in which the availability of gas from Mexico eliminates the demand for Alaskan gas.

LIQUEFIED NATURAL GAS IMPORTS

Although a number of liquefied natural gas (LNG) import projects have been submitted to U.S. regulatory authorities for approval, thus far only three baseload projects have been fully approved: the Distrigas, El Paso I, and Trunkline projects. Conditional approval has been granted for a fourth, the Pacific Indonesia project, with final approval requiring resolution of the California terminal siting problem. The first two of these projects are expected to result in combined LNG imports of 0.4 tcf in 1980. By 1985, LNG imports are expected to rise to 0.8 tcf, reflecting additional supplies from the Trunkline and PacIndonesia projects. Despite the recent DOE rejection of the El Paso II and Tenneco TAPCO projects, it is expected that at least one additional project will be completed between 1985 and 1990, bringing LNG import levels up to 1.0 tcf by 1990.

OTHER SUPPLEMENTAL GAS SOURCES

During the early 1970s, when real U.S. energy prices were escalating and U.S. gas production was falling, interest in non-conventional sources of gas was high. Some supplemental gas sources such as synthetics produced from liquid petroleum feedstocks (SNG) and low-Btu coal gas are based on technologies that are well known and proven. Other supplements such as high-Btu coal gas, coal seam gas and gas extracted from tight rock formations are dependent on the evolution of new technologies. Because of escalating capital investment requirements, generally unfavorable economics, regulatory controls on feedstock availability in the case of SNG, and environmental restrictions, the outlook for gas supplements is substantially more pessimistic today than it was a few years ago. Synthetic gas production is forecast to be 0.4 tcf in 1980, 0.6 tcf in 1985 and 0.9 tcf in 1990. The contribution of new technology gas to Lower 48 supply is expected to be relatively insignificant during the forecast period, possibly reaching a total of 0.3 tcf per year from geopressured aquifers and tight formations. These new technology volumes are included in the Lower 48 production figures of Table III-1.

ALASKAN GAS FORECAST

Alaskan gas transported from the Prudhoe Bay area to the Lower 48 is shown in Table III-1 to contribute 0.7 tcf in 1985 and 1.1 tcf by 1990. This forecast assumes construction of the Alaska Highway Pipeline Project with an initial delivery rate of at least 2.0 bcf per day, beginning in 1984 and reaching 3.0 bcf per day by the late 1980s.

EXHIBIT F

A REVIEW OF ALASKA NATURAL GAS TRANSPORTATION SYSTEM ISSUES

Submitted to the
Federal Energy Regulatory Commission
Under Contract No. EJ-78-C-01-6395

May, 1979

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EXECUTIVE SUMMARY

This report addresses several major questions that relate to the Federal Energy Regulatory Commission's (FERC) deliberations concerning the proposed Alaska Natural Gas Transportation System (ANGTS):

- In light of recent changes in gas supply markets, are there still net benefits to the nation from proceeding with the proposed Alaskan gas pipeline project?
- If the potential benefits remain significant, why must low cost old gas subsidize the project through rolled-in pricing of Alaskan gas and why may special regulatory treatment, such as an "all events tariff" to insure debt repayment, be necessary?
- How does the planned implementation of ANGTS affect other potential gas supply opportunities, especially Mexican gas purchases?
- What policy options, such as gas conditioning charges and wellhead price ceiling levels, exist for reallocation of project costs, and how would these options affect the distribution of the project's opportunities and risks?

The analysis presented here concludes that the ANGTS project should provide significant economic benefits to the nation; nevertheless, serious obstacles to project implementation remain. At least one of these problems, the high initial cost of delivered natural gas, results from the traditional embedded historical cost method of ratemaking for gas regulation. The negative effects that this regulatory approach creates for the marketability of Alaskan gas can be counter-balanced to a large extent through another traditional practice of natural gas regulation, average cost pricing. Other problems revolve largely around questions of the equitable distribution of project benefits and costs. Questions about how to allocate the opportunities and risks associated with the project's significant market, technological, and regulatory uncertainties present especially thorny problems.

Since these latter issues can only be resolved by policymakers' applying their judgment about what is equitable, this analysis can come to no conclusions about the appropriate path for policymakers to take. Instead, it seeks to analyze the extent to which the project could benefit the nation as a whole and specific parties such as gas producers or consumers under a variety of possible scenarios and policy decisions. This information should assist federal policymakers in weighing the significance of the policy questions concerning the ANGTS that they will face.

NET NATIONAL ECONOMIC BENEFIT

The Net National Economic Benefit (NNEB) measures the extent to which the value to the nation of Alaskan gas, delivered to energy users, exceeds the real resource costs to the nation of producing and transporting the gas. For this analysis:

NNEB = Delivered Gas Value
- Production Costs
- Transportation Costs
- Foreign Producer Benefits.

Briefly, these components are estimated in present value-equivalent terms and have the following definitions:[1/]

1/ See Section II of this report for an expanded discussion of the NNEB components and of the reasons for using a 6 percent after-tax real discount rate in calculating the present values.

Delivered gas value: the real resource costs to the nation of the alternative energy source likely to be used in the absence of Alaskan Prudhoe Bay gas.

Production costs: the incremental real resource costs incurred to produce the Prudhoe Bay gas,2/ including capital expenditures, income taxes on required revenues, ad valorem taxes, and operation and maintenance (O&M) expenditures, but excluding costs deemed for purposes of this analysis to be transfer payments within the U.S. economy (royalties and severance taxes).

Transportation costs: the incremental real resource costs incurred to move gas from Prudhoe Bay to the citygate in the lower-48 states, including capital expenditures, income taxes, ad valorem taxes, O&M expenditures for U.S. segments of the ANGTS, and U.S. cost of service payments to Canada for pipeline segments within its territory.

Foreign producer benefits: the share of the potential net national project benefits, in the form of payments to gas producers in excess of the real resource costs of production, which escapes the U.S. economy because a foreign firm owns a portion of the Prudhoe Bay gas.

The base case used for this analysis resembles the ANGTS scenario used for the NNEB discussion in the President's Decision.3/ In order to be consistent with the earlier discussion on this one point, the base case assumes a gas value equal to the wholesale price of distillate fuel. But in contrast to the President's Decision, the base case envisions more rapid world oil price escalation over time and applies a 6 percent real after-tax discount rate to account for consumers' time preferences.

2/ Incremental costs are costs in addition to any expenditures that would have been required in any case to produce oil at Prudhoe Bay.

3/ Executive Office of the President, Decision and Report to Congress on the Alaska Natural Gas Transportation System, Washington, D.C., September 1977. This is the set of assumptions leading to the results presented on pp. 93-98 of the President's Decision.

Under these base case assumptions, the NNEB and its components are estimated to be:

	(mid-1979 dollars)
Delivered Gas Value	$ 33.3 billion
- Production Costs	- 6.0
- Transportation Costs	-11.9
- Foreign Producer Benefits	- 0.5
NNEB	$ 14.9 billion[4/]

A high degree of uncertainty is associated with the base case NNEB estimate. Distillate fuel prices may differ from the assumed levels or Alaskan gas may not displace distillate because of changed project costs or altered availability of other fuels. The distillate price assumptions used for the base case, however, may be conservative; actual future oil price experience, we believe, would be more likely to increase the NNEB estimate than to decrease it. Moreover, worst case cost growth, as estimated by the Departments of the Interior and Transportation (in which the construction costs for both the Alaskan and Canadian segments would more than double over filed estimates), would reduce the NNEB to $10.4 billion (mid-1979 dollars), still a significant level.[5/] Finally, if fuel availability were to reduce the gas value to the price of residual fuel oil instead of distillate, the NNEB also

4/ Section II describes the discounting methodology. The President's Decision estimated the NNEB at $5.8 billion (1975 dollars). The major differences are the Decision's assumption of a constant future price (in real terms) for distillate oil and its use of a 10 percent real discount rate.

5/ U.S. Department of the Interior and U.S. Department of Transportation, Alaska Natural Gas Transportation Systems: White House Task Force Lead Agency Report on Construction Delay and Cost Overruns, July 1, 1977.

would remain significantly positive, $11.8 billion (mid-1979 dollars).

Across all reasonable scenarios, the ANGTS project appears to be economically efficient from a national perspective, in terms of reduced real resource costs for comparable amounts of energy use. But the project may not always provide economic benefits from the narrower perspective of gas consumers. The actual delivered cost of Alaskan gas to consumers compared to their alternative fuel choice—not simply the real resource costs incurred to produce and deliver it—determines the share, if any, of the national benefits accruing to gas consumers.

DELIVERED GAS COST

The delivered cost of Alaskan gas not only provides a necessary input to calculating the share of the NNEB captured by consumers but also provides important insights into problems that Alaskan gas could face in the energy marketplace. And since the success of the ANGTS as a private venture depends upon the marketability of the gas, the delivered costs of Alaskan gas also illuminate problems with obtaining private financing for the project.

The citygate cost of delivered Alaskan gas has four components: the price paid to producers for the gas at the wellhead, Alaskan state severance taxes imposed on gas production, any additional charges for conditioning the gas prior to introduction into the ANGTS, and the "cost of service" allowed to be charged by the project sponsors for transporting the gas from Prudhoe Bay to its markets. For the base case assumptions used in the NNEB analysis, the annuity-equivalent cost of delivered gas (in 1979 dollars) is estimated as follows:

Component	25-Year Annuity-Equivalent Cost6/ (mid-1979 dollars)
Wellhead Gas Price	$1.68 per million Btu
Severance Taxes	0.17
Gas Conditioning Charges	0.007/
Pipeline Cost of Service	1.33
Delivered Cost of Gas	$3.18 per million Btu

The delivered cost of gas hinges importantly on all four of its components. Because of this shared importance, focusing on one particular aspect of the delivered cost--typically potential ANGTS cost overruns and resulting pipeline cost of service increases--can ignore other important cost items. The price producers are allowed to charge, the taxes the state and federal governments are allowed to levy, and the locus of the gas conditioning charges all make important contributions to the cost consumers would pay for Alaskan gas.

Transportation costs (i.e., the pipeline cost of service associated with the ANGTS project) account for less than half of the citygate cost of the gas. In percentage terms, major changes in transportation assumptions do not

6/ The calculation of annuity-equivalents is described in Section III of this report. Briefly, it is a levelized unit cost which represents the constant unit amount that would yield a present value equal to the present value of the unit costs resulting from traditional gas ratemaking. This approach, we believe, represents an improvement over the arithmetic average approach used in the President's Decision because it incorporates a measure of consumers' time preference in a manner consistent with life-cycle cost decisionmaking.

7/ This zero gas conditioning charge is based on FERC's proposal for gas producers to pay gas conditioning costs. The imposition of gas conditioning charges would raise the delivered gas cost to $3.88 per million Btu. This issue is examined in the body of the report.

alter the citygate cost significantly. For example, the annuity-equivalent delivered cost would vary by less than 10 percent for any of the following events: a doubling of construction costs on the high risk segment of the ANGTS located in the harsh Alaskan environment,[8/] a doubling of Canadian segment construction costs, or a doubling of the gas flow rate assumed in the base case. For the worst case cost overrun scenario, the delivered cost estimate would be $3.55 per million Btu, 12 percent above the base case.

The traditional approach to ratemaking for gas pipeline tariffs—the so-called historical embedded cost method—would generate larger swings in the cost of gas from year to year than the annuity-equivalent cost changes resulting from any of the events mentioned in the previous paragraph. Because the historical embedded cost method of setting gas rates provides a constant rate of return on the remaining book value of the pipeline's initial capital investment, payments to provide the return to the pipeline and, in turn, the gas cost to pipeline customers would be highest in the first year of pipeline operation.

Thereafter, along with the remaining book value of the pipeline, the delivered gas cost would decline annually in real terms until the rate base is entirely depreciated (after 25 years of operation for the ANGTS). Afterward the pipeline would receive no further return on rate base, and delivered gas costs would consist only of the purchase costs of the gas at the wellhead plus pipeline O&M costs and other annual expenses, such as taxes. For example, the

8/ Compared to filed estimates.

following table illustrates the base case delivered costs over time (annuity-equivalent cost = $3.10 per million Btu):

	Delivered Gas Cost (mid-1979 dollars)
Year 1	$4.10 per million Btu
Year 10	2.90
Year 25	2.20

ALASKAN GAS VERSUS OTHER ENERGY ALTERNATIVES

The ANGTS project is expected to provide advantages to the nation and to consumers over alternative fuels. Under the base case assumptions:

- the annuity-equivalent price of Alaskan gas would be 12 percent below the assumed annuity-equivalent price for distillate fuel oil;
- over a 25-year project lifecycle, gas users could save $2.5 billion (mid-1979 dollars) with Alaskan gas compared to distillate fuel oil and $13.2 billion compared to Mexican natural gas keyed to distillate oil prices;
- the delivered price of Alaskan gas would be higher than the price of distillate at the citygate for the first seven years of the project based on historical embedded cost ratemaking, in spite of net benefits to consumers and the nation as a whole. For this and all other cases, high gas costs for the earliest project years result from the application of traditional ratemaking to the ANGTS. And these high initial rates would exacerbate the uncertainty associated with Alaskan gas marketability and with the financing of the project.

This analysis of the economic attractiveness to energy users under base case conditions indicates that, on a 25 year annuity-equivalent basis, Alaskan gas would be less expensive than distillate fuel oil, Mexican gas, or even residual fuel oil.[9/] Thus, if it can be constructed at expected costs, the project would be in the national interest for any reasonable energy supply projections.

For the high cost case, the ANGTS project could benefit the nation if it substituted for residual fuel oil, but consumers might chose residual over the Alaskan gas. In fact, consumers would perceive a less than 2 percent annuity-equivalent price advantage from Alaskan gas compared to distillate fuel oil. The differences between the conclusions about the economic attractiveness of the proposed ANGTS project for gas users and for the nation result from the fact that participants other than consumers receive shares of the NNEB. This issue is addressed in Section V of the analysis.

The most important issue related to the market prospects for Alaskan gas is that the time-profile of delivered costs resulting from traditional cost of service ratemaking could create initial marketing difficulties for Alaskan gas, even when its lifecycle cost to consumers is lower than alternative fuels. As noted earlier, an historical embedded cost of service consists of annual operating expenditures plus a return on the book value, after depreciation, of the rate base. Since the rate base is highest in the project's earliest years, the cost of service is highest then as well. In turn, the

9/ These annuity-equivalents do not account explicitly for any atypical risks consumers might bear for the ANGTS project. And although Alaskan gas appears superior to Mexican gas on an annuity-equivalent cost basis, this does not mean that Mexican gas should not be imported. Policymakers must judge potential Mexican imports on their own merits compared to the alternative fuel that these imports might displace and any other relevant considerations.

initial delivered costs of Alaskan gas exceed the expected prices of alternative fuels. Consequently, the method of pipeline regulation can make Alaskan gas appear unattractive to potential customers early-on, even though the annuity-equivalent delivered cost would favor Alaskan gas from the outset (see Figure S-1).

DISTRIBUTIONAL ISSUES AND SPECIAL REGULATORY TREATMENT

The regulatory policy applied to the overall Alaskan gas project also can affect the recipients of the project's net economic benefits. This analysis examines the allocation of the net economic benefits, shown earlier, among gas consumers, the producers of Prudhoe Bay gas, the state of Alaska, the federal government, and gas pipelines. Under the base case assumptions, the NNEB would be captured as follows:

Consumers (fuel cost savings)	$ 2.7 billion (mid-1979)
Domestic Producers (extra profits)	3.7
Alaska (extra taxes and royalties)	4.7
Federal (extra taxes)	3.5
Pipelines (tax credit)	0.2
NNEB	$14.9 billion

These shares of the NNEB are illustrated in Figure S-2.

Very briefly, consumer benefits are the savings from purchasing Alaskan gas compared to alternatives. Domestic producer benefits are the profits after taxes that they receive over the minimum profits necessary to attract the producers to sell gas. Alaskan benefits measure the difference between actual tax and other revenues received by the state from the project and necessary state expenditures resulting from the project. Federal benefits are the federal income taxes levied on the gas producers' extra before tax pro-

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FIGURE S-1

ALASKAN GAS AND THE BASE CASE ALTERNATIVE
FUEL PRICE PROJECTIONS

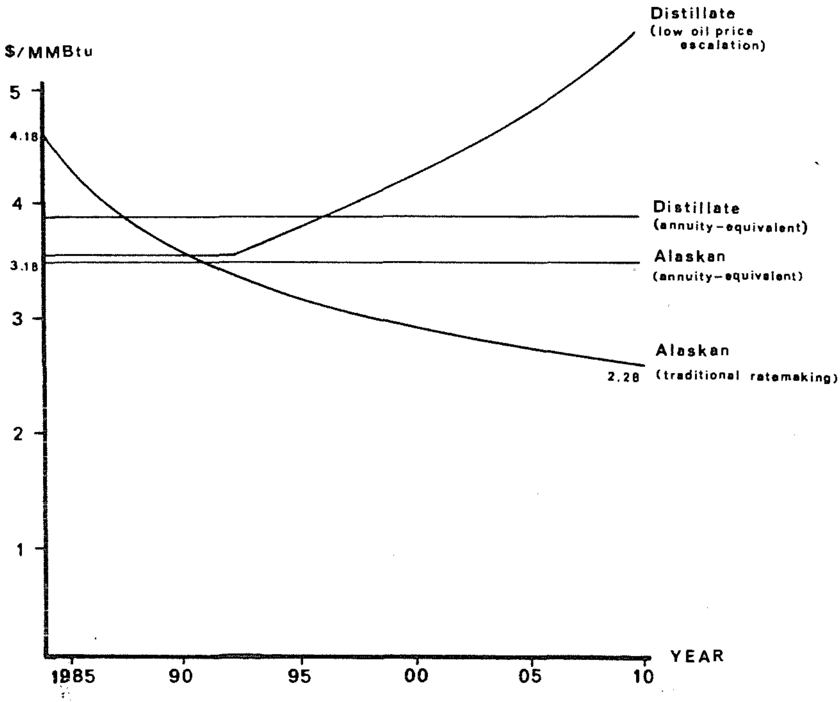

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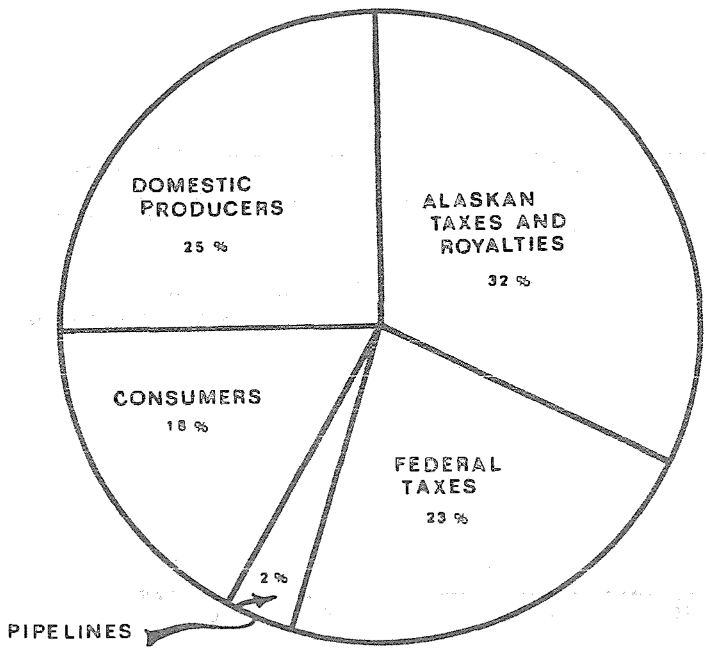
FIGURE S-2

SHARES OF NET NATIONAL ECONOMIC BENEFIT
(Base Case Assumptions)



fits. And pipeline benefits result from the special treatment of the investment tax credit allowed for these companies where their regulators are not free to flow-through the savings of the credit to consumers immediately.10/

Several important points emerge from the distributional analysis:

- The consumer benefit is the only share of the NNEB that varies significantly if the ANGTS costs or the gas value change. Any increased national benefits caused by higher than assumed alternative fuel prices would accrue entirely to consumers. Conversely, any lower prices of alternative fuels and any pipeline cost overruns would mainly shrink the size of the consumer benefit.

- The share of the benefit captured by producers arises because the maximum price set by the NGPA for Prudhoe Bay gas would be significantly above the expected incremental costs of the gas production. Consequently, the Act potentially allocates the major share of the ANGTS project's NNEB to producers of Prudhoe Bay gas in the form of domestic "producers surplus." Also because a portion of the gas is owned by a foreign corporation, some potential NNEB would escape the U.S. economy in the form of foreign "producers' surplus."

- The domestic "producers surplus," however, would translate into above-normal accounting profits before taxes. Since these are subject to income taxes, a major share of the NNEB would be captured by state and federal governments in the form of extra tax revenues.11/

- In addition, Alaska would receive a further share of the NNEB in the form of severance taxes and royalty payments on the production of Prudhoe Bay gas. For the base case, the sum of all extra government revenues accounts for 55 percent of the total NNEB.

10/ The meaning and development of these shares are described in greater detail in Section V of the report.

11/ Normal taxes are considered as real resource costs rather than as transfers of wealth.

Under the basic regulatory framework assumed for this work, producer, State, and federal benefits would be largely independent of the cost or value of the gas to consumers. Consequently, under certain reasonable and feasible scenarios the project would benefit the nation but could harm gas consumers economically.12/ One assumption about this framework is especially critical in this regard. Specifically, imposition of the full costs of gas conditioning on gas purchasers would reduce the consumer share of benefits considerably, with consumers being worse off, relative to using distillate fuel oil, by more than $1.9 billion (mid-1979 dollars). Consumers would not only be receiving Alaskan gas without any major price advantage, but they would also have to bear most of the significant project risks that other parties are unwilling or unable to bear in return for full access to various project opportunities.

In addition to the allocation of the project's direct costs and benefits, the ANGTS also involves significant opportunities and risks that various project participants would assume. These effects result from uncertainty about future gas markets, the future regulatory environment, and the technical feasibility of constructing the project at currently estimated costs.

Regulatory policy will affect the allocation of these project opportunities and risks among gas consumers and project participants in important ways. For example, the question of who should bear the risks of ANGTS cost overruns or the risk that Alaskan gas cannot be sold remains, to a large

12/ Table V-1 summarizes the results for the scenarios examined.

extent, unresolved. This analysis did not focus on these issues, but because the allocation of risks will ultimately affect the distribution of the actual NNEB, the issues are important and are discussed briefly in Section V.

Overall, this analysis has found that the nation could reap large benefits from the proposed ANGTS project. But significant issues remain to be resolved by the Commission and other policymakers. Because the potential benefits remain great, it also is in the nation's interest that some allocation of project risks, costs, and benefits sufficient to attract all the necessary parties to participate in the effort and, thus, to bring Alaskan gas to lower-48 markets be developed as soon as possible. It is hoped that this analysis can illuminate further the difficult balancing problem faced by FERC in this matter.

I. INTRODUCTION

In 1976, Congress passed the Alaska Natural Gas Transportation Act of 1976 (ANGTA) (i) "to provide a means for making a sound decision" that provided for Presidential and Congressional participation, "as to the selection of a transportation system for delivery of Alaska natural gas"; and if a system were approved, (ii) "to expedite its construction and initial operation."1/ The first step in the process established by the ANGTA was completed in May 1977 when the former Federal Power Commission (FPC) transmitted its Recommendation to the President.2/ In its report, the Commission assessed the gas supply increases possible through the Alaskan North Slope gas discoveries as "crucial to this Nation's economy and well-being."3/ The Commission then recommended the Alcan pipeline proposal which envisioned building a gas pipeline along part of the Trans-Alaska Oil Pipeline System right-of-way, then proceeding through Canada and delivering gas to the Midwest and West Coast.

In September 1977, the second step in the process established by the ANGTA was completed when the President issued his Decision that also supported the proposed Alcan system, asserting that Alaskan gas deliveries could provide

1/ ANGTA, Section 3.

2/ U.S. Federal Power Commission, Recommendation To The President: Alaska Natural Gas Transportation Systems, May 1977, (reprinted April 1978 by the U.S. Federal Energy Regulatory Commission), (hereafter referred to as the Recommendation to the President).

3/ Ibid., p. 1.

"critical supplies of Alaskan natural gas to U.S. markets."[4/] Congress then approved the President's Decision through a joint resolution. The concerns noted in the Commission's report and the President's Decision, which arose in the context of U.S. natural gas shortages during the early months of that year, focused primarily on insuring adequate supplies of natural gas to the highest priority gas consumers--homes, offices, and industries with special process needs for natural gas.[5/]

Events since 1977, however, have significantly alleviated earlier fears about natural gas shortages of emergency proportions in the near term. Specifically, the Natural Gas Policy Act of 1978 (NGPA), by providing the interstate market with a basis for better access to intrastate gas, appears to have alleviated the threat of immediate gas supply shortages for high priority gas customers. The new pricing mechanisms of the NGPA, along with the Powerplant and Industrial Fuel Use Act of 1978, also appear to have moderated demand for natural gas in the middle- to longer-term. Moreover, prospects have improved for increased natural gas imports from Canada and Mexico.

But while the short run natural gas supply picture has improved dramatically since 1977, the oil supply outlook has worsened, with domestic and world supplies becoming tight and with much elevated world oil prices. On the one hand, then, the improved near term natural gas supply picture raises new ques-

4/ Executive Office of the President, Decision and Report to Congress on the Alaska Natural Gas Transportation System, September 1977, p. xiv, (hereafter referred to as the President's Decision).

5/ Ibid., pp. 87-90.

tions about the old justification for proceeding at this time with the Alaska Natural Gas Transportation System (ANGTS). On the other, the increased likelihood of an oil supply crunch, during the early 1980's and beyond, raises new reasons for providing lower-48 markets access to known reserves of Alaskan gas.

As a result, the focus for interest in Alaskan natural gas has shifted away from simply avoiding natural gas supply shortages in the short run and toward insuring adequate supplies for high priority users and reducing energy imports in the middle- to long-term. The purpose of this report, then, is to analyze the major economic, market, and financing issues associated with the proposed ANGTS in light of these changed circumstances so that the Federal Energy Regulatory Commission (FERC) can use this assessment in deciding on the appropriate conditions to set for the ANGTS certificate of public necessity and convenience.

The changes in natural gas markets have created a situation in which the policy issues that accompany more widespread use of Alaskan gas are less straightforward than those associated with whether to maintain adequate gas supplies for today's high priority consumers. This analysis suggests a framework which can assist in illuminating these issues, based upon the following major policy questions that must yet be resolved by the Federal Energy Regulatory Commission as part of the process established by the ANGTA:

- Are there still net benefits to the nation from proceeding with the proposed Alaskan gas pipeline project?

- If the potential benefits remain significant, why must low cost old gas subsidize the project through rolled-in pricing of the Alaskan gas supplies and why may special regulatory treatment, such as "all events tariffs" to insure loan repayments even if no gas is ever delivered, be necessary?
- How does the planned implementation of the ANGTS affect other potential gas supply opportunities, especially Mexican gas purchases?
- What policy options, such as gas conditioning charges or wellhead price ceiling levels, exist for reallocation of project costs and how would these options affect the distribution of the project's net benefits?

This report first describes one key measure of whether the ANGTS project would be in the national interest, the Net National Economic Benefit (NNEB) and, then, explores the sensitivity of this measure to various future states of the world. The NNEB measures the attractiveness of the project from the national perspective, but since parties other than potential gas consumers may capture shares of the NNEB, the NNEB does not provide information about the potential attractiveness of delivered gas in energy markets. Therefore, this analysis also develops cost estimates for the delivered Alaskan gas and explores the sensitivity of these cost estimates to variations in several key parameters, including pipeline cost and gas flow rate changes.

Since the assessments of economic efficiency and marketability indicate that the project should benefit the nation and is potentially marketable, the analysis explores why traditional regulatory treatment in terms of pricing policy and allocation of project risks have presented problems for implementation of the project.

ASSESSING THE DESIRABILITY OF PROJECT IMPLEMENTATION

The first important policy question is whether the transportation of Alaskan gas to the lower-48 states can benefit the nation as a whole. Both the Federal Power Commission's Recommendation to the President and the President's Decision used a Net National Economic Benefit (NNEB) calculation as the primary indicator of project desirability from the national perspective.[6/]

The NNEB measure has important advantages and disadvantages. Most importantly, it provides a single measurement, in comparable terms, of the outlays of the nation's real resources required over time to bring Alaskan gas to consumers and the stream of benefits that result from their use of the gas. For the ANGTS, the benefits consist of the stream of real national resource expenditures otherwise required to provide consumers of Alaskan gas with an equivalent fuel. In this manner, the NNEB measures the economic efficiency of the ANGTS project. If the benefits are expected to exceed the costs, the NNEB is positive, and policymakers can conclude that the project would be efficient in an economic sense.

Although the NNEB calculation is a powerful indication of the merits of a project, its usefulness is more limited when decision makers must choose among several qualitatively different energy alternatives. When differences among alternative projects can be expressed entirely in a quantitative manner, the NNEB provides a means for direct comparison. Some projects, however, have

6/ This methodology was first applied to the Alaska gas pipeline in a Department of the Interior report, Alaska Natural Gas Transportation Systems: A Report to the Congress Pursuant to Public Law 93-153, December 1975.

characteristics which are difficult to assess objectively and quantitatively, including :

- technological and cost uncertainties for which statistically-significant experience does not exist;
- equity or distributional issues associated with the allocation of project costs and benefits; and
- externalities that are difficult to measure quantitatively such as the environmental benefits of additional natural gas use or the national security costs of energy imports.

Because criteria in addition to economic efficiency play an important role in decisions about U.S. energy policy, few opportunities arise for automatic decision making based on NNEB estimates or, for that matter, based on any strictly quantitative project assessment technique. Nevertheless, by serving as a benchmark, this NNEB analysis can help decision makers to focus their judgement on the worth of the qualitative advantages or disadvantages available from the alternatives applicable to an energy choice.

APPROACH TO FACILITATING IMPLEMENTATION

The ANGTS has generally been considered a private sector venture. Although federal loan guarantees for the ANGTS have been mentioned in the past and the Natural Gas Policy Act of 1978 (NGPA) permits rolled-in pricing of natural gas transported through the ANGTS in order to enhance its marketability, the NGPA Conference Report stipulates that no additional federal subsidy is to be provided to the pipeline.7/ Thus, the federal government's major

7/ U.S. Congress, House of Representatives, "Natural Gas," Conference Report to accompany H.R. 5289, 95th Congress, 2d Session, Report No. 95-1752, October 10, 1978, p. 103.

policy choices with respect to ANGTS will be expressed in the regulations formulated by FERC and in the conditions imposed in the pipeline's certificate of public convenience and necessity under which the project must be privately implemented.

For the Alaskan natural gas pipeline project to advance successfully as a private venture, many independent parties, each from their separate perspectives, must all reach favorable decisions about the prospects for the project and the attractiveness of the gas it would deliver. Beyond the federal government, major participants include the pipeline venture partners, potential lenders, Prudhoe Bay gas producers, state and local governments, and potential gas customers for Alaskan gas at wholesale and retail levels. These parties have different and often contradictory objectives. Consequently, in its deliberations on appropriate Alaskan gas tariffs and cost and risk allocations, FERC faces a difficult task in balancing these interests in a way which allows private sector implementation of the pipeline project to generate the broader net national economic benefits which the ANGTS can provide.

For the ANGTS, the decision process most likely will be guided by the classic goals of utility regulation: efficiency, equity, and revenue generation.[8/] As mentioned earlier, a positive NNEB indicates that the ANGTS would be economically efficient over a wide range of plausible assumptions. FERC, however, must establish tariffs to be charged for transportation of the

8/ For an expanded discussion, see James C. Bonbright, Principles of Public Utility Rates, Columbia University Press, New York; 1961, pp. 291-294.

gas, and the tariff design may or may not encourage actual use of the gas in an economically efficient manner.

The important aspects of the equity goal are the fair allocation of costs to those benefitting from service and the minimization of windfall gains or losses among the relevant parties. Typically these first two goals, efficiency and equity, also must be weighed within the constraint that the tariffs must generate sufficient revenues to permit the pipeline owners to service their debt obligations and to earn a reasonable rate of return on their equity investment. For a project of the enormous scale, high unit costs, and large risks of the ANGTS, balancing these conflicting goals will be especially difficult.

The project sponsors expect a return on their equity investment commensurate with the technical, market, and regulatory risks that they accept. Potential lenders expect the funds that they lend to the project, as well as interest on their funds, to be repaid in any event.

Furthermore, each state or local regulatory body expects the terms of purchase offered to the gas distribution utilities within its jurisdiction to serve its constituents' interests as defined by its legislative authority. Finally, gas purchasers, both wholesale (direct industrial customers and distribution companies) and retail, expect Alaskan gas to be a competitively-priced and reasonably reliable fuel.

Thus, if the ANGTS is to proceed as a private venture it must deliver Alaskan gas at costs that allow the gas to be sold on terms which will be attractive to gas customers and will be acceptable to regulators. In principle, the marketability of the delivered gas could be assured in at least two ways. First, if Alaskan gas were delivered at low cost relative to other alternatives, sellers and their regulators could agree to prices naturally attractive to potential customers. Second, if Alaskan gas proved to cost more than alternative fuel options, then regulators could still utilize a gas pricing mechanism that would make the Alaskan gas supplies marketable. Since gas is generally priced on an average cost basis, high cost Alaskan gas could be averaged, or "rolled-in," with the "cushion" of lower cost gas to provide consumers with fuel priced below alternative fuels priced on an incremental cost basis.[9/] Traditional utility financing and ratemaking methods generate high costs for delivering gas in a project's early years followed by low costs late in the project's useful life. Consequently, a project which is desirable on a lifecycle cost basis may appear prohibitively expensive at the outset.

This traditional approach--the historical embedded cost method--derives an annual revenue requirement which includes a rate of return on a rate base, defined as the undepreciated book value of the pipeline capital investment. As depreciation erodes the rate base over time, the revenue requirement decreases, and assuming that the annual quantities of gas delivered remain constant the allowed unit cost of pipeline transportation decreases.

9/ The size of the old gas price "cushion" that will be available at the time of Alaskan gas deliveries is quite uncertain because (i) the quantities of old gas that will actually be made available in the future under existing contracts are not known with precision and (ii) the extent to which gas companies may use up any available cushion to bid up prices on decontrolled natural gas supplies is not well understood.

In the case of the ANGTS, high transportation costs in the early years of the pipeline's operation could create initial marketability problems for Alaskan gas. In facilitating marketability through additional regulatory action, care should be taken to differentiate between regulatory actions that simply compensate for the upside-down time-profile of traditional gas tariffs and other actions that subsidize a fundamentally uneconomic source of gas supply. Otherwise, the hidden subsidy of regulatory support of an uneconomic gas source could lead to the use of a high cost energy source instead of a lower cost (but unsubsidized) source. Whether rolled-in pricing of Alaska gas would prop up a fundamentally uneconomic project or, instead, would simply reverse the adverse effects of traditional ratemaking is evaluated throughout this analysis.

Assurances of Alaskan gas marketability would, in turn, improve the outlook for the pipeline project sponsors' ability to arrange financing. Uncertainty about project costs and about the prices of potential fuels which would compete with Alaskan gas largely cannot be eliminated until the ANGTS is actually built and operating. Because of these factors, plus the large scope of the venture, providers of equity and, in particular, debt most likely would support the project only if they perceive an irreversible commitment which would guarantee the marketability of the gas.[10/] If necessary, such a com-

10/ A lack of symmetry in the distribution of claims to any greater than expected benefits flowing from the project may reinforce this investor viewpoint. As will be shown in a later section, consumers capture almost all of the potential NNEB on the upside. And this absence of any major upside potential may justify project sponsors' and lenders' search for assurances that their investment and returns would be insured on the downside, at least with respect to catastrophic events.

mitment could be subject to conditions that the project demonstrate competent management, etc., but probably could not otherwise be a function of the ultimate actual costs for which Alaskan gas would be delivered or of the price of alternative fuels available when the ANGTS would become operational.

A final point about the history of natural gas regulation should be noted here. Theoretically, potential gas users should be indifferent between two long term supply contracts, one with a tariff high in the early years and low in later years resulting from the gas pipeline ratemaking methods and the other with equal annual payments whose present value, calculated at the purchaser's discount rate, equalled the present value of the traditional tariffs. Nevertheless, a large industrial gas user, which might purchase Alaskan gas directly from an interstate pipeline under a long term contract and a separate rate schedule, might be unwilling to do so. Interstate transmission companies and gas distribution utilities have been forced throughout the 1970's to curtail gas deliveries to customers deemed to be low priority by federal gas curtailments policy. As a result, large industrial customers have little confidence that the sanctity of any long term gas supply contract could be preserved in the face of shortages affecting higher-priority customers. And they suspect that once the Alaskan gas prices began to be more attractive, their gas supplies would be curtailed.

As a result, past and present natural gas regulation could be a major reason that a large, capital intensive gas supply project such as the ANGTS might require pricing or other regulatory arrangements different from those appropriate for conventional gas supplies. The ANGTS also involves serious uncertainties in terms of both project costs and the atmosphere of public sentiment in which the project must be implemented. Therefore, unusual regulatory action might be required to develop an equitable allocation of the project's opportunities and risks.

ORGANIZATION OF THE REPORT

The next part of the report, Section II, shows that the ANGTS reasonably can be expected to produce an NNEB in the range of ten to twenty billion dollars (mid-1979 dollars). The analysis considers a number of alternative sets of assumptions and explores the sensitivity of the NNEB to changes in projected costs, gas values, and completion schedules.

Section III estimates the delivered cost of gas for the project under alternative assumptions. Both the time-profile of gas costs under traditional ratemaking and an annuity-equivalent cost are presented. This section also examines the sensitivity of the delivered cost of the gas to the relevant changes considered in Section II.

The fourth section utilizes the delivered gas cost information developed in Section III to analyze the potential marketability of natural gas from Alaska. It discusses the appropriate basis for comparing fuel alternatives from the perspective of the gas purchaser and notes the problems with the single-year and time-average comparisons that are encountered in many assessments of Alaskan gas and alternative energy supplies. This section also compares the time-profile of prices for Alaskan gas and alternative fuels. The implications for the nation of likely end user choices are also considered in this section.

Section V examines who would receive the project's benefits and who would pay for them. It also explores the reasons why so-called special tariff treatment, such as rolled-in pricing of some ANGTS costs and guaranteed repayment of lenders, may be necessary and appropriate despite the fundamental economic advantages of the pipeline project and probes whether these steps truly would represent "special" treatment for the ANGTS in the 1984 timeframe envisioned for initial operation of the project. The final section reviews the findings and conclusions of the analysis.

CAVEATS

Although the NNEB estimates in this analysis indicate that the project should benefit the nation under all but the most disastrous conditions, several caveats apply to the results. These caveats deal with the gas transportation costs, the gas value, the method for determining real resource costs, and some simplifying assumptions underlying our entire analysis.

An independent assessment of the reasonableness of the ANGTS cost estimates is beyond the scope of this analysis. Although we explore costs beyond the range considered feasible in the earlier Federal Power Commission analysis and the President's Decision, no more recent pipeline cost data are available to indicate whether the large overruns considered in Sections II and III are likely to occur. Rather, in light of the Trans-Alaska Pipeline System (TAPS) cost overrun experience, we elected to estimate the NNEB and the delivered cost of gas for a case where the cost overruns for the Alaskan segment of the ANGTS would be analogous to the TAPS experience.

The gas production costs used here are the latest estimates that we have found, but these estimates appear to be quite rough. Changes in these costs could affect NNEB estimates, but since these costs would not affect the wellhead gas price over a wide range, production cost changes would not change the delivered cost of gas.

Gas conditioning costs are drawn from a September 1978 engineering study.[11/] In this analysis we assume that producers pay for gas conditioning as part of the production process; consequently, conditioning cost changes would have the same effects as changes in other gas production costs. The issue, however, of who will pay for gas conditioning is not yet resolved. If pipelines must pay these costs, then gas conditioning cost changes would affect the delivered gas cost as well as the NNEB estimates.[12/]

With respect to the marketability and financial feasibility of the Alaskan gas project, our analysis suggests that, if the ANGTS is built for its expected cost, then economically rational consumers with the correct information would agree to purchase the gas. Nevertheless, efforts to proceed with the project could be stymied by (i) institutional requirements that gas purchase commitments be made prior to finalizing the construction financing, (ii) uncertainty about Alaskan gas transportation costs and, (iii) uncertainty about the future prices of the fuels with which Alaskan gas must compete. And

11/ Ralph M. Parsons, Inc., "Sales Gas Conditioning Facilities, Prudhoe Bay, Alaska," September 1978.

12/ Since the reduction of production costs associated with pipeline payments for conditioning would lead to greater surplus producer revenues, it would increase the foreign producer benefits and, thus, lower the NNEB.

as mentioned earlier, the time-profile of traditional gas tariffs could also hinder efforts to market the gas. Since this analysis does not examine in detail where and to what class of users the gas might be sold, our conclusions about the marketability of Alaskan gas are necessarily based on broad comparisons of citygate costs of Alaskan gas and costs of alternative fuels.

Other important simplifying assumptions and caveats are presented where relevant throughout the remainder of this analysis.

II. PROJECT NET NATIONAL ECONOMIC BENEFITS

As noted in the introductory section, several measures are available for evaluating the attractiveness of the Alaskan natural gas project. Delivered cost of gas calculations focus on consumers by comparing the project's costs to potential gas users with their costs for alternative sources of fuel. Another approach focuses on the U.S. and examines the economic efficiency of the project; that is, it evaluates whether or not the project produces savings of real resources for the nation as a whole. The measure of these savings is called Net National Economic Benefit, or simply NNEB.

This section examines the attractiveness of the project according to this NNEB measure. It reviews the significance of the uncertainties surrounding the components of the NNEB analysis—most notably the project construction costs and the value of the gas to consumers. By examining the extent to which the NNEB varies over reasonable ranges of values for its components, policy-makers can assess their confidence in the conclusions drawn from the base case set of assumptions described later in this section.

Before proceeding, we should note that the NNEB and consumer cost measures can provide contradictory assessments of the attractiveness of the project. Some cases presented in this section describe situations which generate sizeable positive net national economic benefits but which also lead to streams of consumer costs for Alaskan gas in excess of the streams of costs for the fuel whose use would be displaced. The divergence between these two measures stems from the fact that NNEB considers the net benefits received by all project participants including, but not limited to, consumer benefits. In this sense, the NNEB analysis does not assess the distribution of benefits among sectors of the economy. From the overall perspective of national economic efficiency, losses by consumers can be compensated for by increased gains to producers, pipeline companies, and the general taxpayers of the state of Alaska and of the federal government. The important distributional issues associated with the ANGTS project are examined in Section V.

COMPONENTS OF NNEB

Net national economic benefit, as noted before, is a measure of the project's net savings of real resources to the nation as a whole. The difference between real resource costs (or savings) and the normal accounting definitions of costs is a significant one. Real resource costs represent the economic costs associated with physical resources actually consumed in the production of goods and services and a return on these expenditures. Thus, all payments representing the transfer of purchasing power from one party to another without any utilization of resources would be excluded from real resource costs. For example, Alaskan state royalty and severance taxes appear to cover no specific consumption of real resources incurred by the state in connection with gas production. Instead, they merely transfer wealth from Prudhoe Bay gas producers, lower-48 gas consumers, or U.S. taxpayers to the state of Alaska; consequently, these two items have not been treated as real resource costs for purposes of the NNEB calculation.[1/]

1/ They, however, have been included in the calculation of the delivered cost of Alaskan gas which consumers would pay .

Included as components of real resource costs are all costs of material and labor, as well as allowances for taxes and returns on capital at rates that would be expected in normal business activity. This analysis groups the components of NNEB into the following four categories:

- Gas value: This value is the real resource savings that would result from using Alaskan gas instead of some other equivalent fuel; that is, it equals the unit price of the alternative fuel multiplied by the quantity of the fuel displaced by Alaskan gas.

- Production costs: These costs are the incremental real resource costs associated with gas production from Prudhoe Bay. As such, they do not include the costs of installing facilities which already are planned for the production of Prudhoe Bay oil. The major incremental costs of Prudhoe Bay gas production will be the capital investment for the gas conditioning system and water-flood facilities.2/

  Other real production costs include operation and maintenance of the production facilities as well as *ad valorem* taxes paid by producers. The latter have been included as a real resource cost on the assumption that these taxes serve as a surrogate measure of the infrastructure expenditures to which the Alaskan public would be committed in order to facilitate the gas production (e.g. additional roads and schools). For similar reasons, state and federal income taxes, at rates levied on normal levels of producer income from Prudhoe Bay gas production, are included as an approximation of the general government costs required to support the production activity. Also, inclusion of income taxes is necessary in order to maintain consistency with the treatment of other private sector investments and with other components of the NNEB calculation (i.e., the benefits stream), both of which include income taxes.3/

2/ Inclusion of gas conditioning cost as a production cost (rather than as a transportation cost) is based upon a proposed FERC rulemaking.

3/ The analysis imputes income taxes as a part of the calculation of the opportunity cost of capital by developing annuity-equivalent capital costs for the period of project operations, based on the actual capital outlays for the project and a 10 percent real before-tax discount rate. This approach, recommended by the Department of Energy (DOE), is described in greater detail in the discount rate discussion later in this section.

- Transportation costs: For the U.S. segments of the gas pipeline, these costs include construction outlays as well as operation and maintenance expenses. Other U.S. costs include income taxes and state ad valorem taxes on the pipeline activities. For the Canadian segments of the line, the United States would incur real resource costs through cost of service payments to Canadian carriers. The U.S. share of Canadian pipeline costs depends upon relative shares of the total throughput as well as cost overruns on the Canadian segments. The formulae with which these shares are determined were established in the joint United States/Canada pipeline agreement.4/

- Net foreign profits: Foreign interests own a share of the Alaskan gas. The revenues to a foreign oil company that exceed direct and indirect gas production costs are essentially net project costs for the nation, since they escape our economy and, in so doing, provide no benefits for the United States.5/

The net national economic benefit of the proposed project is the present value of the stream of benefits that results from subtracting the three cost components from the gas value to consumers. That is:

NNEB = Gas value - Production costs - Transportation costs - Net foreign profits.

The estimates of gas value and costs affect the NNEB calculations in important ways, as does the choice of discount rate and time period over which the ANGTS project is examined. The discount rate chosen for the NNEB calculation ideally should represent society's rate of time preference; that is, the rate of return at which society is prepared to forego consumption today in

4/ Refer to President's Decision, pp. 47-83, for a summary of this agreement.

5/ Revenues paid to foreign nations are a real resource cost to the U.S. because they represent a future claim on U.S. goods and services.

trade for some greater amount of consumption later on.[6/] The actual project life would depend upon the useful physical lifespan of the pipeline, the design capacity of the pipeline, and the magnitude of recoverable gas reserves which can be economically produced over time.

The remainder of this section describes the set of assumptions which describe the "base case" scenario and explores the sensitivity of the NNEB to alternative assumptions concerning the value of the delivered Alaskan gas, the project life, and the transportation costs.

BASE CASE ANALYSIS

The analysis of the ANGTS used for the President's Decision provides most of the baseline data for the base case used in this analysis. The President's Decision and our base case assume:

- Alaskan gas substitutes for imported distillate fuel oil on a one-for-one, energy equivalent basis and has a gas value equal to the wholesale price of distillate.[7/]

6/ E. J. Mishan, Cost-Benefit Analysis, Praeger Publishers, New York, 1976, pp. 201-203.

7/ This assumption ignores potential changes in total U.S. energy consumption that could be caused by rolled-in or average pricing of Alaskan gas at the retail level compared to marginal cost pricing of distillate fuel oil. If considered fully, it is not clear whether careful consideration of differences in retail pricing would increase or decrease our NNEB estimates, but it is likely that the effect would be small compared to other factors ultimately likely to impinge on the NNEB. Furthermore, technically correct treatment of this effect is complicated by the fact that, early in the project life, Alaskan gas may cost more than the average of all other flowing gas; but late in the project life the opposite may occur. Finally, it also would require an assumption about whether biases of any similarly kind (e.g., domestic price controls on crude oil or refined petroleum products) will affect distillate prices over the life of the ANGTS project.

- strictly for purposes of simplifying the analysis, that a decrease in U.S. demand for world oil, provided through the development of Alaskan gas, would not affect world oil prices.
- an average pipeline construction cost overrun of 30 percent.
- a pipeline debt/equity ratio of 75/25.
- start-up in January 1984.
- gas deliveries to the pipeline of 2.4 Bcf/day and net gas deliveries at the citygate based on overall pipeline gas consumption for the original Arctic gas displacement scheme.8/
- the U.S. portion of cost of service payments for facilities shared with Canada vary as a function of relative volumes of U.S. and Canadian gas, with the U.S. share equal to 76.4 percent for U.S. shipments of 2.4 BCF/day and Canadian shipments of 1.2 BCF/day.
- the U.S. share of cost of service payments for the Dempster lateral varies on the basis of overruns on the Canadian main line, overruns on the Dempster line, and the relative U.S. and Canadian volumes of gas shipped.9/

The NNEB calculations in this analysis are denominated in mid-1979 dollars, and all benefit and cost streams are discounted to mid-1979 using a real after-tax discount rate of 6 percent. Cost data from the President's Decision, which had been denominated in 1975 dollars, were converted to mid-1979 dollars using the aggregate U.S. GNP implicit price deflator. Non-residential

8/ This scheme is used here because it is embedded in internal FERC models of the ANGTS project. To our knowledge, detailed documentation of this displacement plan is not available.

9/ A description of the formula for computing the U.S. share is shown in the President's Decision, op. cit., pp. 72-79 and 168-174.

construction price deflator projections were applied to construction costs.10/

Other important elements of the base case include the following:

- gas processing costs for a 2.4 Bcf/day output stream were based on a linear extrapolation to the higher capacity using best-available cost data for a 2.0 Bcf/day plant.11/

- incremental water-flood requirements were assumed to be approximately 73 percent of the Prudhoe Bay unit's total water-flood requirements.12/

- *ad valorem* taxes of 1.7 percent were applied to the depreciated book value of the pipeline and the depreciated replacement value of the gas production equipment.13/

- Alaskan state income taxes were assumed to be 9.4 percent of pipeline net income and "normal" producer net income.14/

10/ Data Resources Inc., *The Data Resources U.S. Long-Term Review*, Winter 1979 TRENDLONG 2003 projections. See Appendix G for the inflation adjustments used in this report.

11/ Ralph M. Parson, Inc., "Sales Gas Conditioning Facilities, Prudhoe Bay, Alaska," September 1978.

12/ Water-flood facilities investment has been estimated at $2 billion (1979 dollars), as suggested in *Oil and Gas Journal*, February 26, 1979, p. 70. Half of the expenditures are assumed to occur in 1983 and half in 1984. The incremental portion of the outlays for water-flood facilities has been estimated by comparison of alternative production possibilities presented in a report by H. K. van Pollen and Associates, Inc., *Documentation of Input Variables, Northern Alaska Hydrocarbons Model*, August 1978.

13/ The *ad valorem* rate and its application to the pipeline on the basis of depreciated book value are carried over from models used in connection with the *President's Decision*. It is our understanding that these taxes would be assessed at a 2.0 percent rate and would be based on replacement value; this, however, presents a minor difference that does not affect the results significantly.

14/ "Normal" net income is defined as that level yielding an overall 8 percent after-tax return on total capitalization. See Appendix A for the derivation of "normal" net income.

- federal income taxes were assumed to be 46 percent of pipeline net income (after state income taxes), adjusted for the effect of a 10 percent income tax credit.
- the rates of return on pipeline equity were based on the Commission's latest incentive rate of return proposal.15/
- foreign profit calculations were based on British Petroleum's 52 percent interest in Standard Oil of Ohio's 23.5 percent of Alaskan gas.16/
- low world oil price escalation, as defined in the Energy Information Administration Annual Report to Congress.17/

These inputs and assumptions yield an NNEB estimate of $14.9 billion (mid-1979 dollars). The components of this estimate are:

Gas value	$33.3 billion (mid-1979 dollars)
- Production costs	6.0
- Transportation costs	11.9
- Net foreign profits	0.5
NNEB	$14.9 billion

Thus, the proposed ANGTS project would provide significant economic benefits to the nation under the base case inputs and assumptions.

In contrast to ICF's base case estimate, the President's Decision estimated an NNEB of $5.8 billion (1975 dollars). The following table presents

15/ FERC, "Notice of proposed rulemaking to set values for incentive rate of return and establish change-of-scope and inflation adjustment procedures and request comments on filed tariffs," Docket No. RM 78-12, April 6, 1979.

16/ Sources: Arlon R. Tussing and Connie C. Barlow, "An Introduction to the Gas Industry with Special Reference to the Proposed Alaska Highway Gas Pipeline," Institute of Social and Economic Research, Anchorage, Alaska, October 25, 1978, p. I-37 and British Petroleum, Annual Report, 1978, p. 12.

17/ The President's Decision assumed a constant real oil price. President's Decision, p. 97.

our current understanding of the reconciliation between the earlier estimate and our current base case NNEB estimate.

Step		Billions
	President's Decision NNEB	\$ 5.8 (1975 dollars)
1.	Denominate in mid-1979 dollars	+ 1.4 (mid-1979 dollars)
2.	Add Water-Flood Costs	- 1.6 (mid-1979 dollars)
3.	Adjust Transportation Costs	+ 0.2 (mid-1979 dollars)
4.	Unreconciled Changes	- 0.5 (mid-1979 dollars)
5.	Discount to mid-1979 Timeframe	+ 1.4 (mid-1979 dollars)
6.	Change Discount Rate (10% to 6%)	+ 4.9 (mid-1979 dollars)
7.	Alter Distillate Price Trajectory	+ 3.3 (mid-1979 dollars)
	ICF Base Case NNEB	\$ 14.9 (mid-1979 dollars)

Some of these steps are simply accounting changes to update the basis for the estimate (steps 1, 5). Others incorporate later cost data and DOE's recently established standardized capital cost methodology (steps 2, 3).[18/] The 10 percent real discount rate used throughout the President's Decision is appropriate for considering a project's capital cost stream, and we adopt this same approach. For reasons elaborated later in this section, however, we believe that a 6 percent real discount rate is a more appropriate measure of society's time preference and, therefore, a preferable rate to use in discounting the project's overall streams of costs and benefits (step 6).

Finally, we believe that in light of recent world oil price developments an assumption of constant real prices would be optimistic beyond a reasonable limit. Instead, we have essentially applied the low oil price escalation expectations of the Energy Information Administration Annual Report to Congress to the distillate fuel oil price in the President's Decision (step 7).

18/ The DOE methodology is discussed later in this section.

About $0.5 billion (mid-1979 dollars) in difference remains unexplained (step 14).

SENSITIVITY ANALYSIS

Several of the input estimates used to calculate the NNEB could vary significantly from the base case values. Sensitivity analysis provides insights about the relative importance of changes in the discount rate, gas value, useful project life, and pipeline construction costs. In addition, the order of magnitude of the minimum likely effect of the ANGTS on world oil prices and required U.S. payments for imported oil are estimated because lowered world oil prices both benefits the nation and affects the value of Alaskan gas.

Discount Rate

The base case uses a 6 percent real after-tax discount rate to account for the time preference of society. No strong empirical basis currently exists to identify society's time preference, but the after-tax real rate of return on private investments represents one reasonable, yet conservative, approximation of this rate.[19/] The 6 percent rate chosen for the base case appears to approximate the private after-tax rate of return.

19/ Conservative refers to avoiding over-investment in capital-intensive projects such as the ANGTS. It is conservative, we believe, because the effects of personal income taxes on returns to individuals in the form of after-tax corporate income suggest the use of an even lower rate to represent social time preferences. Consequently, it could be argued that conservation recommends the lower rate to guard against under-investment in capital-intensive domestic energy supply and conservation projects.

This choice of discount rate is based mainly upon a recent Department of Energy (DOE) directive on standard financial treatment of cost estimates.[20/] The directive recommends using a real rate of return on equity of 9.5 percent, after tax; a real interest rate on debt of 3 percent; and a 6 percent inflation rate.[21/] Assuming an overall marginal corporate income tax rate of 50 percent a typical capital structure, comprised of one-third debt and two-thirds equity, yields a weighted-average after-tax rate of return of approximately 5.9 percent.

Although a 6 percent after-tax rate is, we believe, appropriate for discounting the project's overall resource cost and gas value flows, the Department of Energy (DOE) has recommended using a before-tax rate of 10 percent as a means of accounting for all the real resource costs associated with the capital expenditure portion of an energy project.[22/] Use of a before-tax rate for capital expenditures captures the returns foregone on alternative private sector investments that would have accrued to (i) equity holders as dividends and/or capital gains, (ii) lenders as interest payments, and (iii) the government as corporate income taxes.[23/] DOE recommends accounting for

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20/ Attachment C of DOE, Stuart W. Ray, Policy and Evaluation, "Financial Costing Guidance for Policy and Fiscal Guidance," memorandum for distribution, March 28, 1979.

21/ DOE, Stuart W. Ray memo, op. cit., Attachment 6.

22/ DOE, Stuart W. Ray memo, op. cit., Attachment 6.

23/ Corporate income taxes are treated as real resource costs because they represent the project's "portion of the fixed costs of government operation." See DOE, Gary Dorman, "The treatment of taxes in cost benefit analyses," memorandum for Darius Gaskins, Deputy Assistant Secretary, Policy and Evaluation, August 8, 1978.

all of these opportunity costs of capital expenditures by using the before-tax, marginal rate of return on private sector investments, and it cites empirical evidence for using 10 percent as this marginal rate.24/

This analysis uses the 10 percent before-tax rate to estimate the real resource costs associated with the ANGTS project's capital expenditures because this approach is "neutral" with respect to any special tax treatment or financing methods available to this one project.25/ The NNEB calculations implement this procedure by, first, annuitizing the project's capital expenditures using the 10 percent discount rate. Then, the project's overall benefit and cost streams (including the annuitized capital expenditures) are discounted at 6 percent in order to estimate the present value of the ANGTS project's overall NNEB.

Earlier work has included estimates based on a 10 percent rate of discount on the project's overall cost and benefit streams. Because this rate provides an extra-conservative appraisal of the project's net benefits, our analysis also presents NNEB estimates generated by applying a 10 percent discount rate to the project's overall benefit and cost streams whenever the information may provide useful insights. Under the base case assumptions, the NNEB estimated

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24/ DOE, Gary Dorman, "Choosing the discount rate for NESS cost/benefit analyses," memorandum for Darius Gaskins, September 18, 1978.

25/ These "tax-neutral" cost estimates do not depend upon the corporate tax structure of the particular parties making the capital outlays, which is an appropriate feature for calculating net benefits from the national perspective. If actual tax payments were used as the real resource cost estimates, the NNEB estimate for the ANGTS project could vary significantly according to the share of capital outlays assumed to be made by oil companies and gas utilities.

using 10 percent is $8.1 billion, 46 percent below the base case estimate.

Gas Value

The base case assumes that Alaskan gas substitutes for distillate fuel oil on an energy-equivalent basis. It is worth reiterating that a primary reason for making this assumption is to maintain consistency with analyses prepared in connection with the President's Decision. We have performed no analyses to verify that Alaskan gas would substitute for distillate fuel oil rather than for less expensive fuels such as residual fuel oil.

Although OPEC oil prices have remained level in real terms, or even decreased slightly, for much of the period since the 1973 Arab oil embargo, recent events make such continued good fortune for oil consumers appear unlikely. Nevertheless, it is worth examining the economic attractiveness of ANGTS if oil prices were to remain constant in real terms throughout the project's life. The NNEB for a constant distillate fuel value, $11.6 billion, is 22 percent lower than the base case estimate (see Table II-1).

The base case projections of distillate fuel oil prices are drawn from the low price escalation scenario assumptions of the forthcoming Energy Information Administration's (EIA) Annual Report to Congress (ARC). The ARC's low price escalation assumptions are summarized in Table II-1.[26/]

26/ In constant 1979 dollars, the crude oil price assumed in this EIA case is $16.00 per barrel from now through 1992, after which it escalates at a real annual rate of 2.8 percent. This compares with crude oil (contract) prices today of approximately $18.00 per barrel and spot market transactions in the $30-35 per barrel range.

TABLE II-1

NNEB ESTIMATES FOR SELECTED GAS VALUE ASSUMPTIONS[a/]

Gas Value Equal to:	Price Trajectory	NNEB (mid-1979 billion dollars)
Distillate Fuel	Constant[b/]	$11.6 billion
	Low Escalation[c/]	14.9
	Medium Escalation[d/]	22.3
Residual Fuel	Low Escalation[e/]	11.8

a/ Base case assumptions for other parameters.

b/ Distillate price: constant $2.62/MMBTU (1975 $).

c/ Base case distillate price: constant $2.62/MMBTU (1975 $) through 1992; 2.8% real escalation annually thereafter; $5.15 (1978 $) ceiling price.

d/ Distillate prices: constant $2.62/MMBTU (1975 $) through 1985; 4.5% real escalation annually to 1990; 4.7% per year thereafter; $5.15 (1978 $) ceiling price.

e/ Residual price: constant $2.84/MMBTU (1978 $) through 1992; 2.8% real escalation thereafter.

NOTE: These projection rules are denominated here in differing-year dollars in order to correspond with the various sources from which they were derived. The base distillate price, $2.62, is the adjusted figure used in internal FERC models for the $2.60 (1975 dollars) figure in the President's Decision. The base residual price is derived from National Energy Supply Strategy data expressed in 1978 dollars. In our NNEB calculations, however, both base figures are converted to mid-1979 dollars and projected using the oil price escalation rules of the Energy Information Administration Annual Report to Congress (low price escalation: Series C low; medium price escalation: Series C).

Distillate fuel oil prices, however, may also escalate more rapidly than these low price escalation projections. Table II-1 also presents the NNEB estimate for the ARC medium price escalation scenario assumptions. This NNEB estimate, $22.3 billion, is 50 percent above the base case. Consequently, the future course of world oil prices exerts large leverage on the net benefits of the ANGTS project. If world oil prices rise faster than the base case assumptions, the benefits to the nation would increase. And as will be discussed later, consumers would capture the full share of the increased benefits.

Thus far, the discussion of the gas value has assumed that Alaskan gas would substitute for distillate fuel oil. If overall gas supplies were plentiful at the time Alaskan gas was delivered, Alaskan gas might displace residual fuel oil. As a consequence, the value of the Alaskan gas would be the lower price of residual fuel rather than the price of distillate fuel. Under low world oil price escalation, the NNEB estimate based on the price of residual fuel oil remains in excess of $11 billion (see Table II-1).

Project Life

Legislative guidelines emphasize a 20-year period for analysis of the cost of service issues associated with the ANGTS.[27/] In turn, most NNEB analyses of the ANGTS have examined a similar time period (25 years). The typical useful physical life of a pipeline, however, approaches 50 years; for example, the President's Decision mentions the likelihood that the ANGTS might operate

27/ For example, see the Alaskan Natural Gas Transportation Act of 1976, Section 5(c).

for more than 40 years.[28/]

There is a realistic possibility that sufficient Alaskan gas reserves will be developed to utilize the pipeline well past the 25-year period assumed in our NNEB calculations.[29/] The useful life of the pipeline exerts a strong influence on its economic value to the nation. If the ANGTS were to deliver 2.4 Bcf/day for 30 years, the NNEB would rise to $17.7 billion (mid-1979 dollars). And an even longer useful life would further increase the NNEB (see Table II-2).

TABLE II-2

NNEB ESTIMATES FOR
ALTERNATIVE PROJECT LIFETIMES[a/]
(mid-1979 dollars)

Project Life	NNEB (6% discount rate)	NNEB (10% discount rate)
20 years	$11.2 billion	$ 6.6 billion
25	14.9 billion	8.1 billion
30	17.7 billion	9.1 billion
50	23.5 billion	10.5 billion

a/ Base case assumptions used for other parameters.

The effect of the discount rate assumption, discussed previously, is especially dramatic in the case of an extended project life. With the 6 percent discount rate, the 50 year NNEB estimate would reach $23.5 billion, an

28/ President's Decision, p. 163.

29/ Data Documentation for Alaskan Hydrocarbons Supply Model, draft Technical Memorandum prepared by Division of Oil and Gas Analysis, Department of Energy, pp. 1^-12.

increase of 58 percent over the 25 year base case estimate.[30/] In contrast, a 10 percent discount rate decreases both the absolute and relative importance of project benefits beyond the first 25 years. If a 10 percent discount rate were applied, doubling the life of the project would increase the present value of the NNEB by only 30 percent.

Pipeline Construction Costs

Few recent major construction projects have been completed at or below their initially estimated costs.[31/] The cost overruns experienced by the Trans-Alaska Pipeline System (TAPS) were especially large. Compared with an original (adjusted) estimate of $1.6 billion, the capital cost of TAPS ultimately reached $7.7 billion, an increase of approximately 380 percent.[32/] The unprecedented scale of the ANGTS project, coupled with the need to construct the Alaskan segment and a minor part of the Yukon segment in the same harsh Arctic environment in which TAPS was constructed, raises the prospect of large cost overruns for the Alaskan gas pipeline.

This section examines the potential effects of serious cost overruns for the Alaskan gas pipeline project. Importantly, the probability of large cost overruns varies significantly among the individual segments of the pipeline. In this context, then, the analysis examines how cost overruns on the various

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30/ The 50-year case represents a rough estimate which excludes any additional capital expenditures required to extend the operational period.

31/ See Walter J. Mead, Transporting Natural Gas from the Arctic, American Enterprise Institute, 1977, pp. 88-89, for an illustrative list of recent projects.

32/ Ibid., pp. 88-89.

segments could affect expected costs and project benefits.

Lower-48. Gas pipeline construction in the lower-48 involves a low probability of major cost overruns. Typically, lower-48 gas pipelines are constructed at a cost within 5 percent of the initial estimate.[33] Approximately 21 percent of the value of the ANGTS plant-in-service would reside in the lower-48.[34] Since the danger of significant cost increases appears remote for the lower-48 segment of the project, this analysis focuses on the Alaskan and Canadian segments.

Alaska. The Alaskan segment of the ANGTS must be constructed in the same hostile environment that the TAPS project faced. There are, however, important differences in the construction of gas and oil pipelines, including the ability to pipe gas at temperatures low enough to avoid thawing permafrost and to lay gas pipeline in the ground rather than above it. Both of these differences should lessen the ANGTS construction problems, with the one exception of burying gas pipeline in areas of discontinuous permafrost, where the chilled gas may cause frost heaving.[35] Discontinuous permafrost could be encountered along approximately half of the Alaskan segment.

Fortunately, the Northwest Alaskan Pipeline Co. (formerly Alcan) proposal for the Alaskan segment follows the TAPS project chronologically. Consequently, this second pipeline construction effort can take advantage of

33/ Private communication from FERC staff.

34/ The plant-in-service estimate is based on the base case figures for the first year of the ANGTS operation.

35/ For a more detailed discussion, see the President's Decision, pp. 187-188.

lessons learned about pipeline construction in an Arctic environment. Moreover, the Northwest project will utilize the infrastructure created by Alyeska, the TAPS project manager, thus minimizing the chance of infrastructure-generated cost increases or delays over the share of the Alaskan segment laid parallel to TAPS. The TAPS experience should also lessen the chance for labor supply problems in Alaska, because the first effort expanded Alaska's pool of skilled workers.[36/]

Despite these advantages, unforeseen technological and management problems are likely to occur. In order to cover such contingencies, the President's Decision incorporated a 30 percent cost increase and one year start-up delay in the Alcan's (now Northwest) initial estimates.[37/] Our base case assumptions also follow this precedent.

Nevertheless, the 380 percent cost overrun for TAPS suggests that the implications of even more substantial cost overruns should be explored. Table II-3 summarizes the effects on the base case NNEB of cost increases for the Alaskan segment of 30, 100, 200 and 400 percent over current filed estimates. Even at four times the filed cost estimates for construction of the Alaskan segment, the NNEB remains significantly positive, at approximately $10 billion (mid-1979 dollars).

Canada. The remaining 2,028 miles of the pipeline system would be constructed in Canada. Approximately 40 miles of the Canadian segment should experience similar difficulties associated with Arctic and semi-Arctic condi-

36/ Ibid., pp. 138-144.

37/ Ibid., p. 150.

TABLE II-3

NNEB ESTIMATES FOR SELECTED CONSTRUCTION COST SCENARIOS[a]
(mid-1979 dollars)

Cost Scenario	NNEB ($ billion)	Change From Base Case (percent)
ALASKAN OVERRUN		
0% (filed costs)	15.8	+ 6%
30% (base case)	14.9	—
100%	14.3	- 4
200%	12.7	-15
400%	9.6	-36
CANADIAN OVERRUN		
0% (filed costs)	15.7	+ 6
40% (base case)	14.9	—
100%	13.6	- 8
COMBINED CHANGES		
filed costs, all segments	16.8	+13
expected costs, all segments[b]	14.9	—
"high cost" scenario[c]	10.4	-30

a/ Base case assumptions used for other parameters.

b/ Base case.

c/ 132 percent Alaskan overrun, 102 percent Canadian overrun (derived from DOI/DOT "worst case" analysis). U.S. Department of the Interior, U.S. Department of Transportation, Alaska Natural Gas Transportation Systems: White House Task Force Lead Agency Report on Construction Delay and Cost Overruns, July 1, 1977.

tions. Other potential problems with the Canadian segment, however, could lead to significant cost increases, including:

- Canadian pipeline companies may have been over-optimistic in their construction labor productivity estimates for the ANGTS.38/
- Requirements for constructing the Canadian segments of the ANGTS with Canadian goods could (i) force builders to use more costly goods than necessary, or (ii) create artificial supply bottlenecks that directly or indirectly raise costs.

The President's Decision and our base case address this concern by incorporating a 40 percent cost overrun for the Canadian segment into the NNEB calculations. Table II-3 demonstrates the effect of even larger cost overruns for this segment. Note that Canadian actions leading to a 100 percent cost overrun would decrease the base case NNEB by approximately $1.3 billion, to $13.6 billion.

Combined Effects: The High Cost Scenario. Of course, major construction cost overruns may occur on both the Canadian and Alaskan segments of the ANGTS. The causes of such overruns could be either related or independent. Rather than continue to probe the implications of cost overruns for each segment separately throughout this report, this analysis examines one "high cost" scenario to understand the effects of catastrophic construction cost overruns.

This high cost case is based on earlier work by the Departments of the Interior and Transportation, which estimated the "worst case" cost experience

38/ Recommendation to The President, p. I-45.

for the three ANGTS proposals.[39/] The Task Force assessed the worst case scenario through the use of expert judgment on specific cost and schedule items for each proposed system. The worst case was then defined as the cost estimate located three standard derivations from the expected overrun; that is, the task force judged with almost 99.9 percent confidence that actual costs would not exceed the worst case amount.

This analysis adopts the earlier worst case analysis by applying a ratio, consisting of the worst case costs and expected costs, to the base case (expected) cost estimates employed in the President's Decision (adjusted to mid-1979 dollars),[40/] where:

$$\frac{\text{worst case cost}}{\text{expected cost}} = 1.466$$ [41/]

Next, lower-48 construction cost was assumed to equal expected levels; then, the overrun amount (in mid-1979 dollars) was allocated equally between the Alaskan and Canadian segments.[42/] This allocation results in an overrun of

39/ U.S. Department of the Interior, U.S. Department of Transportation, Alaska Natural Gas Transportation Systems: White House Task Force Lead Agency Report on Construction Delay and Cost Overruns, July 1, 1977, (hereafter called the Cost Overrun Task Force Report).

40/ Both the President's Decision and the Cost Overrun Task Force Report expect overall construction cost overruns of about 30 percent over filed cost estimates.

41/ Cost Overrun Task Force Report, p. 131.

42/ This rough allocation scheme is used in lieu of detailed quantitative data on the Cost Overrun Task Force Report's conclusions about where the overruns would occur. We believe it is a reasonable approach since the Alaskan segment involves greater technological and other uncertainties but the Canadian segment is larger in an absolute dollar sense.

approximately 137 percent over filed costs for the Alaskan segment and of approximately 108 percent for the Canadian segment. For this worst case of combined overruns, the NNEB estimate again remains significantly positive at $10.4 billion.

Project Delays

Delays of the ANGTS project could generate new problems or new opportunities for project supporters. Among the possible consequences, a delay could affect the quantity of gas available for shipment, the quantity of Alaskan gas demanded by consumers, the interest of potential lenders and equity investors in the project, or the value of the gas deliveries to the nation. These potential results are all important; however, all but the last effect are beyond the scope of this analysis.

If the project makes sense now, that is if its base case NNEB estimate is positive, then with other things equal, the sooner the project is undertaken the better off the nation would be. Because of society's time preference, a delay in starting the project would cause the NNEB to decline exponentially as a function of the length of time the project is postponed if the real value of all benefits and costs over the project's life were to remain constant and the NNEB were measured from the perspective of the NNEB's present value in mid-1979. For the base case, however, the gas value increases over time. With this assumption, a one-year delay prior to any ANGTS expenditures would reduce the base case estimated NNEB by $0.4 billion (mid-1979 dollars).[43/]

After some or all construction has been completed, project delay would lead to even greater decreases in NNEB. Not only would the net benefits be postponed but construction costs already would have been incurred. A one-year delay after the completion of the system's construction and prior to the delivery of any gas would generate greater adverse effects for the NNEB estimate than for any delay of the same length at any other point in the project life. Such a delay would reduce the estimated NNEB by $ 0.4 billion (mid-1979 dollars).

EFFECTS ON THE WORLD OIL PRICE

Our base case NNEB estimates include the direct economic efficiency benefits of substituting Alaskan gas for oil consumption but ignore any other significant effects of reducing U.S. oil use. The delivery of Alaskan natural gas to lower-48 energy markets, especially to distillate fuel oil users, would reduce U.S. oil imports. Decreased U.S. oil imports could reduce worldwide oil demand sufficiently to generate downward pressure on world oil prices.

Currently, a clear consensus does not exist concerning the reduction of world oil prices at all future points in time that would result from, say, a reduction in U.S. oil imports of 1 million barrels per day at all future points in time. In fact, DOE has considered estimates which range from $.10

43/ It appears that a one year delay, compared to the start date used throughout this analysis, is likely. See "U.S. delays threaten Alaskan gas line," Oil and Gas Journal, February 26, 1979, p. 50. We return to this delay issue in Section IV.

to $.70 per barrel for an import reduction of this magnitude.[44/]

Alaskan gas deliveries could replace approximately 430,000 barrels per day of oil imports over the project's life.[45/] Using the low end of the range of estimated world oil price effects ($.10 per barrel) and ignoring the offsetting effect on the gas value stemming from lower world oil prices, the ANGTS might easily produce annual savings of real resources, otherwise consumed by payments for oil imports, of $219 million (mid-1979 dollars) on a base of 6 million barrels of total annual oil imports.[46/] In turn, this would increase our base case NNEB estimate by $2.2 billion over a 25-year period. Importantly, higher estimates of the effect on world oil prices of cutting U.S. imports by 1 million barrels per day would increase this NNEB estimate approximately linearly.

ZERO BENEFITS SCENARIO

Given the high values of the NNEB estimates, it may be useful to explore the magnitude of ANGTS cost overruns that could negate the economic benefits from the delivery of Alaskan gas.[47/] Assume, (i) since the construction of

44/ The estimate at the low end of the range is based on analyses using an ICF world energy model described in ICF Incorporated, Imperfect Competition in the International Energy Market: A Computerized Nash-Cournot Model, May 1979.

45/ Based on 910 x 10^{12} Btus of net gas delivered per year and 5.825 million Btu per barrel of distillate oil (ignoring refinery Btu losses in the case where crude oil, rather than distillate, would be imported).

46/ Approximately the level for 1995 in the Energy Information Administration's ARC, 1979, Series C.

47/ Gas production and gas conditioning cost overruns would also lower the NNEB estimates, but the cost behavior of such non-ANGTS elements are beyond the scope of this analysis. We believe, however, that simply their small absolute size in the base case, compared to the ANGTS construction cost, makes them less critical from the standpoint of NNEB.

the Northern Border Pipeline and Western Leg segments is relatively straightforward, that their actual costs are as expected and (ii) that the Canadian segments are constructed for the worst case costs incorporated in the high cost scenario. Still, the Alaskan segment would have to experience an overrun of more than 400 percent over filed costs before the NNEB would fall to zero.

The TAPS experience certainly demonstrated that such overruns are not inconceivable for arctic pipeline construction projects. Nevertheless, only a similar catastrophic overrun, combined with other conservative features on the benefits side of the base case NNEB estimate, would make the ANGTS project economically inefficient from a national perspective.

These sensitivity analyses strongly suggest that, from the standpoint of the efficient use of the nation's economic resources, the Alaskan project appears highly desirable. Positive net national benefits for the project, however, do not mean that all the individual participants in the project share equally in these net benefits. This natural gas pipeline project must proceed in a regulated environment, and the regulations can affect the distribution of the net economic benefits among the participants in important ways. Moreover, the distribution of benefits could affect the likelihood of project implementation. The next section examines the regulated prices that consumers would face for Alaskan gas, and the succeeding sections explore the market position of delivered Alaskan gas and the distribution of project benefits among consumers, the ANGTS consortium members, and others.

III. DELIVERED COST OF ALASKAN GAS

The cost of delivering Alaskan gas at the citygate of lower-48 gas distribution utilities has four important components:

- the wellhead gas price
- state severance taxes on gas production
- any additional charges for gas conditioning
- the cost of service to transport the gas from Prudhoe Bay to the citygate.

This analysis uses the annuity-equivalent of the annual sum of these figures over 25 years of pipeline operations as its primary tool for assessing the attractiveness of Alaskan gas to potential customers. The strengths and weaknesses of this approach should emerge from discussions later in this section.

The wellhead gas price is one of the two most important factors in determining the cost of delivered Alaskan gas. Section 109 of the Natural Gas Policy Act of 1978 (NGPA) established a ceiling wellhead price of $1.45 per million Btu as of April 1977, plus inflation adjustments, for natural gas produced from the Prudhoe Bay unit and transported through the ANGTS.[1/] Although this amount was established as a maximum, it is generally considered to be the most likely price.[2/]

1/ The inflation adjustments are based on $1.45 effective April 20, 1977.

2/ This presumably reflects the effects of rolled-in pricing and/or the degree of competition at the field market for Alaskan gas. Analysis of this expectation and its policy implications is beyond the scope of this analysis.

The state of Alaska would impose a severance tax on Prudhoe Bay gas production equal to approximately 10 percent of the wellhead price. This would add approximately 15 cents to the wellhead ceiling price of $1.45 per million Btu in April 1977 terms.

A gas conditioning cost estimate of 35 cents has been used in the FPC's Recommendation, the President's Decision, and other government documents.3/ A recently proposed FERC rule would require that all of these gas conditioning costs be recovered within the maximum price that gas producers may charge for their gas (i.e., $1.45 per million Btu, adjusted for inflation).4/ Unless stated otherwise, this analysis assumes that the conditioning costs are covered within the producers' maximum lawful price; therefore, estimates of the delivered cost of gas include no additional conditioning charges.

The cost of service for transporting the gas through the ANGTS is the other important component of the delivered cost of Alaskan gas. This cost, however, is derived in a way that is significantly different from the other components. The three previous cost factors are expected to be relatively stable during the project's operating period. Calculated on a similarly stable basis, the annuity-equivalent cost of service is approximately the same size as the wellhead gas price.

3/ For example, see FERC, "Notice of Proposed Rulemaking and Statement of Policy," Treatment of Certain Production Related Costs, For Natural Gas to be Sold and Transported Through the Alaskan Natural Gas Transportation System, Docket No. RM79-19, February 2, 1979, p. 9, adjusted from 1975 to 1978 dollars.

4/ Ibid.

In contrast, the traditional historical embedded cost method of establishing the cost of service yields high costs in a project's early years and decreasing costs over time as the rate base is depreciated. From the first year of operation to the time when the rate base is fully depreciated, the difference in the cost of service can be large.5/ The implications of the these time patterns of transportation cost are discussed in detail in our analysis of Alaskan gas marketability (see Section IV).

For our base case assumptions, the delivered cost of Alaskan gas consists of the following components:

	Annuity-Equivalent 6/ (mid-1979 dollars)
Wellhead Price of Gas	$1.68 per mmBtu
Severance Tax	0.17
Gas Conditioning Charge	.00
Pipeline Cost of Service	1.33
Delivered Cost of Gas	3.18

SENSITIVITY ANALYSIS

The delivered cost of Alaskan gas could change for many of the same reasons as the NNEB estimates. Variations of several of the inputs to the cost calculations are considered here, including:

5/ Under the base case assumptions, the pipeline cost of service would vary from $2.34 per million Btu in the first year to $0.43 per million Btu in the twenty-fifth year (mid-1979 dollars).

6/ Assuming a six percent discount rate and a 25-year project life.

- Construction costs
- Gas flow rates
- Length of project life
- Canadian energy decisions

In addition to these potential changes, which reside largely beyond the direct control of the federal regulatory process, two other variations are also considered, changes in allowed wellhead prices and reallocation of gas conditioning costs.

Construction Cost Changes

The potential for cost overruns and possible reasons for such problems have already been discussed in the NNEB sensitivity analysis (see Section II). Here we explore the implications of analogous events for the gas prices that consumers would face.

The first section of Table III-1 illustrates how changes in the expected costs of constructing the Alaskan leg of the pipeline system would affect delivered gas costs. In percentage terms, the delivered gas cost is not particularly sensitive to the costs of building the Alaskan segment. For example, if the Alaskan line were built for the costs filed by the ANGTS consortium, rather than for the 30 percent overrun assumed in the *President's Decision*, the delivered cost would decrease by 2 percent. On the other hand, if the Alaskan construction cost were twice as much as originally anticipated, the delivered cost would increase 5 percent above the base case. A disastrous 400 percent overrun on the Alaskan segment (i.e., 5 times the filed estimates) would increase the delivered gas cost by 25 percent.

At first glance, the insensitivity of the delivered gas cost to Alaskan segment overruns might appear surprising. But transportation costs represent only about 40 percent of delivered gas costs, and Alaskan segment costs are less than 40 percent of transportation costs for the base case. Consequently, this insensitivity should be expected.

The second section of Table III-1 explores how construction cost changes for the Canadian segment would affect the delivered cost of gas. Again, the sensitivity of delivered costs to construction costs for this part of the pipeline is not large. For example, if the line were built for its filed cost, rather than the 40 percent overrun assumed in the President's Decision, the delivered cost would decrease by 3 percent. If the Canadian segment, for which there should be relatively little technological uncertainty, were to double in cost from the filed estimates, the delivered cost would increase 4 percent from the base case. And even the "high cost" scenario described in the previous section (132 percent overrun for the Alaskan segment and 105 percent overrun for the Canadian segments), would yield a delivered gas cost only about 12 percent higher than the base case.

Gas Flow Rate Changes

Changes in the rate at which Alaskan gas flows through the ANGTS would also affect the cost of delivered gas. The net result stems from two effects, each moving in opposite directions. First, the flow of additional gas would spread common costs over a greater pool of gas supplies, thereby lowering unit costs. Second, a greater flow would require increased capital expenditures for compression capacity and increased fuel expenditures for each unit of gas

TABLE III-1

DELIVERED GAS COST ESTIMATES
FOR SELECTED CONSTRUCTION COST SCENARIOS a/
(mid-1979 dollars)

Cost Scenario	Delivered Gas Costs b/ ($/mmBtu)	Changed From Base Case (percent)
ALASKAN OVERRUN		
0% (filed costs)	$3.12	- 2 %
30% (base case)	3.18	--
100%	3.33	+ 5
200%	3.54	+11
400%	3.97	+25
CANADIAN OVERRUN		
0% (filed costs)	3.09	- 3
40% (base case)	3.18	--
100%	3.32	+ 4
COMBINED CHANGES		
filed costs, all segments	3.01	- 5
expected costs, all segments	3.18	--
"high cost" scenario c/	3.55	+12

a/ Base case assumptions used for other parameters.

b/ 25-year annuity-equivalent, at the citygate.

c/ Assumes a 132 percent Alaskan overrun and a 105 percent Canadian overrun (derived from DOI/DOT worst case analysis). U.S. Department of the Interior, U.S. Department of Transportation, Alaska Natural Gas Transportation Systems: White House Task Force Lead Agency Report on Construction Delay and Cost Overruns, July 1, 1977.

delivered.[7/] Of course, a lower flow rate would have opposite effects.

Table III-2, below, presents the delivered cost estimates of Alaskan gas resulting from changes in the rates at which gas would flow through ANGTS.

TABLE III-2

EFFECTS OF GAS FLOW RATE CHANGES
ON COST OF DELIVERED GAS a/
(mid-1979 dollars)

Gas Flow Rate (Bcf/day)	Delivered Gas Cost b/ ($/mmBtu)	Change in Gas Cost From Base Case (percent)
2.0	$3.37	+6%
2.4	3.18	—
3.2	3.05	-4
4.0	3.09	-3
4.8	3.25	+2

a/ Base case assumptions used for other parameters.

b/ 25 year annuity equivalent, at the citygate.

If the flow rate were increased by one-third to 3.2 Bcf/day, the delivered cost of the gas would decrease by 4 percent to $3.05 per million Btu. A flow rate of 4.0 Bcf/ day would lower the delivered cost to $3.09 per million Btu, a level lower than the base case but higher than the 3.2 Bcf/day case. Given the current system design, this increase indicates that fuel use penalties would outweigh the capital cost economies of scale at an input flow rate equal

7/ If a flow rate higher than 2.4 Bcf/day were anticipated prior to system design, a system with lower unit costs could possibly be engineered. This analysis, however, assumes that any flow rate changes are accommodated by changes in the system as now planned.

to or greater than 4.0 Bcf/day. If gas production rates were lower than expected, unit costs could increase to $3.37 per million Btu, or a 6 percent increase, for a 2.0 Bcf/day flow rate.8/

Project Life Changes

The base case delivered cost of Alaskan gas assumes a 25-year delivery period in order to develop the annuity-equivalent cost estimate. In the ANGTA, Congress expressed an interest in these cost estimates for a 20-year period.9/ For a minimum likely useful project lifetime of 20 years, the delivered unit cost of gas would increase to $3.28 per million Btu. For 30 and 50 years, a first approximation of the delivered gas cost indicates decreases to $3.11 and $2.98 per million Btu, respectively.10/ These figures are summarized in Table III-3.

Canadian Energy Actions

Two Canadian energy supply decisions could also affect the delivered cost of Alaskan gas. These two possible actions are (i) a reversal of the decision to move Mackenzie Delta gas through the ANGTS and (ii) early sales of Alberta gas through pre-built southern portions of the ANGTS.

8/ The fuel consumption behavior is extrapolated from data in FERC staff, Alaska Gas Project Office, System Design Inquiry draft paper, undated.

9/ ANGTA, Section 5(c).

10/ This approximation assumes no new capital expenditures are required to maintain the ANGTS for these longer periods.

TABLE III-3

DELIVERED GAS COST AS A FUNCTION OF LENGTH OF RELEVANT TIME PERIOD a/
(mid-1979 dollars)

Length of Time	Delivered Gas Cost b/ ($/mmBtu)	Change in Gas Cost From Base Case (percent)
20 years	$3.28	+3%
25 years	3.18	—
30 years	3.11	-2
50 years	2.98	-6

a/ Base case assumptions used for other parameters.

b/ 25-year annuity-equivalent, at the citygate.

Removing the requirement to ship Mackenzie Delta gas would eliminate the U.S. share of the cost of the Dempster Lateral, which would connect the Mackenzie Delta gas to the ANGTS. Conversely, this would also increase the U.S. share of the costs for the ANGTS Canadian segments. The combination of these countervailing effects is estimated to be an increase of 2 percent in the base case delivered gas costs, from $3.18 to $3.23 per million Btu.

The early delivery of Alberta "bubble" gas through pre-building of the southern portions of ANGTS would allow some of the pipeline's capital expenditures to be depreciated prior to initial deliveries of Alaskan gas. A precise estimate of how early deliveries would affect the figures for the delivered cost of gas is beyond the scope of this analysis.

Policy Actions

The FERC has proposed that "the Prudhoe Bay producers should be responsible for the construction and operation of the required conditioning facility."[11/] This analysis assumes that the maximum lawful price ($1.45 per million Btu, with adjustments) includes the payment of gas conditioning costs.

Alternatively, the Commission could decide to make gas consumers bear all or part of the gas conditioning costs. If the ANGTS consortium were required to provide gas conditioning facilities as a part of the pipeline system, the delivered cost of gas would increase by approximately 22 percent to $3.88 per million Btu (1979 dollars) under our base case assumptions.[12/]

Another regulatory issue concerns the maximum lawful price for Prudhoe Bay gas set by the NGPA (Section 109). On a present value basis at this price, the wellhead revenues would exceed estimated production costs (including royalty and severance taxes and a normal return on investment) and gas conditioning costs by $12.9 billion (mid-1979 dollars). Although Commission discretion in this area may be limited, reduction of these wellhead revenues could enhance Alaskan gas marketability and the welfare of gas consumers considerably, but only at the expense of Alaska and federal taxpayers and the gas producers.

11/ FERC, "Notice of Proposed Rulemaking and Statement of Policy," Treatment of Certain Production-Related Costs for Natural Gas to be Sold and Transported Through the Alaska Natural Gas Transportation System, Docket No. RM79-19, February 2, 1979, p. 12.

12/ See Appendix C. This $0.70 (1979 dollar) gas conditioning charge is roughly equivalent to the $0.60 charge mentioned in Foster Associates, Inc., "The Marketability of Prudhoe Bay Gas In The Lower 48 States," March 28, 1979, p. 1. Both the Foster Associates estimate and this analysis use Ralph M. Parson Co. data. The differences from the earlier estimate of $0.30 (1975 dollars) mentioned in the President's Decision, p. 95, can largely be explained through the charging of the maximum wellhead price for the gas consumed in the conditioning process rather than counting just the actual production costs for the gas used in conditioning.

GAS COST BEHAVIOR OVER TIME

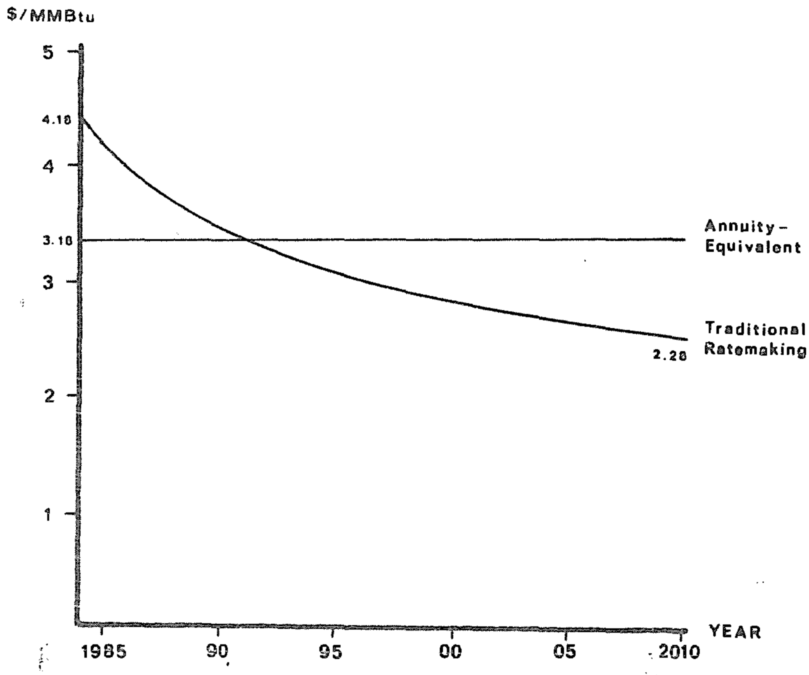
Thus far, our discussion of the delivered costs of Alaskan gas has focused on the annuity-equivalent cost. If, however, FERC were to apply the traditional historical embedded cost approach to the ANGTS ratemaking, the actual costs facing potential Alaskan gas purchasers would vary from year to year.13/ Under traditional ratemaking, the pipeline cost of service includes a constant rate of return on the rate base, where the rate base is defined by the undepreciated book value of the pipeline investment. On this basis, the rate base is highest in the first year of service and, then, gradually decreases over time until the rate base is fully depreciated. Figure III-1 illustrates how the time-profile of the cost of service affects the yearly delivered cost of Alaska gas (in mid-1979 dollars).

The time pattern under traditional cost of service regulation yields costs which initially are much higher than the annuity-equivalent cost and decrease steadily to a level equal to O&M costs and other annual expenditures, well-below the annuity-equivalent cost. In principle, this artifact of traditional regulatory practice represents only one of several possible ANGTS cost profiles. One alternative would be a constant cost (in real or nominal dollars) equal to an annuity-equivalent value. It would also be possible to devise a gas rate schedule of equal present value that allowed lower costs in the

13/ The present value of the stream of these actual costs, however, would be equal to the present value of the annuity-equivalent cost.

FIGURE III-1

DELIVERED ALASKAN GAS COSTS:
TRADITIONAL REGULATION VS. ANNUITY-EQUIVALENT



earlier years of the project and increased costs over time.14/

The importance of the annuity-equivalent gas costs and the time pattern of traditional gas pipeline tariffs results from the opposite price signals each can transmit to gas customers. Earlier, Section II demonstrated the robust nature of the ANGTS NNEB estimates, which remain positive for any reasonable expectations for the project. But regardless of the magnitude of the potential national benefits of the Alaskan gas pipeline project, the proposed project must be implemented in order to realize these benefits. As mentioned in our introduction, the project can be completed only if its sponsors, other equity investors and lenders believe that the Alaskan gas delivered through the pipeline can be sold. This section has explored the range of annuitized costs which gas consumers would be required to pay if the project were implemented. In the next section, we begin to explore the market outlook for Alaskan gas.

14/ Although the former Interstate Commerce Commission approach has no unique methodological value, this pattern could be developed through the rate-making method used for oil pipelines, which allows a constant rate of return on a rate base defined by the replacement cost of the line. Alternatively, the depreciation schedule could be altered so that the resulting rates display less variation on a real cost basis than do gas rates based on traditional depreciation treatment.

IV. THE RELATION OF THE ANGTS TO THE U.S. ENERGY MARKET

The U.S. natural gas outlook differs radically from the situation perceived at the time the Alaskan Natural Gas Transportation Act of 1976 (ANGTA) was enacted. Then, Congress found that "a natural gas supply shortage exists in the contiguous States of the United States."1/ The current outlook appears to be much improved because of legislated changes in natural gas wellhead pricing, end use pricing requirements and reforms, user energy conservation, and other factors. Also, large quantities of Mexican gas have been offered for sale to the U.S., and additional Canadian gas supplies may be offered for export.

In this updated context, this section analyzes whether (i) Alaskan gas can offer economic advantages as a substitute for distillate fuel oil, (ii) the Alaskan gas pipeline project compares favorably with another major potential new gas project--Mexican gas, and (iii) the project's benefits to the nation and to consumers remain if Alaskan gas replaces residual fuel oil rather than distillate.

BASIS FOR COMPARISON

As noted several times in earlier sections, the traditional gas pipeline cost-of-service ratemaking methods can provide misleading signals about the fundamental economic merits of a capital intensive gas supply project such as the ANGTS. For example, consider a comparison of first-year costs between a

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1/ ANGTA, Section 2.

capital intensive gas project and an alternative gas project with low capital investment but with real cost growth built into the price term (e.g., a source whose price of gas, ex transportation, is tied by formula to a rapidly escalating world oil price). The first-year costs of the capital intensive project would include a return on the entire, undepreciated rate base. In contrast, the first-year costs for the latter project would precede the onset of any real cost growth caused by future world oil price increases. Thus, the worst year of the capital intensive project would be compared to the best year of the low investment project. A comparison of the last-year or average-year costs could be similarly inappropriate in an economic sense, even if it were to reverse the apparent relative attractiveness of the two alternatives.

Although one-year cost comparisons have appeared in analyses of the ANGTS,[2/] a more commonly used measure has been the simple arithmetic average of the annual costs. Since the arithmetic average may introduce only minor distortions when comparing projects with similar cost patterns over time, its use as a shortcut in comparing the ANGTS to other capital intensive alternatives may have been acceptable. But for comparing the ANGTS with other less capital intensive energy supply options (e.g., distillate fuel oil or Mexican gas), it is important to use a comparison technique that carefully incorporates the time value of money (Appendix E presents detailed examples of problems associated with the use of an arithmetic average).

2/ For instance, see Congressional Research Service, "Mexico's Oil and Gas Policy: An Analysis," prepared for the Committee on Foreign Relations, U.S. Senate and the Joint Economic Committee, December 1978, pp. 5, 48-49.

To account for the time value of money, this analysis calculates the equivalent cost of purchasing one unit (a million Btus) of energy if the price were the same (in real terms) in each year of the time period considered.[3/] In a manner consistent with lifecycle cost comparisons, these annuity-equivalent costs (or "levelized" costs) provide a basis for comparison among energy supply alternatives with radically different cost patterns over time. This concept was employed to develop the annuity-equivalent figures used in Section III. The following analyses of Alaskan gas versus other potential gas supplies and other energy sources use both annuity-equivalent values and annual time profiles to explore the market prospects for Alaskan gas.

ALASKAN GAS AND DISTILLATE FUEL OIL

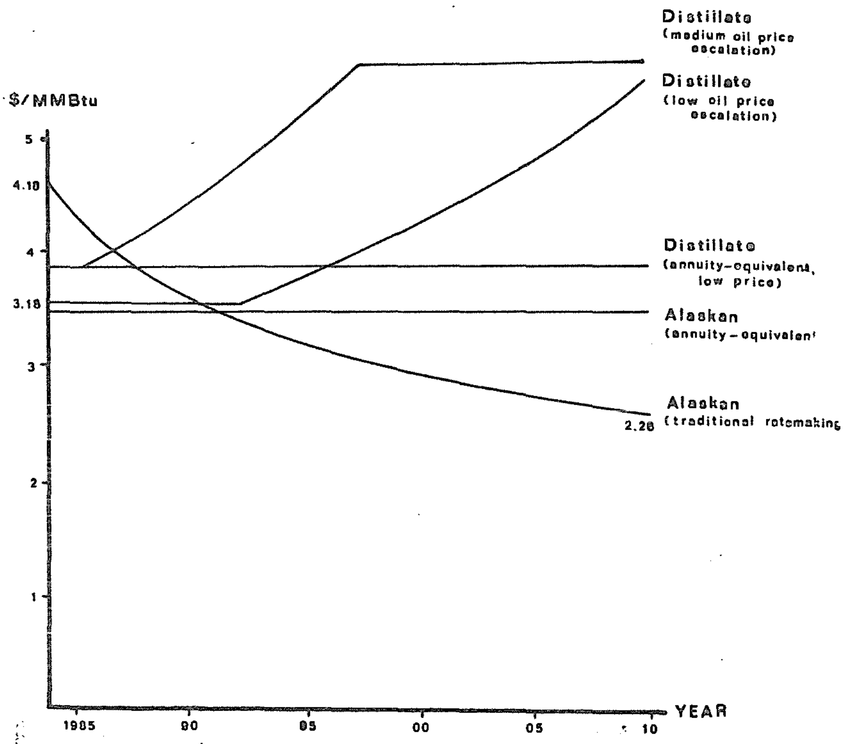
The NNEB analysis (Section II) found that, from a national perspective, the United States would gain large net benefits from the delivery of Alaskan natural gas. Under the base case assumptions, this benefit would be approximately $14.9 billion (mid-1979 dollars).

Despite advantages to the nation from implementing the ANGTS, the base case estimates indicate that potential Alaskan gas customers, if faced directly with the cost of Alaskan gas through a separate rate schedule, initially might prefer distillate fuel oil. This paradox stems from traditional cost of service ratemaking methods, under which customers for Prudhoe Bay gas could expect Alaskan gas costs well above distillate fuel oil costs in the early years of delivery (see Figure IV-1).

3/ See Appendix E for an expanded discussion of the annuity-equivalent concept.

FIGURE IV-1

ALASKAN GAS AND DISTILLATE FUEL COST PROJECTIONS
(1979 dollars)



Alternatively, these gas customers might compare the lifecycle costs of Alaskan gas with the similar costs of their other energy options.4/ On this basis, the annuity-equivalent prices for a million Btu of distillate fuel oil (assuming the low cost escalation scenario) versus Alaskan gas (for a 25 year period) would be as follows:

Alaskan Gas (citygate)	\$3.18 (mid-1979 dollars)
Distillate Fuel Oil (wholesale)	\$3.60 5/

Thus, energy users comparing a 25-year contract for distillate fuel or Alaskan gas would prefer Alaskan gas, other things being equal. Moreover, if distillate fuel oil prices were to rise according to the medium oil price escalation scenario, the Alaskan gas would look even more attractive:

Alaskan Gas (citygate)	\$3.18 (mid-1979 dollars)
Distillate Fuel Oil (wholesale)	\$4.41

THE MEXICAN GAS OPTION

Alaskan gas differs significantly from additional gas imports from Mexico or Canada. From the U.S. consumer's perspective, Alaskan gas would resemble a capital intensive project whose cost would be largely fixed while Mexican gas would resemble a project with high variable costs whose annual level would

4/ The President's Decision emphasized the displacement of wholesale distillate fuel oil by Alaskan gas. This emphasis on wholesale transactions is continued in this analysis of the market position of Alaskan gas; thus, any differences in costs for distribution of gas or oil to end users are not treated here.

5/ This is the distillate fuel oil annuity-equivalent the price projection used to develop the gas value in the NNEB calculations.

depend upon the price of a reference petroleum product.[6/] Other important differences include any national security consequences of domestic versus imported gas supplies and the possible influence of Mexican gas purchase arrangements, especially the price terms, on other energy supplies, particularly Canadian gas and Mexican oil.

Alaskan Versus Mexican Gas

The relationship between the costs of Alaskan and Mexican gas is traced over time in Figure IV-2. Clearly, a comparison of first-year costs tells a misleading story. As Table IV-1 illustrates, over a 25-year period consumers would prefer the Alaskan gas to the Mexican gas even if the Mexican gas price were tied to the residual fuel oil price.[7/] Table IV-2 compares the total costs to consumers for streams of Mexican and Alaskan gas, both delivered at the flow rate projected for the ANGTS. The present value of the savings available to consumers from Alaskan gas is significant, $13.2 billion (mid-1979 dollars), under the assumption that Mexican gas prices would be referenced to distillate (under low oil price escalation).

Even under the high construction cost ANGTS case, consumers would prefer Alaskan gas to Mexican gas pegged to distillate prices. Finally, the high

6/ Mexico has proposed distillate fuel, landed in New York harbor, as the reference price for its gas delivered at the U.S. border. The U.S., howeverr, has countered that domestic transportation costs from the border to the burner tip, added on top of a distillate-equivalent price, would render Mexican gas economically unattractive because it will be forced to compete with residual fuel oil in the U.S. industrial boiler market.

7/ This comparison is made at the citygate where the ANGTS would deliver Alaskan gas, and assumes that Alaskan gas is delivered at base case estimated costs.

FIGURE IV-2

ALASKAN VERSUS MEXICAN GAS COSTS OVER PROJECT LIFE[a/]
(1979 dollars)

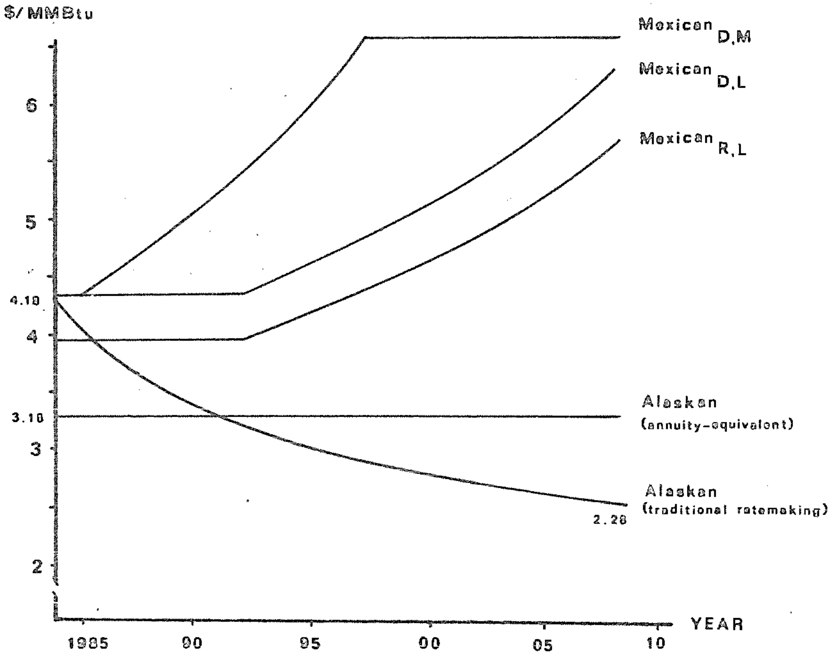


TABLE IV-1

COMPARISON OF ANNUITY-EQUIVALENT DELIVERED COSTS
FOR ALASKAN AND MEXICAN GAS

Supply Source	Annuity-Equivalent Cost[a/] (mid-1979 dollars per mmBtu) (6% discount rate)
ANGTS	
Base Case	$3.18
High Cost	3.55
Mexico	
Distillate Price, Low Escalation	4.61
Distillate Price, Medium Escalation	5.46
Residual Price, Low Escalation	4.25

a/ 25-year annuity-equivalent, at midwestern citygate; delivered volumes projected for ANGTS.

TABLE IV-2

COMPARISON OF TOTAL "LIFECYCLE" DELIVERED COSTS
FOR ALASKAN AND MEXICAN GAS
($ billion, mid-1979)

Supply Source	Total Lifecycle Costs[a/] (6% rate)	(10% rate)
ANGTS		
Base Case	29.4	18.8
High Cost	32.8	21.1
Mexico		
Distillate Price, Low Escalation	42.6	25.4
Distillate Price, Medium Escalation	50.5	29.8
Residual Price, Low Escalation	39.3	23.5

a/ 25 years, at midwestern citygate, delivered volumes projected for ANGTS.

cost ANGTS case, as shown in Table IV-2, still compares favorably to Mexican gas tied to residual fuel oil, even under low world price escalation.

Thus, the Alaskan gas supply option appears likely to provide gas customers with an economically superior alternative to Mexican gas.[8/] At least one important potential benefit from Mexican gas sales, however, is omitted in the above analysis, the effect of an agreement to purchase Mexican gas (or the lack of such an agreement) on the availability of Mexican oil. Yet, as the lifecycle cost comparisons of Table IV-2 indicate, under the base case assumptions consumers would have to save more than $13.2 billion on oil purchases to be compensated for the cost penalty they would incur through enforced purchases of Mexican rather than Alaskan gas. Mexico probably would offer its oil to U.S. purchasers at prices close to world prices. Consequently, direct economic efficiency benefits in the U.S. energy sector from Mexican oil deals alone may not attain such magnitudes, and U.S. policymakers would need to look to other sectors or other effects, such as national security, to prefer Mexican gas over Alaskan gas.

Importantly, the purchase of Mexican gas supplies could also trigger cost increases for U.S. imports of Canadian gas. The cost of Canadian gas imports averaged approximately $2.16 per Mcf in 1978 (approximately $2.09 per million

8/ It is worth noting at this point that the recent Congressional Research Service (CRS) analysis of Mexican gas and oil, referenced earlier, came to the opposite conclusion about Alaskan gas because the CRS compared the two sources only on the basis of 1985 costs. In 1985, Alaskan costs would exceed Mexican because almost all of the ANGTS rate base is included while neither the real cost escalation in later years for Mexican gas nor the transportation costs to move Mexican gas to users were incorporated in the comparison.

Btu).[9/] At the current level of gas imports, one trillion cubic feet annually, a Canadian demand for price parity at the border with Mexican gas would increase the cost of their gas by over one billion dollars (mid-1979) annually, or approximately $12 billion on a present value basis for a 25-year supply.[10/]

But as suggested earlier, direct consumer or national economic efficiency benefits of larger energy purchases from Mexico may not be the consequences of most importance to U.S. policy. Instead, enhanced security of supplies, provided by a geographically closer and robust economic partner, and greater diversification away from Arab oil supplies may be the most important national benefits. But a preference for Mexican rather than Alaskan gas would require a judgement that consumer plus other national benefits from access to Mexican oil and gas exceed the $24.2 billion of NNEB lost when choosing Mexican gas over Alaskan.[11/]

Rephrasing the Question

This analysis demonstrates that, under the narrow criterion of national economic efficiency in the U.S. energy sector, Alaskan gas would provide greater benefits than Mexican gas. As noted, our analysis does not grapple with the potentially more important issue of the benefits of any Mexican

9/ DOE/EIA-0147/8, Table 4, actually lists "Canadian and foreign" supplies.

10/ "Canada gas-export issue grows hotter," Oil and Gas Journal, October 9, 1978, p. 48.

11/ This figure is estimated by using the Mexican gas prices and the Alaska gas value in the NNEB calculation.

gas/oil linkage and its implications for U.S. oil imports strategy or even broader U.S. interests regarding trade and other matters of importance.

In this broader context, the question remains open whether the United States might benefit most from proceeding with both Alaskan and Mexican gas supply projects. Our logic in the Mexican versus Alaskan gas comparison does not illuminate the choice between Mexican gas and oil versus OPEC oil. The results only indicate that the Alaskan gas pipeline project should proceed. But policymakers could also judge the national interest to be well served by purchasing Mexican gas, for example, in order to reduce dependence on Middle East oil. This reduction could occur in two ways: (i) Mexican gas could substitute for oil consumption, and (ii) Mexican oil could replace OPEC oil. In this context, phrasing the question as a choice of either Mexican gas or Alaskan gas might frustrate policymaking. Rephrased, the more germane question concerns the attractiveness of Mexican energy on its own merits across the entire spectrum of the U.S. energy market and of our international affairs.

ALASKAN GAS AND ALTERNATIVE ENERGY SOURCES

In addition to understanding how Alaskan gas compares with distillate fuel oil and Mexican gas, it is also important to explore the implications of its substitution for other energy forms. Our earlier NNEB calculations set the value of Alaskan gas at the cost of distillate. Implicit in this valuation is the assumption that this gas would displace an energy-equivalent amount of distillate fuel. But Alaskan gas could substitute for other energy forms as well, which could lead to a substantially different estimate of the NNEB.

The assumption that Alaskan gas substitutes for distillate fuel sold at wholesale prices implies that large industrial operations are the marginal user of additional gas supplies. The choice of this assumption was based on a desire to maintain consistency with this one key assumption in the analyses associated with the President's Decision. Importantly, it is not a forecast that Alaskan gas, in fact, will be consumed by industry or, if consumed there, will displace distillate rather than residual fuel. If gas supplies were to tighten, Alaskan gas might displace other energy use. If the substitution occurred in the residential sector, the alternative fuel could be electricity, which is more costly than distillate fuel oil for certain residential uses not requiring electricity's special properties. To the extent Alaskan gas replaced such higher cost energy supplies, the NNEB would increase, and all of the additional benefits would be captured by consumers.

If, in contrast, gas supplies were quite plentiful and inexpensive during the 25-year life of the ANGTS, Alaskan gas might displace industrial boiler fuels costing less than distillate, such as residual fuel oil. If the value of Alaskan gas deliveries were equated with projected prices of residual (under a low escalation scenario), the NNEB estimate would shrink by $3.1 billion from the base case to a $11.8 billion level.

MARKET PROSPECTS FOR ALASKAN GAS

Table IV-3 (Column A) indicates that the nation would receive substantial benefits from the development of the Alaskan gas pipeline project even if the gas were valued at the cost of residual fuel oil and if construction of the ANGTS were to experience high cost overruns. Nevertheless, the project might

TABLE IV-3

BENEFITS OF ALASKAN GAS RELATIVE TO SELECTED ALTERNATIVE FUEL OPTIONS
(mid-1979 dollars)

Energy Source Assumed Replaced[a/]	(A) NNEB	(B) Consumer Lifecycle Cash Savings
Base Case Cost:		
Distillate Fuel Oil	$14.9 billion	$3.9 billion
Residual Fuel Oil	11.8	0.8
High Cost:		
Distillate Fuel Oil	10.4	0.5
Residual Fuel Oil	7.3	- 2.6

a/ All fuel prices are assumed to follow low price trajectories as defined in Table II-1.

not attract potential gas customers who can obtain and use residual fuel oil. The reasons for this apparent contradiction include:

- the accrual, under base case assumptions, of most of the project's benefits to parties other than consumers, and
- the market disadvantage faced by Alaskan gas in the early years of the project stemming from traditional gas ratemaking methods.

Table IV-3 (Column B) illustrates the relative market attractiveness of Alaskan gas on the basis of lifecycle costs. Based on this comparison, energy consumers would be better off over the next 25 years with Alaskan gas than with either distillate or residual oil under the base case cost assumptions. Under the high cost ANGTS case, however, consumers would prefer Alaskan gas compared only with either distillate fuel oil (low price escalation) or more costly alternatives.

THE ANGTS DELAY OPTION

Suppose that the marketability of Alaskan gas hinged on the need to make its first-year delivered costs less than or equal to the price of distillate fuel oil. This supposition, coupled with the upside-down cost patterns caused by traditional ratemaking, would mean that Alaskan gas would not be marketable until distillate fuel oil prices reached $4.18 per million Btu (1979 dollars), which would not occur until 2002 under the base case assumptions or until 1991 under the medium oil price escalation assumption. The policy option implicit in this supposition—deferring the ANGTS well into the future—would cause significant economic loss from the national perspective.

When considering project delays of several years, the uncertainties associated with estimating project costs and gas value are compounded significantly compared to the estimating problems already present for the base case. Nevertheless, despite the fact that no precise estimate of how a long delay might affect the NNEB is possible, an approximation can be made. For the low price escalation scenario described in Table II-1, applying the 6 percent discount rate would yield the following NNEB decreases through delay:

Years Delay	NNEB Loss
5	$1.5 (mid-1979 dollars)
10	$2.6
15	$4.1

Although these estimates are rough, they suggest that delay of the project in order to improve the prospects for initial marketability could generate some loss in national benefits.

Analyzing the NNEB to the nation as a whole has thus far helped to make this analysis more managable. In the next section, the question of how the NNEB would be distributed among sectors of the economy is explored.

V. THE DISTRIBUTION OF ALASKAN GAS COSTS AND BENEFITS

The assertions that the Alaskan gas pipeline project offers significant economic advantages and that the project can only proceed if offered special regulatory treatment appear to contradict each other. This apparent contradiction, however, stems from the nature of the uncertainties associated with this project and from the allocation of the accompanying opportunities and risks, as well as other project costs and benefits, among the project's participants.

In preceding sections, this analysis has dealt with project costs and benefits on an aggregate level, finding that the nation or consumers as a whole could receive substantial benefits from this project if current estimates are correct. But these costs and benefits will not accrue to all members of the economy in equal proportions. Consequently, it is important to identify more specifically who pays the project costs and who receives the project benefits.

This section begins by discussing how the base case NNEB would be distributed among the major participants of the project. Next, it considers the distribution of the NNEB under other conditions. Then, the opportunities and risks associated with the proposed pipeline are addressed. The section concludes with an examination of how the FERC regulations applied to the project could modify and allocate these opportunities and risks.

DISTRIBUTION OF NNEB

The net national economic benefits from the ANGTS project would be shared among gas consumers, Prudhoe Bay gas producers, the Alaskan government, the federal government, and pipeline owners. The net benefits captured by each of the participants would consist of the following:

> Consumers: Consumer benefits consist of any savings from purchasing Alaskan gas instead of an alternative fuel.
>
> Gas producers (domestic): Producer benefits accrue from the price received for the gas produced minus incremental production and gathering costs, incremental gas conditioning costs, royalty payments, and taxes (severance and income), further reduced by the benefits flowing to foreign interests.
>
> Alaskan state government: Certain tax payments to Alaska are assumed to be surrogate measures of the real resource costs incurred to support the ANGTS. Revenues in excess of those required to cover such costs represent net benefits captured by Alaska. These include royalty payments plus severance and income taxes on producer revenues in excess of the incremental costs noted directly above.
>
> Federal government: Taxes on a normal level of producer profits are also considered a surrogate for the real resource costs incurred across the overall U.S. economy to support the ANGTS. Federal income taxes levied on above-normal producer profits represent the share of the project's net benefits captured by the federal government and, in turn, the general taxpayer.
>
> Pipeline Owners: Because the ANGTS would be regulated as a utility, its cost of service revenues would be "normal," by definition. The pipeline owners, however, are affected by an investment tax credit on the ANGTS segments constructed in the United States. This credit can be interpreted as capturing a share of the NNEB for pipeline owners because Internal Revenue Service and FERC rulings do not allow these credits to be flowed-through to consumers as they are received.1/

1/ Appendix F describes the methodology for calculating the NNEB shares in greater detail than provided by these five brief summaries of the benefits accruing to each of the major ANGTS participants.

Expected Benefits

Under the base case assumptions used throughout this analysis, the NNEB is expected to be $14.9 billion (mid-1979 dollars). This net benefit would be shared as follows:

Consumers	$ 2.7 billion (mid-1979)
Domestic Producers	3.7
Alaska	4.7
Federal	3.5
Pipeline Owners	0.2
Total NNEB	$14.9 billion

At the maximum wellhead price for Prudhoe Bay unit gas set by the NGPA, gas producer revenues would exceed their expected incremental production costs. In turn, this would allow gas producers and the Alaska and federal governments collectively to capture 80 percent of the base case NNEB. Among the major beneficiaries, the Alaska government would receive the largest share (32 percent of the NNEB). Gas producers would receive the next largest share (25 percent), followed by the federal government (23 percent). Under the base case, gas consumers would obtain a relatively moderate share of the NNEB (18 percent), and pipeline owners would receive a minor portion (2 percent).

Our base case assumes a 6 percent discount rate. Under a 10 percent rate, all participants' benefits decrease; nevertheless, the share of the project benefits captured by producers and the Alaska and federal government increases to 90 percent, because it is the consumer fuel savings which would be most drawn out over the 25-year life of the project.

Consumers	$0.6 billion (mid-1979)
Domestic Producer	2.2
Alaska	2.9
Federal	2.2
Pipeline Owners	0.3
Total NNEB	$8.1 billion

Other Projections

The participants' shares of net benefits also vary with changes in project costs, gas value, gas flow, or the locus of gas conditioning charges (see Table V-1 and Figure V-1). The producer benefits and, in turn, the Alaska and federal government benefits depend only upon the incremental production costs and the wellhead price of the gas. Consequently, consumers would absorb virtually all of the increased or decreased NNEB caused by variations in the gas value or in the ANGTS construction or other costs. Specifically, consumers benefits rise to $10.1 billion for the case incorporating medium oil price escalation and fall to a negative amount, $-1.9 billion, for the high cost ANGTS case. As might be expected, the benefits for all participants would grow if gas production increased to a level sufficient to flow 3.2 Bcf of Alaskan gas through the ANGTS each day.

Direct Redistribution

Regulation can directly affect the share of the NNEB received by gas producers and the Alaska and federal governments. The proposed FERC rule to include gas conditioning costs in the maximum lawful gas price is an example of such a regulatory action. Instead, if gas conditioning costs were added to the maximum wellhead price, consumer benefits would fall by almost $4.4 billion, under the base case assumptions, to a negative amount (-$1.7 billion).

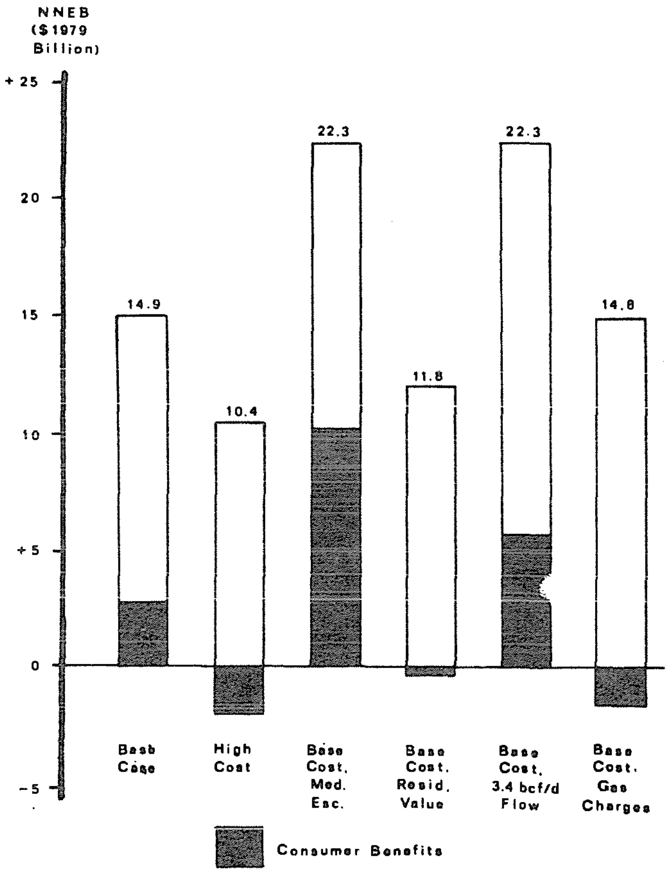
TABLE V-1

DISTRIBUTION OF NNEB FOR SELECTED SCENARIOS
(mid-1979 dollars)

Scenario	Net Benefits: Domestic Producer	Alaska	Federal Gov't.	Consumer	Pipeline Owners	Total NNEB
6 Percent Discount Rate						
Base Case	3.7	4.7	3.5	2.7	0.2	14.9
High Cost	3.7	4.7	3.5	-1.9	0.4	10.4
Base Costs, Medium Oil Price Escalation	3.7	4.7	3.5	10.1	0.2	22.3
Base Costs, Residual Oil Value, Low Escalation	3.7	4.7	3.5	-0.4	0.2	11.8
Base Costs, 3.2 Bcf/d Flow	5.2	6.4	5.1	5.4	0.2	22.3
Base Case With Gas Conditioning Charges	5.6	5.2	5.4	-1.7	0.4	14.8
10 Percent Discount Rate						
Base Case	2.2	2.9	2.2	0.6	0.3	8.1
High Cost	2.2	2.9	2.2	-2.5	0.4	5.2
Base Costs, Medium Oil Price Escalation	2.2	2.9	2.2	4.6	0.3	12.2
Base Costs, Residual Oil Value, Low Escalation	2.2	2.9	2.2	-1.3	0.3	6.3
Base Costs, 3.2 Bcf/d Flow	3.1	3.9	3.1	2.0	0.3	12.5
Base Case With Gas Conditioning Charges	3.4	3.1	3.3	-2.2	0.4	8.0

FIGURE V-1

ILLUSTRATION OF CONSUMER NNEB SHARES
(6% Discount Rate)



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The countervailing increased share of the NNEB would be captured by the gas producers and the Alaska and federal governments. And because British Petroleum receives a share of the producer surplus through their ownership interest in SOHIO, the total NNEB actually would shrink somewhat.

Other actions which could alter the distribution of the base case NNEB include sharing gas conditioning costs between producers and consumers or lowering the maximum price of Prudhoe Bay gas.[2/] For example, if the lawful price were lowered to the level required to provide the gas producers with a typical industry rate of return on their incremental gas production investment, then the producers' and governments' shares of the net benefits would fall to zero. Consumer benefits would grow by a corresponding amount, or $11.9 billion in the base case.

Distribution Among Consumer Classes

This analysis treats "consumers" as one aggregate group; however, not all gas consumers would receive identical shares of the "consumer benefit" discussed earlier. Presently, gas curtailment practices can be interpreted to infer that so-called "firm" gas customers, which already are hooked up to currently flowing gas, have first claim on future gas supplies. Since the costs of new gas supplies are expected to be well above the average cost of old gas now flowing in interstate markets, the purchased gas cost component of today's customers' retail gas prices would be lowest if no new customers what-

2/ Analysis of the legal basis for any of these potential actions is beyond the scope of this analysis.

soever, even high priority ones, were permitted to hook up and if new gas supplies were added only in sufficient amounts to meet existing firm customers' needs.

Wholesale and retail gas prices typically are set by, first, averaging the costs of cheap old gas and expensive new gas on a rolled-in basis and, then, adding an amount to recover fixed and other variable transmission and distribution costs. Consequently, today's gas users of all curtailment priority categories would be worse off if new supplies, added in order to serve new gas customers, increased average unit gas costs by more than larger sales volumes decreased average unit fixed and other costs associated with gas transmission and distribution. This effect, a cross-subsidy of sorts, can occur among members of the same curtailment priority categories (e.g., existing high priority customers and new high priority hookups) or between customer classes with different curtailment priorities. Finally, these cross-subsidies can disadvantage existing customers at the same time that expanding gas supplies and adding new customers, even those of the lowest curtailment priority, can benefit the nation as a whole.

The NGPA permits most of the costs of gas delivered by the ANGTS to be rolled-in. If at any point during its project life delivered Alaskan gas costs were lower or higher than the average costs of all other flowing gas, cross-subsidies of some kind probably would be generated. A meaningful analysis of these effects would require a full general-equilibrium analysis of the entire U.S. energy market, a task well-beyond the scope of this analysis.

Nevertheless, rolled-in pricing and historical embedded cost ratemaking for the ANGTS can generate cross-subsidies within the "consumer" group, and the magnitude of any subsidies and the directions in which they cross between individual consumers can vary over the project's life. Although we did not estimate the magnitude or location of these effects, policymakers may wish to be aware of this potential when formulating an ANGTS regulatory policy.

DISTRIBUTION OF ANGTS OPPORTUNITIES AND RISKS

Previous sections of this analysis have identified numerous uncertainties associated with the ANGTS and with our estimates of the project's expected net national benefits, consumer costs, and shares of the benefits received by various project participants. Each uncertainty embodies an opportunity for better than expected consequences under certain outcomes and a risk of worse than expected results under others.[3/]

The legislative and legal framework surrounding the ANGTS project, as well as proposed and future federal regulatory actions, will determine the overall size of these "upside" opportunities and "downside" risks and their distribution among Prudhoe Bay gas producers, the Alaska and federal governments, and the project sponsors and their lenders. At this juncture, however, all of the regulatory actions affecting the size and distribution of the opportunities and risks are not fully defined and in place. Since the character of the actions are a major focus of current FERC work, they are discussed briefly here in order to connect them to the main thrust of our analysis (estimating the pipeline cost of service and the level and distribution of the NNEB).

3/ For purposes of this discussion, uncertainty refers to the probability of an outcome or event. We label the consequences associated with any one outcome an opportunity if they would increase the welfare of the nation as a whole or of a particular participant compared to the base case; conversely, we label adverse consequences as risks.

The legal and institutional arrangements surrounding the ANGTS appear to be taking a shape somewhat distinct from typical gas pipeline practices, perhaps a necessity for a project of the sheer size of the ANGTS and accompanied by its unique market, technological and regulatory uncertainties.4/ In order to provide context for this discussion, we assume the following arrangements:

- At the wellhead, gas producers would receive the NGPA maximum lawful price but must absorb the full costs of gas conditioning;
- The project sponsors would confine their role to strictly providing transportation service. Lower-48 gas transmission companies and/or gas distribution utilities would purchase the Alaskan gas directly from Prudhoe Bay producers under long-term contracts with take-or-pay provisions.
- And where other gas distribution utilities would purchase Alaskan gas at the citygate, the purchase price plus ANGTS cost of service would be "rolled-in" with the transmission company's other sources of gas. These gas utilities also would purchase this gas on a take or pay basis. Direct-purchase utilities, as well as those purchasing at the citygate, would roll-in all of their purchased gas costs for sale at retail.

Although details of this description may not be fully correct, we believe for purposes of this analysis that it presents a sufficiently accurate picture of the kinds of arrangements ultimately likely to exist. If so, these kinds of conditions have important implications for the distribution of the ANGTS opportunities and risks.

4/ For an excellent discussion of this aspect of the ANGTS, see Arlon R. Tussing and Connie C. Barlow, Financing the Alaska Highway Gas Pipeline: What Is To Be Done? prepared for the Alaska Legislative Affairs Agency, Juneau, Alaska, April 1979.

In this context, the balance of this discussion evaluates the distribution of the ANGTS opportunities and risks under three kinds of outcomes: i) better or worse cost experience at the gas production level of the overall project; ii) better or worse experience in the portions of the project which may control the marketability of Alaskan gas and, iii) once constructed, catastrophic failure to make the project operational, a possibility which may determine the financiability of the ANGTS. Across all three kinds of outcomes, however, it is important to note that the ability to market ANGTS gas and to finance the project are closely related.

CHANGED GAS PRODUCTION EXPERIENCE

Compared to the base case, gas production experience upstream from the ANGTS could prove in actual practice to be better or worse than expected, for three reasons. The incremental costs of the gas conditioning facility could underrun or overrun our base case estimate. Similarly, in order to maintain the level of crude oil recovery while selling gas from the Sadlerochit pool of the Prudhoe Bay field, more or less costly water-flooding might be required. Finally, even with substantial water-flooding, a large loss of crude oil recovery might occur.5/

The base case, as noted above, assumes that producers would condition the gas and would be paid the maximum wellhead price specified by the NGPA. Under these circumstances, more favorable production experience would increase the ANGTS project's NNEB over base case levels. The increase would be shared

5/ Although not considered in this analysis, one recent estimate is alledged to envisioned a catastrophic loss of 1.5 to 2.0 billion barrels of ultimate crude oil recovery.

among gas producers and the Alaska and federal government in their relative proportions shown under the base case. All other participants would be unaffected.

Conversely, a worse production experience would have the opposite effect. Up to the point where gas producers' "normal" profits begin to erode, the full effect would fall on these same three project participants. Beyond that point, these three participants could incur real resource costs greater than their revenues. And if incremental production costs ever exceeded incremental revenues, production would cease unless the wellhead price were altered, an action which would need to be evaluated in light of the overall project's economic merits at that point.

At the production level, then, the assumed institutional arrangements may allocate a large share of the NNEB to producers and governments. But their upside opportunities would depend upon their skill and luck in building the gas conditioning facilities and in developing the Prudhoe Bay gas field. Unless the experience worsened by an extreme amount, other participants would not feel an effect or face a decision problem.

The third outcome, an irreversible and substantial loss of crude oil recovery through Sadlerochit gas sales, is especially difficult to evaluate without a detailed reservoir simulation of production alternatives from the reservoir and a full, general-equilibrium analysis of the overall U.S. energy market. Importantly, however, trading the increased NNEB made available from the use of Prudhoe Bay gas from the ANGTS project for an equal or lesser decrease in NNEB from reduced Prudhoe oil recovery would not necessarily be imprudent. Undoubtedly, however, the distribution of national welfare would be altered by trading increased gas production for decreased oil production, quite possibly to the disadvantage of the oil/gas producers and the Alaska and federal government.[6/]

CHANGED MARKET PROSPECTS

Once the project is certified and the pipeline is built and put into service, federal regulation will work to compel the ANGTS gas to enter the U.S. energy market, in the physical sense of molecules of Alaskan gas finding their way to the burner tip. But in an economic sense, changes from the base case could alter the market prospects of the project.[7/]

Four kinds of events could alter the base case market attractivenss of Alaskan gas. Two of these could be caused by changing either the value of the gas or its delivered cost. Because of changed fuel availabilities, Alaskan gas might displace a fuel other than distillate oil; conversely, changed world oil prices might alter the value of Alaskan gas as a substitute for distillate. Alternatively, the gas value could remain unchanged but its delivered costs could be higher or lower due to the ANGTS construction cost experience or Canadian actions, as discussed earlier in Section IV.

The other two causes of altered market prospects for Alaskan gas are more analytically complicated. On the optimistic side, extra gas reserves, on the North Slope or along the length of line, could facilitate a higher rate of gas flow through the system. And on the more pessimistic side, a cheaper source

6/ This analysis also was beyond the scope of this work.

7/ In the base case, it bears repeating that the opposite paradox may exist; that is, the project may make economic sense but encounter difficulties in the marketplace caused by traditional tariff practices.

of gas (measured in real resource cost terms) might become available after a firm and irreversible commitment was made to the ANGTS project. If this more economical source could not find a place in the market in the face of enforced marketability of ANGTS gas, Alaskan gas would, in effect, displace a cheaper source of gas rather than distillate fuel or another more expensive energy form.

All four kinds of these events would increase or decrease the ANGTS project's net economic benefits to the nation as a whole. As noted by our earlier sensitivity analysis, however, the effects would need to be of enormous proportions, relative to the base case assumptions, in order to negate all of the NNEB (see Section II).

With relatively minor exceptions, consumers would receive the full measure of this increased or decreased NNEB. Enforced marketability—applied through institutional arrangements, such as permitting ANGTS project sponsors to act strictly as providers of a transportation service; legal arrangements such as gas purchase contracts of a take-or-pay variety; and regulatory practices, such as rolled-in pricing—would shift almost all of the upside opportunities and downside risks associated with these four kinds of events to gas consumers.

Incentive Rate of Return

One exception to this pattern of opportunities and risks centers on the incentive rate of return (IROR) mechanism planned to be imposed on the project sponsors. The IROR would shift some of the opportunity and risk associated with construction cost uncertainties to the sponsors. By this reallocation, it is hoped that the IROR would reduce the probability of large construction cost overruns. As currently envisioned, the IROR would lower the overall rate of return on the ANGTS consortium's equity investment if certain project costs were to grow more than 30 percent over base estimates and would raise the rate of return if actual costs prove to be less than estimated.

The effectiveness of an IROR scheme in discouraging cost overruns is not well understood. Reviews of similar incentive contracting by the Air Force have been inconclusive.8/ Moreover, some believe that the TAPS project had greater incentives to avoid cost overruns because the revenues received by the oil companies were reduced dollar-for-dollar by "any and all cost overruns." Yet Mead estimates that Alyeska's costs increased by 23 percent annually after adjusting for inflation and changes in scope.9/

For the high construction cost case the imposition of the IROR penalty would only lower the annuity-equivalent cost of service by 8 percent relative to the cost of service for the same construction cost scenario without the IROR penalty.10/ Thus, although the IROR mechanism would shift risks in a direction that should make those responsible for ANGTS more concerned about cost control, the incentives appear less strong than those asserted to have existed for the TAPS project.

8/ For instance, see Robert Perry, et. al., System Acquisition Strategies, The Rand Corporation, R-733-PR/ARPA, June 1971; Frederic Scherer, The Weapons Acquisition Process: Economic Incentives, Harvard, 1964; and Robert Summers, Cost Estimates as Predictors of Actual Weapon Costs, The Rand Corporation, RM-3061-PR, March 1965.

9/ Walter Mead, Transporting Natural Gas from the Arctic, pp. 88-89.

10/ This may overstate the effect of the IROR penalty because the existence of the "greater risks" from the IROR plan caused a higher base rate of return.

Increased Gas Flow

A second exception to exclusive consumer susceptibility to changed market prospects centers on the effect of an increased flow rate. In addition to the extra NNEB shown for this situation,[11/] producers of the extra gas required to support a higher flow rate also might obtain some further national economic benefits. The size of the total NNEB effect, however, would depend on wellhead pricing, the real resource costs of the extra production, and the national domocile of the firm owning the gas reserves.

Displacement of Cheaper Gas

The fourth situation, under which Alaskan gas would drive out a cheaper gas source, is included here simply to round out our presentation. At this juncture, we are not aware of any gas source which might be driven out by Alaskan gas and which might cost less to the U.S. in real resource terms. Clearly, this hypothetical event would reduce the NNEB. But until a specific alternative source could be identified and its real resource costs and delivered costs evaluated, the likelihood of this phenomenon and its effects on the magnitude and incidence of the NNEB are unclear.

Rolled-In Pricing

A final point concerning the distribution of risks and opportunities related to marketability of Alaskan gas concerns "rolled-in" pricing. The NGPA included an incremental pricing provision for high cost gas. This mechanism allocates a share of transmission companies' gas acquisition costs (generally those in excess of the pre-1977 ceiling price for new interstate

11/ Refer to the base costs, 3.2 Bcf/d flow scenarios of Table V-1.

natural gas) to a segregated account for passthrough to low priority users. This passthrough continues until their retail gas prices reach the level of a substitute fuel (distillate or, subject to certain findings, residual fuel oil).[12/] And over time as, first, all low-priority customers reach the substitute fuel price level and, then, all customers' gas prices reach that level, a situation akin to the longstanding tradition of rolled-in gas pricing once again will prevail in lower-48 retail gas markets.

In Section 208, however, the NGPA treats the Alaskan gas pipeline project in a manner consistent with traditional gas pricing. From the outset of its operations in 1984, the project's transportation costs and most of its gas acquisition costs would be rolled-in.

Rolled-in pricing of Alaskan may, in part, be necessary in order to ensure the marketability of Alaskan gas in the face of traditional methods of setting gas pipeline tariffs. Earlier, Figure IV-1 illustrated that delivered costs of Alaskan gas would initially be much higher than the "levelized" annuity-equivalent of these costs as well as the price of distillate fuel. Unless government or another institution intervenes as a financial intermediary to transform the upside-down tariffs into, say, a levelized cost, another mechanism must lower the apparent delivered costs of gas Alaskan gas during its early years. Rolled-in pricing is one such mechanism; consequently, it can help ameliorate any marketability problems caused by applying traditional pipeline ratemaking to gas delivered from Alaska.

12/ NGPA, Title II.

Importantly, the success of rolled-in pricing for this purpose depends upon the availability of cheaper old gas; unfortunately, the availability of cheaper gas is not fully guaranteed. Moreover, if cheaper gas were available, the extent to which the market problems of Alaskan gas are redressed by rolled-in pricing may not be as large as might at first appear.

Table V-3 presents illustrative U.S. average gas prices, with and without Alaskan gas, for 1985, 1990, and 1995. For the highest cost year (1985), the rolled-in cost of Alaskan gas would be $1.22 per million Btu lower than the cost associated with a separate rate schedule and traditional pipeline tariffs. This 1985 rolled-in cost, however, would be only $0.39 per million Btu below the "levelized" cost of Alaskan gas. By 1990, the Alaskan supplies would approximate average costs without Alaskan supplies, and the average price would exceed the levelized cost of Alaskan gas. Finally, on an annuity-equivalent basis, the delivery of Alaskan gas might decrease overall costs of gas for the 1984 to 2008 period.

To sum up, primarily gas consumers would be exposed to the upside opportunities and downside risks associated with the market attractiveness of Alaskan gas. But compared to gas producers who face the prospect of changed gas production experience, (along with the Alaska and federal governments) consumers' final outcome will be controlled to a much greater extent by remote events (world oil prices) and other project participants' skill and luck (the constructors of the ANGTS). Also, our sensitivity analysis indicates that the range of consequences, measured up and down with respect to their estimated share of the base case NNEB, is much wider for consumers, in both dollar and

TABLE V-2

ILLUSTRATIVE EFFECTS OF ALASKAN GAS DELIVERIES ON AVERAGE CITYGATE GAS PRICES
(mid-1979 $ per mmBtu)

Year	Average Gas Price Without Alaskan Gas[a/]	Alaskan Gas Cost With Utility Method	Average Gas Price With Alaskan Gas[b/]	Change In Average Gas Price
1985	2.73	4.01	2.79	+0.6
1990	3.24	3.30	3.24	+0.00
1995	4.01	2.83	3.95	-0.06
"Levelized" Price[c/] (1984-2008)	3.76	3.18	3.73	-0.03

a/ Source: Energy Information Administration, Administrator's Annual Report, 1979, Series C.

b/ Assumes that Alaskan gas provides 5 percent of the gas supplies at the illustrative citygate.

c/ 25-year annuity-equivalent price, calculated using a 6 percent discount rate.

percentage terms, than for other participants (see Figure V-1). Unfortunately, the basis for assigning sensible probabilities to the variables which drive this range of outcomes, especially world oil prices and ANGTS construction costs, is weak.

CATASTROPHIC FAILURE TO OPERATE

Catastrophic failure alludes to the intervention of some event which interferes with operation of the ANGTS after some or all of its construction costs have been incurred. This interference could permanently prevent operation or, alternatively, could delay operation for a period of sufficient length to financially bankrupt the project sponsors in the face of large annual debt service requirements associated with the project's debt-laden capital structure.

If neither an "all events" tariff nor a loan guarantee is provided to the project, catastrophic failure to operate would create an opportunity loss to certain project participants and an actual net loss of NNEB for the nation as well as for certain other participants. Compared to the base case, consumers would face an opportunity loss whose magnitude would be bounded by the gas value, less the estimated delivered costs of gas. But to the extent that Prudhoe Bay gas later would become available for their use, this opportunity loss would be reduced. Similarly, gas producers and the Alaska and federal government would face some loss in an opportunity sense.

The tangible NNEB loss, however, would consist mainly of the real resources expended to build an inoperable pipeline. And this loss would fall on the project's investors. First, the ANGTS project's equity investors would lose an amount limited either by their legal liability or by their capacity to pay. Then, its lenders would absorb the balance of the loss. Because the magnitude of the project is large compared to the equity-base of its sponsors and because 75 percent of the financing is expected to be in the form of debt, it is likely the bulk of the loss associated with a catastrophic failure to operate ultimately would impinge on the project's lenders.

IMPLICATIONS FOR FINANCING THE ANGTS

Financing problems alleged to be faced by the ANGTS may be rooted, in the most fundamental sense, in a lack of symmetry in opportunities and risks faced by project investors. This lack, in turn, stems from the size of the project; its technical, marketing, and regulatory uncertainties; and the high degree of leverage (or high fraction of debt financing) typically expected in a public utility venture. Compare the circumstances of the pipeline investors and the other participants:

- For any of the outcomes short of the catastrophic failure to operate, utility regulation would fix the rewards of the project sponsors and lenders to a "normal" return, adjusted only by the IROR mechanism instituted to stimulate construction cost control. Compared to the target (or center) rate of return, the full range of cost outcomes can swing the overall weighted average return to equity investors by approximately 2.5 percent upward (for filed costs) or 2.5 percent downward (for high costs) from the base case rate of 17.0 percent.[13/] Better or worse gas production experience or better or worse market attractiveness may improve the investors' confidence of receiving a "normal" return, but otherwise their "upside" opportunities and, importantly, their "downside" risks are constrained as long as the project is certified

13/ To a limited extent, the investment tax credit realized by the pipeline owners for actual capital expenditures could counteract the incentives sought through the IROR. We presume that FERC's IROR order will successfully negate any perverse incentives introduced by the ITC.

and it commences operation approximately on schedule. This, of course, is the tradition of public utility regulation in the U.S. And this tradition, in part, explains the large degree of financial leverage that regulated utilities typically achieve in their capital structures.

- Under a catastrophic failure to operate, however, investors may be faced with a real possibility of ruin. Consequently, the project holds out the prospect to investors of a catastrophic downside risk of unknown likelihood, a minor share of the NNEB in the best of circumstances (i.e., a tax credit benefit), and minor upside potential associated with the IROR mechanism.

These observations, if accurate, may explain why investors particularly lenders, might seek insurance against a catastrophic event in the form of an "all events" tariff or a loan guarantee.

VI. FINDINGS AND CONCLUSIONS

This analysis has found that the proposed Alaskan gas pipeline project is likely to provide significant economic benefits to the nation. The expected net national economic benefit to the United States is estimated at $14.9 billion (mid-1979 dollars). Of course, the actual benefit will remain uncertain until the assumptions underlying the NNEB estimate are proven by time. For example, the NNEB could decrease to about $11 billion if the worst case cost overruns were to occur or if Alaskan gas were required to compete in lower-48 fuel markets with residual rather than distillate fuel oil. Alternatively, the NNEB could grow to $22.3 billion if the distillate price were to escalate at a medium, rather than a low, rate. On balance, however, the NNEB should remain positive over a wide range of future events. And this robustness of the NNEB supports a conclusion that the proposed ANGTS project would be in the nation's economic interest.

But within the larger context of net benefit to the nation as a whole, a second important measure of the desirability of the Alaskan gas pipeline project concerns the cost of the gas to customers in the lower-48. The analysis has found that the traditional regulatory approach for establishing the cost of service for gas transportation (and other institutional factors associated with gas regulation) has important implications for the desirability of Alaskan gas to consumers and, in turn, for its marketability.

ICF INCORPORATED

Because traditional ratemaking methods would create time patterns for the delivered cost of Alaskan gas which would be upside-down compared to those of competing fuels, this analysis adopted an annuity-equivalent measure of the cost to consumers. On an annuity-equivalent basis, energy consumers would have a clear preference for Alaskan gas compared to distillate fuel oil. Further, this preference would persist even if Alaskan gas were used in the lower-48 as a substitute for cheaper fuels such as residual fuel.

Early-on in the project's life, however, traditional cost of service ratemaking would confront customers with an actual gas cost well above its annuity-equivalent cost. Later on, this ratemaking approach would make the actual delivered cost well-below the annuity-equivalent. As a result, purchasers offered a separate rate schedule for Alaskan gas would find the gas unattractive compared to distillate fuel in the project's early years. But taking the case of an industrial user offered a long-term contract under a separate rate schedule, priorities assigned industrial gas users during previous curtailments make it unlikely that such a user would have faith, say, in a long term Alaskan gas purchase contract.

Thus, this analysis found that <u>if</u> Alaskan gas were sold on a separate schedule, it could encounter serious short run marketability problems. These problems would arise from the regulatory method used to price the gas rather than from its underlying economic merits. In turn, <u>if</u> marketability of Alaskan gas were uncertain, then the ANGTS project sponsors would probably not succeed in arranging financing for the project.

These short-run concerns about the marketability and financing of the ANGTS project stem from one aspect of traditional ratemaking. But consistent with another feature of traditional gas ratemaking in the U.S., the NGPA exempts gas transported through the ANGTS from the transitional incremental pricing provisions also contained in the Act. These conditions would allow essentially all of the costs associated with acquiring and transporting Alaskan natural gas to be averaged with gas transmission companies' and gas distribution utilities' other supplies of lower cost gas, if available. This analysis found that, although this rolled-in pricing policy may appear to be a major subsidy to the ANGTS project, Alaskan gas actually could lower the annuity-equivalent average price of the total U.S. natural gas supply over the next 25 years. Thus, rolled-in pricing would ameliorate the market obstacles initially facing the sale of Alaskan gas without the risk of propping up a fundamentally, economically unsound source of gas supply.

This conclusion—that the Alaskan gas project should be in the interests of both the nation and the nation's gas consumers—is valid if the ANGTS were constructed at a cost in line with current estimates. Consumers, however, could lose $2.2 billion if construction problems lead to the high cost case for the pipeline construction. Gas producers, the Alaskan and federal governments, and the pipeline owners still would benefit by more than $10 billion.

In addition to consumer benefits, analysis of the distribution of the NNEB from this project shows that the Prudhoe Bay gas producers benefit substantially in all cases. Surprisingly, however, even producers are not the major beneficiaries. Instead, the Alaskan state government and the federal government together are expected to obtain extra tax revenues well in excess of the benefits captured by consumers and producers. In turn, these extra taxes would benefit all taxpayers, in the state and across the United States, in the form of otherwise reduced taxes.

The marketability of Alaskan gas, even given the rolled-in pricing provision of the NGPA is not without its uncertainty. Currently, any risks and opportunities associated with the market prospects of Alaskan gas appear as though they will be borne mainly by consumers. Market prospects for the gas, and the risk and opportunity position of consumers, could be altered dramatically by actions which would allocate a larger share of the net national economic benefits to gas users. A FERC proposed rule, which would require producers to pay gas conditioning costs, is assumed in this analysis to be implemented. This rule would allocate to consumers what otherwise would be even larger producer, Alaskan and federal shares of the NNEB. In addition, it should better insure the marketability of Alaskan gas and, in turn, the ANGTS consortium's ability to arrange project financing.

Any remaining marketability and financing problems will arise because of other important project uncertainties; for example, the risk of an enormous cost overrun or a catastrophic failure, arising from some yet unknown source, ultimately to make the project fully operational. Private lenders, who are expected to provide 75 percent of the required funds, are appropriately conservative. As a requirement for providing the large amount of debt to a single project of the ANGTS magnitude (requiring more than $10 billion of debt if built at estimated costs), lenders claim to need ironclad guarantees of repayment of all loans and interest in "all events", including project abandonment.

The NNEB estimates indicate that FERC should encourage the project's implementation in the interest of national economic efficiency; however, the problems of devising an equitable way to promote implementation remain, especially in the area of project financing. For example, an "all events" tariff could provide repayment assurance to lenders. The tariff, however, would shift almost all of the risk associated with catastrophic cost or technical problems to consumers of Alaskan gas. Since these consumers—especially in contrast to the general taxpayers of Alaska and of the entire U.S.—are not expected to be the major beneficiaries of the project under base case conditions, it may be appropriate to consider whether they alone should assume the full burden of these risks, however slight their likelihood of occurence. Importantly, the same line of reasoning may apply equally to the project's investors.

With one exception, there appear to be few feasible and desirable alternatives to consumer assumption of opportunities and risks associated with delivered gas value or cost. The one exception is that some of the risks of cost overruns may be allocated to the project sponsors through an incentive rate of return mechanism. Although an incentive rate of return tariff is certainly preferable to the traditional full cost of service tariff, its potential efficacy is uncertain.

Thus, there are important benefits to be reaped from proceeding with the Alaskan gas pipeline system, but there are also significant regulatory problems to be resolved to develop an equitable allocation of project costs and benefits that maintains consumer and investor interest in implementation of the proposed system.

1504.2

NORTHWEST ALASKAN PIPELINE COMPANY

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RECA-79-1195

EXHIBIT G

October 3, 1979

The Honorable John T. Rhett, Jr.
Federal Inspector
Alaska Natural Gas Transportation System
New Executive Office Building, Room 3212
726 Jackson Place, NW
Washington, DC 20503

Re: Project Schedule

Dear Mr. Rhett:

Enclosed is a major milestone schedule for the Alaskan segment of the pipeline system, providing for initial operation of the system in the winter heating season of 1984-85. This supersedes any earlier schedules you may have. There is, it should be noted, no change from our earlier projected 1984-85 completion date. Since the Alaskan segment is the critical section of the system, this same date represents the estimated commencement of delivery of Alaskan gas in the lower 48 states.

Our letter of January 17, 1979, to the Executive Policy Board and its constituent agencies and our letter to the Secretary of Energy dated March 20, 1979, forwarded several "Check Lists of Required Government Action," which highlighted critical government actions needed by specified dates in order to permit completion of the project as scheduled. Most of the required government actions have occurred substantially later than the dates specified, and some actions are yet to be completed. We have, nevertheless, made every effort to adjust our planning and still provide for completion in the 1984-85 heating season. It is not yet clear whether this will be possible, since a number of critical-path actions are now almost entirely in the hands of third parties, over whom we have little or no control.

We remain convinced, however, that completion by the 1984-85 heating season is in the national interest and is feasible, provided that certain assumptions are validated.

These assumptions, confined to items of major significance, are as follows:

Mr. Rhett
10/3/79
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-- The North Slope Gas Conditioning Plant is completed by the oil producers and made operative by the fall of 1984, which requires prompt initiation of final design in order to complete the facilities with a 4½ year lead time as envisioned in the September 1978 study report by the Ralph M. Parsons Company (Vol. I, page 10-1).

-- The currently planned system design characteristics remain unchanged, i.e., basically a 1260 p.s.i. pressure, 48" diameter pipe, buried and chilled gas pipeline system.

-- The principal beneficiaries of the project, notably the North Slope oil producers, provide financial support in a timely manner, which permits the financing plan to be completed in time for a mid-1980 certificate filing with FERC.

-- Government permits, decisions, right-of-way grants, and other authorizations are provided in a timely manner, including:

- resolution in late 1979 or very early in 1980 of pipeline re-routing issues raised by the Department of Interior, accompanied by general agreement on the handling of key design and construction issues, to the extent necessary to permit subsequent issuance of a right-of-way grant. This includes substantial resolution of concerns regarding compatibility with TAPS, but not necessarily formal issuance of the right-of-way grant itself. This action--which should <u>not</u> be confused with the far more detailed and extensive subsequent design review process by the Federal Inspector--is an essential prerequisite to a credible cost estimate for the project;

- issuance of a FERC Certificate of Public Convenience and Necessity by the end of December 1980. A related, secondary-level assumption is that the FERC review process is expedited, in consonance with Section 9 of the Alaska Natural Gas Transportation Act (ANGTA), by the following: (1) implementation of appropriate technical conferences with Staff prior to and immediately after our filing, (2) utilization of the Federal Inspector's parallel review process, and (3) streamlining of procedures, resulting in a six-month period for formal FERC review; and

- concurrence in Northwest's use of "Fast Track, Stage Design" management approaches, as discussed in Condition I.1 (page 27) of the President's September 1977 <u>Decision</u>, to facilitate the cost-effective, environmentally sound, and timely construction of the project.

Mr. Rhett
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-- There is no court challenge to the certificate, so that within 60 days following its issuance, pursuant to Section 10 of ANGTA, the certificate will then be final and nonappealable. There will be, moreover, no litigation on any other matters that would impose significant delay or uncertainty.

We strongly believe that the enclosed schedule is reasonable and achievable, subject to the above assumptions and to events beyond our control. We will continue to direct our efforts toward its realization; and we earnestly solicit the cooperation of all government agencies and officials in this endeavor, particularly in the formulation and use of an innovative, expedited procedural approach toward the remaining key government decisions. In this connection, we request your adoption of this schedule for general planning purposes as soon as possible and look forward to your response giving us this assurance.

Very truly yours,

NORTHWEST ALASKAN PIPELINE COMPANY

Darrell MacKay

Darrell B. MacKay
Vice-President
Regulatory, Environmental and
Civic Affairs

DBM/EAK/rlc

Enclosure

Copy to (w/enc): Charles E. Behlke,
State Pipeline Coordinator
Russell A. Soulen, Executive
Director EPB (18)

(Editor's Note: Because of its large size, the schematic chart entitled, "Major Milestone Schedule for the Alaskan Segment of the ANGTS" has been placed in the committee files.)

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

October 23, 1979

Mr. John G. McMillian
Chairman and Chief Executive
Officer
Northwest Alaskan Pipeline Company
1801 D Street, N.W. Suite 901
Washington, D.C. 20036

Dear Mr. McMillian:

As I indicated at the beginning of the hearings on the Alaska Natural Gas Transportation System, I am providing you with some written questions. Your responses will be included in the record. The Subcommittee would appreciate answers to the following questions:

1. How much money have you spent to date on engineering services?

2. How much do you expect to spend on engineergin before filing your Certification Cost Estimate in June 1980?

3. What is your schedule for expenditures on engineering prior to filing your Certification Cost Estimate?

4. Will there be a difference between your financial cost estimate and your Certification Cost Estimate, and if so, why?

5. What is the expected tolerance of your Certification Cost Estimate?

6. Other than suspension of the profit discount, what are you willing to do to attract new partners?

7. Of the companies you have approached regarding becoming partners, what have been their reasons for refusal?

8. What do you require of new partners?

October 23, 1979
Page two

9. On page 25 of your testimony you refer to unresolved concerns you have with the proposed Stipulations. Would you please specify which stipulations concern you and why?

10. If a proposal for a design change allowed your company to transport more BTU's down the line without significantly increasing your costs, or risk of causing a major delay, would you consider reapplying to F.E.R.C. for a design change?

11. A great deal of concern has been expressed regarding the proposed location of the conditioning plant. Many Alaskans feel the conditioning plant should be located near Fairbanks in interior Alaska. What steps has the "partnership" taken with respect to conducting studies, economic as well as sociologic, pertaining to a conditioning plant in Alaska?

12. Do you feel that all of the alternatives regarding pipeline design have been fully and adequately tested and considered?

13. Does the present design of the ANGTS have the needed capacity to carry additional supplies of gas in the event there are significant discoveries in the Beaufort Sea or NPR No. 4?

14. Do you forsee any change in your management structure in the near future?

As you will recall, Congressman Clausen requested that you submit to the Subcommittee a list of state and Federal actions which have delayed the project.

It is requested that your response to these questions be sent to the Subcommittee as soon as possible in order to make the complete hearing record available to the public in a timely manner.

Sincerely,

HAROLD RUNNELS
Chairman
Oversight and Investigations
Subcommittee

jgh

NORTHWEST ALASKAN PIPELINE COMPANY

1801 K Street, N.W.
Washington, D.C. 20006
(202) 466-5850

November 9, 1979

The Honorable Harold Runnels
Chairman
Oversight and Investigations Subcommittee
U.S. House of Representatives
1535 Longworth House Office Building
Washington, D.C. 20515

Dear Mr. Chairman:

I am attaching responses to the questions which you submitted on October 23, 1979. I have previously sent to the Subcommittee a summary of the actions which we believe delayed the project.

We appreciated the opportunity to present to you and the Subcommittee the status of our project and are encouraged that we are moving toward completion of a private financing plan and commencement of construction of the system.

Very truly yours,

John G. McMillian

John G. McMillian

DBM/dm

Attachment

11/9/79

REPLY TO QUESTIONS OF

OVERSIGHT AND INVESTIGATIONS SUBCOMMITTEE

1. HOW MUCH MONEY HAVE YOU SPENT TO DATE ON ENGINEERING SERIVCES?

	($000)
- Qualified Expenditures prior to February 1, 1978, outside Engineering Services only	$ 19,914
- Partnership Expenditures from February 1, 1978 through September 30, 1979, outside and in-house Engineering Services	32,265
Total	$ 52,179

2. HOW MUCH DO YOU EXPECT TO SPEND ON ENGINEERING BEFORE FILING YOUR CERTIFICATION COST ESTIMATE IN JUNE 1980?

	($000)
- Actual Expenditures for Engineering Services through September 30, 1979	$ 52,179
- Projected Expenditures for Engineering Services from October 1979 through June 1980	68,100
Total Project Expenditures for Engineering Services prior to Certification Cost Estimate Filing	$120,279

3. WHAT IS YOUR SCHEDULE FOR EXPENDITURES ON ENGINEERING PRIOR TO FILING YOUR CERTIFICATION COST ESTIMATE?

	($000)
- Fourth Quarter 1979	$ 9,100
- First Quarter 1980	29,500
- Second Quarter 1980	29,500
Total	$ 68,100

4. WILL THERE BE A DIFFERENCE BETWEEN YOUR FINANCIAL COST ESTIMATE AND YOUR CERTIFICATION COST ESTIMATE, AND IF SO, WHY?

We do not expect a significant difference between these estimates. We do expect that the contingency allowance will decrease but that the total estimate will remain the same. The financial cost estimate will be based upon information available through December 31, 1979. The Certification Cost Estimate will be based upon information available through March 1, 1980, since March 1 data is expected to have more definition and specificity.

5. WHAT IS THE EXPECTED TOLERANCE OF YOUR CERTIFICATION COST ESTIMATE?

As stated in the answer to Question 4, we intend to base the Certification Cost Estimate on information inputs up through March 1, 1980. At this particular point in time, it would not be practical to project the expected value of the estimate's tolerance. Such tolerance will directly depend upon the degree and content of the data utilized in developing the estimate. A detailed risk analysis will be conducted and filed along with the estimate to determine the reliability of the cost estimate.

6. OTHER THAN SUSPENSION OF THE PROFIT DISCOUNT, WHAT ARE YOU WILLING TO DO TO ATTRACT NEW PARTNERS?

In addition to the discount suspension we have offered that a new partner would not have to immediately equalize his investment with existing partners. Rather we have proposed that a new partner would invest $2 for each $1 that each existing partner invests until the individual investment is equalized. We believe we have offered an attractive proposal. In fact, a new partner would avoid the risks of two years that existing partners have borne, without any penalty whatsoever.

7. OF THE COMPANIES YOU HAVE APPROACHED REGARDING BECOMING PARTNERS, WHAT HAVE BEEN THEIR REASONS FOR REFUSAL?

The reasons seem to fall into three categories as follows:

-- Too many regulatory uncertainties yet to be resolved such as approval of a tracking mechanism to assure Alaska gas costs are recovered.

- Unacceptable risk that if the project is abandoned funds now invested could not be recovered.

- Resolution of the private financing plan. Some companies believe that government involvement will be necessary.

8. WHAT DO YOU REQUIRE OF NEW PARTNERS?

A new partner must agree to the terms and conditions of the General Partnership Agreement effective January 31, 1978, as amended and approved by FERC. In addition we have proposed the terms discussed in Item #6 above for entry into the partnership. A partner entering the Partnership at this time would also be appropriately represented on the partnership committees and Board of Partners. A new partner would not be subject to any additional risks and in fact fewer risks than borne by exisitng partners.

9. ON PAGE 25 OF YOUR TESTIMONY YOU REFER TO UNRESOLVED CONCERNS YOU HAVE WITH THE PROPOSED STIPULATIONS. WOULD YOU PLEASE SPECIFY WHICH STIPULATIONS CONCERN YOU AND WHY?

We believe that we are approaching final resolution of the Stipulations, which have been under development for almost two years. As of this time, our principal concerns are limited to the following:

- There is a proposed preamble to the Stipulations that provides that "...the Company and the Federal Inspector shall balance environemntal amenities and values with economic practicality and technical capabilities...." We believe strongly that such a balancing concept must be appropriately recognized in all aspects of design and construction of the pipeline system.

- There is a provision in the current draft of the Stipulations that would require Northwest to coordinate its planning and design activities with third parties <u>before</u> dealing with the Federal Inspector. In addition to our objections of a practical and policy nature, we have serious concerns with legal ramifications of the Stipulations. (We have submitted alternative language which would provide the government with reasonable assurances that we would appropriately interface with third parties, and we are optimistic that this issue will soon be resolved.)

- One Stipulation calls for Northwest to rehabilitate natural resources that are damaged or destroyed in the course of constructing the pipeline system. We have no difficulty whatsoever in agreeing to be responsible for any damage that we cause as a result of improper actions on our part. There is, however, a concept advocated by some government officials that calls for "compensation" to be provided by the company for any environemtnal consequences, even though they may be implicit in the very granting of a pipeline right-of-way over federal lands by the DOI. Such compensation would be an addition to the lease payments which we would make as required by law. Compensation, moreover, could be for such indirect effects as may be ascribed to a cause such as an increase in the level of human activity. We believe that such compensation is not appropriate.

- Northwest is required, by stipulation, to locate the pipeline system so as to "provide buffer strips of land at least 500 feet between the pipeline system and streams, lakes, and wetlands unless otherwise approved in writing by the Federal Inspector." This is an example of a number of Stipulations imposing specific limitations on pipeline design and construction. We can live with these Stipulations only because we recognize that they contain an avenue for an alternative action, subject to approval by the Federal Inspector. It should be well recognized that there will be literally hundreds of instances where the specified distances or other limitations cannot reasonably be adhered to. In the case of the oil pipeline, for example, the distance in the corresponding Stipulation was a more liberal 300 feet, and in hundreds of cases there was no reasonable alternative to locating the pipeline at a closer distance. So long as we are subject to reasonable oversight by the Federal Inspector, operating in light of the general "balancing" provision cited above, Stipulations of this sort are acceptable as a general statement of desirability.

10. IF A PROPOSAL FOR A DESIGN CHANGE ALLOWED YOUR COMPANY TO TRANSPORT MORE BTU's DOWN THE LINE WITHOUT SIGNIFICANTLY INCREASING YOUR COSTS, OR RISK OF CAUSING A MAJOR DELAY, WOULD YOU CONSIDER REAPPLYING TO FERC FOR A DESIGN CHANGE?

We would consider a request for such a design change. However, the only means we know about to increase the heating value of the gas is to increase the design pressure. We have thoroughly examined several increased pressure levels and we do not believe it is possible to increase the pressure without incurring a substantial delay and in some cases assuming unacceptable technical risks. The Canadian government has decided that any pressure higher than the present design for the 48-inch pipeline in Canada would require thorough testing and would delay the project two years. With the same design pressure in Alaska, the Canadian decision introduces such technical uncertainty that we do not believe we could finance the system with a higher pressure.

11. A GREAT DEAL OF CONCERN HAS BEEN EXPRESSED REGARDING THE PROPOSED LOCATION OF THE CONDITIONING PLANT. MANY ALASKANS FEEL THE CONDITIONING PLANT SHOULD BE LOCATED NEAR FARIBANKS IN INTERIOR ALASKA. WHAT STEPS HAS THE "PARTNERSHIP" TAKEN WITH RESPECT TO CONDUCTING STUDIES, ECONOMIC AS WELL AS SOCIOLOGIC, PERTAINING TO A CONDITIONING PLANT IN ALASKA?

Individual partners along with certain producers and other companies have funded studies by Ralph M. Parsons Company concerning the process and economics of the conditioning plant assuming it is located at Prudhoe Bay. The Partnership has not conducted studies of the conditioning plant for a Fairbanks location. However, we have studied the effect on the pipeline system between Prudhoe Bay and Fairbanks and have concluded that it is not feasible to transport unprocessed gas. Therefore, it would be necessary to install two plants, one at Prudhoe Bay and one at Fairbanks with somewhat differing functions. This situation is no different than what we have continually advocated that now or anytime in the future a plant could be constructed at Fairbanks to extract ethane, a component of the gas stream that is the primary raw material for a petrochemical plant. This way the pipeline system can proceed immediately without affecting the ultimate feasibility of developing a petrochemical industry in Alaska.

12. DO YOU FEEL THAT ALL OF THE ALTERNATIVES REGARDING PIPELINE DESIGN HAVE BEEN FULLY AND ADEQUATELY TESTED AND CONSIDERED?

We believe that after over three years of consideration through the crucible of a competitive proceeding before the FPC and a thorough analysis by the Alaska Gas Project Office of FERC and the Commission itself in its order issued August 6, 1979, that the pipeline design has been fully and adequately examined.

13. DOES THE PRESENT DESIGN OF THE ANGTS HAVE THE NEEDED CAPACITY TO CARRY ADDITIONAL SUPPLIES OF GAS IN THE EVENT THERE ARE SIGNIFICANT DISCOVERIES IN THE BEAUFORT SEA OR NPR NO. 4?

Yes. The system will handle the initial 2.0 billion cubic feet per day that the State has authorized for the present Prudhoe Bay field and it can be expanded by the addition of compressor stations to a capacity of approximately 3.2 billion cubic feet per day. This provides expandibility of 60% above the initial volumes.

14. DO YOU FORESEE ANY CHANGE IN YOUR MANAGEMENT STRUCTURE IN THE NEAR FUTURE?

We do not foresee any change in management structure. The present structure is embodied in the General Partnership Agreement. Under this structure the operating partner, Northwest Alaskan, is responsible for design and construction of the Alaskan segment of the system under the policy guidance of the Board of Partners which has a representative of each partner. This structure has avoided the cumbersome, ineffective committee system and yet provided sufficient participation to assure that the project is managed properly and funds expended efficiently.

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NORTHWEST ALASKAN PIPELINE COMPANY

JOHN G. MCMILLIAN
CHAIRMAN OF THE BOARD

SUITE 901
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November 6, 1979

Honorable Harold Runnels
Chairman, Oversight and Investigations
Subcommittee
Committee on Interior and Insular Affairs
U.S. House of Representatives
Washington, DC 20515

Dear Congressman Runnels:

During the October 15, 1979, hearing before the Subcommittee, I agreed to supply additional material for the record dealing with governmentally-caused delays as evidenced in the Alaska Highway Gas Pipeline Project.

I have previously testified that the project has experienced a two-year delay, from projected completion in January 1983 to gas delivery during the heating season of 1984-1985. I have also indicated that unless certain actions are taken very promptly by others--the federal government, the State of Alaska, and the North Slope oil producers--further delay will be experienced. I will now elaborate on some of the specific actions which have caused delay in this project.

The Congress, by joint resolution, endorsed the President's Decision on November 8, 1977. A year later, the Congress passed the Natural Gas Policy Act (NGPA), which established a base price for the sale of Alaskan gas and provided for rolling-in the cost to the consumer in contrast to incremental pricing. The NGPA was a controversial piece of legislation for a number of reasons, and the delay is understandable. Nevertheless, the absence of a pricing decision clearly had the effect of imposing a year's delay on the project due to the uncertainty that existed. Specifically, this delay imposed slippages in key actions such as negotiation of gas sales contracts by the oil producers, and producer participation in financing the project. The alternative, prior to passage of NGPA, was an even lengthier rate-determination proceeding for Alaskan gas before the Federal Energy Regulatory Commission (FERC).

With regard to the second year of delay, there were major uncertainties associated with actions required from FERC and the Department of the Interior (DOI). These included such issues as establishment of the Incentive Rate of Return (IROR) mechanism; resolution of system design criteria (e.g., pipeline size and

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pressure); and resolution of proposed stipulations covering technical, environmental, construction, and procedural requirements for the project. These decisions were necessary to provide a basis for developing a reliable cost estimate and financing arrangements.

An example of the difficulty in obtaining these decisions is reflected in the IROR history. One FERC Commissioner described the use of IROR on the project "as an occasion to test and gain experience with regulatory proceedings for high-risk ventures in many other areas." While the purpose of the IROR mechanism may have been well intended, I do not believe that possible benefits to consumers will be sufficient to offset the significant costs of using this project as an experimental vehicle. In the first place, the Alaska Natural Gas Transportation System (ANGTS) is already a project of major complexity, involving two sovereign governments, several independent groups of sponsoring companies, mandated requirements for private financing, and substantial uncertainty in a number of other areas. With hindsight, it would have been better to develop IROR procedures on a less ambitious, smaller-scope project. The formulation of implementing procedures for the IROR mechanism was not completed by FERC until September 6, 1979. During the period up to that date, the IROR mechanism was the source of major uncertainty, which had a demonstrable, negative affect on financing arrangements and hence on progress of the project. I do not question the diligence of the FERC Commissioners nor of the FERC staff in pursuing this matter. Under the FERC procedures, which mandate an independent role for the FERC staff, and in view of the complex issues involved in provisions for such things as scope changes and inflation adjustments, the delay was perhaps inevitable.

The matters described above are the key sources of delay thus far; however, there are many other things that could be mentioned, such as the delay until July 12, 1979, in placing the Federal Inspector in office. Had he been in office 18 months earlier, it is possible that he could have expedited actions by FERC and other agencies. As a generalization with regard to these issues, I believe, it is imperative that there be a single entity such as a Federal Inspector with the responsibility and authority to adjust and harmonize government requirements as necessary to ensure that major projects can be accomplished in a timely, cost-effective manner, with reasonable protection of the environment and other values--in short, to ensure that an overall balanced approach is taken.

In summarizing the lessons one might learn from our experience with government regulatory involvement in this project, I would suggest the following with regard to any future major private-sector development projects:

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-- avoid novel, untried concepts or procedures if generally satisfactory existing, well-understood approaches can be used, even though they may not be ideal from a theoretical viewpoint.

-- for major development projects involving a number of different federal agencies, provide an effective single entity (e.g, Federal Inspector) with the authority to cut through the regulatory maze.

I will respond separately to the list of questions contained in your letter to me dated October 23, 1979. Please let me know if I can be of assistance in any other way.

Yours very truly,

John G. McMillian

SUBCOMMITTEE ON OVERSIGHT AND SPECIAL INVESTIGATIONS
OF THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
U.S. HOUSE OF REPRESENTATIVES

PREPARED TESTIMONY OF

MARK J. MILLARD

OCTOBER 15, 1979

My name is Mark J. Millard. I am Chairman and Senior Managing Director of Loeb Rhoades Shearson. Since the inception of the Alaska Highway Pipeline Project in 1976, I have acted as its financial advisor and have testified in this capacity before the Federal Power Commission and Committees of the Senate and the House of Representatives. I have also participated in discussions with officials of several departments of the Federal Government concerned with the choice of the pipeline route and the further progress of the Alaska Natural Gas Transportation System (ANGTS).

Two years have elapsed since the President's Decision. During most of this period the financing effort for ANGTS was severely handicapped by continuing delays in the resolution of basic matters of law and regulation. With the passage of the Natural Gas Policy Act and the FERC's determination of the rules governing the Incentive Rate of Return and its approval of the pipeline Tariff last month, the main legislative and regulatory obstacles to the negotiation of the financing have been finally removed. The time lost and the conflicts preceding the solution of these matters has not had a favorable effect on the reception of the project by the financial community.

An added effort will now be required to recover the ground lost. The passage of time has increased the importance of incorporating Alaskan gas into the national energy supply, but it also has brought higher interest rates and more inflation to complicate the problems which our financing plan must solve.

I believe, as do the sponsors of ANGTS, that the ANGTS can still be privately financed even in face of these difficulties, provided that the remaining conditions of the original program are fulfilled completely and expeditiously. Foremost of these conditions is a major financial contribution by the two main beneficiaries of the project: the producers and the State of Alaska. The producers have been unable to respond to our initiative to develop a joint financial program until the gas reserves were committed to buyers which, in turn, depended upon passage of the Natural Gas Policy Act of 1978 to establish the gas pricing conditions. Although thorough discussions have been conducted with the State of Alaska and specific proposals presented to the Legislature, we have not been able to reach agreement on participation by the State in the financing.

In all of these respects, a decisive change has occurred since the President's speech in Kansas City in July, in which the importance of the Alaskan gas supply was given strong emphasis. We are pleased that fruitful conversations with the producers have recently begun in earnest. In order to bring them to a successful conclusion, the producers will have to recognize that their financial input must bear a fair relationship to the massive benefits which they will obtain once the pipeline opens the way to the market for their Prudhoe Bay gas. The sponsors of the pipeline and the producers should be able to work harmoniously on a matter of the greatest importance to both parties. There can be no gas revenues to the owners of Prudhoe Bay until the pipeline is built, and there can be no private financing of the pipeline without the producers accepting an adequate share of financial responsibility.

The other important condition, without which a plan of private financing will have little chance of success, is close cooperation between regulatory authorities and the project management. In this area, Northwest Alaskan had many disappointments in the last two years, but fortunately most of them have been resolved in a manner which at least removed the obstacles to the project's realization which we considered insurmountable. In this connection, the appointment of a Federal Inspector dedicated to the success of the project was a great step forward. His office is an operating force vested with the authority of the federal government to be used to remove, reduce or to resolve hindrances and conflicts which are bound to arise in a project of the scope and importance of the ANGTS. In his organization, we will find the technical competence required for approvals of the detailed design and, later, of the various phases of construction. As a decision-making authority, the office of the Federal Inspector will be the source of the strongest assurance for the financial institutions that construction delays will be held to a minimum and that the actions of the sponsors will receive speedy review and approval.

The sponsors of the project are pleased to report that they have been able to advance decisively one part of the project during the period when most of their program had to be held in abeyance pending action by others. The segments of the system located in the lower 48 states are rapidly approaching the point of construction. We expect that ground will soon be broken for the Northern Border System linking Alberta to Iowa, and for the Western Leg linking British Columbia to the Pacific coast. This remarkable accomplishment has been made possible by a series of arrangements by Northwest Alaskan Pipeline Company joined by other ANGTS sponsors, to fill the prebuilt line with Canadian gas for a period of several years before the Alaskan gas begins to flow. It is quite likely that the transportation facilities in the lower 48 states will begin service before the start of construction of the Alaskan and Canadian segments. In my opinion, the history of the progress of Northern Border and the Western Leg is important evidence for the vigor of private enterprise in solving problems of energy supply. It augurs well for the success of the tasks before us.

The financial advisors to the project are in the process of formulating a plan of financing reflecting the changes in the scope and cost of the project which occurred since 1977, and endeavoring to meet current conditions in the capital markets which, unfortunately, have seriously deteriorated in the last two years. A satisfactory financing agreement with the producers must precede serious conversations with the financial institutions. Failure to obtain that agreement could jeopardize private financing. Conversely, a speedy accord will add strength and conviction to the proposals which will be made to the financial community. The Canadian partners in ANGTS enjoy the support of their financial institutions and powerful financial backing by the Dominion and the Provincial governments. Since the transportation systems south of the border will be financed in the context of "prebuilding," the financing plan deals exclusively with the Alaska segment. We do by no means underestimate the new problems: the uncertainty created by a long span of conflict and enforced inaction, and the complexity of capital markets in a period when interest rates establish new records week after week. The difficulties have increased, but so has the need and the urgency of opening up the largest untapped domestic energy resource. We are certain that the financial institutions are mindful of the national priority of this financing and will act accordingly when working with the sponsors on ways and means of getting the job done.

SUBCOMMITTEE ON OVERSIGHT AND SPECIAL INVESTIGATIONS
OF THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
U.S. HOUSE OF REPRESENTATIVES

PREPARED STATEMENT OF

FRANK P. MOOLIN, JR.

OCTOBER 15, 1979

Mr. Chairman, my name is Frank P. Moolin, Jr., currently president of Frank Moolin and Associates of Fairbanks, Alaska and Alaska International Constructors, Inc. of Fairbanks, Alaska. Both of these companies are wholly owned subsidiary companies of Alaska International Industries, which is the largest home based company in the state of Alaska. Prior to November of 1977, I was the Senior Project Manager for the pipeline portion of the Trans Alaska Pipeline project responsible for the $4.3 billion pipeline portion of the project. I became associated with Alyeska Pipeline Service Company, the agent of the Trans Alaska Pipeline System owners, in September 1973 as an ARCO employee assignee. Initially, I worked in San Francisco and Houston during the planning phases of the project, and in May 1974, I moved to Fairbanks and opened the Fairbanks pipeline construction office. From May 1974 to October 1974, I was Senior Project Manager in charge of that portion of the pipeline south of the Yukon River. In October 1974, I was appointed Senior Project Manager, the person in charge of constructing the pipeline from Prudhoe Bay to Valdez, Alaska, a distance of approximately 798 miles. I had the day-to-day responsibility for all construction aspects of the pipeline portion of TAPS and had approximately 800 supervisory and management personnel reporting to me, with responsibility for over 400 active contracts, 14,000 pieces of construction equipment and over 15,000 workers. Although I was not responsible for engineering of the project, I had substantial input into many of the more basic engineering decisions that were made.

In November 1977, I left the employ of ARCO and organized the companies indicated above. These companies offer project and construction management services to the energy industry.

In late 1977 and early 1978, my company performed front end planning work for the Alaska Highway Pipeline Project for Northwest Alaskan Pipeline Company and developed the basic planning guide that was used prior to bringing on board the project management contractor.

I am going to testify to the following basic points:

1. There are many similarities, and also many differences, between the proposed gas line, and the Alyeska Crude Line. However, with few exceptions, both the similarities and the differences are such that the uncertainties, risks and potential for cost increases that the gas line will be exposed to are considerably less than what was the case for the Alyeska Crude Line.
2. Today, much more is understood about the process of building a large pipeline in Alaska. This is true not only from the technical point of view, but also with regards to management, government involvement, infrastructure and the supply/demand of critical manapower and equipment resources.

3. Transporting chilled gas across permafrost is inherently easier than transporting oil and, with several exceptions, the technology that is required is state-of-the-art. Technological breakthroughs, that could be practically employed on a giant scale, where required for the crude line.
4. The crude line was a pioneer project, built across a tremendous expanse of land that had nothing in the way of support infrastructure. To a large extent, the gas line will take advantage of existing camps, roads, work pads, and the like.
5. A key to the cost effective completion of the gas line is the commitment of governmental agencies to maintaining a rigorous timetable for making decisions.

Government must recognize that many decisions will be made with less than perfect information, yet they will be informed decisions based upon the best of engineering advice and judgment. There are always excuses available for not taking certain calculated risks, even more so in a project of this nature.

I am not advocating irresponsible shooting from-the-hip...but, sufficient technology exists now to make considered judgments using solid engineering approaches.

Equivocation, the call for more studies, and the development of seemingly never ending lists of conditions to decisions that have been made could create a situation reminiscent to what happened in 1973 and 1974 with the crude line.

A tremendous data base was developed during the design and construction of the crude line...NWPL has acquired this data base from Alyeska and is now putting it to use. The entire infrastructure in the State of Alaska is now orders of magnitute more supportive than what existed 8 years ago. A much improved technical, managerial and construction capability exists today. Inherently, because the gas line will be carrying cold gas instead of hot oil, the technological hurdles that the gas line must clear will be lower. It should not be necessary to "reinvent the wheel" and relearn many of the lessons we already know. I cannot emphasize too much to this subcommittee the importance, now, of clear, concise, and unequivocal decisions, using what we have learned over the past decade about building pipelines in Alaska that are much more complex than the gas line should be.

There recently has been an improvement in obtaining decisions from government. With the assignment of the Federal Inspector, we have confidence that government recognizes the role it plays in affecting the cost and schedule of the project and that the timetable for decision making is, in fact, attainable.

6. Positive approaches that Northwest Alaskan Pipeline has taken to control the project.

If I had to sum up my entire testimony in a single statement, it would be that the gas line is a different project, being built at a different time, under different physical, social and organizational conditions, and has a huge advantage because of the tremendous body of knowledge that was developed during the design and construction of the crude line. After all, the crude line is a spectacular technological success (regardless of the several recent wrinkles in the line) and has successfully carried over 700 million barrels of hot crude oil since it started up more than two years ago. We must build upon that knowledge and not go back to "square one". Instead of reciting a litany of problems that were encountered in the construction of the Trans Alaska Pipeline, I believe a more valuable approach is to compare the proposed gas line project to situations that existed when the crude line was built and point out the more basic similarities and differences. First, however, I will enumerate some of the principal factors that effected the Trans Alaska Pipeline System:

1. The crude line was the largest, private construction project in history and was constructed along an 800-mile front. Because

of the numerous geotechnical, climatic and logistical problems involved, it was more akin to a civil construction project, than to traditional pipeline construction. But, unlike most other giant civil engineering projects, the unknowable soil conditions were ever present throughout the entire duration of the project. Final foundation conditions were not known until the last of the 78,000 piles were in place and the last foot of the 375 miles of ditch were dug. These unknowable subsurface conditions existed even though the foremost authority alive in the field of soil mechanics, Dr. Ralph B. Peck, stated: "... few projects to my knowledge, except possibly nuclear power plants with their obvious and immediate hazard to human life in the event of an accident, have been so thoroughly investigated and conservatively designed with respect to their geotechnical features". One must try to understand the tremendous reverberations that went through the project whenever, because of unknown (and unknowable) soil conditions, the line had to zig instead of zag, or go deeper or go above ground instead of below.

The essence of cost-effective construction is developing a cadence and then preventing disruption to the construction process. Yet, because of unknown and unknowable soil conditions, about 39 miles of pipe had to be changed from below ground to above ground during construction. Actually from the time that construction started in late 1974 until completion, the length of the pipeline above ground increased from about 375 miles to about 423 miles. Also during construction, there were 87 remodes (where the pipe had been originally planned to be above ground or below ground and was then switched). Each above ground support structure is different.* Thus, when a mode change occurred, it was necessary not only to get above ground supports to the site, it was necessary to get the proper kinds of support structures there. Each remode had a dramatic impact on construction cadence, equipment needs, work crew scheduling and camp space requirements and numerous indirect and support activities.

2. The crude line was constructed at the end of a long logistical tail. Equipment, manpower and supplies were far away from even the closest point of pipeline construction. Every changed construction requirement resulted in a ripple effect in the logistical path that reverberated all the way back to Seattle, San Francisco, the industrial centers of the East Coast, Japan and Europe. Also, because of the construction equipment requirements (over 14,000 pieces) and the unusually high wear and tear on equipment that often had to operate two shifts per

*The above ground pipeline is designed to move longitudinally and transversely due to temperature changes and seismic events. The amount of movement varies with the location; therefore the type and size of support structure also changes with location. With a below ground pipe this situation does not exist because the ground restrains the pipe.

day, seven days per week at subzero temperatures, the demand for spare parts was very high, unpredictable and often exceeded the supply capability of the industry in the "Lower-48".

3. Construction was complicated by the lack of infrastructure. There is a lack of roads, bridges, airfields, communication facilities, housing facilities, warehousing and other elements of infrastructure that are taken for granted in the construction of many large projects in the "Lower-48". Changes in construction requirements meant that infrastructure had to be added to support the change. The long lead time required to add to the infrastructure added considerable uncertainty in construction planning.

4. Mandates to remedy social concerns perceived by federal and state legislatures, primarily the Alaska "Hire/Fire" law and the federal requirements for native training and counseling, introduced uncertainty relating to labor productivity and availability.

5. There was unprecedented governmental involvement in design and construction techniques that invariably led to costly changes and delays, interjected a considerable amount of uncertainty as to the ability to plan and, when approvals were

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not forthcoming, broke the cadence of construction and caused expensive and time-consuming movement of crews and equipment. Restricted access to construction areas because of Peregrine Falcon nesting, Dahl sheep lambing, snow pad (instead of gravel) requirements and "windows" for construction in hundreds of "fish-sensitive" streams also required an intense level of effort in planning construction activities and the moving of construction crews and equipment.

Interestingly, the agreement between Alyeska and the federal government states "...parties shall balance environmental amenities and values with economic practicalities and technical capabilities, so as to be consistent with applicable national policies." In over four years of direct involvement on the project, I probably had over 200 meetings with governmental representatives at all levels. I do not recall a single instance where a government representative ever discussed or acknowledged in any way the cost effect of a particular requirement or course of action.

Of course, the impact of risky situations was far greater than the nominal sum of the individual risks involved. Although each was of serious potential disruption in itself, the greatest impact occurred when two or three separate disruptive events occurred at the same time. A shortage of supply, combined with bad weather, combined with governmental requirements that caused a break in construction cadence, etc.,

etc., created situations that could impact the entire project and had to be dealt with separately and aggressively.

On August 3, 1975, I described the critical path of the project (as I knew it at that time) to be "...the ability to effect timely enough responses to the many negative geotechnical surprises that plague us. Contractors have already demonstrated that they are able to lay pipe at a faster rate, on a sustained basis. What knocks the average down is the shifting of operations from location to location and the stop and start nature of the project as it becomes necessary to shift gears because of a change in mode/design/specifications to accomodate specific geotechnical situations."

To give some structure to this testimony, I am going to speak to 11 different areas and identify specific problems encountered in construction of the crude line, how the situation is similar, or different, for the gas line, and what actions can be taken by Northwest Alaskan Pipeline Company, regulatory agencies, and others, to aggressively resolve problems that are unique to the gas line. These areas are:

1. Infrastructure
2. Physical scope of work
3. Planning abilities
4. Engineering know-how
5. Contractor availability/know-how

6. Worker availability/qualifications
7. Engineered materials
8. Construction equipment
9. Regulatory agencies
10. Positive approaches being taken by Northwest
11. Basic decisions to be made/regulatory delays

1. Infrastructure.

I can summarize several pages of testimony by saying that the crude line was a pioneer project...the gas line is not going to be a pioneer project because much of the infrastructure required to construct the gas line is already in place. While technical problems associated with the crude line did create cost increases and delay, the most significant cause that also had serious ripple effects throughout the entire project was the total lack of "infrastructure" so necessary (and so frequently taken for granted) for the efficient prosecution of a super project. Infrastructure was almost totally lacking in arctic and subarctic Alaska. For instance, there were no roads north of Livengood (Livengood is about 70 miles north of Fairbanks). A 70 mile road had to be built from Livengood to the Yukon River and a 360 mile road had to be built from the Yukon River to the North Slope. Also, until October 1975, (at which time 40% of the pipeline had been completed) there was no bridge across the Yukon River. Alyeska had to employ unique and very expensive transportation modes such as flying thousands of tons of supplies in Hercules C-130 aircraft, using "cat trains" to move supplies north after winter had set in (when potential damage to the permafrost was significantly reduced), and by shipping and barging into the Beaufort Sea during the 6 week window that normally (but not always) exists each year after ice has moved away from the north shore of Alaska. No airfields existed in most areas and 14 had to be constructed. Today there is vehicular access all the way north of Fairbanks to Prudhoe Bay, including crossing the Yukon River. Therefore, the gas line project will not, by any stretch of the imagination, be subjected to the type of uncertainty and disruption that existed during the early phases of building the crude line, when the entire construction operation was dependent upon a very fragile logistical thread.

Many other elements of infrastructure, the existence of which is taken for granted in the Lower 48, had to be built from scratch for the crude line. For example, communication facilities along the pipeline route, warehousing facilities, material storage yards, transportation facilities, and camps (and their life support systems) for workers were all necessary. Virtually all the construction infrastructure that was created in Alaska, by Alyeska, for the purpose of constructing the crude line is infrastructure that already exists in the Lower 48. Moreover, all the construction infrastructure had to be built in arctic weather and pursuant to stringent environmental stipulations imposed by State and Federal regulatory agencies. Unlike the Lower 48, a construction manager could not simply place a phone call to a supplier for an essential part or piece of equipment. Because equipment broke down much more frequently in the Arctic than in the Lower 48, the procurement and transportation of spare parts caused tremendous problems in achieving productivity. During the peak of crude line construction, the supply of spare parts for construction equipment was the critical path; at that time, the demand for spare parts exceeded the supply capabilities of the Lower-48 industries.

The transportation system that had to be constructed not only included 14 airfields, over 400 miles of highway and 20 bridges, but also complete fueling systems capable of supplying and dispensing about 1,000,000 gallons of fuel per day. Dozens of warehouses and material depots also had to be constructed along the 800 mile route.

Two marshalling yards had to be set up in the Lower 48, and an extensive barge operation was required to transport more than 1,000,000 tons of materials to Alaska.

A completely new construction communication system, linking Fairbanks with all of the camps north to Prudhoe and south to Valdez had to be constructed. A mobile communication system connecting the pipeline spreads to this system was also required. The extensive data gathering needed over the construction period required installing small computers in the field and a large IBM 370/135 in Anchorage. Elaborate PBX telephone exchanges were required at all major field locations, and in Fairbanks and Anchorage. The hub of the construction effort was in Fairbanks. The existing Fairbanks telephone system was inadequate to support the effort, and a microwave system had to be installed in Fairbanks as the only rapid way to supplement the existing telephone system.

Over 19 pipeline camps had to be built to accomodate a peak labor force of about 15,000 people. These camps are small cities that must cater to the needs of workmen and provide power, heat and lighting, communications, sewage and water systems, dormitories, kitchens, laundries, recreation and commissary facilities. These facilities had to meet all the requirements of new OSHA standards as well as very strict EPA requirements.

The point that I want to make in the way of comparison of the crude line situation with what's going to exist during gas line construction is the fact that much of the infrastructure built by Alyeska exists. I indicated above that the haul road and the bridge over the Yukon River exist. Also, and just as importantly, the communication networks in the state of Alaska are much more capable of supporting a large project than they were in 1973 and 1974. Numerous vendors have set up warehousing support facilities and now maintain inventories of everything from nuts and bolts to crawler tractors. Probably most importantly, the camps along the Alyeska crude line, with several exceptions, also exist and are available to support gas line construction. Even camps south of Delta Junction (Isabel Pass, Tonsina and Sheep Creek) can be moved to new locations to support gas line construction along the Alaska Highway.

I do not want anyone to misunderstand me and think that the infrastructure that now exists in Alaska is akin to what is normally found in the Lower 48...it isn't, but there have been significant improvements, and the fact is that many of the concurrency problems that existed during the construction of the crude line, when it was necessary to employ a "pulling yourself up by the bootstraps" operation, will, to a large extent, not exist on the gas line. Nor should you believe that the cost of reopening and occupying the mothballed Alyeska camps is going to be small. These camps have been mothballed for as long as three or four years, the elements will have taken their toll (exacerbated by the almost 2 years delay that the gas line has encountered to date) and a considerable effort will be required to make them habitable again. However, the pipeline camps have been acquired by Northwest and the fact that they exist will greatly reduce infrastructure problems.

I frequently hear comments from regulatory agencies that they may not permit using a camp such as Prospect Creek, which is sitting in a flood plain and which had a small, in-camp oil spill (fuel oil, not crude oil). Similar statements are also made about Galbraith, which also had an in-camp oil spill. These oil spills happened because of leakage in a very small diameter (1") piping, buried in the gravel pad that the camp is built on, used to feed fuel oil to furnaces. While I believe these problems have been remedied, it may be necessary for Northwest Alaskan Pipeline Company to adopt further remedial actions to prevent this situation from developing again. However, to require that these camps be totally relocated, as has been advocated by some government officials, would, in my opinion, result in an unnecessary environmental impact, and unconscionable cost increases. There is nothing wrong with using these camps to build the gas line, and I think everything should be done, by both Northwest and governmental agencies, to concentrate disturbances at existing camp locations and not create additional problems by moving camps to entirely different locations.

I can sum up the infrastructure situation by making the following statements:

1. The haul road exists
2. The bridge over the Yukon River exists
3. Warehousing/communications/vendor support/office facilities are greatly improved
4. Northwest must build only compressor station camps and three pipeline camps (these camps can be relocated from existing Alyeska sites south of Delta Junction)

5. The gas line project is not a pioneer project in the sense that the crude line project was

6. I have concerns about the impact of concurrent Alaskan/Lower 48/Canadian demands on vendor/spare parts/transportation support and also about changes and new demands that could be made by State and Federal regulatory agencies relating to the use of existing Alyeska camps. The first concern can be resolved by adequate planning...the second by a hard nosed look at the benefits (or, rather the lack thereof) that would be derived from making changes to existing camps.

2. Physical Scope of Work

When I describe the TAPS project, I would like to say that the crude line is a civil engineering project that happens to have a pipeline associated with it. I can best illustrate this by the following table:

ITEM	CRUDE LINE	GAS LINE
Haul Road	412 miles	0
Access roads	137 miles	few miles
Work pad	25 MM cubic yards	10 MM cubic yards
Total Earthwork	93 MM cubic yards	18 MM cubic yards of borrow

(MM = Million)

The above illustrates the tremendous amount of earthwork and traditional civil type construction activity that was required for the crude line that will not be required for the gas line. It is also interesting to note that the crude line was, in its own right, a gigantic earthwork project. The 93 MM cubic yards of earthwork required for the crude line compares with 125 MM cubic yards for Fort Peck Dam and 230 MM cubic yards of excavation for the Panama Canal. If you look at the requirements for the gas line, you will see that earthwork requirements are going to be substantially less than for the crude line.

I want to emphasize again, a point that I also make elsewhere in this testimony. It is in the overall best interests of Northwest, from a cost, schedule and control of uncertainty point of view, that the amount of earthwork required for the Northwest Gas Line be kept to a minimum. It is difficult to find suitable gravel in Alaska. Many of the best and least costly mining sites were depleted to build the Alyeska crude line. There were considerable costs involved in mining, hauling, placing and rehabilitating material sites to meet stipulation requirements. Therefore, it is in the best interests of the gas line that maximum use be made of the work pad that was constructed for the crude line. I have noted elsewhere that comments have been made by members of various regulatory agencies that the gas line alignment should deviate for substantial distances from the crude line. Directionally, this will significantly increase gravel requirements and only if there are substantial cost or schedule reduction benefits should any such deviation be considered.

Alyeska made a substantial investment in civil facilities, including access roads, work pad and haul road. Their civil facilities are now really a part of the infrastructure, and this investment must be protected...the tendency to want to build additional work pads, for reasons that are not all that convincing, has to be "nipped-in-the-bud." A cold gas pipeline is inherently much simpler than a hot oil pipeline, and one must be careful to avoid tainting (and I use that term in the best possible sense) the gas line with many of the overly conservative and costly approaches that were mandated for crude line construction. I recognize that the Alyeska work pad must be rehabilitated at certain locations, thickened, extended in width and additional insulated work pad installed so that the below ground gas line can be placed, roughly about 80 feet from the center line of the crude line. In absolute terms, this is not a small amount of earthwork; however, it is orders of magnitude less than the effort that would be required if an entirely new work pad was constructed or if major realignments were required of the gas line.

One should realize that, on a foot by foot basis, more is known about the subsurface (the geotechnical) conditions along the crude line than any other 800 miles in existence. Remember that each and every foot of crude line buried pipe was logged by a soils engineer or geologist.

Where the crude line is elevated, every foot of every vertical support member (there are two vertical support members every 60 feet along the 423 miles of the above ground pipeline) was also logged by a soils engineer or geologist. Therefore, considerable data exists that are impossible to duplicate with a preconstruction boring program. This geotechnical information is now available to Northwest and is being used in the planning efforts. To the extent that the gas line deviates from the crude line it is obvious that additional delays and cost will be incurred to obtain subsurface information. Also, Northwest will experience many of the same negative geotechnical surprises that plagued Alyeska, since it is impossible to determine with anything near certainty the actual subsurface situation until ditch excavation takes place.

The next element of physical scope of work that will be discussed will be the above ground pipeline system. As the table below indicates, the quantity of materials, logistical support, transportation and construction required for the crude line was immense compared to what is going to be required for the gas line.

ITEM	CRUDE LINE	GAS LINE
Above ground pipe	423 miles	minimal
Insulated above ground pipe	423 miles	small
Piles	78,000	few
Heat pipes	122,000	few
Mode changes	541	few

The 78,000 piles required to support the crude line weighed in excess of 100,000 tons and, if laid end to end, would be equivalent to an 18" pipeline 370 miles long. The heat pipes were elegant heat exchange devices made under clean room conditions in Texas, and dozens of different lengths were required to match unknown and variable lengths of piles (the final length of any pile was known only after the hole was drilled for that particular pile, logged and examined by a soils engineer). The insulation for the above ground pipe required over 30,000 tons of material. More importantly, the structural steel supporting the 423 miles of above ground pipe weighed in excess of 400,000 tons. I cannot emphasize too greatly the overwhelming transportation and support effort required to transport, to the right place at the right time, the appropriate steel piles, support beams, shoes to support the pipe off the beams, heat pipes and above ground pipeline insulation. No other project in existence has required the extremely close and yet massive logistical support that the crude line required. Remember, the crude line was elevated at those locations where it could not be put below ground. This was at locations where the subsoil consisted of fine grained, thaw unstable, ice rich permafrost. This means that the pipe had to be elevated to prevent the thaw unstable soils from subsiding due to the heat of the oil carried in the pipe. Because of the unknown and extremely variable geotechnical situations in Alaska, there were numerous and daily mode changes (a mode change is where the pipe ended up above ground when it was originally intended to be placed below ground, or vice versa), and one cannot adequately describe in words the impact that changes from below ground to above ground had on the cadence of pipeline construction and the cost and schedule of the effort. This was a daily occurrence and resulted in tremendously unproductive efforts on the part of pipeline crews and all of the support organizations required to keep pipeline crews productive. When above ground pipeline construction started in late 1975, it was only expected that about 375 miles of above ground pipeline would be required. At completion, the above ground pipeline amounted to 423 miles or an increase of 13 percent. This demonstrates the variability and the unknowable soil conditions that can and do exist in Alaska.

Because the gas line is planned to be a conventional pipeline, and because the gas will be chilled and should not result in any thermal degradation of the permafrost, there will be few, if any, places where the gas line needs to be located above ground. The only exceptions may be river crossings and some stream crossings. Therefore, the negative surprises, upsetting situations, cadence breaks, uncertainty and disruption that existed during the construction of the crude line should be considerably less for gas line construction. Also the tremendous logistical support required for the crude line just to transport to the field the staggering tonnage of materials required to carry the above ground crude line will not be required for the gas line.

Finally, one other comment relating to the gas line and to above ground pipe should be made at this point. There continues to be a number of written statements from members of regulatory agencies indicating that it may be desirable to place substantial lengths of the gas line above ground. There is no reason to place the gas line above ground, and the design solutions that were used for the crude line, primarily because of hot oil being moved in thaw unstable materials, are not applicable to the gas line.

Continuing with a tabular display of the physical scope of the two lines and moving to the below ground portions, we see the following:

PHYSICAL SCOPE	CRUDE	GAS
Below ground pipe	375 miles	741 miles
Below ground in flood plains	30 miles	considerably less
River crossings	Approx. 220	Approx. 230
Insulated below ground pipe	6 miles	Not determined
External refrigerated burial (brine lines)	6 miles	0

The crude line was buried when it was determined there was thaw-stable permafrost (normally sands, gravels, subsoils with relatively small amounts of clays and silts). This will not be the same situation for the gas line, and it is expected that the gas line, with few exceptions, will be buried for its entire 741 miles in Alaska. This means that a considerable amount of ditching will be done at locations where the crude line was placed above ground. Because of potential thermal degradation of the sides and bottoms of the ditch, Northwest will have to exercise considerable control over the length of the ditch that is opened up ahead of pipeline installation. Also, special construction techniques may be necessary at particularly difficult locations.

Using conventional ditching methods, including drilling and shooting much of the ditch, I do not expect unusual problems in ditching for the gas line. However, this statement is predicated upon being able to work from a normal gravel work pad to perform and support the ditching and subsequent pipelaying operations. In permafrost, most of the ditching will be done when the ground (below the active layer) is frozen, regardless of whether it is winter or summer. However, statements have been made by members of regulatory agencies promoting the use of snow pads (instead of permanent gravel pads), proposing that ditching operations should be performed in the winter time, working off of these snow pads. The concept of trying to perform substantial ditching and then subsequent pipe stringing and laying from a snow pad (during the coldest seasons of the year) is totally impractical and should be abandoned because of two specific reasons; firstly because much of the work would have to be done in the coldest and least productive weather, and secondly, because of the total loss of flexibility.

Alyeska had considerable experience working and ditching in the cold seasons (when one would have to work off of a snow pad). I cannot

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adequately describe to you the inefficiencies, equipment breakdowns, unproductive labor and quality control problems when trying to work when temperatures are below -10° F. Yet, attempting to ditch and install pipe, working only off of a snow pad for substantial lengths of the line, will result in exactly the same situation. Because of the compounding uncertainties, I doubt if any responsible contractor would be willing to fix any element of his proposal for this work.

Working off a gravel work pad gives a degree of flexibility that is impossible to obtain with a snow pad. This statement is based upon first hand and agonizing experience in constructing 6 miles of above ground crude line from a snow pad. Regardless of the best and most knowledgeable predictions of weather and working conditions in Alaska, so-called "abnormal" weather conditions caused deterioration of the snow pad in mid-April and required an <u>additional construction season to complete the work</u>. If this happened on substantial lengths of the gas line, then I can say with considerable certainty, that schedule slippages will occur that will equate into horrendous cost overruns.

The planning process for a project as huge as the gas line must continually reduce alternatives, i.e., it must be a decision making process. I can think of nothing more fundamental to the planning effort than gravel pad vs. snow pad. I can also think of nothing riskier and fraught with uncertainty than trying to build substantial lengths of line (in excess of a few thousand feet) from a snow pad...snow pad must be used only as a <u>last resort</u>.

Until regulatory agencies agree with this position, there will be a spectra of uncertainty overshadowing the project.

The below ground gas line will include some unconventional buried construction primarily where it must be installed in subsoil susceptible to frost heave. Here it will be necessary to insulate the pipe, or, insulate portions of the ditch to mitigate the amount of frost heave that could occur. Alyeska did install relatively short stretches of both types of pipeline, but the quantity was too small to justify spending a considerable amount of time and effort to determine the most productive design and construction techniques. There is some uncertainty and potential for disruption if significant lengths of gas line have to be installed using insulated pipe or ditch, and additional study must be done (possibly even the installation of field test sections) to determine the most cost effective design and construction techniques.

I should point out that the Trans Alaska crude line crossed three mountain ranges: the Brooks, the Alaska and the Chugach. On the other hand, the gas line is going to cross only the Brooks Range. This means that many of the upsetting and disruptive conditions that existed on the crude line at extremely difficult construction locations in the Alaska

Range and at Thompson Pass and Keystone Canyon in the Chugach Range will not exist on the gas line. However, this is not to imply that the work in the Brooks Range will be easy for the gas line. The gas line must cross Atigun Pass in the Brooks Range. Here the extremely narrow mountain pass is complicated by the presence of the crude line. This will require a considerable amount of study by Northwest; and, although I am satisfied that the problem is solvable using good engineering and construction techniques, there is uncertainty and risk associated with working in Atigun Pass because of the extremely difficult working conditions (snow and rock avalanches, spring floods, permafrost) and the presence of the crude line.

For the sake of completeness, it should be pointed out that the crude line also had a 147 mile long 8" gas line (fuel gas line), a 1,000 acre terminal at Valdez and 12 pump stations.

I will conclude my testimony about the physical scope of work by saying that the gas line is much more conventional construction, requires much less work pad, much less civil work; and, because significant lengths of the gas line are expected to be conventional burial, the engineered materials and logistical supports will be many times less than what was required for the crude line. However, several basic decisions that are yet to be made could affect the gas line scope, such as the extent of the special below ground insulated pipe, the center-line to center-line distance between the crude line and the gas line and the criteria for the above ground gas line.

3. Planning abilities

For the crude line there was little in the way of a data base for:

1. Construction equipment productivity
2. Climatic effects on labor productivity
3. Availability of skilled labor
4. Soils/geotechnical conditions
5. Environmental constraints
6. Impact of involvement of regulatory agencies

For the gas line, this will not be the case. A substantial, even overwhelming, data base was generated by Alyeska about work along the crude line. This data base includes the most comprehensive soil information that exists about any 800 mile long stretch of ground in the world, including a log prepared by a graduate soils engineer or geologist for every foot of ditch dug for the buried crude line. Also, a similar log of soil conditions for each of the 78,000 vertical support members exists. This data will be of immense value to the gas line planners.

To the extent that the gas line deviates from the crude line, Alyeska information will be much less valuable. Subsurface conditions are extremely variable in Alaska, and even a 100 foot deviation from where soils information was obtained makes the information considerably less valuable and increases the risk that different soil conditions will be found. Therefore, considerable thought has to be given to the risks that will be incurred any time the gas line location is changed relative to the crude line.

Also, one of the significant differences in planning abilities that exists today as compared to when the crude line was built are the number of individuals that developed first hand experience in working, not only in Alaska, but also with super projects under Alaskan type conditions. This means that experienced planners are available not only to Northwest, but to management contractors and to potential execution contractors. Planning is not only going to be more realistic, but can be based upon actual situations that were encountered in the past. Fewer surprises should develop and many of the uncertainties and inaccurate predictions generated during crude line construction should be reduced.

Finally, the fact that a substantial infrastructure system exists including such things as the haul road, the bridge over the Yukon River, communications systems, and vendor support means that the complexity of the planning process is considerably reduced. There will be fewer things to go wrong, and therefore the planning process itself should be more accurate and meaningful.

However, a word of caution. One of the things that can be learned from the crude line planning and construction is the fact that the number of options and alternatives that are available cannot continue to be expanded or carried indefinitely. There must be a definitive plan of identifying options, eliminating options that are not cost effective, and reducing the number of parallel paths on which the project can proceed to a manageable few. This does not mean that retreat positions are not identified...what it means is that basic decisions have to be made according to a rigid time table, and there has to be a freezing of decisions at appropriate milestones throughout the planning, design and procurement phases of the project. There is a tendency, what I identify as the "Alyeska syndrome", to continue to study, explore and to find different questions that can be asked without making engineering judgments regarding the significance of these questions. This is devastating to the progress, morale and effectiveness of the project team. This can only be brought under control by firm direction from management, both from within Northwest and the regulatory agencies.

4. <u>Engineering Know How</u>

A whole host of technological refinements, adventures and breakthroughs were required for the Alyeska project; among the more significant include:

1. Complex above ground support system
2. Heat pipes (developed from space age technology used in satellites)

3. Seismic interaction of the above ground pipe and its support system
4. Seismic interaction of the restrained below ground pipeline and the surrounding soil
5. Thermal interaction of the pipe and permafrost
6. Insulated work pad
7. Effective erosion control
8. Revegetation techniques including new seed development
9. Hydrostatic testing large diameter pipes under cold weather conditions

The technological complexity of the crude line necessitated elaborate and well documented field change procedures because the design was sensitive to different soil conditions. Whenever soil conditions changed and went outside the parameters of field design change manuals (and therefore outside of the authority of the field engineer to change), redesigns, remodes and basic changes were required to the crude line project. This had tremendous productivity impacts, and, of course, affected the entire organization including the length of pipe that was required, the number of piles to be placed, the number of above ground supports, etc. I can sum up the situation by saying that the variability of the subsoils created a nightmare of design changes that rippled all the way through the organization with obvious cost and schedule impacts.

Considerable efforts were spent identifying hydrological features of rivers and streams that paralleled and crossed the crude line and in developing appropriate river crossing designs for the unique hydrological situations prevalent in northern latitude rivers and streams, including icing, aufeius and techniques to cross rivers and streams in such a way that the fish habitat is least affected.

Similar efforts were expended on the identification of fault zones, the development of seismic design criteria and techniques for construction across seismically sensitive areas.

Alyeska had to go through many excursions and technological adventures, often going down blind alleys, to develop not only the technology but a practical basis to employ the technology. In many respects, Northwest Alaskan is going to be the beneficiary of this information. In particular, Northwest is going to be able to benefit in the following ways:

1. Much of the technology developed by Alyeska, primarily insulated work pad, erosion control, restoration, seismic interaction of below ground pipe and the soil surrounding soil, thermal interactions, etc. is directly applicable to the gas line.
2. To the extent that the gas line is able to closely parallel the crude line, extensive soil information is available and

can greatly assist not only the detailed mile by mile design of the gas line, but also planning for construction purposes, and minimize many of the negative geotechnical surprises and delays that Alyeska suffered.

Of course, there are basic differences between requirements for the crude line and for the gas line where new technological data and advances have to be developed, but they are significantly less than what was required for the crude line.

Firstly, significant lengths of gas line are going to be buried where Alyeska employed the above ground mode. At these locations there are thaw sensitive soils, and new techniques may have to be used to keep the length of open ditch as short as possible and to prevent side walls from sloughing. Secondly, the thermal interaction between the buried, eventually cold gas line and the crude line is going to have to be understood in considerable detail to ensure there is no potential for compromising crude line integrity. This is true for both the buried and above ground crude line. Thirdly, the potential for frost heave over certain sections of the gas line is not totally understood nor have mitigating techniques to minimize frost heave been fully and cost effectively designed. Substantial testing efforts are already underway by Northwest at both Alberta and Fairbanks, and it is expected that enough information will be developed early in the definitive design stage to enable meaningful planning to proceed.

Therefore, the technological content of the gas line is much more state-of-the-art, and there is no reason for many of the early engineering problems that Alyeska experienced. However, keeping control of this is also going to require hands-on and in-depth involvement of regulatory agencies to separate the significant engineering problems from the myriad of trivial problems.

Unexpected soil conditions caused many "skips" or "holds" in crude line construction that required field changes, many that could only be resolved at the Anchorage level. Also, quality control requirements evolved during construction as ever more stringent demands were placed on the project. Eventually, the quality control inspection requirements and the quality control documentation became as comprehensive as that required for nuclear power plants.

The control of field changes and the generation of the quality control program is best developed working in close cooperation with governmental agencies during the planning phase of the project and I am convinced that with appropriate efforts expended by government and Northwest, problems associated in both of these areas can be greatly minimized and should not reach the degree of impact that developed on the crude line.

5. Contractor availability/know-how.

The following is a succinct but accurate summary of contractors on the crude line:

1. No contractor had big pipeline experience in Alaska.
2. No contractor had the required construction equipment.

3. Contractors did not understand and accept the new specification requirements.
4. Contractors were overwhelmed by the level of detailed planning required for the project and by the number of interfaces (Alyeska, government, other contractors).
5. Much effort had to be spent to train contractors' supervisors.

There was an attitude among contractors that, "we have been building pipelines for 30 years and what we did before was good enough...just let us alone and we'll build your pipeline the same way". There were real problems with contractor understanding and acceptance of specification requirements. Unfortunately, this attitude started at the senior management level and prevailed all the way down to the field foreman. It got so bad that it was necessary for Alyeska to open up formal classroom training programs to teach contractors' foremen, in foreman language, the specification requirements.

Another significant problem developed because the project labor agreement was negotiated between the international unions and Alyeska... contractors did not play a direct or significant role in generation of the project labor agreement. Therefore, when problems arose with labor unions, the attitude of the contractor was "Alyeska, it's your labor agreement, why don't you straighten it out". Labor unions would also make end-runs around the contractors and go directly to Alyeska for resolution of "their" agreement. Therefore, conflicts were pushed up to Alyeska for resolution, and the end result was a bottlenecking of decisions.

Finally, and possibly the most significant, was a problem with developing a cost effective mentality among contractors. There were so many elements outside the direct control of the contractors that their response to a problem was to shrug their shoulders and say "when everything is here that I need, and when all of the regulatory approvals are available, and when you tell me what to do and where to go, I will go do it". The logistics requirements for the project were so immense, and yet site specific, that logistic support was strained to the breaking point such that it was not always possible to give contractors exactly what they needed when they needed it. Indeed, the project was so complex and the planning that had to be done was so beyond anything that contractors had done in the past, that they themselves often were not able to accurately predict their requirements until they started working on a particular element. Then, when everything came to a screeching halt because something was missing (material, spare part, government approval, etc.), or because of unexpected geotechnical conditons or a government induced revision, a mini-crisis developed...the summation of literally hundreds of these mini-crises had to be resolved by extraordinary management means.

Nor was it possible to turn each contractor loose and let them do their own thing, because, in the process, they would have competed against one another in a very limited market and bid up and clogged an already unbelievably congested procurement and transportation system.

Probably the most irritating situation contractors had to face was one of getting Notices to Proceed from the governmental agencies that exercised regulatory control. Literally thousands of formal and informal Notices to Proceed had to be obtained by describing in considerable detail construction techniques, locations, and schedules to regulatory representatives that were not at all familiar with pipeline construction.

Much has happened since the crude line was constructed, and there are now 5 major contractors that have experience in Alaska on big inch pipelines. I believe there is an understanding and a change in attitude on the part of many of the major contractors as it relates to the need for intensive in-house training of their own personnel and the use of more comprehensive and sophisticated planning techniques. From several recent conversations with some of the large contractors that worked on the crude line, it is obvious they have already taken steps to capture and retain the knowledge they gained on building the crude line. I think this will be evident in contractor initiated training of foremen, and acceptance of the fact that more planning and engineering is going to be required by contractor supervisory personnel...in all, an acceptance of the fact that contractors have the basic responsibility to build quality into a project.

Also, I believe there will be significant local contractor involvement, to a much greater extent than existed on the crude line. This will happen for several different reasons. Firstly, the demand for contracting services in the state is probably going to be depressed, just as it is now. That means more local contractors will be available and will be willing to work on unit price or even hard dollar contracts for much of the site preparation, opening of material sites, installation of work pad, stockpiling select material, installing new camps, etc. Also, because of the crude line, the capabilities of local contractors have improved. Local contractors now have a cadre of personnel available that gained considerable experience on the crude line.

Northwest plans that the gas line project labor agreement will be negotiated between the labor unions and a contractors association. Northwest should then be able to expect contractors to implement the provisions of the project labor agreement, and a stronger and more effectively administered agreement will be the end result.

Also, although there will be considerable hesitancy on the part of the large pipeline contractors to perform actual pipeline construction on a lump sum or hard dollar basis, I am convinced that enough will be known about certain elements of the project, particularly if work is phased over a three year construction period, for many elements of the effort, including those indicated above, to be built under competitive unit price and possibly even hard dollar contracts. Appropriate escalation and change order provisions will be essential in these contracts. The ability to obtain meaningful hard dollar contracts is going to be directly related to the completeness of definitive planning and to the extent of regulatory approval of such plans. Regulatory approval includes not only approval of the design elements but also approval of and commitment to the schedule so that contractors have, available to them during the bidding period, all the information necessary for them to submit meaningful competitive proposals with a minimum of contingency.

To sum it up, I believe there will be a greater awareness of quality requirements and a greater acceptance of responsibility on the part of contractors to build-in quality by training their personnel as to the specific technical requirements of the project. Also, since the project will be more conventional (with essentially no above ground pipeline), contractors and their supervisory personnel should feel more comfortable with the pipeline that is being built. On the other hand, the proximity of the crude line and the potential for damage to the crude line from construction operations is significant, and there will be considerable concern, reluctance and a financial inability on the part of contractors to carry all of the liability.

6. Worker availability/qualifications

The crude line had a considerable amount of unique pipeline construction; primarily the above ground pipe, although other elements of the project were significantly different, such as bedding, padding and taping requirements, etc. These different construction techniques required the training of large numbers of workers. In fact, the 423 miles of above ground pipeline more closely resembled a pipe fitting rather than a pipe laying operation. Therefore, new skills were required and long learning curves with low productivity resulted.

For the gas line, because the total number of workers will be considerably less and because the pipeline will be much more conventional, obtaining skilled workers should be easier. However, because the gas line could be constructed in a period of relatively low economic activity, there will be strong political and union pressures to hire Alaskans, even for jobs they are not qualified for. This will cause productivity and training problems. Yet, on balance, because more local contractors will be employed who have a better understanding of the qualifications of local labor, and because there will be more hard dollar contracting, I believe that the process of selecting qualified labor will be more rigorous and there will be more competition for the jobs available. Also, because much of the infrastructure is already in place, because communications systems are greatly improved and because management will be able to devote more time to building the gas line and

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less time to the support activities, there will be fewer opportunities for upsetting situations that contribute to low productivity.

7. Engineered materials

As I testified earlier under Physical Scope of Work, the quantity of engineered materials for the gas line will be substantially less than for the crude line, primarily because only very limited lengths of above ground pipe are expected to be used. A significant difference between crude line construction and gas line construction is the fact that the crude line pipe was all available in Alaska when construction started, and had been stockpiled at Valdez, Fairbanks and Prudhoe Bay years before construction started. Since gas line pipe must be ordered, rolled, transported and possibly double jointed in Alaska, the gas line project will be much more sensitive to pipe delivery than was the crude line. This should not be an overwhelming problem because of the degree of concentrated planning and control that will be exercised over the huge order of pipe. Yet, a risk does exist and it must be recognized as such. One other difference is the amount of insulated ditch that may be required for gas line pipe that is buried in areas of frost heave potential. Again, I do not see this as an overwhelming problem, just one that has to be promptly addressed during the planning phase.

8. Construction equipment.

The crude line required over 14,000 pieces of construction equipment. New equipment had to be designed and developed for a number of extremely critical elements of work, such as the VSM drills for the above ground pipe, the above ground pipe insulation installation equipment, cold weather hydrotesting, etc.

While the gas line will require substantial amounts of construction equipment, a direct comparison to the crude line is not valid due to the unprecedented nature of the equipment needs for the crude line. The crude line construction was actually a series of several major sub-projects occurring in a consecutive but partially overlapping sequence. Camp construction, airfield construction, haul road construction, and the development of material sites all went on at the same time, requiring large amounts of civil construction equipment. Elevated pipeline construction, buried pipeline construction, station and terminal construction also proceeded concurrently and required large amounts of equipment.

The gas line however, will require only limited amounts of camp construction, some work pad construction, and primarily buried pipeline and compressor station construction.

Because the total construction equipment requirements for the gas line are going to be significantly less than for the crude line, it is possible that a large percentage of the total equipment fleet will be furnished by contractors instead of by the owner, as was necessary for the Alyeska project. Also, because the number of pieces of equipment will be less, the spare parts demand and skilled mechanics support requirements will be significantly less. However, because the length of below ground pipe installation will be almost twice that required for the crude line, the backhoe and ditch excavation construction equipment demands will be much greater. Because of potential concurrent construction of large amounts of conventional pipeline in Canada and the the Lower-48, this situation needs a detailed analysis to insure that sufficient amounts of heavy ditch excavation equipment are available. Northwest has had a continuing dialogue with major equipment manufacturers and has been assured of their ability to meet the demand for this equipment.

Although the gas line will be much more conventional than the crude line, some specialty construction equipment may still be required. For instance, it may be cost effective to design special equipment for the insulated ditch (or pipe) that may be required in areas of possible frost heave. Also, when ditching in thaw unstable soils, temporary measures may have to be taken to protect the ditch side walls and bottom...here again there could be a need for special equipment.

Although I do not expect the quantity of gas line prototype equipment to be significant, there is an old saying that "the best place to develop new equipment is on someone elses job". Early in the detailed planning for construction, the project management contractor will be assessing the needs for prototype equipment...there will be sufficient time to retrofit equipment that is understood and used by the construction industry.

To sum up the construction equipment situation, I believe that both supply and demand factors will be more favorable, that spare parts requirements will be significantly less and there will be much less need to develop new equipment...so, construction equipment should be much less of a problem for the gas line.

9. Regulatory agencies.

For the crude line the following summarizes regulatory agency involvement:

1. At least initially, there was an undefined role of governmental agencies which caused considerable confusion. Many months went by before there was a coordinated effort among the regulatory agencies.
2. An extremely complex notice to proceed and approval system developed. Literally hundreds of people were required for several years to develop, administer and obtain approvals from the regulatory agencies.
3. A delay on the part of governmental agencies in issuing notices to proceed caused an early slippage in procurement and construction activities.

Also, during the latter phases of design and early construction, many unique requirements, largely governmental agency dictated, evolved that had significant impacts on cadence and productivity, including the following:

1. Six (6) miles of main line snow pad
2. Fuel gas line snow pad
3. Difficult location for the pipe in Atigun Pass requiring a unique insulated box
4. Refrigerated burial of a substantial length of line to provide caribou crossings
5. Numerous locations where special efforts had to be taken to either raise or depress the line for animal crossings
6. Fish window constraints that had a tremendous impact on the cost effective construction of the main line because, in many cases, streams could not be crossed when the pipe line on either side of the stream was being installed. Crews had to be brought back during winter months to complete the stream crossings
7. The erosion control, restoration and revegetation program was in a state of constant revision throughout the project.

Elsewhere in this testimony (item 11 "Basic Decisions to Be Made/Regulatory Delays"), I speak about specific issues relating to regulatory agencies. I intend now to cover more general yet very fundamental issues that Northwest is addressing at the highest levels. I believe that it is essential that the following steps be taken, regarding the relationship between regulatory agencies and the project:

1. Participation, Acceptance and Committment by Agencies. During the planning, design and early construction phases of the project, it is essential that government agencies participate, accept and commit themselves to identifying site and time specific constraints, conditions and requirements that will be imposed on the project. This level of involvement is necessary to define in detail the construction requirements, the scope of work and to reduce to a minimum situations that will upset or break the cadence of field work.
2. Formalized Risk and Schedule Alternative Planning. The basic construction scheduling must include flexibility and built-in retreat positions to permit alternative solutions and alternative time periods for the resolution of yet unknown situations that will develop. Governmental involvement and commitment to this effort is essential.
3. Technological Content State-Of-The-Art. There will be a tendency on the part of governmental agencies to use the project as an opportunity to study exotic solutions to problems that may not exist. There will be strong pressures to try unique

solutions to problems, and there has to be firm management direction, both by Northwest and the governmental agencies, to keep the project on course by keeping the technological content state-of-the-art.

4. Change Control. There must be a recognition that the source of many changes that will affect the cost, schedule or quality of the project will be one or more of the governmental agencies that have regulatory responsibility. We strongly recommend that a formal program be developed by senior Northwest and government officials to contain change and to review, approve or disapprove and document any change that significantly affects cost, schedule or quality. Further, senior Northwest and governmental officials should commit themselves to basing their go/no-go decisions on the cost/benefits of the proposed change. Unless a high level containment and formal review of proposed changes is achieved, a myriad of changes will be built in, with considerable cost and schedule effects, without control or even senior management knowledge that changes are taking place.

At the risk of repeating myself, I will say it just a little differently. The most significant thing that can be done to control this project, and the key to cost/schedule/quality control, is the early identification and visibility of changes and a positive, fail-safe mechanism to personally involve senior Northwest and government officials in go/no-go decisions based upon the cost and the benefits of the change. There must be personal identification with specific changes; in other words, every change affecting the cost of the project must be identified with the person initiating and approving the change. If this is not done the project will not be controlled.

10. Positive Approaches Being Taken By Northwest.

A number of very positive actions are being taken by Northwest to exercise the greatest possible control over the project and yet maintain the flexibility that is so essential in this phase. These positive approaches are the following:

1. There is a strong commitment to comprehensive planning.
2. Steps are being taken to implement formal cost and change control early during the preliminary design phase. These steps include the following:
   a. Change control (configuration management) approach
   b. Relating new cost estimates to the March 1977 base line estimate
   c. Periodic cost reporting
   d. Formal risk analysis
   e. Structuring the definitive estimate to support the cost control system

f. The early development of computer systems to ensure that they are onstream and functioning properly prior to the first major orders for material.

3. Independent financial and management audit.

4. Contractor negotiated and administered project labor agreement

5. An early identification of the combined impact of concurrent Alaskan/Lower 48 construction on:
   a. Spare parts
   b. Pipe production/delivery
   c. Transportation system
   d. Construction equipment
   e. Contractor availability

6. Many of the problems causing substantial cost increases on the Alyeska project were related to concurrency...that is, building infrastructure at the same time construction was proceeding. One of the basic approaches Northwest intends to take to prevent this situation from developing is to complete all infrastructure related construction well before the start of civil, pipeline and compressor station construction.

7. The use of local contractors whenever practical.

8. The use of speciality contractors for areas such as Atigun Pass, river crossings and bridges.

11. Basic Decisions Yet To Be Made/Regulatory Delays

Eighteen months ago, the project planning guide (The "Plan-for-the-Plan") for the gas line was completed. It's interesting to review some of the conclusions and recommendations, because they vividly point to the problems that were encountered in moving this project ahead...many of these problems were identical to the delays that Alyeska experienced in the 1969 through 1974 time period. In early 1978, we concluded that it was possible to cost effectively complete the project, ready for gas delivery, on January 1, 1983. We also concluded there were no planning, design, procurement, transportation or construction reasons, in short there were no physical reasons why the project could not be cost effectively completed by that date. This conclusion was based upon a normal or reasonable length of time for outside party review, approval and decision making of the data/design/plans prepared by Northwest Alaskan Pipeline. There were no provisions in the project schedule for a protracted re-review, redesign or replanning. Also, to the extent that decisions made by outside parties were not timely, and in accordance with a well defined timetable, we indicated that there would be a significant schedule slippage, or cost increase, or both.

We also concluded that the theoretical critical path of the project "runs through" those activities that are required to plan, design, procure and ship the long lead time pipe and compressor station equipment. Yet, based upon our experience with the planning, design and construction of the crude line, the real but yet unidentifiable critical path for the project would in fact change, and be lengthened by:

"1. Studies/data/reports, undefined as yet, that would be required by the agencies prior to preliminary or final design approval.

2. Internal approval cycles within and between the governmental agencies exercising regulatory control.

3. Specific requirements of the project stipulations."

Eighteen months after our report was written there are still a number of issues, fundamental to the project, that are unresolved. With the recent assignment of the Federal Inspector and a number of decisions that have been made by the government, we believe that the mechanism and interest now exists within the government for timely resolution. These include the following:

1. Center-line to center-line distance of the gas line to crude line. The so-called "proximity" issue was recently addressed by the Department of Interior and some definitive guidelines were given in their June 13, 1979 letter. Yet, there are numerous caveats and conditions placed upon the location of the gas line relative to the crude line,

and a number of specific studies and tests have to be implemented by Northwest Alaskan Pipeline Company before detail design can commence. I cannot stress too strongly the importance of a definitive resolution of this issue.

Very significant issues continue to be raised by personnel in regulatory agencies, including such fundamental points as relocating the gas line for significant lengths of line to hug the haul road (actually using one lane of the haul road as a part of the work pad) instead of hugging the Alyeska work pad. Also, there continues to be discussions about the use of snow pads and building a considerable amount of pipeline in the winter time. The DOI indicates that..."winter construction from snow pads is a viable alternative and is expected to be used where desirable from environmental and construction scheduling standpoints". Quite frankly, I do not understand that statement and I don't know how such criteria can be used to come up with cost effective solutions. If any one lesson was learned from the Alyeska pipeline construction, it is this; attempting to perform any significant amount of pipeline construction in the winter time from snow pads is extremely risky, has no built-in flexibility and will result in costs many times that that would be experienced if the pipeline was constructed using more conventional techniques.

2. Our study assumed that virtually all of the gas line would be buried, except for several bridged river crossings. Yet, we continue to hear discussions by personnel from regulatory agencies, indicating they are interested in determining if portions of the line should be placed above ground. There are two basic differences between the gas line construction and the Trans Alaska Crude Line. Firstly, the crude line was built before sufficient infrastructure (road, camps, communications, vendor support, etc.) existed in the state of Alaska...this situation is substantially different for the gas line and has improved immeasureably. Secondly, 423 miles of the 800 mile crude line was built above ground. The above ground crude line required tremendous engineering, procurement, logistical and construction efforts that are not presently expected for the gas line. To the extent that above ground pipe is found to be required for anything more than nominal lengths of line, there will be substantial and adverse cost and schedule impacts. I strongly recommend that the issue of above ground pipe be put to bed once and for all, and that a firm position be adopted by regulatory agencies indicating that only under extremely unusual circumstances will above ground gas line be installed.

3. River crossing requirements, requirements for insulated below ground pipe, Atigun Pass, erosion control, restoration and revegetation were also issues that must be resolved rapidly, with firm commitments from regulatory agencies, because of the overall and fundamental impact they could have on planning and basic design for the project.

After reading exchanges of correspondence between the Department of Interior and Northwest Alaskan Pipeline Company, between the Department of Interior and Alyeska Pipeline Service Company and a number of the more recent internal memorandums that were generated as a result of the review process of the proximity between the gas line and the crude line, I have come to the following recommendations:

1. The basic concept proposed by Northwest Alaskan Pipeline to, in essence, follow and use the Alyeska work pad is sound and should <u>form the fundamental basis for all</u> planning purposes. In other words, Northwest should plan to hug the Alyeska work pad and, <u>except at such locations where it is definitely more cost or schedule effective</u> or essential to the safety of the crude line to locate the new gas line elsewhere (at places such as the Sag River crossings which should be avoided if at all possible), every effort should be made to utilize the Alyeska work pad as much as possible.

2. It is technically feasible, to parallel and use the state haul road as a part of the work pad. Whenever there are strong and compelling cost or schedule reasons for using the haul road, then, and only then, should Northwest deviate from the Alyeska work pad to parallel the haul road.

3. Northwest should strongly resist building snow pads. I am convinced that any extended amount of snow pad will <u>greatly increase the cost</u>, and result in <u>substantial additional risk that the project will be delayed</u>.

4. The periodic references that I see relating to above ground pipe should be put to rest as soon as possible...I see no reason why any substantial length of above ground pipe is going to be required for the gas line.

5. The twelve "Working Group Questions/Concerns" included as enclosure "C" of the Department of Interior's letter dated June 13, 1979 must be resolved as soon as possible. There is a tendency among some representatives of regulatory agencies to continue to raise questions and identify potential problems, etc., as opposed to addressing and resolving problems and making decisions in accordance with a specific time table. Often the type of issues raised, or the conditions attached to approaches could be resolved by considered engineering

judgment, or could be determined to be insignificant. I am concerned that, even after these so-called questions/concerns are resolved a whole host of additional questions/concerns will be raised. It is difficult to reconcile and to come to grips with this issue. The basic design proposed by Northwest uses proven technology...in fact, one of the strengths of the gas line proposal is that it is state-of-the-art and does not require any breakthroughs to be successful. There already are strong pressures to try unique and exotic solutions to problems and firm management direction, including a firm resolution on the part of governmental agencies, is required to resist these temptations. The recent decisions that have been made by several of the agencies, plus the attitude and approach being taken by the Federal Inspector will go a long way to resolving these issues.

57-087 O - 80 - 50

THE WESTERN LEG OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM: A PROGRESS REPORT

Prepared Statement Of

JOHN A. SPROUL

Executive Vice President
Pacific Gas and Electric Company

Chairman of the Board and Chief Executive Officer
Pacific Gas Transmission Company

Before The

Subcommittee on Oversight and Investigations

Of The House Interior and Insular Affairs Committee

Washington, D.C.

October 15, 1979

I appreciate the opportunity to appear before this Subcommittee on behalf of Pacific Gas and Electric Company (PGandE) and Pacific Gas Transmission Company (PGT) to provide this brief report on the status of the Western delivery leg of the Alaska Natural Gas Transportation System.

PGandE and its subsidiary PGT have been designated by President Carter to build the Western Leg of the Alaska Natural Gas Transportation System (ANGTS). In addition, PGandE, through another subsidiary, Calaska Energy Company, is participating in the partnership that will build the Alaska portion of this system. PG andE will also purchase Alaska North Slope gas to serve the 9.1 million people in our service area in Northern and Central California. We have entered into a contract with the Exxon Corporation to purchase one-third of its share of the gas production from the Prudhoe Bay field. Thus, you can see that PG andE and PGT are deeply involved in and strongly committed to this overall project. We believe it to be the single most important domestic energy project on the nation's agenda today.

Mr. John G. McMillian, Chairman of Northwest Alaskan Pipeline Company, is submitting a presentation to this Subcommittee on the overall ANGTS and the critical Alaskan portion of the project. I will confine my remarks to the project's Western delivery leg.

I. THE WESTERN LEG - ORIGINS AND DESCRIPTION

In the enactment of the Alaska Natural Gas Transportation Act of 1976, Congress wisely mandated that the project selected for the transportation of Alaskan North Slope gas must include new facilities to assure direct delivery of that gas to markets both East and West of the Rocky Mountains and the Lower Continental United States. This mandate guarantees that both sides of the country would have direct and equal access to the vast new domestic natural gas reserves at Prudhoe Bay. Members of this Committee, along with other members of Congress, took an active role in pushing for the passage of this provision which assures that the benefits of the ANGTS will be truly national in scope. We deeply appreciate those efforts.

In accordance with the provisions of the Alaska Natural Gas Transportation Act of 1976, the transportation system selected by President Carter in his September 1977 Decision and Report to the Congress on the ANGTS includes both an Eastern and a Western delivery leg. The Western leg is simply the expansion of an existing natural gas pipeline system owned and operated by PGT and PGandE in the States of Idaho, Washington, Oregon and California.

Since 1961, PGT and PGandE have operated a 911-mile, 36-inch diameter natural gas pipeline system extending from the Canada-U.S. border near Kingsgate, British Columbia, to Antioch, California, near San Francisco Bay. PGT presently has the capacity to import approximately one billion cubic feet per day of Alberta natural gas for PG and E's gas consumers in Northern and Central California. The existing pipeline also transports up to 152 million cubic feet per day of Alberta natural gas for Northwest Pipeline Corporation and makes deliveries of this gas at various points along the pipeline in Idaho, Washington and Oregon for distribution to gas consumers in the Pacific Northwest.

In early 1974 PGT and PG&E proposed the expansion of the existing Alberta-to-California pipeline in order to carry additional quantities of natural gas from Canada and new supplies of natural gas from the Alaskan North Slope in connection with the so-called Arctic Gas Project. The PGT-PGandE pipeline expansion was also compatible with the competing Alaska Highway Pipeline Project, the one ultimately chosen by the Canadian and United States Governments to transport the Prudhoe Bay gas. Thus, PGT and PGandE were designated by President Carter to construct the United States' portions of the project's Western Leg. In December 1977, the Federal Energy Regulatory Commission (FERC) issued a conditional certificate for the Western Leg, and for the other United States' portions of the ANGTS.

The Western Leg is a full paralleling - what we call "looping" - of the existing PGT/PG and E pipeline with the installation of approximately 882 miles of new 36-inch diameter pipe. The new pipe will be installed side-by-side with the existing pipe, using the present pipeline corridor with only minor exceptions. No new compressor stations or compressor horsepower will be necessary to carry the expected initial volumes of North Slope gas in addition to the current volumes of Alberta-source gas.

The authorized Western Leg design is blessed with the virtue of simplicity. Conventional pipeline design and construction techniques will be used throughout, relying on known, proven technology. The potential for unforeseen problems and difficulties is vastly reduced by the fact that the Western Leg expansion is essentially a replication of the existing pipeline, constructed by two experienced companies in the present pipeline corridor through well-known and accessible terrain.

Thus, the Western Leg design will minimize disturbance to the environment. It will use the existing right-of-way so only a relatively small additional amount of land resources will be affected. Also the Western Leg design will assure that more clean-burning natural gas will be available for beneficial use by the ultimate consumer to displace other more polluting fuels. When transporting expected volumes of North Slope gas, the expanded system will actually consume less gas in the transportation process than is now used by the existing system. The Final Environmental Impact Statement prepared for the ANGTS by the Department of the Interior concluded that the environmental impact of the Western Leg would be "minimal".

The authorized Western Leg design can provide for delivery of approximately 30% of initially-expected Alaskan North Slope natural gas volumes to markets in California and other Western states, about 600-700 million cubic feet per day. Alaskan gas destined for California markets will flow over the full length of the Western Leg to the PG and E load center in the San Francisco Bay Area. From that point, gas destined for Southern California will be delivered over PG and E facilities to the Southern California Gas Company.

Through interconnection with the extensive transmission system of Northwest Pipeline Corporation the Western Leg will be able to provide for direct delivery of North Slope Alaskan gas to other Western markets throughout the Pacific Northwest and the Rocky Mountain States, including Arizona and New Mexico.

Because of the relative simplicity of the Western Leg and its use of existing facilities, it is the least expensive of the three United States segments of the ANGTS. PGT's portion is estimated, in 1978 dollars, to cost approximately $417 million. PGandE's portion is estimated on the same basis to cost $212 million. Thus, the total Western Leg capital cost is estimated at $629 million. These amounts, while sizable, are within the financial abilities of PGandE and PGT. We plan to rely on conventional financing techniques in which the corporate credit of each company will stand behind the securities to be issued by each company for the financing of its portion of Western Leg construction.

The capital cost figures which I have just presented are estimates based upon a single-phase construction of the Western Leg to carry Alaskan gas only. However, as you have heard, in prior testimony, we, along with other sponsors of the ANGTS, are proposing now to "prebuild" some of the southerly portions of the overall ANGTS Project in order to transport some additional volumes of Alberta gas into the United States over these facilities before the entire project is ready to transport the Alaskan North Slope gas.

II. THE WESTERN LEG "PRE-BUILD" PROPOSAL

The National Energy Board of Canada (NEB) in its July 1977 Reasons For Decision: Northern Pipelines, first suggested the possibility of importing some additional volumes of Canadian gas into the United States through the early building of portions of the ANGTS. The NEB noted the existence of an apparent surplus of natural gas in Alberta which might be exported to U.S. markets, thereby encouraging a higher level of exploration and development in Canada which could yield further discoveries of natural gas.

President Carter in his September, 1977 Decision and Report, also noted the benefits that could be obtained from "prebuilding" some of the southerly portions of the ANGTS and importing some additional Canadian gas through these "prebuilt" facilities before the remainder of the entire ANGTS is completed. The President recognized that these additional Canadian gas exports could help to offset potential gas shortages in the lower 48 states before the completion of the entire project. The President noted that the ready market for the additional Canadian exports could also stimulate exploration and development activities in Canada, thus enhancing the possibility that the United States could obtain additional volumes of Canadian exports under existing and new contracts over the long term.

Encouraged by these statements of the Canadian National Energy Board and the President of the United States, the sponsors of the ANGTS moved to implement the prebuild concept. Northwest Alaskan Pipeline Company signed agreements with Pan-Alberta Gas Ltd., for the purchase of a total of 1.04 billion cubic feet per day of Alberta-source natural gas over a 12-year period. These additional imports of Canadian gas are proposed specifically for the purpose of supporting the prebuilding of portions of the Eastern and Western delivery legs of the ANGTS in advance of the time that the rest of the project would be constructed and placed in operation. Pacific Interstate Transmission Company, an affiliate of Southern California Gas Company, entered into a contract with Northwest Alaskan to purchase 240 million cubic feet per day of this Alberta-source gas for delivery to consumers in Southern California.

PGT will "prebuild" approximately 160 miles of the Western Leg expansion in order to transport the additional 240 million cubic feet per day of Alberta source natural gas from the international boundary near Kingsgate, British Columbia to a point of interconnection with the pipeline facilities of Northwest Pipeline Corporation near Stanfield, Oregon. From that point, the gas would be transported over the facilities of Northwest Pipeline and El Paso Natural Gas Company to Southern California. The total pipeline distance from the Canadian border to the interconnection between PGT and Northwest Pipeline at Stanfield, Oregon, is actually over 277 miles. PGT does not need to install a full paralleling of the pipeline over that distance in order to increase its throughput capacity by the required 240 million cubic feet per day. The 160 miles of partial loops are sufficient for this prebuild phase. The pipe size and pressure of the loops are, of course, consistent with the overall Western Leg design designated by the President's Decision. Cost of PGT's Western Leg prebuild facilities is estimated to be $116 million, on a 1978 cost basis.

PGT's application for a final certificate for the prebuild facilities and the coordinate applications of Northwest Alaskan, Pacific Interstate, Northwest Pipeline, and El Paso, are now pending before the FERC. If the FERC issues a final certificate by the end of this year, and if all other necessary regulatory authorizations, including the Canadian export license, are in place by that time, we may be able to construct enough of the prebuild facilities in 1980 to allow a portion of the projected additional Alberta gas to flow by late 1980.

The use of the Northwest Pipeline and El Paso systems to complete the transportation of the additional volumes of Alberta gas to Southern California does not represent a deviation from the Western Leg plan as approved by the President for delivery of Alaskan gas. These initial volumes of Alberta gas are much smaller than the expected North Slope gas volumes. For these initial, smaller volumes, it is more economic and sensible to prebuild only on the northern portion of the Western Leg and to use the Northwest Pipeline and El Paso systems to complete the transportation of the Alberta gas to Southern California instead of constructing more of the Western Leg now. The capital at risk (which is ultimately the risk of the consumer) is significantly lower for the proposed route. The total capital cost of the PGT prebuild and the required expansions of the Northwest and El Paso systems to carry the 240 million cubic feet per day of additional Alberta gas is $283 million. Prebuilding all the way through the Western Leg now to carry only these volumes of additional Alberta gas to Southern California would cost $446 million. The economics of scale that will be enjoyed on the Western Leg when the larger Alaskan volumes will be transported are not available now for these relatively smaller volumes of Alberta gas.

The remaining portions of the Western Leg on the PGT and PGandE systems will be completed in coordination with the rest of the ANGTS in order to make deliveries of Alaskan gas as I have earlier described. The expansion of the Northwest Pipeline and El Paso systems in connection with the prebuild will be quite compatible with the operation of the full-scale Western Leg; those systems can provide a pathway for the delivery of Alaskan North Slope gas from the Western Leg to markets in the various Western States that are served by those systems. Thus, these connecting facilities are in addition to and in support of - not in place of - the ANGTS Western Leg designated by the President.

In addition to the obvious benefit of providing an additional early source of new gas supply for Southern California gas consumers, the prebuilding on the Western Leg offers a number of other substantial benefits. Construction of the Western Leg in two phases instead of one should result in a savings for the ultimate consumer of Alaskan North Slope gas when the ANGTS is completed. Transportation costs for Alaskan gas should be less because a portion of the Western Leg facilities will have been installed at an earlier date at less inflated costs; also these less expensive facilities will be partially depreciated when deliveries of Alaskan gas commence. Construction of the Western Leg in two phases will also make it easier and more economical to obtain labor and materials necessary to construct the overall ANGTS.

We believe that prebuilding will also aid the financing of the Western Leg and the remainder of the ANGTS in several ways. First, total capital cost should be reduced by inflation avoidance, as I have noted, and the demand on the money markets will be spread out over a greater period of time. Second, PGT will gain additional revenues from transportation of the Alberta gas for Pacific Interstate, thus making available additional internally generated funds for financing of the ultimate phase of the Western Leg expansion, and reducing the need to issue additional equity shares or long-term debt. Third, and perhaps most important of all, the successful construction of the prebuild phase of the Western Leg will, I believe, greatly increase investor confidence in the probable success of the overall ANGTS.

It is difficult to measure investor confidence but is is a prime factor in the determination of the cost and availability of private debt and equity capital. The outcome of the prebuild proposal, including the resolution of a number of important regulatory issues, will be regarded by investors as an indicator of the probability of success of the overall project. Prebuilding will offer firm and convincing evidence that the United States government is fully committed to and supportive of the construction of the Western Leg as well as all other portions of the ANGTS. Also, FERC resolution of tariff issues in the prebuild phase will help to give investors more confidence that they understand the "rules of the game" going into the financing of the complete Western Leg.

III. REGULATORY ISSUES AFFECTING THE WESTERN LEG

Because of the simplicity of the Western Leg and the lack of any substantial environmental and other problems, regulatory issues involving the Western Leg are nowhere near so numerous nor of as great a magnitude as on other sections of the ANGTS.

It is ironic that our greatest regulatory challenge on the Western Leg results from the fact that we are part of the ANGTS. Because of that fact, the initial tendency of federal regulators, perhaps understandably, has been to assume that the Western Leg construction would be as challenging and as complex as the Alaska portion of the project. However, we have worked carefully with federal agency representatives to familiarize them with the true nature of the Western Leg, and we have made it clear that what is being proposed here is simply another conventional "lower-48" natural gas pipeline of the kind that has been built for years without fanfare, without environmental difficulties, and without cost overruns. And, of course, we have pointed out that the Western Leg expansion is actually simpler than most other lower-48 pipeline jobs, because of the use of our existing right-of-way. We are happy to report that there is a growing recognition on the part of federal officials that the Western Leg poses no significant environmental problems, that socio-economic impact is minor and that substantial cost overruns are highly unlikely. FERC has formally recognized this by determining that there is no need to apply the so-called "incentive rate of return" cost control mechanism to the Western Leg. FERC concluded that the character of the Western Leg construction, coupled with the conventional nature of Western Leg financing, which places more risk on the companies than "project financing", will provide sufficient insurance against cost overruns.

There are other encouraging signs that the federal government is approaching its regulatory responsibilities regarding the Western Leg in a reasonable and expeditious manner. We have been heartened by the recent appointment of the Federal Inspector, Mr. John T. Rhett, and by the fact that he is moving quickly to set up an effective organization.

Nevertheless, I would be less than candid with you if I did not admit that we still face a very real threat of regulatory delay which could well thwart the chances for meeting our prebuild delivery schedule.

- We are still tied up in hearings before the FERC for the 160 miles of Western Leg prebuild, even though these facilities are simply a portion of the same facilities that were authorized by the President and conditionally certificated by the FERC almost two years ago in December, 1977.
- We are still waiting for the issuance of a final right-of-way permit from the Department of the Interior to allow us to cross the <u>three miles</u> of federal lands - out of the 160 mile total - that are involved in the Western Leg prebuild proposal.
- We need other subsidiary federal authorizations, site-specific terms and conditions must be developed by various federal agencies to enable us to go to final design.

- We face the potential for costly conflict between the new equal employment opportunity regulations which are proposed for this project and the already-effective federal EEO regulations to which we, as existing operating companies, are now subject.

Of course, one of the key elements in the prebuild equation must come from north of our border: Canada's approval of the proposed twelve-year export of Alberta gas is necessary if the prebuild concept is to go forward as planned. The National Energy Board has concluded its omnibus hearings on exports, and we believe it reasonable to expect that a decision on exports will be issued and approved by the Canadian Government by the end of this year.

We are hopeful that the regulatory processes of the United States will be able to keep up with this pace. The simple fact of the matter is that for us to have any hope of delivering the first quantities of Alberta gas by the end of 1980, we must have <u>all</u> final regulatory approvals in place by the end of <u>this</u> year, 1979.

FERC hearings are almost concluded. The only remaining FERC matter for the Western Leg - PGT's cost estimate for the FERC Certificate - is being filed today. We have worked closely with the FERC staff in the preparation of the cost estimate filing, and we have made all of our back-up materials and records freely available to them, so the cost estimate filing should be no cause for controversy. With the acceptance of the cost estimate, the FERC record on the Western Leg prebuild proposal can be closed and it should be possible for the FERC to issue expeditiously a separate decision allowing the Western Leg prebuild to move forward. Likewise, we believe that it will be quite feasible for the DOI to issue the necessary right-of-way permit for the three miles of federal lands on the Western Leg prebuild well before the end of this year. The DOI has all of the necessary information in hand and the general terms and conditions to be attached to the right-of-way grant appear to be reaching the final stages.

This expedited handling of the Western Leg prebuild proposal is clearly in the national interest. The completion of the Western Leg prebuild will assure the early delivery of additional supplies of Alberta gas to help displace some of the demand for OPEC oil.

Of greater significance in the long run is the fact that the prebuild will truly be the testing ground for the entire new federal regulatory structure which has been established to supervise construction of the ANGTS. The prebuild phase of the Western Leg will be the first pioneering portion of the ANGTS which will be subjected to this new regulatory format. If the federal government can demonstrate that this first segment of the ANGTS can be expedited and constructed on a reasonable time schedule, this will have a positive impact on the ability of the ANGTS to obtain private financing on reasonable basis.

If, however, the net result of this Western Leg prebuild experiment is to show that the federal government's new method of regulation has slowed or stalled this simplest and most straightforward part of the ANGTS, then the conclusions to be drawn are somber indeed.

We are optimistic. Despite the two years of delay so far, during which this nationally vital energy project has been exposed to the ravages of inflation, we believe that the ANGTS can and will be built. If it were not, or even if the ANGTS is, subject to further substantial delay, gas consumers throughout the United States and the national interest in energy security will have been badly served.

Thank you for affording me this opportunity to express the views of PG and E and PGT on this important subject.

This concludes my prepared remarks. I would be happy to answer any questions as the Subcommittee may have.

57-087 0 - 80 - 51

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

October 23, 1979

Mr. John A. Sproul
Chairman of the Board and
Chief Executive Officer
Pacific Gas Transmission Company
77 Beale Street
San Francisco, California 94106

Dear Mr. Sproul:

As I indicated at the beginning of the hearings on the Alaska Natural Gas Transportation System, I am providing you with some written questions. Your responses will be included in the record. The Subcommittee would appreciate answers to the following questions:

1. On page 13 of your testimony you refer to new equal employment opportunity regulations. Would you be more specific regarding your objections to the proposed regulations?

2. What is the effect of the U.S. - Canadian procurement agreements on the progress of your segment of the pipeline?

3. What will be the effect on your plans if "prebuild" is not approved in Canada?

4. Regarding "prebuild" approval, what kind of assurances can you give to the Canadian Government that the entire system will be built?

As you will recall, Congressman Clausen requested that you submit to the Subcommittee a chronological list of actions by the Federal Energy Regulatory Commission which have delayed your company.

It is requested that your response to these questions be sent to the Subcommittee as soon as possible in order to make the complete hearing record available to the public in a timely manner.

Sincerely,

HAROLD RUNNELS
Chairman
Oversight and Investigations
Subcommittee

jgh

PACIFIC GAS AND ELECTRIC COMPANY

77 BEALE STREET · SAN FRANCISCO, CALIFORNIA 94106

HAROLD RUNNELS, M.C.

JOHN A. SPROUL
EXECUTIVE VICE PRESIDENT

November 27, 1979

The Honorable Harold Runnels
Chairman, Oversight and Investigation Subcommittee,
Committee on Interior and Insular
Affairs
United States House of Representatives
Washington, D.C. 20515

Dear Chairman Runnels:

I very much appreciated the opportunity to present a statement on behalf of Pacific Gas and Electric Company and Pacific Gas Transmission Company in your Subcommittee's hearings on the Alaska Natural Gas Transportation System (ANGTS) on October 15, 1979. To complete the record of that hearing, I am pleased to respond to the additional written questions posed by your letter of October 23, 1979. Our detailed answers to those questions are attached hereto.

Please accept my apology for the length of time that it has taken to furnish this reply. Our staff has been fully occupied in recent weeks in pushing to completion the Federal Energy Regulatory Commission hearings related to the proposed prebuilding of the Western Leg of the ANGTS, over some last-minute tactical maneuvers by the FERC staff.

The recent events shed some light on the reasons for regulatory delay associated with the ANGTS. As you may be aware, the FERC staff made a last-minute effort to resurrect its previously discredited attempt to cut off the Western Leg and replace it with a scheme of "displacement delivery" from eastern pipelines. Then, when that attempt was ruled out of order by the FERC Administrative Law Judge, the Staff did an about-face and attempted to introduce some testimony that suggested a study of a larger capacity Western Leg than the sponsors propose. This proposed new study was given as a reason for delaying the certification of the prebuilding proposal. This testimony, too, was rejected by the FERC's Administrative Law Judge and the record has finally been closed, with briefs due to be filed next week.

The Honorable Harold Runnels Page 2
November 27, 1979

We believe that the FERC hearing record strongly supports the prebuilding proposal. The hearings have been completed in time to allow the FERC to reach a decision on this proposal by the end of the year, as Chairman Curtis indicated that the Commission intended when he testified before your Committee on October 16, 1979. We are heartened by the actions of the Administrative Law Judge, and the apparent determination of the Commission itself to bring this proceeding to a conclusion without further delay. I know that you and other members of the Committee are just as interested as we are in seeing Western Leg prebuilding go ahead without further delay as the significant first step toward the completion of the entire Alaska Natural Gas Transportation System. Current events in Iran serve only to underscore the urgency of this project which will help substantially to lessen this nation's dependence upon OPEC oil.

Once again, thank you very much for the opportunity to participate in your Subcommittee's hearings on this project. We will keep you informed of any further significant developments.

Very truly yours,

John A. Sproul

JOHN A. SPROUL

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RESPONSES OF PACIFIC GAS and ELECTRIC COMPANY AND PACIFIC GAS TRANSMISSION COMPANY TO QUESTIONS ON REGULATORY ISSUES RELATED TO THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM AS POSED BY CHAIRMAN RUNNELS' OCTOBER 23, 1979 LETTER TO MR. JOHN A. SPROUL

QUESTION:

1. "On Page 13 of your testimony, you refer to new equal employment opportunity regulations. Would you be more specific regarding your objections to the proposed regulations?"

PGandE/PGT RESPONSE:

On October 12, 1979, the Department of the Interior published for comment its proposed rulemaking consisting of procedures to carry out the requirements of Section 17 and Condition 11 of the President's Decision.1/ We do not oppose the proposed rules except to the extent that they exceed statutory authorization, are otherwise unlawful, or either duplicate or conflict with existing regulation. Our principal objections are as follows:

1/Section 17 of the Act reads as follows:

All Federal officers and agencies shall take such affirmative action as is necessary to assure that no person shall, on the grounds of race, creed, color, national origin, or sex, be excluded from receiving, or participating in any activity conducted under, any certificates, permit, right-of-way, lease, or other authorization granted or issued pursuant to this Act. The appropriate Federal officers and agencies shall promulgate such rules as are necessary to carry out the purposes of this section and may enforce this section, and any rules promulgated under this section through agency and department provisions and rules which shall be similar to those established and in effect under title VI of the Civil Rights Act of 1964.

Condition No. 11 of the President's Decision reads as follows:

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

1. The proposed rules exceed statutory authorization in terms of the scope of activity regulated. Section 17 authorizes regulation of ANGTA activity only, whereas the proposed rules attempt to regulate both ANGTA and non-ANGTA activity to the extent that both occur in the same "establishment." This is especially nonsensical in the case of PGandE and PGT which are already subject to, and guided by existing equal employment regulation. Prior to the issuance of the proposed rules, we repeatedly urged the adoption of a regulatory scheme which would not duplicate or conflict with existing equal employment opportunity regulation. We argued that since all of PGandE/PGT's existing and future facilities, including those to be created and operated under ANGTA, already are fully and effectively regulated by OFCCP, there simply is no justification for additional EEO regulation by the ANGTA agencies. These proposed rules would ignore the simple logic of this argument and would arbitrarily impose an additional and unnecessary set of EEO regulations. Why?

   The Federal Inspector needs only one set of EEO regulations to effect the objectives of Section 17. OFCCP's ought to suffice. It makes no sense to provide the Federal Inspector with a duplicate set; and although he can be expected not to enforce <u>both</u> sets, given his special mandate to effect efficient and expeditious construction and initial operation, the same prediction cannot be made with regard to the post-construction and initial operation when enforcement power devolves to the ANGTA agencies. At that point, if not before, there almost certainly will be double enforcement. Why burden our already overburdened ratepayers with this unnecessary expense?

2. The proposed rules also exceed statutory authorization to the extent that they prescribe "affirmative action" in excess of that "necessary to assure that no person shall, on the grounds of race (etc.). . . be excluded from receiving, or participating in any activity conducted under (the Act)." This language does not authorize regulations to require inclusion of minority and female business enterprises (MBEs/FBEs) irrespective of their present availability, capacity, interest or solvency. In contrast, the proposed rules would obligate recipients, etc., to organize new MBEs/FBEs, expand their capacity, invest in them, withdraw contracts from competitive bidding on their behalf and otherwise grant them preferential treatment solely because of race or sex. Not only is there no express authorization in Section 17 for such race and sex-based preferences, there is express language plainly indicating a contrary Congressional intent; i.e., the Section 17 language stating that the regulations "shall be similar to those established and in effect under Title VI of the Civil Rights Act of 1964." Title VI regulations, in contrast to the ones proposed here, do not require affirmative action to insure preferential inclusion, but only affirmative action to insure against discrimination, as the Supreme Court ruled in Bakke, even where as here it is benevolently designed to remedy the effects of past societal discrimination. Thus, instead of following Title VI regulatory standards, as Congress has instructed, the proposed rules violate those standards.

But even if this were not so and Section 17 somehow could be read to permit the agencies to impose race and sex-based preferences, Section 9 of the Act nonetheless would prohibit the agencies from doing so, because the predictable effect would be to significantly "impair. . .expeditious construction." We cannot imagine anything more likely to impair expeditious construction than these MBE/FBE procurement regualtions, given their chaotic impact on planning, financing and cost control determinations. Accordingly, we believe these regulations are, under Section 9, "not authorized."

In sum, the MBE/FBE procurement regualtions, to the extent thay require affirmative action in excess of that necessary to treat MBEs and FBEs equally, are not authorized by ANGTA or any other law. On the contrary, they are implicitly, if not explicitly, prohibited by ANGTA. Congress, which in the recent past has demonstrated its willingness to legislate preferences for minority contractors in some circumstances (see the 1977 Public Works Employment Act), chose not to do so here, doubtless because of its greater concern for the timely and efficient delivery of this critically needed and privately funded energy system. Proposed rules demonstrably inconsistent with this conscious Congressional choice are certain to invite very substantial and ultimately successful opposition and may lead to serious delays in the final issuance of employment and procurement regualtions.

3. The proposed rules also exceed statutory authorization to the extent that they would regulate operations-related procurement activity after the construction of the project is completed. It is clear from the language of Condition 11 that the President and the Congress intended that contract procurement regulation be limited to contracts "for management, engineering design or construction activity."

4. The proposed procurement rules requiring preferential treatment on the basis of race and sex, in addition to being unauthorized and in derogation of the statutory mandate for expeditious and efficient construction, also are in derogation of paragraph 7 of the Agreement on Principles with Canada. That Agreement requires that the "supply of goods and services to the Pipeline will be on generally competitive terms." See pages 2589 of the President's <u>Decision</u>. Withdrawal of goods and services contracts from competitive bidding would appear to be in violation of this Agreement.

We are hopeful that the Department can be persuaded, during the 60-day comment period, to make the necessary changes in its proposed rules.

<u>QUESTION</u>:

2. "What is the effect of the U.S.-Canadian procurement agreements on the progress of your segment of the pipeline?"

<u>PGandE/PGT RESPONSE</u>:

The proposed U.S.-Canadian procurement agreements set up a process for the review of bidders' lists, bid documents, and material specifications by Canada's Northern Pipeline Agency (NPA). It is understood that the Federal Energy Regulatory Commission (FERC) proposes to make the procurement agreement a condition of the final certificate of public convenience and necessity issued for the PGT portions of the ANGTS Western Leg.

If the final procurement agreement is similar to the drafts which have been circulated, then there is the possibility that the sponsor companies will have to wait until comments are received from the NPA at each step of the procurement process before the next step can be taken. If this occurs, then 6 to 8 weeks could easily be added to the procurement process. When the procurement of material is on or near the project's critical path as it will likely be for the Western Leg prebuild, the completion date and project cost could be adversely affected. The procurement agreements, as proposed, attempt to minimize the potential for such delays by limiting the procedures to major material items and allowing the procurement process to move forward and parallel with the review process. However, there is still the potential for delay with respect to major material items since it will take considerable time to prepare and submit documents for review and to consider, respond to, and act on NPA requests.

QUESTION:

3. "What will be the effect on your plans if "prebuild" is not approved in Canada?"

PGandE/PGT RESPONSE:

We believe that Canada will approve the "prebuild" proposal because it is equally as beneficial to Canadian interests as it is to the interests of our own country. Canada currently has a large surplus of natural gas available in the province of Alberta. Shutting in the production of that natural gas surplus will tend to dampen the exploration and development efforts which Canada itself needs if it is to continue to meet the natural gas requirements of its own people in the future. Production and sale to the United States of some of that surplus now will not only provide an impetus to further exploration and development in Canada but will also markedly improve Canada's balance of trade with the United States, its largest trading partner. Prebuilding is also attractive to Canada because it will allow the Canadian portions of the ANGTS to be constructed over a longer time period, providing a stimulus to the Canadian economy over a greater length of time, and helping to even out the demand for labor and materials that will result from the construction of this huge project.

Nevertheless, if Canada for some reason did not see fit to support the prebuild phase of the ANGTS, this would not make it impossible for the project to move forward. We estimate that the early construction of the proposed prebuild portions of the Western Leg will result in savings to consumers of Alaskan natural gas of approximately $305,000,000 over an assumed 25-year delivery life of Alaskan gas. These savings would not be available if prebuild does not go forward; however the overall project including the Western Leg would still be desirable and beneficial and PGT and PGandE foresee no untoward difficulty in financing their portion of the project with or without prebuilding. If prebuilding were not to take place, the only major effect on the plans of PGT and PGandE would be that the entire Western Leg would be built at one time on a schedule compatible with the projected completion date for the other portions of the overall project.

QUESTION:

4. "Regarding "prebuild" approval, what kind of assurances can you give to the Canadian government that the entire system will be built?"

PGandE/PGT RESPONSE:

We assume that this question has reference to statements by Canadian government officials that, before Canada will approve gas exports to support prebuilding, there must be adequate assurance that the remainder of the ANGTS will ultimately be built. It is as yet unclear exactly what combination of factual circumstances, U.S. government actions and sponsor company actions will be considered by the Canadian government to provide such adequate assurance. However, it would not be unreasonable for Canada to conclude that the existing facts and circumstances, including recent regulatory decisions in the United States, provide sufficient assurance to proceed at this time with the prebuild phase of the overall project.

There should be no doubt that the overall ANGTS will be built and placed in operation. It is a project which has already been approved by the President and the Congress. The sponsor companies' confidence in, and commitment to, the success of the project is clearly demonstrated by the hundreds of millions of dollars of risk capital that have been, and continue to be invested even before all final regulatory authorizations have been received. Recent regulatory developments in the United States lend new confidence that the project can and will be expeditiously completed: the creation of the office of the Federal Inspector and the naming of Mr. John T. Rhett, Jr., to that office is a strong indication of the U.S. government's active support of the project; so also is the FERC's recent decision on the so-called "incentive rate of return" mechanism which has been designed in a way to facilitate the private financing of the project. Another positive development tending to assure that the project will be successfully completed is the announced willingness of major Prudhoe Bay gas producers to lend their considerable strength to the financing of the overall project. All of these facts and circumstances could reasonably be relied upon by the Canadian government in concluding that the overall ANGTS will indeed be built.

It has been suggested by some that the prebuild portions of the ANGTS should not be allowed to go forward until the financing for the remainder of the project including the Alaskan portion has been completely arranged. We believe that it would be a great mistake for either the United States or Canada to impose such a precondition on prebuilding. The sponsors are actively engaged in arranging for the financing of the project, but the development of the financing package must go forward hand in hand with other elements of project work, including engineering and design tasks, and completion of related cost estimates. Obviously, if prebuilding is delayed until the entire project is certificated and ready to go forward, there will be no prebuilding; the project would be built all at one time. Similarly, if prebuilding were delayed until some intermediate date when the financing package is at or near final form, the benefits of prebuilding would be correspondingly reduced. From Canada's point of view, a delay in prebuilding will reduce Canada's opportunity to provide an early market for some of its sizeable current gas surplus.

RESPONSE OF PGandE/PGT TO INFORMATION REQUEST OF CONGRESSMAN CLAUSEN:

Chairman Runnels' October 23, 1979 letter notes that Congressman Clausen requested various witnesses appearing before the Subcommittee to present a chronological listing of Federal Energy Regulatory Commission actions which have delayed the ANGTS. PGandE and PGT here respond to that request as it pertains to the Western Leg portion of the ANGTS.

The regulatory delays which led up to and prompted passage of the Alaska Natural Gas Transportation Act of 1976 are well documented and need no further elaboration. For present purposes it appears most pertinent to examine the record of regulatory action following the President's decision and Congressional approval of the ANGTS in the fall of 1977. Much of the delay that has occurred in the two years since the ANGTS was selected by the President has had to do with the overall project or the critical Alaskan section, and not specifically with the Western Leg portion.

Federal officials may tend to think of the ANGTS as a complex and difficult project, and sometimes assume that the same is true of the Western Leg portion of that project. Thus, they have initially proposed the application to the Western Leg of some unnecessarily complicated regulatory schemes. Nevertheless, the true character of the Western Leg, as a simple paralleling of an existing conventional "lower 48" pipeline, has gradually been made clear. Therefore, questions about the Western Leg have not tended to delay the overall project. For the most part, the Western Leg has instead been an indirect victim of delays related to other portions of the overall project.

The foregoing observations, however, do not provide a complete explanation for the time that it has taken to move the Western Leg "prebuild" proposal through the regulatory process. The following is a chronology of significant dates related to the Western Leg prebuild:

1. April 5, 1978. Filing by Northwest Alaskan Pipeline Company in Docket No. CP78-123 *et al.* of applications pursuant to Section 3 of the Natural Gas Act requesting conditional authorization for the importation of Canadian gas to support the Eastern and Western Leg prebuild proposals.

2. June 7, 1978. Commission order granting Northwest Alaskan the requested conditional import authorizations.

3. July 24, 1978. Commission order clarifying June 7 order.

4. August 4, 1978. Commission order denying other requests by various parties for further clarification of June 7 order.

5. November 2, 1978. Decision by United States Court of Appeals for District of Columbia circuit and Midwestern Gas Transmission Company v. FERC, 589 F. 2d 603 (1978) affirming the Commission's June 7, July 24, and August 4, 1978 orders.

6. November 6, 1978. Application filed by Pacific Gas Transmission Company for a final certificate of public convenience and necessity to prebuild certain portions of the Western Leg to transport the conditionally authorized Canadian export volumes; applications were also filed on this date by other sponsor companies for related facilities and services.

7. April 20, 1979. Commission order consolidating proceedings, establishing procedures, granting interventions and instituting hearings.

8. June 18, 1979. Hearings commence on prebuild proposal.

9. November 20, 1979. Hearings concluded on Western Leg prebuild proposal.

As can be seen from the foregoing chronology, it has taken over one year from the time of the filing of the applications for final certificates for the Western Leg prebuild proposal to the time that hearings on that proposal have drawn to a close. Briefing is scheduled to be completed on this proposal in early December to allow for a Commission decision on the Western Leg prebuild by the end of December.

PACIFIC GAS AND ELECTRIC COMPANY

77 BEALE STREET · SAN FRANCISCO, CALIFORNIA 94106

JOHN A. SPROUL
EXECUTIVE VICE PRESIDENT

October 30, 1979

The Honorable Don H. Clausen
United States Congressman
House of Representatives
Rayburn House Office Building
Room 2336
Washington, D.C. 20036

OCT 31 1979

Re: Alaskan Natural Gas Transportation System - Western Leg; Update on Regulatory Problems

Dear Congressman Clausen:

In my testimony before the Subcommittee on Oversight and Investigations of the Interior and Insular Affairs Committee of the House on October 15, I advised you and other Committee members that we hoped to be able to install the first portions of the Western Leg of the Alaskan Natural Gas Transportation System (ANGTS) sometime this coming year, 1980, but that regulatory obstacles and delays may prevent us from attaining that goal.

In this letter I want to advise you of recent developments which seriously threaten the attainment of our goal and, in my opinion, threaten to deprive western gas consumers of Western Leg direct delivery benefits which were mandated by the Congress in the passage of the Alaskan Natural Gas Transportation Act of 1976.

As you will recall, the ANGTS sponsors propose to "prebuild" portions of the eastern and western delivery legs to carry some Alberta-source gas temporarily surplus to Canadian needs, in advance of Alaskan gas deliveries. The plan, which includes the early delivery of 240 million cubic feet of gas to Southern California over prebuilt portions of the Western Leg and connecting systems, is going through the hearing process at the Federal Energy Regulatory Commission. When I appeared before your Committee on October 15, it appeared to us that the FERC hearing process with regard to the Western Leg prebuild was almost completed, all of the Western delivery system sponsors' evidence having been filed in support of the proposal. We were heartened by FERC Chairman Curtis's statement that the Commission hopes and intends to issue its decision on the Western Leg prebuild by the end of this year.

The Honorable Don H. Clausen
October 30, 1979
Page Two

Now that picture has radically changed: The FERC Staff has just announced that it is seeking to file, more than two months after the time designated for the filing of any further evidence by Staff, some new testimony by a staff witness which suggests doing away with Western Leg prebuilding altogether in favor of the previously discredited FERC Staff idea requiring Western consumers to rely upon "displacement delivery" of natural gas from Eastern U.S. pipelines rather than on direct delivery of the gas into the Western States over the new Western Leg facilities.

This inexcusably dilatory filing by Staff will, if allowed, almost certainly dash any hopes of the FERC's reaching a decision on the Western Leg prebuild proposal by the end of this year. You can rest assured that the project sponsors will vigorously oppose the attempted introduction of this untimely evidence, but without clear direction to the Administrative Law Judge from the Commission, the outcome of this issue is in doubt.

Even more damaging to consumers' interest than the delaying effect of the Staff's testimony, is the possibility that the testimony might be taken seriously by decision makers. What Staff is suggesting is nothing more nor less than denying entirely to Western consumers the benefits which the record shows will be derived from the prebuilding proposal on the Western Leg. The evidence of record shows that the Western prebuilding proposal, if allowed to proceed, will mean savings to the consumers of Alaskan North Slope gas of well over $300 million over the 25-year period of deliveries of the Alaskan gas. All of this would be lost if the Staff has its way. In the shorter run also, the consumer will suffer. Delivering the short-term Canadian gas to Southern California over the roundabout route through Eastern pipelines as the Staff proposes would use 143% more gas as compressor fuel than the more efficient Western delivery system. Given the new Canadian gas prices, this would mean a penalty of almost $18 million each and every year to United States gas consumers if the Staff's ill-advised and ill-timed suggestions were to be taken seriously.

The real irony is that these are not issues properly before the Commission. If there were any real issue regarding the need for or size of the Western Leg prebuild portion, the President's Decision and Report to Congress on the Alaskan Natural Gas Transportation System quite clearly makes this a matter for the Secretary of Energy to determine. Page 233 of that Decision and Report reads:

> ". . . The Secretary of Energy will determine the size and volume of the Western Leg to be certified, as well as review the need for any prebuilding to take direct deliveries for the West Coast of any short-term increases in Canadian exports from Alberta."
> (Emphasis added.)

Accordingly, the Secretary of Energy should now act to determine the need for Western Leg prebuilding, not the FERC.

The FERC Staff is attempting to raise issues before the Commission which the Commission itself does not have the authority to decide. The result can only be a confused and useless record, and serious delay to this important first step of an energy project vital to the West and to the nation as a whole.

I am sure that you view these new developments just as seriously as we do. We would be happy to furnish you with any further information about this or any other issue related to the Alaskan Natural Gas Transportation System.

Very truly yours,

John A. Sproul

JOHN A. SPROUL

JAS:bt

BEFORE THE

SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS

OF THE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

U. S. HOUSE OF REPRESENTATIVES

STATEMENT OF NORTHERN BORDER PIPELINE COMPANY

Tendered by

J. Conrad Pyle, Project Manager

Washington, D.C.
October 15, 1979

57-087 0 - 80 - 52

STATEMENT OF
NORTHERN BORDER PIPELINE COMPANY

I.

What Northern Border Is

Mr. Chairman, and members of the Subcommittee, my name is J. Conrad Pyle, and my present position is Project Manager for Northern Border Pipeline Company. The present Northern Border Pipeline Company is a new partnership, which is the successor in interest to the original Northern Border partnership designated as owner and operator of the lower-48 Eastern Leg facility by the President's Decision on the Alaska Natural Gas Transportation System (ANGTS), pursuant to agreement between the present partners and the original partners. The present partners are:

1) Northern Plains Natural Gas Company, a subsidiary of Northern Natural Gas Company, the Managing Partner;

2) Northwest Border Pipeline Company, a subsidiary of Northwest Energy Company;

3) Pan Border Gas Company, a subsidiary of Panhandle Eastern Pipeline Company; and

4) United Mid-Continent Pipeline Company, a subsidiary of United Gas Pipeline Company.

The final management authority for Northern Border rests with its Management Committee, which functions in much the same way as a Corporate Board of Directors. Each partner has one representative on the Management Committee, and each presently has an equal vote. The Management Committee sets policy, and makes or approves all final decisions of significant importance. Supplemental committees, such as Legal, Technical, Finance, etc., assist and advise the Management Committee and the Managing Partner within their areas of expertise.

The Northern Border partnership is managed, subject to policy guidelines and decisions of the Management Committee, by its Managing Partner, Northern Plains, which is principally staffed by Northern Natural executives and employees charged with the responsibility for bringing the project to fruition. As Project Manager for Northern Border, I direct the partnership activities in obtaining all requisite governmental permits and authorizations, and in designing, constructing, and ultimately operating the Project. For some time now, our principal attention has been focused on what is commonly called the "Pre-Build" Project (also referred to as "Phase I Construction" in the Partnership Agreement).

II.

The "Pre-Build" Project

The concept of a "Pre-Build" project appeared both in the *President's Decision* on ANGTS and in the companion National Energy Board (NEB) decision in Canada. Those decisions recognized that both countries might benefit from a new export of surplus Canadian gas to the U.S., and that such gas, if transported through "pre-built" portions of the total ANGTS in southern Canada and the lower-48 states, could provide significant assistance to successful completion of the entire ANGTS. In pursuance of this objective, Pan-Alberta Gas Co. thereafter contracted to sell 1.04 billion cubic feet per day (1.04 BCF/d) of Canadian gas to Northwest Alaskan Pipeline Company, the managing partner for the Alaskan segment of ANGTS, over a term of 12 years. Northwest Alaskan in turn contracted to resell such gas to:

1) Pacific Interstate Transmission Company, 240,000 Mcf per day (240 MMCF/d), for delivery to Southern California through U.S. "Western Leg" facilities;

2) (a) United Gas Pipeline Company, 450,000 Mcf per day (450 MMCF/d), reducible to 400 MMCF/d commencing with the third contract year,

(b) Northern Natural Gas Company, 200,000 Mcf per day (200 MMCF/d), increasing at Northern's option to 250 MMCF/d commencing with the third contract year, and

(c) Panhandle Eastern Pipeline Company, 150,000 Mcf per day (150 MMCF/d),

with the total volume of 800 MMCF/d to be transported by Northern Border, the U.S. "Eastern Leg" facility.

Engineering studies established that Northern Border could accomplish delivery of the 800 MMCF/d to the three purchasers by constructing 809 miles of 42 inch pipeline to a point near Ventura, Iowa, together with one 16,200 HP compressor station in MacKenzie County, North Dakota. All the gas will be delivered physically to Northern Natural, which will redeliver to United and Panhandle through existing facilities and interconnections by exchange or transportation-displacement arrangements. The necessary agreements to effect such redelivery have been executed. These "Pre-Build" facilities comprise a significant portion of the 1,117 miles of 42" pipeline and seven 16,200 HP compressor stations originally approved by the President's Decision for the full Northern Border segment of ANGTS.

At least some part of the 800 MMCF/d transported through Northern Border ultimately reaches almost all states lying east of the Rockies.

United, Panhandle and Northern serve a very broad range of states directly. They also make substantial sales to other pipeline companies, some of whom again sell to still other pipelines; the end result is that they make gas available from Montana to Texas, from New England to Florida, and throughout the plains, the mid-west, the south, Appalachia and the eastern seaboard.

III.

Benefits to ANGTS of "Pre-Building."

Northern Border's economic studies fully verify the President's view that "pre-building" a portion of Northern Border will be of significant benefit to the entire ANGTS, as well as providing a welcome increment of additional energy at a time when the nation sorely needs it. "Pre-building" will benefit the entire ANGTS in at least seven major respects:

1) It will produce "economies of scale"--i.e., the increased total volume of gas to be transported through the 42" pipeline over the life of the project reduces the unit cost of amortizing the capital cost of the segment, thus reducing the unit transportation cost of Alaskan gas (and Canadian gas also, once both volumes are flowing).
2) The current dollar cost of constructing Northern Border will be reduced by earlier construction avoiding three or more years of inflationary cost escalation.
3) By the time Alaskan gas commences to flow, the Northern Border facilities will be partially depreciated, thus reducing capital charges on the Alaskan gas.

The combined effect of these first three benefits, stated in current dollars over a 25-year delivery period for Alaskan gas, is a savings in the cost of transportation of Alaskan gas of approximately $3.8 billion. Additional savings would be realized through operation of the same economic principles on the "pre-built" Canadian portion and U.S. Western Leg facilities; those savings would exceed $1 billion. The calculation of Northern Border savings assumes a time lag of three years between commencement of flow of Canadian gas and flow of Alaskan gas; the figure would be reduced by a shorter time interval, and increased by a longer one.

4) The early operation of Northern Border will provide additional cash flow to its sponsors (partners), better enabling them to participate in the equity financing of the full ANGTS.

The magnitude of this benefit to the equity financing of the entire ANGTS is most impressive. For example, the total current dollar equity cash requirements are actually less for Northern Border to construct the facilities required to transport both Canadian gas (three years early) and Alaskan gas, than for facilities for Alaskan gas alone (three years later), due to avoidance of inflation; net of cash distributions to the sponsors, the equity cash requirements in current dollars are some $530 million less for construction of facilities required for both Canadian and Alaskan gas than for Alaskan gas alone. It is also extremely important that the peak year equity cash requirement is both reduced by about $150 million for construction of facilities for both sources of gas, and shifted to an earlier date than that for Alaskan segment peak requirements; without pre-building, the peak year cash equity requirement for Northern Border alone will exceed $500 million, and will occur simultaneously with very large Alaskan segment equity cash requirements.

5) By staggering construction periods for "pre-build" and the full ANGTS, demands on suppliers of materials, contractors and labor at any given time are reduced, which offers potential cost savings due to increased competition and greater assurance that construction schedules will be met.

6) Similarly, staggering the construction periods for "pre-build" and the full ANGTS reduces the demand at any given time for capital (equity and debt), thus improving the capability and willingness of investors to finance the full ANGTS.

7) Perhaps most importantly of all, early construction and operation of Northern Border (and other "pre-build" segments) will increase investor confidence in the financing of the full ANGTS, a factor which well could be critical to the ultimate success of the full project financing.

It is difficult to overstate the importance of Benefit 7. While it is true that a successful "pre-building" of Northern Border and other U. S. and Canadian ANGTS segments cannot, of itself, assure successful financing of the entire ANGTS, to have a large percentage of the total system authorized and financed on terms deemed reasonable by both regulators and investors must increase investor confidence in the viability of the total system. Having undertaken the "pre-build" proposal, it is now crucial both to Northern Border and to ANGTS that it succeed.

IV.

Current Status of "Pre-Build" Proposal

The status of the proposal today is encouraging. The Federal Energy Regulatory Commission (FERC) not only has acted expeditiously to date, but has required its Administrative Law Judges, Alaska Gas Office and Staff, as well as the applicants and other parties, to proceed with utmost expedition. Similar expedition is being accorded the companion Pan-Alberta Gas Co. applications in Canada. FERC has directed that the "pre-build" applications be tried in three phases, in large part because of the applicants' belief that such procedure would achieve maximum expedition. (A description of the Phases, and the issues to be addressed in each Phase, is embodied in FERC's Order of April 20, 1979, in Docket Nos. CP78-123, et al). The hearings on Phase I were completed in July and briefed to FERC, and a Phase I decision is expected in the near future. The hearings on all Phase II issues respecting the Western Leg, the gas purchase and sales contracts, and such Eastern Leg issues as could be addressed prior to issuance of FERC's Opinion and Order in Docket RM78-12 on the Incentive Rate of Return (IROR) mechanism also have been concluded, and the applicants have moved for waiver of the intermediate decision procedure and setting of briefing dates.

FERC's final Order 31-B in Docket RM78-12 was issued September 5, 1979, determining the methodology for application of the IROR mechanism. On September 6, 1979, FERC ordered Northern Border to file its certification capital cost estimate for the "pre-build" facilities by October 15, 1979, and directed the Presiding Judge to conclude hearings thereon by December 3, 1979.

For the reason set forth in detail in section V. hereof, explaining the Norther Border construction schedule, Northern Border today found it necessary to advise the FERC it could not meet that filing schedule, and to request an extension to November 15 to file. However, in preparation for the filing, meetings have been held with representatives of FERC's Alaska Gas Office and Staff, the Federal Inspector's Office and Department of Energy to determine the format for presentation of the cost estimate. All underlying work papers which could be made available prior to filing the estimate have been furnished FERC Staff representatives, and an additional set of work papers is being made available for public inspection in FERC's Alaska Gas Office. We also anticipate the holding of technical conferences (open to the public) with FERC Staff on the capital cost estimates after the estimates are filed.

In addition to the filing and hearing dates set by FERC, the Presiding Judge has fixed other dates in an effort to assure maximum expedition. He has directed that all Phase III evidence (pertaining to any competitive issues sought to be raised by any party), and all evidence pertaining to special tariff provisions proposed by the buyers and shippers of gas, be filed by October 19, with hearings thereon to commence October 25.

On October 31, Northern Border was directed to file its "pre-build" financing, economic and tariff evidence, but since these cannot be finalized until after the final capital cost figures have been determined, we are requesting extension of that filing date to December 3, 1979. We expect hearings on the capital cost estimates and on the Northern Border finance and economic evidence will be at the earliest date possible after allowance of the necessary time for analysis and possible filing of answering or rebuttal evidence.

It is Northern Border's present intention to file the following very detailed cost estimating exhibits, and an appropriate construction schedule:

1) Summary of March, 1977, estimate in 1975 dollars.
2) Summary and details of 1977 estimate by Certification estimate work breakdown structure in 1975 dollars.
3) Summary and details of 1977 estimate by WBS in 1979 dollars.
4) Summary and details of Certification estimate by WBS in 1979 dollars.
5) Summary and details of the variances between (3) and (4).
6) Summary and details of Certification estimate by inflation adjustment cost category in 1979 dollars (by quarter).
7) Certification estimate in escalated dollars.
8) Proposed labor inflation adjustment index
    a) Pipeline
    b) Compressor station and other.

In addition, the following work papers will be made available at FERC for use by its Staff or others in analyzing such exhibits:

1) Details of pipeline quantities by location (maps or county summary).

2) Pipeline bids and Monte Carlo distribution of results.

3) Split between the Second Amended Application for 1,117 miles and the "pre-build" Application for 809 miles.

4) Computer run showing details of the compressor station estimate.

5) Other detailed estimates required (measuring station, etc.).

FERC Staff and other parties may file answering evidence taking issue with the Northern Border capital cost estimate and the finance-economic evidence, in whole or in part; if so, Northern Border may file rebuttal evidence addressing the issues raised.

An additional timing complexity is presented by the request of Trans-Canada Pipelines, Ltd., a Canadian company, to join the Northern Border partnership pursuant to various terms and conditions proposed by Trans-Canada. As this was written, the TransCanada request had been under active negotiation for some time, but had not been concluded on a mutually agreeable basis. It is probable that such negotiations will be concluded in the near future; if TransCanada does become a partner, it will be necessary to prepare appropriate legal documentation and to prepare the finance and economic evidence on a basis reflecting its admission as a partner, and the terms and conditions thereof. The filing dates suggested above could be affected by the date of resolution of the TransCanada negotiations. Even allowing for the suggested revisions of filing dates we believe hearings could be concluded in early January, 1980, with an FERC decision to follow as promptly as needed to permit the procurement and construction schedule to be met.

Northern Border also is proceeding energetically on other matters than regulatory proceedings. In anticipation of right-of-way acquisition at an early date, Northern Border has opened four regional right-of-way offices to maintain liaison with landowners and state and local officials. Every effort is being made to answer legitimate questions, and disseminate information about the route of the line and the nature of construction activities. To that end, five local public meetings already have been held, one in each county traversed in Minnesota, with three more planned this week in Iowa. The meetings held to date have been well attended by landowners and some agencies; we have been very encouraged by the reception we have received, and intend to continue a maximum effort to maintain cordial relations with our future neighbors.

V.

The Northern Border Construction Schedule

The Northern Border construction schedule has always contemplated a two year construction period commencing in late spring, following a sufficient time period for procurement of material, equipment and contractors to make all items needed for commencement of construction available on site by the start of such construction period. On a "crash" basis for construction, the possibility of reducing the construction period to one year also was present. Northern Border originally planned its procurement program for late 1979 and early 1980 to permit commencement of construction after thaw in the late spring of 1980, and completion by November 1, 1981, inasmuch as all United States and Canadian approvals were not received in time to hold this schedule, a timing problem exists. A "crash" construction schedule targeted on a November 1, 1981, completion date remains a possibility under certain conditions, but Northern Border's adoption of this approach will require a revision in costs.

The business risk to Northern Border partners of undertaking such a "crash" program must be, and is being, carefully studied. In FERC Docket RM78-12, Order 17-A on January 17, 1979, applied the IROR mechanism to Northern Border, but did not detail what that mechanism would be, or how it would be applied. Order 31-B, on September 5, 1979, did so, and detailed study of that Order revealed the magnitude of the exposure Northern Border faced if its construction schedule should prove over optimistic. Before filing its capital cost estimates with the FERC, Northern Border has reexamined the question of whether to use a one year or a two year construction schedule. We believe a "crash" schedule, which could achieve completion by November 1, 1981, can be undertaken if the partnership determined that the risks of this action, in terms of Orders 17-A and 31-B, as applied to Northern Border, are not prohibitive.

VI.

Northern Border Capital Costs and Costs of Transportation

Our capital cost estimate, to be filed as soon as possible, had not been finalized as this was written. In any event, that estimate stated in 1979 dollars (with finance charges, or AFUDC, computed at a "real" interest rate of 5%) avoids uncertainty as to the rate of inflation and cost of capital which in fact will be experienced. The 1979 dollar estimates thus do not reflect the current dollar costs actually to be incurred, which must be financed, which will appear on the books of account, and from which the cost of service and charges to customers will be computed. Taking all factors into consideration, we believe that a total current dollar capital investment, including AFUDC (finance charges), in the order of magnitude of $1.5 billion.

is probably as reasonable an estimate as might be made today. Such an investment cost would result in an order of magnitude transportation charge of $1.40 per Mcf for Canadian gas delivered to Ventura, Iowa, in the first year, with an average cost over the term of a 12-year contract of approximately $0.97 per Mcf. With the advent of Alaskan gas, that 12-year average transportation cost for Canadian gas should be reduced by approximately one-third. These figures, both for investment cost and cost of transportation service, should be considered as no more than reasonable approximations, since they are quite sensitive to variations in rates of inflation and costs of money actually incurred as compared to those assumed.

VII.

Route and Design

The route of the Northern Border pipeline is virtually identical with that approved by the President. There are two presently planned minor deviations from that route. One deviation routes the line around instead of through the Ordway Memorial Prairie in McPherson County, South Dakota, in compliance with a suggestion in Judge Litt's Initial Decision in 1976. The other avoids certain coal deposits in Dunn County, North Dakota, which the route previously traversed. Environmental assessments have been filed on both deviations, establishing that the terrain and wildlife encountered for each deviation is virtually the same as the original route, and that no additional environmental problems will be encountered, or new or additional mitigative measures required. In our opinion, no further Environmental Impact Statement is required for these two deviations.

One other route deviation is possible. If we should be unable to acquire a right-of-way across the Fort Peck Indian Reservation in Montana on acceptable terms, it will be necessary to route the line around the reservation, since we do not have eminent domain powers over Indian lands. We do not expect this to happen, but we have located an alternate route avoiding the reservation, and performed and filed an environmental assessment thereof. Montana State authorities are preparing an environmental impact statement suitable for adoption by Federal agencies if one should become necessary.

The basic design (pipe size, allowable operating pressure, horsepower installed at compressor stations) of the pipeline remains the same as originally proposed, and approved by the President's Decision. For the "pre-build" operation, the design capacity is 800,000 Mcf per day on an annual average basis. That capacity can be increased to approximately 2,200,000 Mcf per day by the addition of compressor stations (up to 14 in all) without looping the line.

Northern Border has requested that FERC provide it with sufficient flexibility in authorizing the line to permit it to install the most economic grade of pipe and type of compressor equipment. Either of two grades of 42" pipe could be installed: 65 or 70. Either would permit operation at up to 1,435 psig, meeting design requirements, and each is approved by the Department of Transportation. The choice is thus one of economics, and the answer will depend primarily on supplier bids for each grade.

It is also possible to employ either gas-driven or electric-driven equipment at compressor stations. This economic equation is somewhat more complex, since reliability of service, cost of electric power, and value of fuel gas must be considered, as well as the purchase price and installation cost of the equipment. Flexibility in choice of equipment should increase competition between suppliers, and assure the lowest cost to consumers.

VIII.

Financing

Always assuming all necessary regulatory authorizations are issued by FERC and NEB on satisfactory terms, Northern Border is completely confident the "pre-build" facilities can be financed promptly after issuance of such satisfactory authorizations. The financing plan calls for an approximate 70%-30% debt-equity capital ratio, with the equity funds to be provided by the Northern Border partners and the debt funds by commercial banks (quite possibly including Canadian banks). An equal drawdown of equity and debt funds is contemplated until all equity funds are committed, with debt funds employed thereafter. Although no formal or legally binding commitments have yet been executed either by the partners or any commercial banks, the financing requirements have been discussed fully, and both equity and debt investors have informally expressed their positive interest in financing the project under the stated conditions, with precise terms yet to be negotiated and appropriate documentation to be prepared. Forms of equity commitment agreements and bank letters of intent are now being circulated.

IX.

Beyond The "Pre-Build"

This presentation has focused on the "pre-build proposal because that is what is immediately before us, and because its successful completion would provide such great impetus toward successful completion of the entire ANGTS on a privately financed basis. Assuming final authorization of "pre-build" during the first half of 1980, we visualize no unusual problems in completing the full Northern Border project for Alaskan gas service. The problems normally attendant on any major pipeline construction project will have to be solved, of course, but we foresee no more difficulty in that regard than would be the case for any other pipeline. In the critical area of financing, completion of "pre-build" will eliminate some and significantly alleviate all of the problems Northern Border would have faced in constructing its system for transportation of Alaskan gas without the benefit of "pre-build." Insofar as equity funding is concerned, the Northern Border sponsors are committed under the partnership agreement to provide equity funds to complete Northern Border if "pre-build" is consummated. Moreover, assuming a three year time lag between commencement of flow of Canadian "pre-build" gas and Alaskan gas, the usable cash flow to the partners from "pre-build" operations should approximately equal their obligations to provide equity funds for completion, so the "pre-build" not only fixes the partners' obligation to provide equity but furnishes the wherewithal to do so. Insofar as debt funding is concerned, that problem will be greatly reduced by Northern Border's status as an existing, operating pipeline with assured revenues independent of the Alaskan gas service. In short, Northern Border will be ready to proceed whenever the other segments of ANGTS are, fully confident of its ability to do so.

57-087 O - 80 - 53

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

October 23, 1979

Mr. Conrad Pyle
Projects Director
Northern Border Pipeline Company
c/o Northern Natural Gas Company
223 Dodge Street
Omaha, Nebraska 68102

Dear Mr. Pyle:

As I indicated at the beginning of the hearings on the Alaska Natural Gas Transportation System, I am providing you with some written questions. Your responses will be included in the record. The Subcommittee would appreciate answers to the following questions:

1. What is the effect of the U.S. - Canadian procurement agreements on the progress of your segment of the pipeline?

2. What will be the effect on your plans if "prebuild" is not approved in Canada?

3. Regarding "prebuild" approval, what kind of assurances can you give to the Canadian Government that the entire system will be built?

4. Referring to your statement on page 10, will you please list the benefits which would be expected to your partnership should TransCanada join?

5. As a new member, would a profit discount be imposed on TransCanada?

October 23, 1979
Page two

It is requested that your response to these questions be sent to the Subcommittee as soon as possible in order to make the complete hearing record available to the public in a timely manner.

Sincerely,

HAROLD RUNNELS
Chairman
Oversight and Investigations
Subcommittee

jgh

2223 Dodge Street
Omaha, Nebraska 68102
Telephone (402) 348-4085

Northern Border Pipeline Company

RECEIVED PM 3:32 HAROLD RUNNELS, M.C.

November 28, 1979

The Honorable Harold Runnels
Chairman, Oversight and
Investigations Subcommittee
Committee on Interior and Insular Affairs
U. S. House of Representatives
Washington, D. C. 20515

Dear Chairman Runnels:

Enclosed are answers to the several questions which I received in your letter of October 23, 1979 regarding the hearings on the Alaska Natural Gas Transportation System. I hope that these answers will be valuable in completing the hearing record.

If you have any further questions, I would be glad to answer those in the future.

Sincerely,

J. Conrad Pyle

J. Conrad Pyle
Project Manager

JCP:imj
Enclosures

Answers to Written Questions Submitted
to Northern Border Pipeline Company by
Committee on Interior and Insular Affairs
October 23, 1979

Date of Response: November 28, 1979

1. What is the effect of the U. S. - Canadian procurement agreements on the progress of your segment of the pipeline?

So far the U. S./Canadian Procurement Process has not interfered with the progress of the Northern Border segment of the Alaska Natural Gas Transportation System basically because only a draft plan has been circulated. Northern Border has proceeded to advertise and obtain quotations on major materials and equipment for the purposes of preparing its Certification Cost and Schedule Estimate. Canadian suppliers have been invited to bid. We have not had the luxury of time to accommodate the procedures for the review of bid lists and specifications as prescribed in the draft plan of the procurement process. As a result, much of the work and information obtained from these bids may be worthless if the Procurement Process Agreement is made retroactive and Northern Border is unable to use the bids which it has received already. In addition, future procurement activities will be slowed by the implementation of the draft plan. We are attempting to revise our schedules to accommodate a one year construction period after the necessary time from procurement and construction mobilization. The primary purpose is to retain the ability to place the pipeline in service by November 1981. If the procurement time is lengthened, it may cancel any benefits gained by attempting the one year crash construction schedule.

2. What will be the effect on your plans if "prebuild" is not approved in Canada?

If the prebuild is simply denied outright in Canada, then Northern Border will turn its efforts to assuring construction of Northern Border concurrently with the construction of the entire ANGTS. In short, we would expect to continue active prosecution of ANGTS, including Northern Border, on an intensive basis.

If the prebuild should be approved in Canada, but on terms and conditions differing from those on which Northern Border's plans and application are based, then Northern Border would have to ascertain its ability, and the willingness of its sponsors, to prosecute the prebuild to conclusion on the terms of the authorization. This same position would apply if U. S. authorizations differed from plans and applications. If unable or unwilling to proceed with prebuild pursuant to the authorization granted, Northern Border's position would be the same as in the case of an outright denial. If able and willing to proceed, Northern Border would do so, but probably would have to file further evidence of its method of compliance with the Federal Energy Regulatory Commission.

3. Regarding "prebuild" approval, what kind of assurances can you give to the Canadian Government that the entire system will be built?

It is not within Northern Border's power to assure either the Canadian government or any other entity that the entire system will be built, but we can assure the Canadian government that Northern Border will be built as a part of the entire system when the necessary financing and regulatory approvals for the entire system are in final form. We believe our evidence in the prebuild case offers assurance that Northern Border, as an individual entity, can be financed and constructed so long as it has assured sources of supply. We would emphasize that, viewing Northern Border in isolation, it consists of a lower-48 pipeline employing designs and construction techniques which are in current use and with which Northern Border is familiar and experienced. Northern Border presents no peculiar or unique financing or construction problems as a separate entity; the fundamental problem lies in completing the Alaskan and Canadian segments of the system to ensure that Alaskan gas will be delivered to Northern Border.

Insofar as assurance of completion of the Alaskan and Canadian segments is concerned, the managers of those sections are much better equipped to provide such assurance than is Northern Border. However, we would point to recent favorable developments as providing substantially greater assurance of completion of those segments than has heretofore been the case. The decision of TransCanada to join Northern Border is only one of these recent developments.

Another development of utmost importance is the indicated willingness of Alaskan gas producers at least to consider financial support of the Alaskan segment. The attitude of the Alaskan state government toward state financial and other support also seems to be more favorable than has heretofore been the case. While such support, either from the producers or the state, remains to be negotiated on any definitive basis, it is our firm conviction that successful negotiation of significant financial support from those sources, together with realistic regulatory actions, would assure completion of the entire system. Governmental actions and approvals needed to implement any financial support agreements reached between private parties could include affirmative congressional action under some circumstances.

4. Referring to your statement on page 10, will you please list the benefits which would be expected to your partnership should TransCanada join?

We believe that the benefits derived from the joining of TransCanada as a partner are best and most accurately described in the agreement executed between Northern Border and TransCanada dated as of October 25, 1979. We enclose a copy of that agreement herewith. Your particular attention is invited to Article VIII (commencing at page 10), respecting TransCanada's obligation to transport gas through Northern Border, if necessary, to supplement the volumes authorized for export, and to Article X (commencing at page 21), with respect to TransCanada's undertaking to provide financing. We recognize that the agreement is complex, and that you or your staff may have questions concerning the operation of such agreement after studying it. We would be pleased to undertake to answer any such questions. In due course, the agreement will be the subject of hearings before the Federal Energy Regulatory Commission and your staff may wish to monitor that hearing, at which all aspects of the agreement will be discussed fully.

5. As a new member, would a profit discount be imposed on TransCanada?

No. See Northern Border/TransCanada Agreement mentioned above.

NOTICE: A PORTION OF THIS CONTRACT IS SUBJECT TO ARBITRATION UNDER TEX. REV. CIV. STAT., ART. 224.

AGREEMENT DATED AS OF OCTOBER 25, 1979
AMONG
NORTHERN BORDER PIPELINE COMPANY
TRANSCANADA PIPELINES LIMITED
AND
TRANSCANADA BORDER PIPELINE LTD.

THIS AGREEMENT dated as of October 25, 1979 ("First Supplement") by and among NORTHERN BORDER PIPELINE COMPANY, a Texas general partnership ("Partnership") formed pursuant to the Northern Border Pipeline Company General Partnership Agreement effective as of March 9, 1978 ("Partnership Agreement"), TRANSCANADA PIPELINES LIMITED, a Canadian corporation ("TransCanada"), and TRANSCANADA BORDER PIPELINE LTD., a Nevada corporation ("TransCanada Border") and an indirectly wholly owned subsidiary of TransCanada,

WITNESSETH THAT:

WHEREAS, TransCanada Border has requested the Partnership to admit TransCanada Border as a Partner on the terms and conditions set forth in this First Supplement, and the Partnership is willing to admit TransCanada Border as a Partner on such terms and conditions; and

WHEREAS, TransCanada desires to have the Partnership transport Gas for TransCanada's account through the Line on the terms and subject to the conditions set forth in this First Supplement, which terms and conditions entail, among other things, certain amendments to the Partnership's Tariff as now on file with the FERC: and

WHEREAS, TransCanada believes that the debt financing necessary for the construction of the Phase I Project can be obtained on commercially reasonable terms and is willing to undertake to arrange for such financing; and

WHEREAS, the Partnership is willing to transport Gas for TransCanada's account on the terms and subject to the conditions set forth of this First Supplement.

NOW, THEREFORE, the Partnership, TransCanada and TransCanada Border, intending to be legally bound hereby, agree as follows:

I

In accordance with the provisions of this First Supplement and the Partnership Agreement as amended hereby, TransCanada Border shall become a Partner in the Partnership as of November 1, 1979 (hereinafter called the "Admission Date"). In consideration of becoming a Partner, TransCanada Border shall make capital contributions to the Partnership on the terms and subject to the conditions of Section 4 of the Partnership Agreement, as amended by this First Supplement.

II

Section 4.1.3 of the Partnership Agreement is amended, effective as of the Admission Date, to read as follows:

"4.1.3 Qualified Expenditures shall be subject to review and verification by the FERC, and only those expenditures found by the FERC to reflect reasonable and necessary expenditures, prudently incurred, shall be retained in the Capital Accounts, and then only to the extent that the FERC authorizes the inclusion thereof as a capital expenditure appropriately made on behalf of the Partnership for inclusion in rate base. Any disallowance by the FERC of an amount included in any Capital Account under Section 4.1 shall be reflected forthwith in a retroactive adjustment of (i) the Capital Account from which such amount was so disallowed and (ii) all other Capital Accounts affected by such disallowance in accordance with this Agreement. In the event such disallowance occurs after the ownership interest of each Partner has been determined in accordance with Section 4.3.1, the retroactive adjustment required by this Section 4.1.3 shall not affect the division of interests determined in accordance with Section 4.3.1, but shall instead be reflected in the amount of capital required to be contributed by the Partners pursuant to Section 4.3.2."

III

Section 4.2 of the Partnership Agreement is amended, effective as of the Admission Date, to read as follows:

"4.2 Pre-Commitment Date Capital Investment:

4.2.1 Each Partner, other than TransCanada Border, agrees to contribute to the Partnership, for the period commencing with the Formation Date and ending with October 31, 1979, an amount equal to the anticipated cash requirements of the Partnership during such period divided by the number of Partners, other than TransCanada Border.

4.2.2 TransCanada Border agrees to contribute to the Partnership that amount which is determined by dividing thirty percent (30%) of the total of the Capital Accounts of all Partners (other than Trans-Canada Border) as of October 31, 1979 by seven-tenths (0.7).

4.2.3 TransCanada Border agrees to contribute to the Partnership, for the period commencing with November 1, 1979 and ending with the Commitment Date, an amount equal to thirty percent (30%) of the amount by which the anticipated cash requirements of the Partnership during such period exceeds the amount to be contributed by TransCanada Border pursuant to Section 4.2.2.

4.2.4 Each Partner, other than TransCanada Border, agrees to contribute to the Partnership, for the period commencing with November 1, 1979 and ending with the Commitment Date, an amount equal to (i) the amount by which the anticipated cash requirements of the Partnership during such period exceeds the amounts contributed by TransCanada Border pursuant to Section 4.2.2 and 4.2.3, divided by (ii) the number of Partners, other than TransCanada Border.

4.2.5 Notwithstanding anything to the contrary in Section 4.5, the Management Committee shall request payment to be made of the entire amount to be contributed by TransCanada Border pursuant to Section 4.2.2 on or before the date ownership interests in the Partnership are determined pursuant to Section 4.3.1 and on or before the date any capital contributions are to be made in accordance with Sections 4.2.3 and 4.2.4, and, so long as TransCanada Border shall remain a Partner, no other Partner shall make, and the Management Committee shall not request payment of, any capital contributions pursuant to Section 4.2.4 unless the Management Committee shall have requested payment on the same date from TransCanada Border pursuant to Section 4.2.3 of a capital contribution equal to three-sevenths (3/7) of the capital contributions requested to be made on such date by all

Partners other than TransCanada Border pursuant to Section 4.2.4."

IV

Section 1 of the Partnership Agreement is amended, effective as of the Admission Date, to include therein a new Section 1.5 to be and read as follows:

"1.5 TransCanada Border PipeLine Ltd. (hereinafter called 'TransCanada Border') a corporation organized under the laws of the State of Nevada. TransCanada Border represents that: (a) all of its capital stock is owned by TransCanada PipeLine USA Ltd., a Nevada corporation, and a wholly owned subsidiary of TransCanada PipeLines Ltd. ("TransCanada"), a Canadian corporation: and (b) TransCanada, subject to their terms and conditions of this First Supplement, intends to become a Shipper."

V

Section 4.3.1 of the Partnership Agreement is amended, effective as of the Admission Date, to read as follows:

"4.3.1 Prior to the Commitment Date, the ownership interest in the Partnership shall be apportioned as follows: thirty percent (30%) to TransCanada Border, provided that TransCanada Border remains a Partner at the time of such apportionment; and the ownership interest in the Partnership which is not so apportioned to TransCanada Border (the 'remaining ownership interest') to the Partners other than TransCanada Border (the 'remaining Partners') as the remaining Partners shall mutually agree; provided, however, that if such mutual agreement apportions to any remaining Partner an ownership interest in the Partnership of greater than thirty percent (30%), such mutual agreement shall not be effective without the written consent thereto of TransCanada Border, provided that TransCanada Border remains a Partner at the time of such agreement. If such mutual consent cannot be reached or if such mutual agreement requires the written consent of TransCanada Border and TransCanada Border shall withhold such consent, the remaining ownership interest shall be apportioned among the remaining Partners in accordance with the following formula, which formula cannot be applied prior to the Commitment Date as defined above unless the Management Committee shall determine, by a vote of majority of the remaining Partners, an earlier date; provided, however, that such date shall not, without the written consent of all Partners, be earlier than the date upon which the Partnership files with the FERC notice of acceptance of the FERC Certificate:

(i) Each Partner, other than TransCanada Border, shall have the right, at its option, to elect by written notice to the other Partners, other than TransCanada Border, any portion of the remaining ownership interest in the Partnership, but not more than that interest which, expressed as a percentage of the total remaining ownership interest, equals the Pre-Commitment Expenditures of such Partner divided by the total of the Pre-Commitment Expenditures of all Partners, other than TransCanada Border, with such Pre-Commitment Expenditures exclusive of any allowance for funds used during construction for purposes of applying the formula (each Partner, other than TransCanada Border, which elects the maximum ownership percentage in the Partnership to which it shall be entitled pursuant to this Section 4.3.1(i) being hereinafter called a 'Maximum Interest Elector');

(ii) In the event all Partners, other than TransCanada Border, shall not be Maximum Interest Electors, the aggregate remaining ownership interest in the Partnership which has not been elected by the Partners pursuant to Section 4.3.1 (hereinafter called the 'Available Interest') shall be subject to subscription by the Maximum Interest Electors as follows: Each Maximum Interest Elector shall have the privilege of subscribing by written notice to the other Partners for all or any portion of the Available Interest, subject, in the case the Available Interest is oversubscribed pursuant to this Section 4.3.1 (ii), to allotment among the Maximum Interest Electors exercising such privilege in the ratio that the capital contributions made pursuant to Section 4.2 (hereinafter called the 'Section 4.2 Investments') by each such Maximum Interest Elector bears to the total Section 4.2 Investments of all such Maximum Interest Electors; provided, however, that the maximum ownership interest in the Partnership which any Maximum Interest Elector shall obtain pursuant to Section 4.3.1(i) and this Section 4.3.1(ii) shall be thirty percent (30%); and provided, further, that if any Maximum Interest Elector would have obtained a maximum ownership interest of greater than thirty percent (30%) but for the next preceding proviso, no other Maximum Interest Elector shall obtain a greater ownership interest pursuant to this Section 4.3.1(ii) than such Maximum Interest Elector;

(iii) In the event the entire Available Interest shall not be subscribed for pursuant to Section 4.3.1(ii), the portion not so subscribed for shall be subject to subscription pursuant to this Section 4.3.1(iii) by TransCanada Border and the Maximum Interest Electors as follows: TransCanada Border and each Maximum Interest Elector shall have the privilege of subscribing by written notice to the other Partners for all or any portion of the remaining Available Interest, subject, in the case the remaining Available Interest is oversubscribed pursuant to this Section 4.3.1(iii), to allotment among TransCanada Border (if it shall exercise such privilege) and the Maximum Interest Electors exercising such privilege in equal amounts.

(iv) For the purposes of Sections 4.3.1(i) and, 4.3.1(ii), the Pre-Commitment Expenditures and Section 4.2 Investments made by the Partners as of the end of the most current month next preceding the date upon which the ownership interests are determined shall be used."

VI

Section 4.3.5 of the Partnership Agreement is amended, effective as of the Admission Date, to read as follows:

"4.3.5 When construction of the Phase I Project is completed and the Management Committee determines that the Incremental Facilities are to be constructed, the Management Committee shall determine, by a vote of representatives of Partners owning not less than two-thirds of the Partner's Percentages of the Partners, the amount of the then Estimated Cost of the Incremental Facilities which should be financed with equity funds, including (i) equity funds generated by the operations of the Partnership and (ii) equity funds raised through contributions of additional capital by the Partners to their Capital Accounts (such amount of new equity funds to be raised by contributions being hereinafter called the 'Additional Equity Requirements')."

VII

Section 4.3.6 of the Partnership Agreement is amended, effective as of the Admission Date, to read as follows:

"4.3.6 When the Additional Equity Requirements, if any, of the Partnership have been determined pursuant to Section 4.3.5, each Person who has been admitted to the Partnership pursuant to Section 11.1.1(i) (hereinafter called a 'New Partner') shall have the privilege of subscribing for up to seven and one-half percent (7.5%) of the Additional Equity Requirements; provided, however, that in no event shall the new capital subscribed to and contributed by all New Partners exceed thirty percent (30%) of the Additional Equity Requirements. The portion of the Additional Equity Requirements remaining after the New Partners have made their election (hereinafter called the 'Remaining Requirements') shall be taken up and satisfied as follows:

(i) TransCanada Border, provided that it is a Partner when the Additional Equity Requirements, if any, are determined pursuant to Section 4.3.5, shall contribute capital in satisfaction of twenty-five percent (25%) of the Remaining Requirements. In addition, TransCanada Border, provided that it is a Partner when the Additional Equity Requirements, if any, are determined pursuant to Section 4.3.5, shall have the privilege of subscribing to contribute capital in satisfaction of any portion of the Unsubscribed Percentage of the Balance (as hereinafter defined). As used in Section 4.3.6(ii)(c), the percentage of the Remaining Requirements which TransCanada Border shall be obligated to contribute and satisfy pursuant to this Section 4.3.6(i) (including the portion of the Unsubscribed Percentage, if any, subscribed for pursuant to the second sentence hereof) shall be TransCanada Border's Original Elected Percentage.

(ii) The Remaining Requirements not to be contributed by TransCanada Border pursuant to the first sentence of Section 4.3.6(i) (hereinafter called the 'Balance') shall be apportioned among the Partners other than the New Partners and TransCanada Border (hereinafter called the 'Other Partners') by mutual agreement of the Other Partners; provided, however, that if such mutual agreement cannot be reached within thirty (30) days after the Additional Equity Requirements, if any, are determined pursuant to Section 4.3.5, the Balance shall be contributed and satisfied by the Other Partners and TransCanada Border (in the event there shall be an Unsubscribed Percentage), in accordance with the following provisions:

(a) Each Other Partner shall have the right, at its option, to elect, by written notice to all Other Partners and TransCanada Border, to satisfy any percentage of the Balance up to a percentage equal to its Partner's Percentage (any percentage so elected being hereinafter called an 'Original Elected Percentage'). For the purposes of this subsection (a) and subsections (b) and (c) below, the Capital Accounts of TransCanada Border and the New Partners are not to be considered Capital Accounts in the determination of the Partner's Percentages of the Other Partners.

(b) In the event the Original Elected Percentages of all Other Partners do not equal one hundred percent (100%) of the Balance, those Other Partners whose Original Elected Percentages equal their respective Partner's Percentages shall have the privilege of subscribing, by written notice to all Other Partners and to TransCanada Border, for any percentage of the Balance by which one hundred percent (100%) exceeds the aggregate Original Elected Percentages of all Other Partners' percentage of the Balance available for subscription pursuant to this subsection (b) (hereinafter called the 'Available Percentage'), subject, in the case the Available Percentage is oversubscribed pursuant to this subsection (b), to allotment among the Other Partners exercising such privilege, such allotment to be in proportion to the Partner's Percentages of the Other Partners exercising such privilege (any percentage of the Balance subscribed for pursuant to this subsection (b) being hereinafter called a 'Subscribed Percentage').

(c) In the event that one hundred percent (100%) of the Balance exceeds the sum of the Original Elected Percentages of all Other Partners and the Subscribed Percentages, if any, of all Other Partners (the excess percentage so determined being hereinafter called the 'Unsubscribed Percentage'), the Unsubscribed Percentage shall be subject to subscription by TransCanada Border as provided in Section 4.3.6(i) and, to the extent not subscribed for by TransCanada Border pursuant to Section 4.3.6(i), shall be allocated and required to be made up as follows. First, TransCanada Border, provided that it is a Partner when the Additional Equity Requirements are determined pursuant to Section 4.3.5, shall contribute capital in satisfaction of that portion of the entire remaining Unsubscribed Percentage of the Balance as shall equal the amount, if any, by which the product of TransCanada Border's Partnership Percentage (which, for the purposes of this subsection (c), means TransCanada Border's Partner's Percentage determined as if the Capital Accounts of the New Partners were not Capital Accounts) multiplied by the Remaining Requirements exceeds the product of TransCanada Border's Original Elected Percentage multiplied by the Remaining Requirements. Secondly, the Other Partners in Reduction (as hereinafter defined) shall contribute capital in satisfaction of any portion of the Unsubscribed Percentage of the Balance not required to be satisfied by TransCanada Border pursuant to the next preceding sentence hereof as follows (as used herein, the term 'Other Partner in Reduction' shall mean any Other Partner whose Original Elected Percentage was less than its Partner's Percentage, and the fraction, expressed as a percentage, the numerator of which is the amount by which the Partner's Percentage of such Other Partner in Reduction exceeds the Original Elected Percentage of such Other Partner in Reduction and the denominator of which is the Partner's Percentage of such Other Partner in Reduction is hereinafter called the 'Reduction Percentage of such Other Partner in Reduction'):

(1) The remaining Unsubscribed Percentage shall first be allocated to the Other Partner in Reduction with the greatest Reduction Percentage until the Reduction Percentage of such Other Partner in Reduction, as adjusted downward to reflect the portion of the remaining Unsubscribed Percentage so allocated, equals the Reduction Percentage of the Other Partner in Reduction with the next greatest Reduction Percentage;

(2) Any portion of the remaining Unsubscribed Percentage not allocated pursuant to clause (1) above shall be allocated to the Other Partners in Reduction with the greatest Reduction Percentage (after giving effect to clause (1) above) until the Reduction Percentage of each such Other Partner in Reduction, as adjusted downward to reflect the portion of the remaining Unsubscribed Percentage allocated pursuant to clause (1) above and this clause (2), equals the Reduction Percentage of the Other Partner in Reduction, if any, with the next greatest Reduction Percentage; and

(3) In the event any portion of the remaining Unsubscribed Percentage is not allocated pursuant to clauses (1) and (2) above, the unallocated portion shall continue to be allocated in accordance with the principles

set forth in clauses (1) and (2) above until the remaining Unsubscribed Percentage has been fully allocated; and

(iii) For the purposes of this Section 4.3.6, the Partners's Percentages as of the end of the most recent month next preceding the date the Additional Equity Requirements, if any, of the Partnership have been determined pursuant to Section 4.3.5 shall be used."

VIII

(1) TransCanada and the Partnership agree to use their respective best efforts to negotiate, execute and deliver, as soon as practicable after the date hereof and in any event prior to the Commitment Date, a service agreement between TransCanada, as a Shipper, and the Partnership, as the transporter, for the transportation through the Line for the account of TransCanada up to 800,000 Mcf per day or 292 billion cubic feet per year of its Canadian Gas (such service agreement being hereinafter called the "TransCanada Service Agreement"). The execution and initial effectiveness of the TransCanada Service Agreement shall be expressly subject to the FERC approving provisions for recovery by the Partnership of the investment in the Phase I Project by charging depreciation on a unit of throughput basis predicated on 4.164 TCF, which throughput may be achieved by a throughput of 800 MMCFD for 15 years at a 95% load factor, and be consistent with, and not contravene, any of the terms or provisions of the Partnership Agreement, this First Supplement or the Partnership's Tariff on file with the FERC at the date hereof (as such Tariff shall be modified as required by this First Supplement and/or FERC orders issued prior to the date hereof). In the event that the provisions for charging depreciation as set forth above should be changed after execution by TransCanada of the TransCanada Service Agreement because of the commencement of transportation by the Partnership of Alaskan gas as defined below, the TransCanada Service Agreement shall continue to be effective.

(2) The TransCanada Service Agreement shall be for a term of years that shall expire at the end of the fifteenth (15th) Tariff Year (as hereinafter defined) following the Billing Commencement Date (as defined in the Tariff); provided, however, that (A) the term of such agreement shall be extended by the aggregate period of time during which, as contemplated by Section (4) of this Article, no depreciation shall accrue under the Partnership's Tariff and (B) such agreement shall give TransCanada the right to shorten the term of the agreement to a date, to be selected by TransCanada (upon ninety (90) days notice to the Partnership) which occurs after the Partners have recovered, without any

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obligation (fixed or contingent) on their part or on the part of the Partnership to refund any portion of such recovery, the full original cost of the Partnership's depreciable property, plant and equipment for the Phase I Project, provided, that at such date the Management Committee has not determined that the Incremental Facilities are to be constructed. As used herein, the term "Tariff Year" shall mean a period of twelve (12) consecutive calendar months beginning at 8:00 A.M., Mountain Standard Time, on the Billing Commencement Date (as defined in the Partnership's Tariff), or on any annual anniversary of such day, and ending at 8:00 A.M., Mountain Standard Time, on the annual anniversary of such day in the next succeeding calendar year.

(3) The TransCanada Service Agreement will afford TransCanada the right to have the Partnership transport TransCanada's gas for its account in an amount equal to all or any portion of TransCanada's Tendered Volumes (such Tendered Volumes being, in any year, that volume of Canadian Gas which is the amount by which TransCanada's total sale and transportation obligations for that year exceeds 1,225 billion cubic feet) up to 800 MMCFD, or 292 BCF per year. The TransCanada Service Agreement shall further provide that TransCanada shall have the right to nominate the amount of such Tendered Volumes at least 18 months prior to the commencement of each Tariff year and that the Partnership shall be obligated to transport such nominated Tendered Volumes; provided, however, that with respect to that portion of the Tendered Volumes in excess of the amount shipped by the Partnership for TransCanada during the immediately preceding Tariff year, (a) the Partnership shall not be required to undertake any action with respect to the operation or potential expansion of the Line that a prudent Gas transmission company acting reasonably in the conduct of its own affairs would not undertake under the same or similar circumstances, (b) the exercise by TransCanada of the right to have such excess of the Tendered Volumes transported shall not require the Partnership to interrupt or reduce service to other Shippers of Canadian Gas destined for consumption in the United States or Shippers of Gas from the Prudhoe Bay area of the North Slope of Alaska ("Alaskan Gas"), and (c) such right shall be subject to the receipt by the Partnership of authorization from all governmental bodies exercising jurisdiction, which authorization shall be acceptable in form and substance to the Partnership.

(4) The TransCanada Service Agreement and the Partnership's Tariff shall contain terms and provisions to the effect that TransCanada shall in each Tariff Year, regardless of the amount of gas actually transported by the Partnership for TransCanada's account during such Tariff Year, be obligated to pay the Partnership minimum monthly fixed charges on the same basis as if the Minimum Annual Volumes applicable to such Tariff Year actually were transported during such Tariff Year. Such obligation of TransCanada to pay the Partnership shall be subject only to the adjustments expressly provided in Section 5 of Rate Schedule T-1 of the Partnership's Tariff on file with the FERC at the date hereof, and the monthly charges to be paid by TransCanada shall be determined in accordance with such Tariff, as in effect from time to time. If and to the extent that the volume of Canadian Gas authorized for export to the United States for sale at the terminus of the Line at the United States-Canada border to Shippers other than TransCanada shall be reduced below 800 MMCFD, the Contract Decatherm Miles (as defined in the Tariff) for each such Shipper other than TransCanada shall be reduced proportionately in its Service Agreement and the charges which each such Shipper shall be obligated to pay the Partnership under its Service Agreement shall be

reduced as determined by using these reduced Contract Decatherm Miles to compute the charges in accordance with the Partnership's Tariff. The charges which TransCanada shall be obligated to pay the Partnership under the TransCanada Service Agreement shall be increased as a result of the decreased Contract Decatherm Miles of the Shippers other than TransCanada so that, for example, if no Canadian Gas is authorized for export to the United States and sale at the United States-Canada border to any Shipper other than TransCanada, TransCanada shall, regardless of whether any Canadian Gas is authorized for export to the United States for TransCanada's account, be obligated to pay the Partnership's total Cost of Service (as defined and determined in accordance with the Partnership's Tariff). As used herein, the term "Minimum Annual Volumes" shall have the following meaning: (x) As applied to any Tariff year prior to the Fifth Tariff Year next succeeding the Billing Commencement Date (as defined in the Tariff), the largest volume of gas transported by the Partnership for TransCanada's account during any preceding Tariff year; (y) as applied to any Tariff Year beginning with the Fifth Tariff Year next succeeding the Billing Commencement Date and ending with the Tariff Year in which shall first occur either the commencement of the transportation by the Partnership of Alaskan Gas or the date on which the Partners have recovered, without any obligation (fixed or contingent) on their part or on the part of the Partnership to refund any portion of such recovery, the full original cost of the Partnership's depreciable property, plant and equipment for the Phase I Project through depreciation charges as permitted by the Partnership's Tariff, the greater of (i) the largest volume of Gas transported for TransCanada's account during any preceding Tariff Year or (ii) the lesser of (A) 50 BCF of Gas during the first such Tariff Year and 50 BCF of Gas plus an increase of 25 BCF of Gas for each consecutive Tariff Year thereafter until the volume to be so transported for the account of TransCanada totals 275 BCF of Gas per year or (B) such volume of Gas during each such Tariff Year as is required to ensure that the total of all Gas volumes transported through the Phase I Line in each such Tariff Year is at least 292 BCF; and (z) as applied to any Tariff Year occurring after the last Tariff Year referred to in the next preceding clause, the largest volume of Gas transported by the Partnership for TransCanada's account during any preceding Tariff Year.

TransCanada and the Partnership further agree that the Partnership's Tariff shall provide that if in any twelve-month period beginning with the Billing Commencement Date or any anniversary thereof, which anniversary occurs prior to the commencement of transportation by the Partnership of Alaskan Gas or the tenth (10th) anniversary of the Billing Commencement Date, licensed exports of Gas under the contract dated March 9, 1978 between Northwest Alaskan Pipeline Company and Pan-Alberta Gas Ltd., as amended from time to time (the "Pan-Alberta Contract") for transport through the Phase I Line total less than 100 billion cubic feet and total deliveries of Gas through the Phase I Line total less than 250 billion cubic feet, no depreciation shall be accrued on the Phase I Line during such period; provided, that the number of such twelve-month periods during which no depreciation shall accrue shall not be more than four; and provided, further, if the TransCanada Border Phase I Financial Plan (as hereinafter defined) requires depreciation to accrue during any such period in order to obtain the debt financing necessary for the Phase I Project, the Partnership's Tariff provisions regarding depreciation may, at the Partnership's election, be further amended to the extent necessary to obtain such financing.

IX

(1) If on the final day of the tenth year after the Billing Commencement Date (hereinafter called the "Trigger Date"), the Management Committee has not determined that the Incremental Facilities are to be constructed in order to transport Gas produced from the Prudhoe Bay Area of Alaska and the only Gas being transported through the Phase I Line is Canadian Gas ultimately destined for delivery by others, or for exchange for Gas to be delivered by others, to TransCanada's market area in Eastern Canada, TransCanada shall purchase either:

(i) all the interest in the Partnership of the then existing Partners (other than TransCanada Border) (hereinafter called the "Partnership Interests"); or

(ii) the business of the Partnership and assets (hereinafter called the "Partnership Assets"); or

(iii) all the outstanding capital stock of each then existing Partner (other than TransCanada Border) (hereinafter called the "Partners' Stock").

Within thirty (30) days after the Trigger Date, TransCanada shall give written notice to the Partnership of its election to purchase the Partnership Interests, the Partnership Assets or the Partners' Stock. In the event TransCanada shall fail to give this notice within this period, the Partnership, at its option, may either terminate this Article IX, with the effect specified in Section (6) below or, by written notice to TransCanada within sixty (60) days after the Trigger Date, specify that TransCanada shall be obligated to purchase the Partnership Interests, the Partnership Assets or the Partners' Stock, as a majority of the Partners (other than TransCanada Border) shall have determined. In the event the Partnership shall fail to give this notice within this period, it shall be deemed to have terminated this Article IX. Notwithstanding that TransCanada may give such notice within this period of its election to purchase the Partnership Interests or the Partnership Assets, the owners of the Partners' Stock (hereinafter called the "Stockholders") may, by written notice to TransCanada delivered within forty-five (45) days after the Trigger Date, elect to sell TransCanada the Partners, Stock, in which event the TransCanada Purchase Agreement (as hereafter defined) shall provide for the purchase of the Partners' Stock. TransCanada and the Partnership agree to negotiate, execute and deliver (and the Partnership agrees to cause the Stockholders to negotiate, execute and deliver in the event the Partners' Stock is to be purchased), subject to the terms and conditions hereof, as soon as practicable after the Trigger Date, a purchase agreement for the purchase and sale provided for herein (such purchase agreement being hereinafter called the "TransCanada Purchase Agreement"). The TransCanada Purchase Agreement shall provide for the closing of the purchase and sale transaction as soon as practicable after the Trigger Date and in any event not later than the third anniversary of the Trigger Date or on such later date as the parties might, but shall not be obligated to, agree to in writing. The terms, conditions and provisions of the TransCanada Purchase Agreement shall, subject to the provisions of Section (5) hereof regarding arbitration, be in form and substance satisfactory to the parties to the TransCanada Purchase Agreement and their respective legal counsel and, notwithstanding the provisions of Section (5) hereof regarding arbitration, shall include terms and provisions consistent with the following provisions of this Article IX and such other terms and conditions as are usual and customary in a transaction involving the sale of interests in, or the business of, an operating company.

(2) In the event the TransCanada Purchase Agreement shall provide for the purchase of the Partnership Interests:

(i) TransCanada shall have the right to assign, in whole or in part, its purchase right to one or more of its then existing subsidiaries that shall be directly or indirectly wholly owned (except for directors' qualifying shares, if any) by TransCanada;

(ii) Such purchase shall be effected over the shortest period of time as will not, in the opinion of counsel for the Partnership, cause the Partnership to terminate under Section 708 of the Internal Revenue Code of 1954, as amended; in the event said Section 708 shall require such purchase to be effected in two stages, TransCanada shall purchase the maximum amount of Partnership Interests that will not result in such termination in the first stage, and the purchase price of the Partnership Interests to be purchased in the second stage will be subject to such adjustments as shall provide the same consideration to the Partners as if all the Partnership Interests were purchased in the first stage; and

(iii) Each such then existing Partner shall receive cash and/or such other consideration (as shall be acceptable to such Partner) equal to the value as of the date of purchase of either of the following, as a majority of the Partners other than TransCanada Border shall elect by written notice delivered to TransCanada within forty-five (45) days after the Trigger Date or if no such election is made, then as elected by TransCanada: (A) such Partner's portion, as represented by its Partner's Percentage as of the date of purchase, of the Partner's Capital plus the unamortized portion of the one-time adjustment to rate base and equity in accordance with the provisions of FERC Order No. 31, issued June 8, 1979, in Docket No. RM78-12 as the same may be amended from time to time, or (B) such Partner's portion, as represented by its Partner's Percentage at the date of purchase, of the fair market value of the Partnership Interests determined as hereinafter provided. If fair market value is elected as the basis for the purchase, such fair market value shall be determined either by mutual agreement of the parties to the TransCanada Purchase Agreement or at the option of any such party, by a qualified investment banking firm selected by the mutual agreement of such parties. If such parties do not agree on the selection of a qualified investment banking firm, such fair market value shall be determined through arbitration as provided in Section (5)(vi) of this Article IX. The fair market value of the Partnership Interests shall mean the price at which the property would change hands between a willing buyer and a willing seller when the former is not under any compulsion to buy and the latter is not under any compulsion to sell, both parties having reasonable knowledge of relevant facts. In this connection, the valuator(s) of fair market value shall consider, in addition to such other factors as it (or they) may deem relevant: (a) the nature of the Partnership's business and the history of the enterprise; (b) the economic outlook in general and conditions in and outlook for the Partnership's industry in particular; (c) the Partnership's Partners' Capital and financial condition; (d) the Partnership's earnings capacity; (e) the Partnership's capacity to make distributions to the Partners; (f) goodwill or other intangible values the enterprise may have; (g) prior sales of ownership interests in the Partnership and the fact that all Partnership Interests are to be valued; and (h) the financial performance of the Partnership versus that of a group of companies that can be used for comparative purposes and whose securities are actively traded in a free and open market. As used herein, the term "Partners' Capital" shall mean, at any time, the sum of all Capital Accounts determined as of such time.

(3) In the event the TransCanada Purchase Agreement shall provide for the purchase of the Partnership Assets:

(i) TransCanada shall assume all the debts and liabilities of the Partnership, known or contingent, as set forth or referred to in the audited financial statements of the Partnership as of the date of purchase and/or in a statement of loss contingencies prepared by the Partnership as of such date and delivered to TransCanada and shall also assume all obligations of the Partnership as contained in the Partnership Agreement, this First Supplement, the Amendment and Agreement dated August 1, 1978 to the Study Group Agreement as defined in Section 2.51 of the Partnership Agreement and the Partnership's Tariff and Service Agreements, and any other agreement of the Partnership with third parties;

(ii) The Partnership shall receive cash and/or such other consideration (as shall be acceptable to the Partners other than TransCanada Border) equal to the aggregate value, as of the date of purchase of either of the following, as a majority of the Partners other than TransCanada Border shall elect by written notice delivered to TransCanada within forty-five (45) days after the Trigger Date: (A) the net book cost of the assets being purchased plus the unamortized portion of the one-time adjustment to rate base and equity in accordance with the provisions of FERC Order No. 31, issued June 8, 1979, in Docket No. RM78-12, as the same may be amended from time to time (i.e., the book value of the assets being purchased plus the unamortized portion of the one-time adjustment to rate base and equity in accordance with the provisions of FERC Order No. 31, issued June 8, 1979, in Docket No. RM78-12, minus all recorded debt and liabilities (known or contingent) from the Partnership as determined from the audited books of accounts and financial statements of the Partnership as of the date of such purchase), or (B) the aggregate fair market value (as defined in Section (2)(iii) of this Article IX) determined as provided in Section 2(iii) of this Article IX and in accordance with the standards set forth in said Section (2)(iii); and

(iii) Except as otherwise provided herein, upon the consummation of such purchase, the Partnership shall dissolve automatically and there shall be a winding up and liquidation of the Partnership in a manner identical to that set forth in Section 15.5 of the Partnership Agreement.

(4) In the event the TransCanada Purchase Agreement shall provide for the purchase of the Partners' Stock:

(i) TransCanada shall have the rights specified in Section 2(i) of this Article IX;

(ii) Each Stockholder shall receive cash and/or such other consideration (as shall be acceptable to such Stockholder) equal to the value of the Partnership Interests owned by the Partner in which such Stockholder owns stock, as such value shall be determined in accordance with Section 2(iii) of this Article IX, subject to such equitable adjustments as may be necessary (as a result of the liabilities of such Partner) to place the buyer in the same position as would obtain if it purchased Partnership interests or Partnership assets and assumed all liabilities required by this Article IX to be assumed it in connection therewith.

(iii) If the purchase of the Partner's stock will result in known and quantifiable adverse tax consequences (as compared to the purchase of the Partnership Interests or the Partnership Assets) to either the buyer or sellers at the time of purchase which cannot reasonably be avoided by the one suffering the same in the exercise of its best efforts, an appropriate adjustment shall be made in the purchase price. If the parties cannot agree on the appropriate adjustment to be made, the appropriate adjustment shall be determined in accordance with the provisions of Section (5)(vi) of this Article IX.

(5) In connection with any purchase made under the TransCanada Purchase Agreement:

(i) TransCanada shall use its best efforts (with which the other Partners shall cooperate) to obtain the release by novation of the Partners (other than TransCanada Border) (if Partnership Interests or Partnership Assets are to be sold) and their Affiliates (in any event) from any further obligations arising under or as a result of the Partnership Agreement, the Study Group Agreement, the Phase I Financing Commitment Agreements and any debt securities issued pursuant thereto, the Partnership's Tarriff and Service Agreements and any other agreement entered into by the Partnership with third parties; provided, however, that: (A) each such Partner (if Partnership Interests or Partnership Assets are to be sold) shall remain severally but not jointly liable (in proportion to its interest in the Partnership immediately prior to the purchase) for any liabilities arising out of events occurring while it was a Partner and which were not known to TransCanada or such Partner at the date of purchase and which became known to TransCanada within nine (9) months thereafter; (B) no such release shall affect any claims by the parties hereto against one another or their respective Affiliates; and (C) if TransCanada is unable to obtain all the releases called for by this Section (5)(i), and the Partners (other than TransCanada Border) do not by majority vote waive the benefit of this Section, then TransCanada may elect to purchase the Partners' Stock, in which event any reduction in the purchase price as a result of Section 4(iii) of this Article IX shall be reduced by fifty percent (50%).

(ii) Such purchase shall be subject to the receipt of all necessary authorizations from all governmental bodies having jurisdiction in the premises, acceptable in form and substance to all the Partners (which acceptance, however, shall not be unreasonably withheld) and all the Partners agree to use their respective best efforts to assure the receipt of any and all such authorizations;

(iii) All audited financial statements provided for in this Article IX shall be prepared by independent public accountants of the Partnership;

(iv) If the Corporation shall have succeeded to the assets and business of the Partnership as provided in Section 14 of the Partnership Agreement, the terms "Partnership," "Partners" and "interest in the Partnership," as used in this Article IX, shall refer to the Corporation, the Corporation's stockholders and the Corporation's stock, respectively;

(v) TransCanada hereby guarantees the performance by any assignee of it of TransCanada's purchase obligations under this Article;

(vi) Any controversy between the parties arising under this Article IX not resolved by agreement shall be determined by a board of arbitration upon notice of submission given by either party, which notice shall also name one arbitrator. The party receiving such notice shall, within ten (10) days thereafter, by notice to the other, name the second arbitrator, or failing to do so, the party giving notice of submission shall name the second. The two (2) arbitrators so appointed shall name the third, or failing so to do within ten (10) days, then the parties shall attempt to agree upon and appoint such third arbitrator. If the parties are unable to agree within ten (10) days, then the third arbitrator shall be selected by the Chief Judge of the United States Court of Appeals for the Second Circuit.

The arbitrators selected to act hereunder shall be qualified by education and training to pass upon the particular question in dispute, and shall be disinterested persons. Therefore, for example, if an investment valuation question is involved, qualified investment bankers shall be appointed, and similar procedure will be followed in connection with other questions.

The arbitrators so appointed shall promptly hear and determine (after giving the parties due notice of hearing and a reasonable opportunity to be heard) the question submitted, and shall render their decision within sixty (60) days after appointment of the third arbitrator. If within said period a decision is not rendered by the board or a majority thereof, new arbitrators may be named and shall act hereunder at the election of either party in like manner as if none had been previously named.

The decision of the arbitrators, or of a majority thereof, made in writing shall be final and binding upon the parties hereto as to the question submitted and the parties shall abide by and comply with such decision. The expenses of arbitration, including reasonable compensation to the arbitrators, shall be borne equally by the parties hereto, except that each party shall bear the compensation and expenses of its counsel, witnesses and employees; and

(vii) The Partnership shall cause the Partner's Stock in each Partner (other than TransCanada Border) to be owned by a single Person.

(6) Any provision in this Article IX to the contrary notwithstanding, this Article IX shall cease to be of any force or effect and shall be treated as if it were never included in this First Supplement if any of the following events shall occur:

(i) Any of the following events shall occur and a majority of the Partners (other than TransCanada Border) shall give written notice to TransCanada of the termination of this Article IX by reason of such occurrence;

(A) TransCanada Border shall at any time become a Withdrawing Partner; or

(B) TransCanada shall default in any of its payment obligations under the TransCanada Service Agreement and such default shall continue unremedied for ten (10) days after written or telegraphic notice thereof shall have been given to TransCanada by the Partnership or a majority of the Partners other than TransCanada Border; or

(C) If TransCanada or TransCanada Border at any time shall default in the performance of any term, covenant or agreement binding on it contained in this First Supplement and such default shall continue unremedied for ten (10) days after written or telegraphic notice thereof shall have been given to TransCanada by the Partnership or a majority of the Partners other than TransCanada Border; or

(D) If any representation, warranty or statement made by TransCanada or TransCanada Border in this First Supplement shall prove at any time to have been incorrect when made in any material respect; or

(ii) Any of the following events shall occur and TransCanada shall give written notice to the Partnership of the termination of this Article IX by reason of such occurrence:

(A) TransCanada Border shall become a Withdrawing Partner prior to the Commitment Date pursuant to Section 15.10(ii) of the Partnership Agreement; or

(B) The Partnership shall default in any of its transportation service obligations under the TransCanada Service Agreement and such default shall continue unremedied for ten (10) days after written or telegraphic notice thereof shall have been given to the Partnership by TransCanada; or

(C) If the Partnership at any time shall default in the performance of any term, covenant or agreement binding on it contained in this First Supplement and such default shall continue unremedied for ten (10) days after written or telegraphic notice thereof shall have been given to the Partnership by TransCanada; or

(D) If any representation, warranty or statement made by the Partnership in this First Supplement shall prove at any time to have been incorrect when made in any material respect; or

(iii) Either of the following events shall occur and TransCanada shall give written notice to the Partnership, or a majority of the Partners (other than TransCanada Border) shall give written notice to TransCanada, of the termination of this Article IX by reason of such occurrence:

(A) TransCanada Border shall become a Withdrawing Partner pursuant to Section 15.10(i) of the Partnership Agreement; or

(B) The TransCanada Service Agreement shall not be effective on the Commitment Date.

X

TransCanada Border will promptly arrange, on terms complying with the provisions of this Article X and otherwise satisfactory to TransCanada Border, the debt financing necessary for the Phase I Project (such arrangement, and the terms and conditions thereof, being hereinafter called the "TransCanada Border Phase I Financial Plan").

(1) The TransCanada Border Phase I Financial Plan shall provide, subject to the various conditions to lending which may be applicable (which may include the condition that the TransCanada Service Agreement shall be effective), for loans by responsible banks or other lending institutions (hereinafter called the "Lenders") either to the Partnership or, with the consent of all the Partners, to the Partnership and/or the Financing Corporation, at such times as the Partnership shall require funds to finance construction of the Phase I Project and shall include from Lenders a written commitment to lend and/or a written offer to arrange for the lending of an aggregate principal amount at least equal to seventy percent (70%) of the Certification Estimate (as defined in FERC Order No. 31, as amended by FERC Order No. 31-B, issued September 6, 1979) of the Cost of the Phase I Project. The TransCanada Border Phase I Financial Plan shall also provide that representatives of the Lenders will appear at such Canadian and United States regulatory proceedings as the Partnership may request to support and explain the terms and conditions of such plan.

(2) The TransCanada Border Phase I Financial Plan shall provide, in effect, that the Lenders shall rely upon funds generated through the operation of the Phase I Line for repayment of the loans, and the amortization and final maturity of the loans shall be based upon the Partnership's anticipated revenue stream under its Tariff. In this connection, the TransCanada Border Phase I Financial Plan shall not require or contemplate, as a condition to lending or otherwise, that any Affiliate of any Partner shall guarantee the payment of the principal of the loans in any manner or in effect guarantee such payment through a contingent agreement to purchase the notes or other securities evidencing the loans. Similarly, the terms of the TransCanada Border Phase I Financial Plan shall be such that, if performed, they will not result in any breach by any Affiliate of any Partner of any term or condition of any mortgage, indenture, credit agreement or other financing instrument to which such Affiliate is presently a party or by which it or any material portion of its property is presently bound, provided that a copy of each such instrument shall have been delivered to TransCanada Border by

November 5, 1979, together with a statement by such Affiliate specifying any provision of each such instrument which might be contravened by any provisions of the TransCanada Border Phase I Financial Plan which are specifically described herein. Further, the TransCanada Border Phase I Financial Plan shall not contain any term or condition which prevents any Partner from obtaining, for United States Federal income tax purposes, tax basis reflecting each Partner's full proportionate share of Partnership borrowings and flow-through to it of the deductions and credits (including investment tax credits) attributable to its ownership and profit and loss interests in the Partnership.

(3) The TransCanada Border Phase I Financial Plan shall contain terms and conditions respecting repayment of debt and distributions to the Partners which are tied to the debt portion of deferred taxes and a schedule of depreciation of the Phase I Project on a unit of throughput basis as set forth in Article VIII(1) of this First Supplement. TransCanada Border shall use its best efforts to arrange a repayment schedule under the TransCanada Border Phase I Financial Plan which provides, in effect, for a moratorium (complete or partial as shall be acceptable to a majority of the Partners other than TransCanada Border) with respect to payments of principal of the loans of at least twelve (12) months to be applicable over any period in which, in accordance with the Partnership's Tariff, no depreciation shall accrue.

(4) The TransCanada Border Phase I Financial Plan shall be consistent with, and not contravene, any of the terms or provisions of the Partnership Agreement (as amended by this First Supplement) or the Partnership's Tariff (as such Tariff shall be modified as a result of this First Supplement and/or applicable FERC orders issued prior to the date hereof). The TransCanada Border Phase I Financial Plan shall not contain any provision for mandatory prepayments of principal or the establishment or maintenance of any fund in the nature of a working capital or permanent reserve fund unless such provision is satisfactory to a majority of the Partners. Subject to the foregoing provisions of Article X, the terms and conditions of the TransCanada Border Phase I Financial Plan, including (but not limited to) rates of interest, commitment fees, premiums, origination fees, representations and warranties and events of default, shall be commercially reasonable in light of the circumstances then existing as applied to similar project financings in the United States (including consideration of similar project financing of United States interstate pipeline facilities, but recognizing the differences, if any, in such projects and the attendant business risks).

(5) The Partnership shall be under no obligation to finance the Phase I Project on the basis of the TransCanada Border Phase I Financial Plan and may seek to arrange alternative debt financing.

XI

TransCanada, TransCanada Border and the Partnership will file as soon as practicable with Canadian and United States regulatory bodies exercising jurisdiction, such applications, statements and other filings as are required to give effect to and/or notice of this First Supplement and the Partnership Agreement as amended hereby or to authorize construction and operation of the Phase I Line and performance of the obligations contained herein, in the TransCanada Service Agreement, the Pan-Alberta Contract and the Partnership Agreement. In this connection, TransCanada, TransCanada Border and the Partnership agree to use their respective best efforts to obtain and maintain such authorizations.

XII

(1) If TransCanada Border shall become a Withdrawing Partner pursuant to Section 4.5.5, 15.2, or 15.4 of the Partnership Agreement, the Partnership, pursuant to a vote of a majority of the Partners, shall have the right, at its option, to terminate this First Supplement and/or the TransCanada Service Agreement.

(2) If TransCanada Border shall become a Withdrawing Partner pursuant to Section 15.10 of the Partnership Agreement, either the Partnership, pursuant to a vote of a majority of the Partners, or TransCanada Border or TransCanada, as the case may be, shall have the right, at its option, to terminate this First Supplement and/or the TransCanada Service Agreement.

(3) If any agreement is terminated pursuant to this Article XII, the parties to such terminated agreement shall have no further rights or obligations under such terminated agreement; provided, however, that termination of an agreement pursuant to this Article XII shall not affect the right of any party to such terminated agreement to seek, obtain or enforce damages or other relief in respect of any breaches by any other party to such terminated agreement of its obligations thereunder, if and to the extent such breaches occurred prior to the termination of such terminated agreement.

(4) Termination of any agreement pursuant to this Article XII shall be effective as of the date the party entitled to effect such termination delivers written or telegraphic notice of such termination to the other parties to such agreement.

XIII

Section 2.33 of the Partnership Agreement is amended, effective as of the Admission Date, to read as follows:

"2.33 Partner: Each of the Partners executing this Agreement, and any Partner substituted for an original Partner pursuant to Section 10; and any Additional Partner which is admitted to the Partnership pursuant to Section 11; provided, however, that the term Partner shall not include any Person which has given a Withdrawal Notice (as defined in Section 15.2) to the Partners and the Partnership pursuant to Sections 15.2 and 16.2, or any Person which has been deemed to have withdrawn from the Partnership pursuant to Section 4.5.5 or 15.4 or 15.10."

XIV

The Partnership Agreement is amended, effective as of the Admission Date, by including therein new Sections 2.53 and 2.54 to be and read as follows:

"2.53 First Supplement: The Agreement dated as of October 25, 1979 among Northern Border Pipeline Company, TransCanada PipeLines Limited and TransCanada Border PipeLine Ltd.

"2.54 Phase I Financing Commitment Agreements: Arrangements for the issuance of debt securities by the Partnership, debt and other securities by the Corporation or the Financing Corporation (or by any combination of them), the proceeds of which are sufficient, together with the capital contributions to be made by the Partners pursuant to the Phase I Partnership Commitment Agreement, in the opinion of the Management Committee, to complete construction of the Phase I Project based upon the then Estimated Cost of the Phase I Project."

XV

The Partnership shall, to the extent it is commercially reasonable and practicable to do so, afford Canadian suppliers of goods and services an equal opportunity with United States suppliers to negotiate to provide goods and services for the construction of the Phase I Project and the Incremental Facilities; provided, however, that such undertaking by the Partnership under this Article XV shall not be deemed to prevent the purchase of goods or services from any country; and provided, further, that neither TransCanada nor any Canadian supplier of goods and services shall have by reason of this Article XV any legal or equitable rights against the Partnership, this Section being a statement of intent only.

XVI

TransCanada agrees for itself and its successors and assigns that no judgment, order or execution entered in any suit, action or proceeding, whether legal or equitable, on this First Supplement, shall be obtained or enforced against any Partner in the Partnership for the purpose of satisfaction and payment of any claim arising under this First Supplement, any right to proceed against such Partners individually in connection with this First Supplement pursuant to applicable law being hereby expressly waived by TransCanada for its and its successors and assigns.

XVII

If requested by TransCanada Border, the Partnership will consider filing an election under Section 754 of Internal Revenue Code of 1954, as amended.

XVIII

Terms used in this First Supplement which are defined in the Partnership Agreement are, unless the context otherwise requires, used herein as therein defined.

XIX

Nothing in this First Supplement is intended, or shall be construed, as an amendment to the Partnership Agreement so as to reduce or impair the rights of any Study Group Member under the Amendment and Agreement dated August 1, 1978 to the Study Group Agreement or the Partnership Agreement. In this connection, TransCanada Border represents and warrants to the Partnership that it concurs with Section II(3) of such Amendment and Agreement and agrees with the other Partners that the Partnership Agreement will not voluntarily be amended so as to reduce or impair any such rights of any Study Group Member.

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XX

TransCanada and TransCanada Border represent and warrant to the Partnership that neither this First Supplement or the Partnership Agreement as amended hereby nor the performance of any term or provision hereof or thereof is subject to the jurisdiction of, or will require any notice to or review or approval by, the Canadian Foreign Investment Agency under the Canadian Foreign Investment Review Act or any Canadian provincial or local regulatory authority under any Canadian provincial or local law comparable in effect to the Canadian Foreign Investment Review Act.

XXI

This document shall be effective as of October 25, 1979 and shall continue in force and effect unless terminated pursuant to the provisions of Article XII above.

XXII

Sections 2.9 and 2.19 of the Partnership Agreement are amended, effective as of the Admission Date, to read, respectively, as follows and Section 16.11 of the Partnership Agreement is amended to read as follows:

"2.9 Corporation: Northern Border Pipeline Corporation, a corporation organized or to be organized under the laws of Delaware for the purpose, among others, of succeeding to the assets and business of the Partnership as provided in Section 14, if succession occurs, and which corporation shall (i) have such classes of stock, common and preferred, voting and nonvoting, as the Certificate of Incorporation and By-Laws of said corporation may provide and (ii) be established only with the unanimous approval of all the Partners.

"2.19 Financing Corporation: A corporation organized or to be organized for the purpose of issuing securities, the proceeds of the sale of which are to be paid, directly or indirecty, to the Partnership to finance in whole or in part (i) the Cost of the Phase I Project, (ii) the Cost of the Incremental Facilities and/or (iii) the Cost of the Project. The Financing Corporation may be the same corporate entity as the Corporation and shall have such class or classes of stock, common and preferred, voting and nonvoting, as the Certificate of Incorporation and By-Laws of the Financing Corporation may provide, and may be established only with the unanimous approval of all the Partners.

"16.11 Voting Rights: For purposes of determining voting rights in any instance where voting is based on Partner's Percentages, the latest monthly statement of Capital Accounts delivered to the Partners shall be controlling; provided, however, that in any instance prior to the Commitment Date where voting is based on Partner's Percentages, TransCanada Border's Capital Account shall be considered to equal three-sevenths (3/7) of the sum of the Capital Accounts of all other Partners for purposes of determining voting rights."

XXIII

Section 11.1.1(ii) of the Partnership Agreement is amended, effective as of the Admission Date, to read as follows:

"(ii) Any Person which is not a party to the Amendment and Agreement dated as of August 1, 1978 to the Study Group Agreement and which elects to become a Partner prior to the Commitment Date shall be eligible for admission on such terms and conditions as shall be determined by the unanimous consent of the Management Committee, provided that such Person shall, within 30 days after notice has been published in the Federal Register, or other public notice has been given, that the Partnership has made the filing with the FERC which is required by Section 16.13, have given written notice to the Partnership of its good-faith election to become a Partner forthwith. Any Person which does not timely give such written notice to such effect shall not again be eligible for admission to the Partnership until such time as public notice has been given, by publication in the Federal Register or otherwise, that the Partnership, by determination of the Management Committee as provided in Section 4.3.5, will proceed with the construction of the Incremental Facilities. At such time, any such Person shall be eligible for admission on such terms and conditions as shall be determined by the unanimous consent of the Management Committee, provided that (1) the equity participation of such Person in the Partnership shall be limited to participation in financing the Additional Equity Requirements (as defined in Section 4.3.5) and (b) such Person shall, within 30 days after such public notice has been given, have given written notice to the Partnership of its good-faith election to become a Partner forthwith. Any Person which does not timely give such written notice to such effect shall not again be eligible for admission to the Partnership."

XXIV

Section 11 of the Partnership Agreement is amended, effective as of the Admission Date, to include therein new Section 11.1.5 to be and read as follows:

"11.1.5 Notwithstanding anything to the contrary contained in this Section 11, a Partner may be admitted to the Partnership only under circumstances which, in the opinion of counsel to the Partnership, will avoid a termination of the Partnership under Section 708 of the Internal Revenue Code of 1954, as amended."

XXV

The first sentence of Section 8.3.1 of the Partnership Agreement is amended, effective as of the Admission Date, to read as follows:

"The Audit Committee shall consist of four members selected to serve by the Management Committee."

XXVI

The first sentence of Section 8.4.1 of the Partnership Agreement is amended, effective as of the Admission Date, to read as follows:

"The Compensation Committee shall consist of four members selected by the Management Committee."

XXVII

Section 10.1 of the Partnership Agreement is amended, effective as of the Admission Date, to read as follows:

"10.1 <u>Limitation on Right to Transfer Partner's Interest</u>: Except with the unanimous consent of the Management Committee or as permitted by Section 10.3, or Article IX of the First Supplement, a Partner may not sell, assign, pledge, hypothecate or otherwise transfer in any manner all or any part of its right, title or interest in, or any evidence of indebtedness of, the Partnership or in this Agreement."

XXVIII

Section 7.6 of the Partnership Agreement is amended, effective as of the Admission Date, by including therein a new last paragraph to be and read as follows:

"Any item of gain recognized by the Partnership upon a taxable disposition of property of the Partnership which would be a capital gain except that a provision of the Internal Revenue Code of 1954, as amended, requires that some or all of the gain be treated as ordinary income because the realization of such gain is attributable to deductions, whether with respect to depreciation or otherwise, previously allowed to the Partnership shall be allocated to the Partners to which the prior deductions were allocated in proportion to the amounts so allocated previously."

XXIX

Section 15.2 of the Partnership Agreement is amended, effective as of the Admission Date, to read as follows:

"15.2 Right to Withdraw: Any Partner shall have the right to withdraw from the Partnership at any time prior to the Commitment Date upon written notice pursuant to Section 16.2 to the other Partners and to the Partnership (the 'Withdrawal Notice') so stating. Rights of Withdrawal on and after the Commitment Date shall be as specified in the Phase I Partnership Commitment Agreement or the Partnership Commitment Agreement, whichever shall be in effect."

XXX

Sections 4 and 10 of the Partnership Agreement are amended, effective as of the Admission Date, to include therein new Sections 4.3.8 and 10.5 to be and read, respectively, as follows:

"4.3.8 Notwithstanding anything to the contrary contained in this Section 4.3, the provisions of this Section 4.3 shall be interpreted and applied in such a manner so as to avoid a termination of the Partnership under Section 708 of the Internal Revenue Code of 1954, as amended."

"10.5 Notwithstanding any other provision of this Section 10, no interest in Partnership capital or profit and losses may be transferred if in the opinion of counsel for the Partnership, such transfer would result in a termination of the Partnership under Section 708 of the Internal Revenue Code of 1954, as amended."

XXXI

Section 15.8 of the Partnership Agreement is amended, effective as of the Admission Date, to read as follows:

"15.8 Continuation of Partnership: Except as provided in Sections 15.3 and 15.7, it is understood and agreed by each of the Partners that the relationship of partnership among them is intended to continue without interruption until such relationship is either specifically dissolved by unanimous consent of all the Partners or by the occurrence of one of the events specified in Sections 15.3 and 15.7 as an event of dissolution, and each Partner waives and releases its right to dissolve or obtain dissolution of the Partnership in any other manner or for any other reason. In this connection, the Partners agree and intend that the Partnership shall not be dissolved by the admission of a new Partner pursuant to Section 11.1.1 or by the withdrawal of a Partner from the Partnership. If, notwithstanding the foregoing understanding, agreements and intentions of the Partners, the Partnership may at any time or from time to time be deemed by operation of law and otherwise than pursuant to Section 15.3 or 15.7 to be dissolved and subject to winding up, each of the Partners hereby covenants and agrees with the other Partners as follows:

"15.8.1 The business and affairs of the Partnership shall continue without interruption and be carried out by a new partnership (the 'Successor Partnership');

"15.8.2 The Partners of the Successor Partnership shall be the Persons who were Partners hereunder at the time of such dissolution, and the Successor Partnership and the Partners thereof shall be governed by the terms of this Agreement as if the Successor Partnership were the Partnership;

"15.8.3 Each of the Partners covenants and agrees to execute such further agreements, including (without limitation) notes, novations and accommodations, as may be necessary to continue the business of the Partnership by the Successor Partnership and to protect and perfect any lien or security interest granted by the Partnership;

"15.8.4 Each Partner waives and releases, to the full extent it may lawfully do so, all rights to a winding up or liquidation of the business of the Partnership, notwithstanding that the dissolution of the Partnership may be caused wrongfully or otherwise in contravention of this Agreement by such Partner or any other Partner and further notwithstanding that, at the time of such dissolution, such Partner shall be, or be deemed to be or thereby become, a Withdrawing Partner pursuant to this Agreement; and

"15.8.5 As used in this Section 15.8, the term 'Partnership,' at any point in time, shall mean the Partnership originally formed pursuant to this Agreement or the Successor Partnership which at such time is continuing the business and affairs of the Partnership originally so formed."

XXXII

Section 15 of the Partnership Agreement is amended, effective as of the Admission Date, by including therein new Sections 15.10 and 15.11 to be and read as follows:

"15.10 Withdrawal of TransCanada Border in Certain Events: In addition to those instances where withdrawal is deemed to occur under Sections 4.5.5 and 15.4, TransCanada Border shall be deemed to have withdrawn from the Partnership and be entitled to receive payment as specified in Section 4.5.4 upon the happening of any of the following events:

(i) If within ninety (90) days after decisions have been issued by both the National Energy Board of Canada regarding export of the Alberta Gas subject to the contract dated March 9, 1978 between Northwest Alaskan Pipeline Company and Pan-Alberta Gas Ltd., as amended from time to time, and by United States regulatory authorities regarding the construction and operation of the facilities required for Prebuilding (as that term is defined in the Amendment and Agreement dated August 1, 1978 to the Study Group Agreement), the Management Committee of the Partnership shall advise the FERC and the National Energy Board of Canada that the Partnership will not accept the export and import authorizations and the certificates of public convenience and necessity required to construct the Phase I Line for the transportation of Canadian Gas and, consequently, will not proceed with Prebuilding; or

(ii) If the Partnership fails to receive a ruling from the Internal Revenue Service to the effect that, under this Agreement as amended by the First Supplement, (a) the Partnership shall be treated as a partnership for federal income tax purposes, (b) any net losses of the Partnership shall be deductible by the Partners, and (c) the basis of the Partners for their interest in the Partnership includes the indebtedness of the Partnership, or which is otherwise in form and substance satisfactory to the Partnership as determined by the Management Committee, and no corrective amendments to this Agreement or other documents can be executed sufficient to obtain such satisfactory ruling, or

(iii) If TransCanada Border shall fail by November 15, 1979 to provide the TransCanada Border Phase I Financial Plan (as defined in a letter of intent from a major lending institution regarding implementation of Article X of the First Supplement); or

(iv) If by June 30, 1980, all necessary Canadian regulatory approvals referred to in Article XI of the First Supplement shall not have been issued in terms and conditions satisfactory to TransCanada.

"15.11 Effect of Withdrawal: Any Partner which shall exercise its right to withdraw from the Partnership prior to the Commitment Date pursuant to Section 15.2 or shall be deemed to have withdrawn from the Partnership by operation of Section 4.5.5, 15.4 or 15.10 (herewith called a 'Withdrawing Partner') shall have those rights stated in Section 4.5.4 and no others. Withdrawal by one or more Partners pursuant to Section 15.2 or by operation of Sections 4.5, 15.4 or 15.10 shall not (i) effect a dissolution of the Partnership or (ii) affect obligations previously incurred by the Withdrawing Partner. Withdrawal pursuant to Section 4.5.5, 15.2, 15.4 or 15.10 shall, ipso facto, terminate the Withdrawing Partner's status as a Partner, forfeit all voting rights in Partnership affairs and terminate all representation on Partnership committees and the Management Committee."

XXXIII

This First Supplement shall be governed by and interpreted in accordance with the laws of Texas.

XXXIV

This First Supplement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

XXXV

This First Supplement embodies the entire agreement and understanding among the Partnership, TransCanada and TransCanada Border and supersedes all prior agreements and understandings relating to the terms and conditions of the admission of TransCanada Border as a Partner and any other matters which are the subject of this First Supplement.

XXXVI

This First Supplement and the obligations of the Partnership, TransCanada and TransCanada Border hereunder are subject to all applicable laws, rules, orders and regulations of United States federal, state or local governmental authorities having jurisdiction and, in the event of conflict, such laws, rules, orders and regulations of governmental authorities having jurisdiction shall control.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed ~~in several counterparts and their corporate seals to be hereunto affixed; attested~~ by the hands of their proper officers duly authorized in the behalf, as of the day and year first above written.

TRANSCANADA PIPELINES LIMITED

By ____________________

TRANSCANADA BORDER PIPELINE LTD.

By ____________________

NORTHERN BORDER PIPELINE COMPANY
BY THE PARTNERS:

NORTHERN PLAINS NATURAL GAS COMPANY

By Gordon Severa

NORTHWEST BORDER PIPELINE COMPANY

By ____________________

PAN BORDER GAS COMPANY

By ____________________

UNITED MID-CONTINENT PIPELINE COMPANY

By John F Brown

TESTIMONY
OF
ROBERT H. LOEFFLER
MORRISON & FOERSTER
COUNSEL TO THE STATE OF ALASKA

BEFORE THE
SUBCOMMITTEE ON OVERSIGHT AND
INVESTIGATIONS OF THE HOUSE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

OCTOBER 15, 1979

The State of Alaska is pleased to be afforded the opportunity to testify before this Subcommittee on the matter of the Alaska Natural Gas Transportation System, a subject of vital concern to Alaskans and to the Nation as a whole. I appear today on behalf of the Governor of Alaska and, for the record, should note that the State, and its Counsel, have been involved with the proceedings related to the Alaska gas pipeline for more than five years now. We believe, therefore, that we have a unique perspective to offer on the progress or lack of progress on the pipeline. Before we turn to that perspective, we wish to reiterate several basic principles that form the State's position.

The State of Alaska supports the construction of an Alaska gas pipeline and supports the construction of the pipeline by the Northwest Partnership along the proposed route. We believe this is the best available pipeline route and that the pipeline should be built now. Governor Hammond has made it a priority of his administration to see that the pipeline is built and to do his part in realizing that goal.

In that regard, we are in the process of seriously considering the various choices for financial participation by the State in the pipeline project. We cannot say today the exact form our proposal will take. We do know that the revenue bond proposal that was made to us by Northwest Alaska has serious attraction. The proposal, in brief, was that the State create a pipeline bonding authority to issue one billion dollars in tax-exempt bonds to assist the financing of the gas pipeline. A similar arrangement assisted the financing of the TransAlaska Oil Pipeline. To further this proposal, the Alaska legislature has passed legislation creating the Alaska Gas Pipeline Financing Authority although there are certain technical clarifying amendments that are necessary to perfect the pipeline authority. But even if the Legislature had enacted technically perfect legislation, a change in Federal law -- the Internal Revenue Code -- to afford tax-exempt status to the Authority's bonds was necessary. No progress has been made on that front that we are aware of. It is noteworthy also that the Carter Administration has generally opposed the expansion of tax-exempt bond authority.

The State has been criticized for not coming forward with financial support for the pipeline. We believe this is not a fair statement of what occurred. The State did create the pipeline authority Northwest requested albeit imperfectly. We have pledged to remove those imperfections. For whatever reason, the required change in Federal legislation for the tax-exempt bonds has not been forthcoming.

The other half of the proposal Northwest made to the State was for a form of secondary equity participation. The State would provide half a billion dollars in return for convertible debentures that would be convertible to preferred equity. This was for a huge investment of state funds on a very short time schedule.

No responsible governmental body could have committed that much money on so little information in so short a time. We regret that financial participation in an acceptable form to the State has not been arrived at but we do not believe the entire blame rests with the State.

We do not say that the only form of financial support that the State can provide is tax-exempt bonds nor do we believe that tax-exempt bonds necessarily will be part of the final State proposal. But we do say that tax-exempt bonds look attractive to us and deserve serious consideration.

As for equity participation, the problem of such participation by the State is complex. We have not foreclosed such participation, but we need much more information before any intelligent decision can be made. Representatives of the Legislature and the Administration are working to gather that information. Within a few months we may be able to reach some consensus on the issue.

Another issue of vital importance to Alaska and to the forward progress of the project, in our view, has been mishandled by the Federal Eenergy Regulatory Commission. That issue is the responsibility for the conditioning plant to be built at Prudhoe Bay. To review the facts briefly, the gas that leaves the existing oil field facilities at Prudhoe Bay is technically ready for transportation. In fact, it is noteworthy that the natural gas from Prudhoe is presently transported without conditioning nearly 200 miles down the TAPS line to fuel pump stations and other facilities. To make this transportable gas acceptable for the Northwest line, the CO^2 content of the gas must be reduced from 12% to 1%, its pressure must be increased, and much of the natural gas liquids must be removed from the gas because the 1260 psig pressure Northwest line cannot accept them.

The cost of the facilities to perform these conditioning functions approaches two billion dollars. The Federal Energy Regulatory Commission in its Order 45 has said that the producers must perform these functions and may receive no extra compensation for them. This Alaska believes is wrong. For one reason the legislative history of the Natural Gas Policy Act makes it clear that producers of Alaska gas may sell the gas without first conditioning it and may receive the maximum lawful price for the gas nonetheless. The burden of conditioning the gas would then fall upon the purchasers of the gas. Those purchasers would, in turn, be entitled to be compensated for the cost of conditioning. The Commission has proposed to bar this result by Order 45 and on a theory that we find fallacious and punitive.

But let us put aside these legal questions. Order 45 has a pernicious result. For a number of years everyone has recognized that the negotiation of gas sales agreements is necessary for the gas line's financing to proceed. This last Spring and Summer the producers of Prudhoe Bay gas all either signed gas sales contracts or signed letters of intent for gas sales. This would be a sign of forward progress but for the fact that the Commission has proposed to upset these contracts as inconsistent with its Order 45 because they provide for the purchasers to bear most of the cost of conditioning. We believe, therefore, that Order 45 is an impediment to forward progress on the system in a most basic and serious way. Absent a change in course, Order 45 will end up in Court and that cannot help speed the project.

While it is true that Order 45 would upset the gas sales contracts and force the parties to the courts for legal redress for what they believe is an improper interpretation of the statute, the most serious fault of Order 45 is that it continues and enlarges the division between the producers, the State, the pipeline sponsors and other interested parties. The President's Decision contemplated a scheme whereby the producers would provide guarantees for debt of the pipeline but would be barred from an equity role. The Decision seems to have overlooked the requirement commonly opposed in large loans that the lenders are assured controls over management to protect their investment. By separating the loaning of money from the necessary oversight necessary to protect the loans, the Decision has created an artificial separation between the pipeline and the producers. With Order 45 we have another facet of the same problem. Much of what the producers are required to do in the way of conditioning is a transportation related or pipeline function. The separation between what is conditioning plant and what is Alaska gas pipeline is not technically or legally clear. A fair compromise of the issue would involve some sharing of conditioning costs between producers and pipeline purchasers but the Commission has proposed a radical result which would place nearly the entire burden of those costs on the producers. This only increases their isolation from the project and makes even more unlikely the prospects of financial participation by the producers.

Alaskans have another grievance with the Commission's procedures. There is widespread interest in Alaska in the question of possibly using the natural gas liquids from Prudhoe Bay field for petrochemical development. There is concern that the conditioning plant, if feasible, be located not at Prudhoe Bay but at Fairbanks where it would alleviate the high unemployment of that City (recently approximately 14%). A number of technical advisors have suggested that this is possible at an admittedly unknown cost, but the Commission by entering an order on pipeline pressure in

August has foreclosed this possibility.

Alaska sought reconsideration of that Order and asked the Commission to set once and for all -- in an omnibus proceeding -- the technical standards for the gas. What we asked is that the Commission would look at the trade-offs between various levels of CO^2 content and conditioning, the various locations of the plant, and the other technical standards for the gas so that it would arrive at an optimal system. The Commission denied Alaska's request and Alaska has filed suit in the Court of Appeals to overturn the Commission's order on size and pressure. By law, a decision in that suit must come in ninety days. We did not file our suit without awareness of the fact that we might be charged with delaying the pipeline but we believe the approach the Commission has taken to this and other issues is what is delaying and will delay the pipeline.

The important point however is that we believe the Commission's piecemeal approach to the issues has not advanced the cause of the Alaska gas pipeline. There needs to be a strong coalition in support of the project and that coalition must include in various forms of participation the producers, the State, the present participants in the Northwest Partnership and a good number of other interstate natural gas pipelines. What the Commission has done is taken action that has increased the separation of the producers and the State of Alaska from the project and has already engendered

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one court suit and prospectively another on conditioning costs.

Alaskans believe now more than ever that there will be an Alaska gas pipeline and that national energy needs demand it. Whereas a year ago we heard much questioning about whether Alaska gas would be too expensive, that is now a moot point. The enormous price rises in imported crude oil beginning this Spring have shown that Alaska gas will be a secure, reliable and perhaps even economical energy source for American consumers. While Alaskans believe that the pipeline will be built, we do not believe that the present approach taken by the Federal Energy Regulatory Commission will arrive at that goal directly. An effort must be made to bring the producers and the outside natural gas companies to the pipeline and there must be a compromise of the issues which have so bitterly divided the participants and potential participants in the project.

It is an encouraging sign that representatives of the White House and the Department of Energy have been sponsoring a consultant with financial expertise to discuss with the various parties the development of a feasible financing plan. This effort, however, will be doomed to failure unless everyone takes a realistic approach to the problems of constructing this pipeline. The parties cannot say that the President's Decision settled issues which it has not settled. Nor for that matter can the President's Decision be viewed as the Ten Commandments of this pipeline. Modifications will be necessary and if this administration and the country really want an Alaska natural gas pipeline, there must be an effort to develop a financing plan that is realistic and not guided by out-of-date concepts on financing.

I will be pleased to answer any questions.

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

October 23, 1979

Mr. Robert Loeffler
Morrison and Foerster
1025 Connecticut Avenue, N.W.
Suite 807
Washington, D.C. 20036

Dear Mr. Loeffler:

As I indicated at the beginning of the hearings on the Alaska Natural Gas Transportation System, I am providing you with some written questions. Your responses will be included in the record. The Subcommittee would appreciate answers to the following questions:

1. Would you make available to the Subcommittee a copy of the feasibility study prepared for the State on the establishment of a petrochemical industry?

2. Can a petrochemical industry be based on Alaska's royalty share of gas?

3. In the summary of your testimony you mentioned the need to modify the President's Decision. What specific modifications are needed and why?

4. Why didn't the State of Alaska request a rehearing on the design order issued by the Federal Energy Regulatory Commission?

5. In your testimony, you made it quite clear that the State of Alaska did not readily accept the manner of presentation of the need for state participation in the financing of the pipeline. What measures do you feel are necessary for F.E.R.C. or Northwest Pipeline to take so that some scheme of financial participation would be acceptable by the State of Alaska?

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6. The State of Alaska has come under increasing pressure from Northwest and the Carter Administration to participate financially in the overall gas project. If the construction of the gas conditioning facility in interior Alaska is shown to be technically and economically feasible, would the state consider issuing revenue bonds to finance the construction of the conditioning facility as its contribution to the overall gas project, if the interior Alaska location for conditioning provided greater economic, employment, and energy benefits to Alaska than the proposed site at Prudhoe Bay?

It is requested that your response to these questions be sent to the Subcommittee as soon as possible in order to make the complete hearing record available to the public in a timely manner.

Sincerely,

HAROLD RUNNELS
Chairman
Oversight and Investigations
Subcommittee

jgh

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ROBERT H. LOEFFLER
WASHINGTON, D. C.

November 19, 1979

Harold Runnels
Chairman
Oversight and Investigations
Subcommittee
Committee on Interior and
Insular Affairs
U. S. House of Representatives
Washington, D.C. 20515

Dear Mr. Runnels:

On behalf of the State of Alaska, I am pleased to respond to your letter of October 23, which posed six questions concerning my testimony to your subcommittee. The answers correspond to the questions in your letter.

Question Number 1. Yes. A copy of the feasibility study will be sent to the subcommittee when it is published in final form. We expect this to occur in the next few weeks.

Question Number 2. The quantity of natural gas liquids that the royalty share entails is not sufficient to form the basis for a petrochemical industry. The methane of the royalty share could be traded for the additional liquids that are needed.

Question Number 3. Several legislative modifications to the President's Decision could be appropriate depending on the exact financing scheme that is determined to be in the national interest. For example, if producer equity ownership of part of the pipeline is contemplated as was recently proposed by the Exxon Corporation, modification of the President's Decision would be appropriate to clarify its ban on such ownership. Similarly, as my testimony indicated, regardless of the exact form of producer participation, there must be assurances that the producers would be able to safeguard their investment in the pipeline in the manner normally afforded any lender of substantial moneys to a major project.

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Harold Runnels November 19, 1979

Depending on action taken by the Federal Energy Regulatory Commission, federal legislation may be appropriate to ensure the tracking of costs from the Alaska natural gas transportation system to distribution companies in order to assure the continuity of the flow of revenues to debt and equity holders.

There are other legislative modifications that also could be appropriate. For example, the President's Decision prevents a pre-construction surcharge being charged to consumers to assist the financing of the pipeline. Such a surcharge would ultimately reduce the costs of the Alaska gas pipeline and could very well be justified on economic grounds. To adopt one, however, the Decision would have to be modified.

Lastly there is the question of private financing. If private financing efforts do not prove successful, then the President's Decision will have to be modified to provide for Federal guarantees to assist the construction of the project. Alaska assumes these guarantees would be accompanied by charges corresponding to normal commercial relationships so the Federal government would be compensated for providing a guarantee even if the guarantee were never called upon.

We cannot say that any of these modifications are absolutely necessary at this juncture but they, if adopted, could expedite and assist the completion of the pipeline.

Question Number 4. The State did not originally file for rehearing because the Commission had expressly ruled in its August 6th Order that rehearing could not be sought. Accordingly, the State filed a petition asking the Commission to take another look at the size and pressure order, vacate it and proceed on an omnibus basis. The Federal Energy Regulatory Commission then denied the petition. One Commissioner then gave an interview suggesting he would have supported rehearing but not the State's position. In response to these remarks, the State filed a second petition which expressly sought rehearing but the Secretary of the Commission returned the petition, saying rehearing was not available. More details are given below.

The Commission's Order of August 6, 1979, which approved the size and pressure of the Alaska segment of the gas pipeline, expressly barred rehearing in ordering paragraph C. There, the FERC said, that its size and pressure order "is not subject to the provisions for rehearing set forth

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in Section 19 of the Natural Gas Act and in Section 1.34 of the Commission's rules of practice and procedure." This was consistent with the precedent previously established for orders issued pursuant to the Alaska Natural Gas Transportation Act of 1976, which held that petitions for rehearing under ANGTA can be filed only when the Commission expressly provides. In light of that precedent and the specific statement in the Commission's August 6th Order that rehearing was not available, the State and three Alaskan boroughs decided to file a "Petition To Vacate Order, Re-Open the Record and Complete the Investigation of Alaska Segment Design Specifications, and Related Issues." Although the title differs from that of a petition for rehearing, this Petition (which was filed September 28, 1979) argued that the Commission erred in the size and pressure order and urged the FERC to reconsider its order and proceed to consider the issues in a legally proper way. This petition was tantamount to a petition for rehearing. Nonetheless, it was denied by Commission Order of October 15.

Due to subsequent statements by one of the Commissioners in a television interview that rehearing might be allowed, the State and the three boroughs on October 17, 1979, filed a second pleading, expressly captioned "Petition for Rehearing." The Commission's Secretary by letter, returned the petition for rehearing, stating that petitions for rehearing could not be filed because of Paragraph C of the August 6th Order.

Question Number 5. There is little popular support in the State of Alaska for participation in the Alaska natural gas pipeline as it stands. Indeed, there is considerable apathy or outright opposition to the project stemming from several causes. The Hammond administration believes that it could consider financial participation if the following three pre-conditions were met. First, the State obtains an option on the necessary natural gas liquids to sustain and build a petrochemical industry. As indicated in answer to Question Number 2, this would require more than the natural gas liquids in the State's royalty share and so the producers which own the gas would have to be agreeable to selling or trading their liquids in return for additional methane or compensation or both. If the State had the option on the liquids, it could then pursue the petrochemical industry concept without hindering the progress of the Alaska natural gas transportation system.

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Harold Runnels November 19, 1979

Second, the State needs the agreement of Northwest to the laying of a separate natural gas liquids line, should one be necessary to implement the petrochemical plan, either in the same trench as the Northwest pipeline, assuming no technical difficulties, or along the same right-of-way and at the same time as the gas pipeline is laid. By permitting this, the State would achieve considerable economies of construction.

Third, the State needs the agreement of the Federal government to provide the necessary permits and right-of-ways for such a natural gas liquids line should the State propose one to implement the petrochemical plan. If these conditions are satisfied, the State of Alaska could seriously consider participating in the financing of the Alaska natural gas pipeline in a way that would be both meaningful and related to the State's unique interest in the project.

Question Number 6. Yes. The State would consider using revenue bonds to finance the construction of the facility but the bondholders would have to be assured that the bonds would be paid back by revenues from the conditioning plant.

Sincerely yours,

Robert H. Loeffler

RHL:c

STATEMENT OF JOHN T. RHETT, JR.
FEDERAL INSPECTOR
OFFICE OF THE FEDERAL INSPECTOR
ALASKA NATURAL GAS TRANSPORTATION SYSTEM

BEFORE THE SUBCOMMITTEE ON OVERSIGHT
AND INVESTIGATIONS

HOUSE INTERIOR AND INSULAR AFFAIRS COMMITTEE
OCTOBER 16, 1979

GOOD MORNING, MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE, I AM PLEASED TO HAVE THIS OPPORTUNITY TO APPEAR BEFORE YOU TODAY TO INTRODUCE MYSELF AND MY ORGANIZATION AND TO DISCUSS THE PROGRESS WHICH HAS BEEN MADE ON THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM. I AM JOHN T. RHETT, FEDERAL INSPECTOR FOR THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM. WITH ME IS MR. PETER COOK, EXECUTIVE OFFICER AND DEPUTY FEDERAL INSPECTOR.

DURING MY NOMINATION HEARING ON JULY 12, I CHARACTERIZED THE JOB OF FEDERAL INSPECTOR AS A "MOST CHALLENGING ASSIGNMENT." MY EXPERIENCES DURING THESE FIRST 3 MONTHS AS FEDERAL INSPECTOR HAVE MORE THAN SUPPORTED THAT PRELIMINARY ASSESSMENT OF THE TASK WHICH LIES AHEAD. THE DIVERSITY OF TERRAIN, THE SENSITIVITY OF THE ENVIRONMENT, THE UNIQUE CONSTRUCTION CONDITIONS, THE GEOGRAPHIC SCOPE OF THE PROJECT, THE NUMBER OF GOVERNMENT AND CORPORATE ENTITIES INVOLVED, AND THE COST OF THE PROJECT

TOGETHER POSE A CONSIDERABLE CHALLENGE TO ALL PARTICIPANTS. THIS, HOWEVER, SHOULD NOT DETER US BECAUSE THE BENEFITS TO THE SPONSORS AND TO THE COUNTRY ARE SUBSTANTIAL. COMPLETION OF THE PIPELINE WILL DELIVER A VOLUME OF NATURAL GAS ROUGHLY EQUIVALENT TO 450,000 BARRELS OF CRUDE OIL PER DAY. WITH THE ADDITION OF COMPRESSION, THIS SYSTEM HAS THE POTENTIAL TO DELIVER ENOUGH ENERGY TO OFFSET 600,000 BARRELS OF CRUDE OIL PER DAY. LOOKING AT IT ANOTHER WAY, THE GASLINE WILL ULTIMATELY SUPPLY 5% OF CURRENT UNITED STATES NATURAL GAS NEEDS FOR A PERIOD OF 25 YEARS. THIS PROJECT, THEREFORE, OFFERS US A UNIQUE CHALLENGE TO MARSHALL THE RESOURCES OF A NUMBER OF COMMUNITIES - GOVERNMENT, INDUSTRY, FINANCIAL, ACADEMIC - TO BUILD AN ENERGY TRANSPORTATION SYSTEM WITH SIGNIFICANT AND UNDISPUTED BENEFITS TO THE NATION.

I HAVE BEEN ASKED TO ORCHESTRATE THE FEDERAL GOVERNMENT'S RESPONSE TO THIS CHALLENGE. WHILE THE GOVERNMENT IS NEITHER BUILDING NOR FINANCING THIS PIPELINE, THE EXTENT OF OUR REGULATORY ROLE MAKES OUR PARTICIPATION CRITICAL TO THE SUCCESS OF THIS PROJECT. IT IS MY JOB TO ASSURE THAT THE FEDERAL GOVERNMENT EXERCISES ITS DUTIES BOTH COMPETENTLY AND PROMPTLY. IN ADDITION, THE DEVELOPMENT AND MAINTENANCE OF A CONSTRUCTIVE WORKING RELATIONSHIP AMONG ALL PARTIES IS NECESSARY TO ASSURE THAT THE PROJECT IS CONSTRUCTED IN A TIMELY AND COST-EFFECTIVE FASHION, CONSISTENT WITH ENVIRONMENTAL AND PUBLIC SAFETY REQUIREMENTS. I AM PREPARED TO DO EVERYTHING I CAN FROM THE GOVERNMENT SIDE TO FOSTER SUCH A CONSTRUCTIVE RELATIONSHIP.

A LARGE PERCENTAGE OF MY EFFORTS TO DATE HAVE BEEN DIRECTED TO "GETTING ACQUAINTED" -- WITH THE PROJECT SPONSORS, THE FEDERAL AGENCIES, THE STATES AND ESPECIALLY ALASKA AND ITS PEOPLE; THE CANADIANS; AND, INDEED, WITH THE PROJECT AS A WHOLE. GETTING ACQUAINTED WITH THE PROJECT ITSELF IS A CHALLENGE. I HAVE TRAVELED OVER 32,000 MILES IN THE PAST 8 WEEKS IN AN EFFORT TO ACQUAINT MYSELF WITH THE SPONSORS AND THE PROJECT. THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM SPANS ALASKA, 4 PROVINCES IN CANADA, AND 10 "LOWER 48" STATES. IT COVERS EVERY CONCEIVABLE TYPE OF TERRAIN FROM THE FRAGILE ARCTIC TUNDRA TO THE PRAIRIE POTHOLE REGION IN THE DAKOTAS AND MINNESOTA. I HAVE FLOWN OVER MOST OF THE LINE IN ALASKA AND CANADA AND HAVE BEEN ON THE GROUND IN MANY PLACES.

I HAVE ALSO VISITED NORTHWEST ALASKAN PIPELINE COMPANY AND THEIR PRINCIPAL CONSTRUCTION MANAGER, FLUOR ENGINEERING. NORTHWEST HAS ASSEMBLED A TEAM COMPOSED OF TOP-FLIGHT PERSONNEL, THOROUGHLY CAPABLE OF PROVIDING THE NEEDED TECHNICAL ENGINEERING SUPPORT. IN ADDITION, THE FINAL RESOLUTION OF THE INCENTIVE RATE OF RETURN AND PIPE PRESSURE ISSUES, REACHED BY THE FEDERAL ENERGY REGULATORY COMMISSION IN EARLY SEPTEMBER, WILL ENABLE NORTHWEST TO CONTINUE THEIR MOBILIZATION EFFORT.

DUE TO SCHEDULE CONFLICTS, I HAVE NOT YET BEEN SUCCESSFUL IN ARRANGING A VISIT TO PACIFIC GAS TRANSMISSION COMPANY AND PACIFIC GAS AND ELECTRIC COMPANY HEADQUARTERS. HOWEVER, MY DISCUSSIONS WITH MR. PRUDHOMME, PRESIDENT OF PACIFIC GAS TRANSMISSION COMPANY, HAVE BEEN VERY CONSTRUCTIVE AND ENCOURAGING. THE

Western Leg of the Alaska Natural Gas Transportation System consists of looping the existing Pacific Gas Transmission Company and Pacific Gas and Electric Company system. By virtue of having constructed and operated a gas transmission line on this right-of-way, Pacific Gas Transmission and Pacific Gas and Electric Companies are well prepared to move ahead with their portion of the Alaska Natural Gas Transportation System. The Federal Energy Regulatory Commission is scheduled to issue a Certificate of Public Convenience and Necessity early next year and I foresee no major problems which the Office of the Federal Inspector and the sponsors cannot resolve. The exclusion of the Western Leg from the Incentive Rate of Return process further simplifies the Office of the Federal Inspector's responsibilities on the Western Leg.

The Northern Border Pipeline Company faces a somewhat more complicated set of problems than Pacific Gas Transmission Company and Pacific Gas and Electric Company, but the sponsors are doing an impressive job of dealing with them. Northern Border is completing its final filings for a Certificate and work on right-of-way acquisition is also proceeding. By conventional standards, construction of the 800 miles of pipeline necessary to allow early delivery of Alberta gas constitutes a "major" undertaking. However, the construction problems on this segment will not be unique. The sponsors' planning process is well under way and should result in an effective marshalling of the necessary manpower, equipment and materials. Obviously,

CONSTRUCTION ON A NEW ALIGNMENT HAS POTENTIAL FOR SURPRISES. YET, THIS ROUTE UNDERWENT CAREFUL ANALYSIS BEFORE PRESIDENTIAL SELECTION AND NORTHERN BORDER IS CONTINUING TO SUPPLEMENT THE EXISTING DATA-BASE TO REDUCE THE POTENTIAL FOR BOTH ENVIRONMENTAL AND TECHNICAL SURPRISES LATER ON.

OF COURSE, ALL OF THE QUESTIONS HAVE NOT BEEN ANSWERED, NOR HAVE ALL OF THE PROBLEMS BEEN RESOLVED. BUT I AM FIRMLY CONVINCED THAT THE SUCCESSFUL, TIMELY, COST EFFECTIVE AND ENVIRONMENTALLY ACCEPTABLE CONSTRUCTION OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM RESTS ON TWO CRITICAL FACTORS: ONE - CAREFUL AND THOUGHTFUL PLANNING TO FORESEE AND RESOLVE PROBLEMS EARLY AND, TWO - GENUINE DEDICATION BY ALL PARTIES, BOTH GOVERNMENT AND PRIVATE ALIKE, TO COOPERATIVELY RESOLVE THE PROBLEMS WHICH SURFACE. I AM ENCOURAGED BY WHAT I HAVE SEEN SO FAR IN BOTH OF THESE AREAS.

FOR ANY PROJECT, AND ESPECIALLY FOR ONE OF THIS MAGNITUDE, THE DEVELOPMENT OF REALISTIC AND DETAILED SCHEDULES IS A SIGNIFICANT ELEMENT OF THE TOTAL PROJECT PLANNING PROCESS. ALL RELEVANT ACTIVITIES AND THEIR INTERRELATIONSHIPS MUST BE CONSIDERED. IN THE BEGINNING, A CERTAIN NUMBER OF ASSUMPTIONS MUST BE MADE FROM WHICH SUBSEQUENT ACTIVITY TIMEFRAMES ARE DEVELOPED. CURRENT SPONSOR SCHEDULES ASSUME SATISFACTORY AND TIMELY COMPLETION OF FINANCING, THE FEDERAL ENERGY REGULATORY COMMISSION CERTIFICATION PROCESS AND OTHER MAJOR ACTIONS. FAILURE TO COMPLETE ANY OF THESE MAJOR ACTIONS WITHIN THE ASSUMED TIME FRAME THUS

NECESSITATES RE-EVALUATION OF THE REMAINDER OF THE SCHEDULE. BECAUSE PROJECT SCHEDULES ARE A MAJOR COMPONENT OF THE SPONSORS' CERTIFICATION FILINGS, ALL EXISTING SCHEDULES ARE NOW BEING REVIEWED. A REVIEW OF THESE SCHEDULES BY FEDERAL ENERGY REGULATORY COMMISSION IS CURRENTLY UNDER WAY AS A PART OF THE SPONSORS REQUEST FOR CERTIFICATION.

THE SCHEDULES PRESENTLY UNDER REVIEW CALL FOR ALASKAN GAS TO BEGIN FLOWING FROM PRUDHOE BAY TO THE LOWER 48 DURING THE WINTER OF 1984-1985.

SINCE MY CONFIRMATION AS FEDERAL INSPECTOR IN JULY, I HAVE DEVOTED A GREAT DEAL OF MY ENERGIES TO DEVELOPING AN ORGANIZATION WHICH WILL BE CAPABLE OF EFFECTIVELY FULFILLING ALL FEDERAL INSPECTOR RESPONSIBILITIES. MY RESPONSIBILITIES ARE SPELLED OUT IN THE ALASKA NATURAL GAS TRANSPORTATION ACT, THE PRESIDENT'S DECISION AND REORGANIZATION PLAN NO. 1. THE PRINCIPAL ONES ARE:

1) COORDINATING THE SCHEDULING AND ISSUANCE OF ALL FEDERAL AUTHORIZATIONS FOR THE PROJECT;

2) ENFORCING ALL RELEVANT FEDERAL STATUTES, INCLUDING MONITORING COMPLIANCE WITH ANY TERMS AND CONDITIONS IMPOSED;

3) MONITORING ALL ACTIONS TAKEN TO ASSURE THAT COST CONTROL, SAFETY, AND ENVIRONMENTAL PROTECTION OBJECTIVES

ARE FULFILLED WHILE STILL ACHIEVING THE TIMELY CON-CONSTRUCTION AND INITIAL OPERATION OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM; AND

4) ESTABLISHING A JOINT, COOPERATIVE RELATIONSHIP WITH AFFECTED STATE GOVERNMENTS AND THE GOVERNMENT OF CANADA.

THE ORGANIZATION OF THE OFFICE OF THE FEDERAL INSPECTOR MUST BE CAPABLE OF FULFILLING THIS WIDE RANGE OF RESPONSIBILITIES AND IT MUST DO SO WITHIN A RATHER UNIQUE SET OF PARAMETERS. THE OFFICE OF THE FEDERAL INSPECTOR IS A SINGLE-PURPOSE ORGANIZATION WITH A WIDE SCOPE OF RESPONSIBILITIES, WITH A LIMITED DURATION. IT MUST BE HIGHLY FLEXIBLE, IN ORDER TO BE CAPABLE OF FOCUSING ATTENTION ON PROBLEMS WHEREVER THEY ARISE.

THE FIRST QUARTERLY REPORT OF THE OFFICE OF THE FEDERAL INSPECTOR THOROUGHLY DISCUSSES THE ORGANIZATION, AND I HAVE PROVIDED COPIES OF THIS REPORT TO YOUR STAFF. BRIEFLY, IT IS A FUNCTIONALLY DESIGNED ORGANIZATION. EACH OF THE MAJOR AREAS OF RESPONSIBILITY IS CONSOLIDATED IN AN OFFICE, THE HEAD OF WHICH REPORTS DIRECTLY TO MY OFFICE. FOR EXAMPLE, EXTERNAL AFFAIRS, ADMINISTRATION, POLICY ANALYSIS, GENERAL COUNSEL, ENGINEERING REVIEW, AUDIT AND COST CONTROL, ENVIRONMENTAL REVIEW AND PERMITS AND COMPLIANCE FUNCTIONS EACH COMPRISES A SEPARATE OFFICE. WHILE THESE ARE SEPARATE OFFICES, THERE

WILL BE SUBSTANTIAL INTERACTION AMONG THEM TO ASSURE AN INTEGRATED APPROACH TO OVERSIGHT. FOR EXAMPLE, IT IS FULLY INTENDED THAT, ALTHOUGH DELINEATED AS SEPARATE OFFICES, THE ENVIRONMENTAL AND ENGINEERING REVIEW FUNCTIONS BE DISCHARGED IN A UNIFIED FASHION.

THE ON-THE-GROUND MONITORING AND COMPLIANCE EFFORT WILL BE THE RESPONSIBILITY OF THE PROJECT OFFICE ESTABLISHED FOR EACH LEG OF THE SYSTEM. WE ANTICIPATE ESTABLISHING PROJECT OFFICES IN THE LOWER 48 IN THE NEAR FUTURE. AT THIS TIME, THE ACTUAL DATE AND LOCATION HAS NOT BEEN DETERMINED. THESE DECISIONS ARE CLOSELY ALLIED WITH THE PROJECT SPONSORS' SCHEDULES AND NEEDS AND WILL BE MADE AT THE APPROPRIATE TIME. THE MAJORITY OF THE OFFICE OF THE FEDERAL INSPECTOR'S STAFF WILL BE LOCATED IN WASHINGTON UNTIL SHORTLY BEFORE NORTHWEST BEGINS CONSTRUCTION, AT WHICH TIME THE MAJORITY OF THE STAFF WILL BE RELOCATED TO ALASKA.

COORDINATION AND OVERSIGHT OF THE FEDERAL INVOLVEMENT ON THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM IS NO SMALL TASK. REORGANIZATION PLAN NO. 1 EFFECTS THE TRANSFER OF THE STATUTORY AUTHORITIES OF SEVEN AGENCIES TO THE OFFICE OF THE FEDERAL INSPECTOR. IF THE SHEER NUMBER OF LAWS ALONE LISTED IN THE PLAN IS NOT OVERWHELMING, THE DIVERSITY OF THE AREAS COVERED IS. COORDINATING THE ACTIONS OF INTERIOR, TRANSPORTATION, TREASURY, AGRICULTURE, ENERGY (INCLUDING THE FEDERAL ENERGY REGULATORY COMMISSION), THE ENVIRONMENTAL

PROTECTION AGENCY AND THE CORPS OF FNGINEERS IS A FORMIDABLE TASK. THE AGENCY AUTHORIZED OFFICER, ESTABLISHED BY THE REORGANIZATION PLAN, WILL PLAY AN IMPORTANT ROLE IN COORDINATING THESE DIVERSE REQUIREMENTS.

AS PRESCRIBED BY THE PLAN, THE AGENCY AUTHORIZED OFFICERS SERVE AS THE PRINCIPAL POINT OF CONTACT FOR THEIR AGENCY. DURING THE PERMITTING PHASE, THE AGENCY AUTHORIZED OFFICERS WILL BE THE PRIMARY OFFICIAL RESPONSIBLE FOR THEIR AGENCY'S ACTIONS. DURING THE ENFORCEMENT PHASE, THESE OFFICERS WILL OVERSEE THE ENFORCEMENT EFFORTS OF THE OFFICE OF THE FEDERAL INSPECTOR'S STAFF TO ASSURE THAT THEIR AGENCY'S ENFORCEMENT POLICIES AND PROCEDURES ARE BEING PROPERLY EXECUTED. THE ADVICE GIVEN BY THE EXECUTIVE POLICY BOARD WILL COMPLETE THE OFFICE OF THE FEDERAL INSPECTOR-AGENCY INTERFACE.

WORKING THROUGH THE AGENCY AUTHORIZED OFFICERS WHICH HAVE BEEN APPOINTED, THE OFFICE OF THE FEDERAL INSPECTOR HAS STARTED TO ADDRESS SOME OF THE MORE TROUBLESOME AREAS TO PRECISELY DEFINE THE RESPONSIBILITIES AND TO DEVELOP AN EFFECTIVE FEDERAL INSPECTOR-AGENCY INTERFACE. TO DATE, WE HAVE CONCENTRATED OUR EFFORTS ON ANALYZING INTERIOR'S REIMBURSEMENT FUNCTION UNDER SECTION 28(L) OF THE MINERAL LEASING ACT AND ON DEVELOPING THE MOST EFFECTIVE METHODS TO CARRY OUT THE FEDERAL ENERGY REGULATORY COMMISSION'S RESPONSIBILITIES, ESPECIALLY IN THE AREAS OF COST ESTIMATION AND CONTROL, IMPLEMENTATION OF THE INCENTIVE RATE OF RETURN, RATE BASE FORMATION, AND PROCUREMENT.

I AM PLEASED TO BE ABLE TO REPORT THAT A NUMBER OF SIGNIFICANT ISSUES HAVE BEEN RECENTLY RESOLVED. AS I MENTIONED EARLIER, THE FEDERAL ENERGY REGULATORY COMMISSION HAS PUBLISHED ITS FINAL ORDER ON THE INCENTIVE RATE OF RETURN. RESOLUTION OF THIS ISSUE CONSTITUTES A MAJOR MILESTONE IN THE FEDERAL REGULATORY PROCESS AND SHOULD HELP PROMOTE INVESTOR CONFIDENCE.

IN EARLY AUGUST, THE FEDERAL ENERGY REGULATORY COMMISSION ISSUED ITS DECISION ON THE DESIGN AND CAPACITY FOR THE ALASKAN LEG. NORTHWEST ALASKAN IS NOW CHARGED WITH CONSTRUCTING A 48" SYSTEM WITH A 1260 POUNDS PER SQUARE INCH MAXIMUM ALLOWABLE OPERATING PRESSURE AND AN INITIAL 2.0-2.4 BILLION CUBIC FEET PER DAY INITIAL CAPACITY. THIS SYSTEM WILL BE ULTIMATELY CAPABLE OF EXPANDING TO CARRY 3.2 BILLION CUBIC FEET PER DAY WITH ADDITIONAL COMPRESSION.

AN ATTENDANT ISSUE TO THAT OF SIZE AND CAPACITY OF THE ALASKAN SEGMENT IS THE DETERMINATION OF THE ALLOCATION OF COSTS OF THE GAS CONDITIONING FACILITY. THESE COST ALLOCATION DETERMINATIONS ARE CRITICAL TO THE FINANCIAL OBLIGATIONS WHICH MUST BE BORNE BY THE PRODUCERS, THE SHIPPERS, AND THE CONSUMERS AND THUS AFFECT BOTH THE WELLHEAD AND TRANSPORTATION COST OF THE GAS. THE FEDERAL ENERGY REGULATORY COMMISSION REPRESENTATIVES APPEARING HERE TODAY WILL DISCUSS THESE ISSUES IN GREATER DETAIL. ALTHOUGH NO FORMAL APPLICATION FOR THE CONSTRUCTION OF THIS FACILITY HAS BEEN MADE, A DRAFT ENVIRONMENTAL IMPACT STATEMENT HAS BEEN PREPARED THROUGH THE COOPERATIVE

EFFORTS OF BOTH THE ENVIRONMENTAL PROTECTION AGENCY AND THE FEDERAL ENERGY REGULATORY COMMISSION, AND HEARINGS HAVE BEEN HELD IN ALASKA TO RECEIVE PUBLIC COMMENT.

THESE DECISIONS HAVE COLLECTIVELY BEGUN TO CREATE THE POSITIVE REGULATORY CLIMATE ESSENTIAL TO PROJECT SUCCESS. FOR EXAMPLE, THE PRODUCERS ARE CURRENTLY EVALUATING INVESTMENT OPTIONS WHILE NORTHWEST ALASKAN CONTINUES TO PURSUE VARIOUS OTHER FUNDING SOURCES. IN GENERAL, THE FINANCING COMMUNITY IS RESPONDING FAVORABLY TO THE RECENT TURN OF EVENTS. DEPARTMENT OF ENERGY REPRESENTATIVES ARE CLOSELY WATCHING THIS AREA AND ARE KEEPING ME APPRISED OF DEVELOPMENTS AS THEY OCCUR.

ANOTHER LONG-STANDING ISSUE WHICH IS NEARING RESOLUTION IS THE CONTENT OF THE ADMINISTRATIVE, ENVIRONMENTAL, AND TECHNICAL STIPULATIONS WHICH WILL BE ATTACHED TO THE DEPARTMENT OF THE INTERIOR'S GRANT OF RIGHT-OF-WAY ACROSS FEDERAL LANDS. THESE STIPULATIONS HAVE BEEN UNDER DEVELOPMENT FOR SOME TIME AND THE PROJECT SPONSORS HAVE ACTIVELY PARTICIPATED THROUGHOUT THE PROCESS. THE DEPARTMENT OF INTERIOR WILL BE READY TO ISSUE GRANTS TO BOTH THE PACIFIC GAS TRANSMISSION COMPANY AND NORTHERN BORDER BEFORE THE END OF NEXT MONTH. WORK ON THE GRANT AND STIPULATIONS FOR THE ALASKA SEGMENT IS ALSO NEARING COMPLETION.

THE DEPARTMENT OF INTERIOR ALSO HAS THE LEAD RESPONSIBILITY FOR THE PREPARATION OF A SET OF REGULATIONS TO IMPLEMENT THE EQUAL EMPLOYMENT OPPORTUNITY PROVISIONS OF THE ALASKA NATURAL GAS

TRANSPORTATION ACT AND THE MINORITY BUSINESS ENTERPRISE PARTICIPATION REQUIREMENTS OF THE PRESIDENT'S DECISION. MY STAFF HAS BEEN INVOLVED WITH THIS EFFORT AND I AM PLEASED TO REPORT THAT THE COOPERATION EVIDENCED BY BOTH THE DEPARTMENT OF INTERIOR AND FEDERAL ENERGY REGULATORY COMMISSION HAS BEEN EXEMPLARY IN THIS AREA. WHEN THESE REGULATIONS ARE FINALIZED, THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM WILL HAVE AN EFFECTIVE MEANS TO ASSURE EQUAL OPPORTUNITY AND TO PROMOTE MINORITY BUSINESS ENTERPRISE PARTICIPATION IN ALL PHASES OF THE PROJECT.

EVEN THOUGH THESE MINORITY BUSINESS ENTERPRISE REGULATIONS HAVE NOT YET BEEN FINALIZED, THE DEPARTMENT OF TRANSPORTATION HAS TAKEN AFFIRMATIVE STEPS TO FULFILL THE INTENT OF THE ALASKA NATURAL GAS TRANSPORTATION ACT AND THE PRESIDENT'S DECISION IN THIS AREA. LATE IN 1978, THE DEPARTMENT OF TRANSPORTATION SOLICITED OFFERS FROM MINORITY BUSINESSES TO PROVIDE TECHNICAL ASSISTANCE IN REVIEWING THE DESIGN AND QUALITY CONTROL PROGRAMS. MY STAFF IS ACTIVELY PARTICIPATING IN THE FINAL CONTRACT NEGOTIATIONS TO BROADEN THE SCOPE TO INCLUDE OTHER AREAS OF THE OFFICE OF THE FEDERAL INSPECTOR'S INTEREST. IF FINAL NEGOTIATIONS ARE SATISFACTORY, MY OFFICE WILL ASSUME ADMINISTRATION OF THIS CONTRACT IMMEDIATELY AFTER IT IS AWARDED.

ALSO OF NOTE IN THE AREA OF TECHNICAL ASSISTANCE, I AM DEVELOPING AN AGREEMENT WITH THE CHIEF OF THE CORPS OF ENGINEERS FOR ASSISTANCE IN REVIEWING NORTHWEST'S ENGINEERING SOLUTIONS

TO PERMAFROST-RELATED PROBLEMS. THIS ASSISTANCE WILL BE PROVIDED BY A NUMBER OF THE CORPS OF ENGINEER'S DIVISIONS AND LABORATORIES, INCLUDING THE COLD REGIONS RESEARCH AND ENGINEERING LABORATORY WHICH EMPLOYS SOME OF THE WORLD'S EXPERTS IN PERMAFROST DYNAMICS AND ARCTIC ENGINEERING. IN ADDITION TO THEIR IN-HOUSE EXPERTISE, THE CORPS OF ENGINEERS WILL DRAW UPON THE RESOURCES OF THE UNITED STATES GEOLOGICAL SURVEY, AND THE ACADEMIC AND INTERNATIONAL ENGINEERING COMMUNITIES. THIS EXPERTISE WILL BE INVALUABLE TO THE OFFICE OF THE FEDERAL INSPECTOR DURING THE DESIGN REVIEW STAGE.

THE SUPPORT AND COOPERATION I HAVE GOTTEN FROM ALL THE AGENCIES IS ESPECIALLY APPRECIATED SINCE I DO NOT INTEND TO DUPLICATE EXISTING EXPERTISE WHICH CAN BE MADE AVAILABLE TO THE OFFICE OF THE FEDERAL INSPECTOR. THERE EXISTS AMONG THE FEDERAL AGENCIES A SINCERE DESIRE TO FACE THE ISSUES SQUARELY AND TO RESOLVE THEM WITH EQUANIMITY AND PRUDENT HASTE. THIS IS NOT TO SAY THAT REACHING AGREEMENT HAS ALWAYS BEEN EASY OR QUICK. AS I HAVE REPORTED ALREADY, THERE ARE A NUMBER OF ISSUES WHICH ARE STILL UNRESOLVED. YET, THE LINES OF COMMUNICATION ARE OPENING AND THE FLOW OF INFORMATION AND IDEAS IS STEADILY INCREASING. AND, MORE IMPORTANTLY, <u>ALL</u> KEY PARTIES BOTH IN GOVERNMENT AND THE PRIVATE SECTOR ARE PARTICIPATING. THIS IS A NEW ATMOSPHERE FOR THE ALASKA GAS PROJECT AND I FIRMLY BELIEVE IT IS A HEALTHY ONE. I INTEND TO DO EVERYTHING I POSSIBLY CAN TO SEE THAT IT CONTINUES.

At the September Executive Policy Board meeting, the State of Alaska's Pipeline Coordinator reported significant progress in the area of socioeconomics in which the State has assumed the lead responsibility. The State and Northwest Alaskan have been able to reach agreement on a number of provisions which the State believes will be effective in minimizing socioeconomic impacts during construction. Here, again, the case is by no means closed; but the outlook is encouraging. I will continue to follow closely developments in this area.

Socioeconomics is but one of the areas of impact on, and involvement with, the State of Alaska which merits special attention. As mentioned before, the State has participated in the development of the environmental and technical Stipulations to assure uniformity of the requirements which will be imposed on both State and Federal lands. Not only should the requirements be as uniform as possible but the monitoring and enforcement structures should also be compatible and closely coordinated. The vehicle for the resolution of this and other related issues is, of course, the Joint Federal/State Monitoring Agreement. Because these issues are both very complex and extremely important, I have personally been involved and will continue to monitor the negotiation process to assure that the details of the agreement are fairly and intelligently developed.

As the members of this committee are well aware, this is

NOT THE FIRST TIME THAT THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM HAS RECEIVED CONGRESSIONAL ATTENTION--NOR, I DARE SAY, WILL IT BE THE LAST. THIS PROJECT IS IMMENSE, NO MATTER WHAT MEASURING TOOL ONE APPLIES. SOMEWHERE ALONG THE LINE, ALMOST EVERYONE HAS AN "INTEREST." SOME OF THE INTERESTS ARE VERY LIMITED IN TIME; SOME ARE QUITE NARROW IN SCOPE; AND SOME PERVADE EVERY FACET OF THE PROJECT. AS FEDERAL INSPECTOR, I FULLY RECOGNIZE THAT IT IS MY RESPONSIBILITY TO BE CONSTANTLY AWARE OF THESE INTERESTS. DURING MY TRIPS TO ALASKA, I HAVE MET, OR TRIED TO MEET WITH, AS MANY GROUPS AS POSSIBLE WHO HAVE EXPRESSED AN INTEREST IN THIS PROJECT.

WHILE IN WASHINGTON, I HAVE SPENT TIME WITH REPRESENTATIVES OF VARIOUS GROUPS AND THROUGH THESE TALKS, I HAVE GAINED A VALUABLE UNDERSTANDING OF THE PERSPECTIVE OF EACH OF THESE INTERESTS. I HAVE ALSO COME TO UNDERSTAND THAT ACHIEVING A BALANCE BETWEEN THESE INTERESTS WILL NOT ALWAYS BE EASY. YET, AS FEDERAL INSPECTOR, I AM PREPARED TO FULLY ACCEPT MY RESPONSIBILITY FOR DETERMINING HOW COMPETING INTERESTS WILL BE BALANCED AND FOR ACCOMPLISHING THIS IN A FAIR AND RESPONSIBLE MANNER.

FOR EXAMPLE, ENVIRONMENTAL GROUPS HAVE PROPOSED FORMATION OF A CITIZEN COMMITTEE WHICH WOULD BE ATTACHED TO THE OFFICE OF THE FEDERAL INSPECTOR. THE PERSPECTIVE WHICH SUCH A CITIZEN COMMITTEE COULD BRING TO THE OFFICE OF THE FEDERAL INSPECTOR COULD BE A VALUABLE ASSET TO THE DECISION-MAKING

PROCESS. I AM CURRENTLY ANALYZING THE AVAILABLE OPTIONS TO DETERMINE WHICH ALTERNATIVE WILL BEST ACHIEVE OUR COMMON OBJECTIVE: THE MINIMIZATION OF ENVIRONMENTAL DAMAGE. I REMAIN FIRMLY CONVINCED THAT EARLY, CAREFUL PLANNING WILL ACCOMPLISH THIS OBJECTIVE; FIRST BY ELIMINATING MOST OF THE MAJOR POTENTIAL ENVIRONMENTAL PROBLEMS, AND SECOND BY SERVING TO REDUCE THE SEVERITY OF THE PROBLEMS WHICH MAY SURFACE LATER.

THE PAST T''REE MONTHS HAVE BEEN AN EDUCATION--AND A VALUABLE AND REWARDING ONE. I AM ENCOURAGED BY WHAT I HAVE SEEN AND I AM OPTIMISTIC ABOUT THE FUTURE. AS A RESULT OF THE DEDICATED EFFORTS AND COOPERATIVE ATTITUDE EVIDENCED BY ALL SIDES, A NUMBER OF PROBLEMS ARE NOW ON THEIR WAY TO RESOLUTION. I FULLY RECOGNIZE THAT THERE ARE DIFFICULT CHOICES AHEAD BUT I STAND PREPARED TO ASSURE YOU THAT THEY WILL BE MADE FAIRLY, INTELLIGENTLY, AND QUICKLY. IF WE CAN SUCCEED IN MAINTAINING THE FOWARD MOTION WHICH HAS ALREADY BEGUN, WE SHALL HAVE A SUCCESSFUL PROJECT WHICH IS A CREDIT TO US AND TO THE NATION.

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

October 23, 1979

The Honorable John T. Rhett, Jr.
Federal Inspector
Alaska Natural Gas Transportation System
New Executive Office Building
Room 3212
726 Jackson Place
Washington, D.C. 20503

Dear Mr. Rhett:

As I indicated at the beginning of the hearings on the Alaska Natural Gas Transportation System, I am providing you with some written questions. Your responses will be included in the record. The Subcommittee would appreciate answers to the following questions:

1. What actions do you believe you can take to raise the level of confidence of lenders in the government's ability to accomplish it's task?

2. Are you receiving sufficient budget support to carry out your function?

3. We received testimony on October 15 that cost effectiveness was not a consideration of Federal agencies during construction of TAPS. Can you comment on this issue as it relates to ANGTS?

4. Concern was expressed on October 15 that the proposed procurement guidelines between the U.S. and Canada will delay construction because of burdensome bidding procedures. Can you provide more detail on this matter?

5. Will you provide the Subcommittee with the options you now have under consideration under Section 28(1) of the Mineral Leasing Act?

October 23, 1979
Page two

6. What, specifically, are the requirements in the Stipulations regarding "wetlands", and what is the extent of land affected in the Alaskan and Northern Border segments? What special construction limitations will result from these Stipulations?

It is requested that your response to these questions be sent to the Subcommittee as soon as possible in order to make the complete hearing record available to the public in a timely manner.

Sincerely,

HAROLD RUNNELS
Chairman
Oversight and Investigations
Subcommittee

jgh

FEDERAL INSPECTOR
ALASKA NATURAL GAS TRANSPORTATION SYSTEM
P. O. Box 19400
Washington, D. C. 20036

NOV 06 1979

Honorable Harold Runnels
House of Representatives
Washington, D.C. 20515

Dear Mr. Runnels:

As requested in your letter of October 23, I am submitting the following responses for inclusion in the Oversight and Investigations Subcommittee's record on the Alaska Natural Gas Transportation System. The following numbered responses correspond to the questions raised in your letter.

1. What actions do you believe you can take to raise the level of confidence of lenders in the government's ability to accomplish it's task?

   The most significant contribution that the Office of the Federal Inspector (OFI) can make toward raising the level of confidence of all project participants, including the financial community, in the Federal government's ability to accomplish its task is to create and maintain a record of responsible and timely actions on all aspects of the project. Such a positive regulatory climate is essential to maintaining forward motion. OFI will assure that this objective is achieved by: 1) establishing an efficient organization with clear lines of authority and delegation; 2) continuing to work closely with the project sponsors and the Federal and State community to foresee and resolve problems early; and 3) assuring that decisions are timely, reasonable, and reliable.

2. Are you receiving sufficient budget support to carry out your function?

   Our request for $15,000,000 for FY 1980 operations is still pending before Congress. In the interim, a continuing resolution has provided $727,000 which is adequate to support a limited staff and a moderate level of activity until November 20, 1979.

   The FY 1980 budget request is based on the sponsors' current construction schedule, and reflects our best estimate of the required rate of staffing and build-up of office operations. The $15,000,000 estimate, while lean, is the amount of funding that we believe will be sufficient to carry out the Federal Inspector responsibilities. Without adequate funds, the Federal Inspector's effectiveness in expediting construction and in monitoring enforcement may be impaired.

3. We received testimony on October 15 that cost effectiveness was not a consideration of Federal agencies during construction of TAPS. Can you comment on this issue as it relates to ANGTS?

The respective regulatory schemes surrounding TAPS and ANGTS have several significant differences. Cost control is a case in point.

On the one hand, crude oil pipelines like TAPS, were traditionally not subject to either public utility-type rate regulation or project certification. Under current oil pricing regulations, the consumer is not directly affected by the capital costs of TAPS. Instead, the producers receive a prescribed price for the Prudhoe Bay oil and basically split that price between production and transportation. Also, cost control was not critical to TAPS project financing, due to the producers' economic strength.

Finally, other than Section 28(j) of the Mineral Leasing Act (under which the Department of the Interior is to ascertain financial capability of right-of-way applicants), Interior was not charged with assuring cost control.

On the other hand, interstate natural gas pipelines, like ANGTS, are heavily regulated. This includes the FERC ratemaking and project certification procedures. Cost control becomes important because the gas consumer pays for capital costs through transportation rates and because the FERC, as an economic regulator, must assess the economic viability of proposed pipelines.

In the case of ANGTS, specifically, cost control is accentuated. The Alaska Natural Gas Transportation Act of 1976, the President's Decision and Report to Congress, and Reorganization Plan No. 1 of 1979 all contribute means for controlling the costs of building ANGTS. These include the incentive rate of return and the substantial role of the Federal Inspector in all phases of project management and planning. Due to the enormity of ANGTS, such emphasis on cost control is essential for financing the project in the private money markets.

4. Concern was expressed on October 15 that the proposed procurement guidelines between the U. S. and Canada will delay construction because of burdensome bidding procedures. Can you provide more detail on this matter?

   The procurement procedures proposed by FERC and the State Department were developed with the primary objective of providing transparency in the bidding process conducted by U. S. and Canadian project sponsors. The draft procedures propose to place the Federal Inspector in the lead role for purposes of assuring that major procurement decisions by the Canadian and U. S. project sponsors are based upon generally competitive bidding processes. We are currently discussing both sets of proposed procedures (those applicable to the Canadian sponsor and those applicable to the U. S. sponsors) with all concerned parties. It appears that procedures can be formalized which do not place undue burdens upon project sponsor procurement processes but which do comply with the objectives of Paragraph 7 of the U. S. Canadian Agreement on Principles.

5. Will you provide the Subcommittee with the options you now have under consideration under Section 28(1) of the Mineral Leasing Act?

   Section 28(1) of the Mineral Leasing Act requires private parties to reimburse the U. S. for certain costs associated with their use of Federal lands for oil or gas pipelines. There are several major questions which must first be addressed before the Federal Inspector can implement reimbursement. First, since reimbursement for Federal Inspector activities clearly is required, the options are then either to accept that conclusion or else to seek a Congressional waiver of the reimbursement requirement.

   The most complex aspect of this issue is determining exactly what Federal Inspector activities are reimbursable. During the agency permit-issuance phase, there are three options. First, all Federal Inspector activities related to every Federal agencies' permitting could be reimbursable. Second, reimbursement could be limited to Federal Inspector activities related only to Department of the Interior (DOI) actions such as review of draft right-of-way stipulations. Third, reimbursement could be further limited to those Federal Inspector activities providing specific assistance to DOI, not merely reviewing DOI actions to assure expedition.

   During the enforcement phase there are two options. First, all Federal Inspector field personnel (and support) enforcing any requirement referenced in the DOI right-of-way or stipulations could be reimbursable, whether required by DOI or any other Federal agency. Second, reimbursement could be limited to Federal Inspector field personnel (and support) enforcing only specific DOI authority under the Mineral Leasing Act.

The most important issue is determining the appropriate mechanism for reimbursement. The two options are either to retain present DOI procedures (including advance billing) or to establish a streamlined approach, under which appropriations would be sought for all Federal Inspector activities and reimbursement would be made directly to the Treasury after-the-fact.

6. What, specifically, are the requirements in the Stipulations regarding "wetlands", and what is the extent of land affected in the Alaskan and Northern Border segments? What special construction limitations will result from these Stipulations?

The Department of the Interior Stipulations lay out a number of requirements designed to minimize damage to wetland areas during and following construction. Because avoidance of any problem is the most effective and desirable mitigation measure, the Stipulations direct that the pipeline system shall be designed to minimize the number of wetland crossings and and that there will be a 500-foot buffer strip of undisturbed land between the pipeline and wetlands, unless otherwise approved by the Federal Inspector. Thus, in accordance with my conviction that problems must be identified and resolved early, discussions involving Northwest Alaskan Pipeline Company (Northwest), DOI, other affected Federal agencies, and the State of Alaska are underway to analyze the potential of various routing options to reduce environmental impact in a number of areas, including wetlands. The Stipulations also contain certain requirements which are designed to minimize erosion and control the production and deposit of any resulting sediment. Because certain activities (i.e., stockpiling and the operation of mobile ground equipment) possess the potential for causing significant environmental harm in sensitive areas such as wetlands if not conducted carefully, the Stipulations provide for the Federal Inspector to authorize such activities on a site-specific basis.

Although efforts are underway to determine the extent of lands in Alaska which will be considered as wetlands, the exact extent has not yet been determined. Efforts are also underway to classify wetland areas in terms of their sensitivity or value in terms of wildlife habitat and other factors. The types of construction limitations which will be placed on these areas will be determined by these factors, with more stringent controls being implemented on those areas with high sensitivity or habitat value. At Northwest's request, the FWS has been gathering the necessary field data to make an accurate assessment of the miles of wetlands crossed, to classify these areas, and to arrive at a more detailed statement of the required construction limitations. Although the majority of this work should be complete enough for Northwest to meet its current FERC schedule, some specific requirements will not be established until Northwest's exact construction plans (including the timing, exact location, and specific methods to be used) are developed.

The requirements imposed by the DOI Stipulations are similar for both the Alaskan and Northern Border segments of the ANGTS. The Corps of Engineers (COE) has been working closely with Northern Border Pipeline Company to delineate the requirements which will be imposed. The current COE position is that the Company may cross most of these areas by complying with the general requirements already established for Nationwide Permits. Northern Border has been notified that it will be required to apply for special permits for four river crossings. As in Alaska, the exact requirements which will be imposed on each of these river crossings will be determined after Northern Border submits more detailed construction plans.

In summary, I understand the concern over the treatment of wetlands; both from Northwest's concern over potential cost ramifications and from the environmental concern that damage to these sensitive and valuable areas be minimized. The efforts outlined above will result in reducing the concerns of both parties and will be completed in a timely fashion to assure that Northwest's planning efforts can continue on the present schedule.

I would like to thank you for the opportunity to appear before your Subcommittee to begin the open and free exchange of information which is essential to the success of this project. If I can be of further assistance to you in these or other matters, please do not hesitate to contact me.

Sincerely yours,

John T. Rhett

John T. Rhett
Federal Inspector

FEDERAL INSPECTOR
FOR THE
ALASKA NATURAL GAS TRANSPORTATION SYSTEM
Washington, D.C. 20503

October 9, 1979

Honorable Walter F. Mondale
President of the Senate

Hon. Thomas P. O'Neill, Jr.
Speaker, U.S. House of Representatives

Section 7(a)5(E) of the Alaska Natural Gas Transportation Act of 1976 (P.L. 94-586) requires that I keep the President and the Congress currently informed, on a quarterly basis, regarding certain aspects of the natural gas pipeline project authorized by the Act. I herewith submit my first such report.

This first report includes historical and general background information about the project, the progress we have made since my being confirmed as Federal Inspector, and the areas we expect to concentrate on in the coming months. Future reports, especially as we get to the construction phase, will focus increasingly on both the progress of my office and the project sponsors.

Sincerely yours,

John T. Rhett

John T. Rhett
Federal Inspector

57-087 0 - 80 - 58

The First

QUARTERLY REPORT

to the

PRESIDENT AND CONGRESS

on the
Construction of the

ALASKA NATURAL GAS
TRANSPORTATION SYSTEM

October, 1979

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* Executive Summary *

FIRST REPORT

This first Quarterly Report to Congress provides basic background information on the creation and operation of the Office of the Federal Inspector, and the development of the Alaska Natural Gas Transportation System. Subsequent Quarterly Reports will provide information on current achievements and recent developments that are critical to the success of the project.

FEDERAL INSPECTOR ORGANIZATION

Responsible Federal oversight is as critical to the success of the Alaska Natural Gas Transportation System as is competent project sponsor management. Recognition of this fact led to the creation of the Office of the Federal Inspector which has the responsibility for coordinating all Federal involvement in the project. Cooperation, dedicated effort, early planning, and timely, rational decisions by all parties are the keys to project success.

During the first quarter of operation, the Office of the Federal Inspector has been organized and partially staffed to create a mechanism capable of implementing the immediate responsibilities before it. The Office's unique responsibilities, its limited duration, and the need for high mobility pose special recruitment and organization problems requiring careful attention. The organizational structure embodies sufficient flexibility to respond to changing needs, and staffing levels will be adjusted to meet project demands.

ACHIEVEMENTS

The most significant achievements of the preceding three months center around the resolution of a number of key Federal decisions.

1. The Federal Energy Regulatory Commission issued its order establishing the mechanism to determine the rate of return on investment which the project sponsors will receive: the "Incentive Rate of Return." The Federal Energy Regulatory Commission has also specified both the pipe size (48-inch) and pressure (1260 psig) for the Alaskan segment. Resolution of these issues served to establish parameters for the construction of the gas conditioning facility. In addition, the Federal Energy Regulatory Commission initially determined that the producers of Alaskan gas should bear the cost of constructing this facility and most of the costs of conditioning the gas as well. Taken together, these decisions have set the stage for the sponsors and the investment community to commence comprehensive negotiations on project financing.

2. Although not yet resolved, significant progress has been achieved in a number of other regulatory and permitting issues. These include the Department of the Interior Right-of-Way Grants (including attached Stipulations), and the Equal Employment Opportunity and Minority Business Enterprise regulations. Progress has also been made in developing workable solutions to a number of complex issues including the treatment of the reimbursement provisions of the Mineral Leasing Act, the method and extent of the transfer of Federal Energy Regulatory Commission functions to the Office of the Federal Inspector, and the establishment of a code of conduct for Federal Inspector employees.

3. On the non-government side of the project, concerted efforts to address and resolve a number of important aspects are continuing. For example, permafrost-related problems and ductile fracture arresting techniques are receiving serious attention.

Although not precisely quantifiable, progress has been made in another major area. An atmosphere of optimism, growing out of increased, constructive communication between all entities, is becoming increasingly evident. Recent advances in the area of investor interest, Alaska socioeconomics, and relation with Canada and the States are but a few examples of the beneficial results of this new atmosphere. The Office of the Federal Inspector will continue to enhance the growth of open and frank communication between all parties while assuring that necessary Federal actions are taken in a responsive and responsible manner.

PART I - BACKGROUND

Introduction

In 1968, a wildcat rig drilling on Alaska's North Slope struck the vast petroleum reserve now known as Prudhoe Bay. Estimated to contain 9.6 billion barrels of crude oil and over 26 trillion cubic feet of saleable natural gas, Prudhoe Bay constitutes the largest of the United States' reserves. The Trans Alaska Pipeline System is currently transporting over one million barrels of Prudhoe Bay crude oil daily to southern Alaska for shipment to ports in the United States. Part of the natural gas in this reserve is in solution with the oil and part of it is in a free gas cap above the oil reservoir. Thus, as the oil is extracted, some natural gas is also removed. At this time, this gas is being reinjected back into the reserve for future use. The Alaska Natural Gas Transportation System will provide a means to transport this vast quantity of natural gas to consumers in the Lower 48 States.

Pipeline Route

On November 2, 1977, pursuant to the requirements of the Alaska Natural Gas Transportation Act of 1976, Congress approved the President's selection of a 4,800-mile joint U.S.-Canadian pipeline system to transport Prudhoe Bay natural gas to the Lower 48 States (Figure 1). The Alaska Natural Gas Transportation System (ANGTS) begins at Prudhoe Bay, Alaska, and parallels the Trans Alaska Pipeline System (TAPS) corridor to Delta Junction, just southeast of Fairbanks. At Delta Junction the route turns southeast and generally parallels the Alaska Highway across the Yukon Territory, British Columbia, and Alberta to James River Station. At James River, the System divides into two legs. The Western Leg crosses British Columbia and then proceeds south through Idaho, Washington, and Oregon before terminating near Antioch, California. The Eastern Leg, also called Northern Border, turns east to cross Saskatchewan and the States of Montana, North Dakota, South Dakota, Minnesota and Iowa before terminating near Chicago, Illinois.

Project Sponsors

The Alaska segment of the Transportation System will be constructed by Northwest Alaskan Pipeline Company, the operating partner of Alaskan Northwest Natural Gas Transportation Company, a partnership. A consortium of four companies has formed the Northern Border Pipeline Company to construct the Eastern Leg. This partnership is headed by Northern Plains Natural Gas Company, which is a subsidiary of Northern Natural Gas Company. Pacific Gas Transmission Company and its parent corporation, Pacific Gas and Electric Company will construct the Western Leg. The principal sponsor of the Canadian portion is Foothills Pipe Lines (Yukon) Ltd., which is owned by Alberta Gas Trunk Line Company, Ltd., and West Coast Transmission Company, Ltd.

System Description and Capacity

With the exception of the partial looping of the existing Pacific Gas Transmission Company and Pacific Gas and Electric Company system in Idaho, Washington, Oregon, and California, the entire 4,800-mile Transportation System, (see figure 1) will be new construction. System pressures range from 1435 psig on the Northern Border leg to 1260 psig on the Alaskan leg and 911 psig on the Western Leg. PGT/PG&E's partial looping of the Western Leg will utilize 36-inch outside diameter pipe. Northern Border Pipeline Company's new system will be 42-inch while Northwest Alaskan Pipeline Company will use 48-inch pipe for the Alaskan segment. The majority of the Canadian portion of the Transportation System will be 56-inch pipe, operating at varying pressures, depending upon the volume of gas to be transported through each particular section.

The system will initially transport from 2.0 to 2.4 Billion cubic feet of gas per day and will supply 5% of current U.S. gas needs for a period of 25 years. In terms of energy the daily output in 1984 will be equivalent to about 450,000 barrels of oil. The pipeline system can be expanded to carry additional volumes of both Alaskan and Canadian gas. The system has the capability to deliver the equivalent of 800,000 barrels of oil per day to the Lower 48 States by 1990.

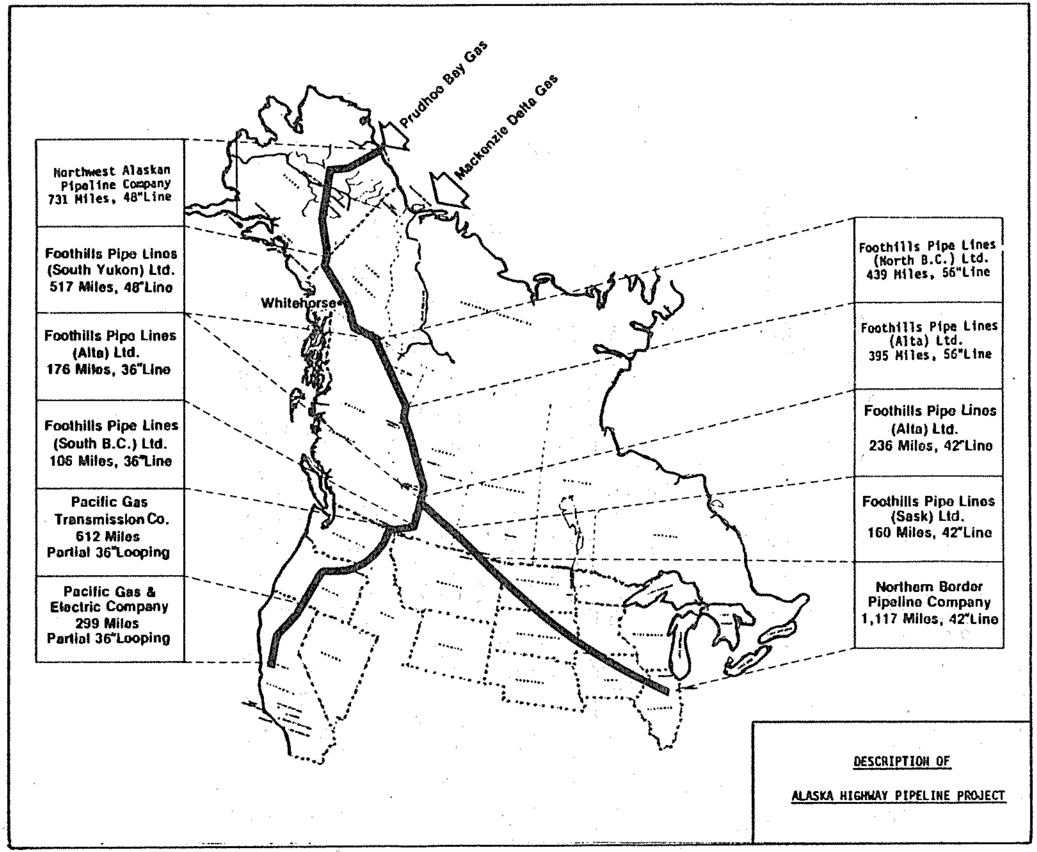
Prudhoe Bay Gas
Mackenzie Delta Gas
Whitehorse
Northwest Alaskan Pipeline Company 731 Miles, 48"Line
Foothills Pipe Lines (South Yukon) Ltd. 517 Miles, 48"Line
Foothills Pipe Lines (Alta) Ltd. 176 Miles, 36"Line
Foothills Pipe Lines (South B.C.) Ltd. 106 Miles, 36"Line
Pacific Gas Transmission Co. 612 Miles Partial 36"Looping
Pacific Gas & Electric Company 299 Miles Partial 36"Looping
Foothills Pipe Lines (North B.C.) Ltd. 439 Miles, 56"Line
Foothills Pipe Lines (Alta) Ltd. 395 Miles, 56"Line
Foothills Pipe Lines (Alta) Ltd. 236 Miles, 42"Line
Foothills Pipe Lines (Sask) Ltd. 160 Miles, 42"Line
Northern Border Pipeline Company 1,117 Miles, 42"Line
DESCRIPTION OF
ALASKA HIGHWAY PIPELINE PROJECT

Figure 1

5

PART II - THE OFFICE OF THE FEDERAL INSPECTOR

Legislative History

Late in October, 1976, Congress enacted the Alaska Natural Gas Transportation Act (ANGTA) thereby establishing a series of unique procedures designed to expedite the selection, approval, construction, and initial operation of a pipeline system to transport Alaska natural gas to the Lower 48 States. Congressional approval of the Alaska Highway Pipeline Project in November, 1977 completed the selection and approval process laid out in ANGTA. Three documents, the President's Decision and Report to Congress, Reorganization Plan No. 1 of 1979, and Executive Order No. 12142, combined to implement the ANGTA requirements for expeditious construction and initial operation of the system by establishing the Office of the Federal Inspector.

Federal Inspector's Responsibilities

The Federal Inspector is charged with the responsibility for Federal oversight of all aspects of the ANGTS during the construction and initial operation phases. Specifically, the Federal Inspector shall be responsible for:

1. enforcement of all Federal statutes relevant to ANGTS, including monitoring compliance with any terms and conditions or stipulations which are attached to any Federal authorization;

2. monitoring actions taken to assure that cost control, safety, and environmental protection objectives are fulfilled while still achieving the timely construction and initial operation of ANGTS;

3. keeping the President and the Congress informed on project progress, including factors which may delay construction and initial operation of the system and the extent to which the objectives outlined in Number 2 above are being met;

4. establishing a joint surveillance and monitoring agreement with the State of Alaska; and

5. coordinating the scheduling and issuance of all Federal permits and related activities to assure timely and unified decisions.

Although the Federal Departments of Transportation, Energy, Interior, Agriculture, Treasury, the Environmental Protection Agency, Corps of Engineers of the Department of the Army, and the Chairman of the Federal Energy Regulatory

Commission retain their authority to issue necessary permits and related authorizations, the Federal Inspector is responsible for assuring that the agencies issue these permits and other authorizations in a timely fashion. The Reorganization Plan states further that, in order to discharge this responsibility, the Federal Inspector will act as the "one window" point for all data gathering and permit application and issuance activities.

Organization of the Office of the Federal Inspector

Since the establishment of the Office of the Federal Inspector (OFI) on July 1, 1979, a concentrated effort has been made to develop an organization which is capable of effectively implementing the duties set forth by Congress and the President. In addition, OFI needs to be flexible enough to accommodate changing conditions which will occur from time to time and from leg to leg. The organization needs to be staffed quickly, with competent people, be willing to move, and must demobilize following completion of the pipeline. The basic organization, structured along functional lines and responsibilities is shown in figure 2. A brief description of the functions to be performed is provided below:

The Federal Inspector is responsible for overall management of the Office, for policy formulation, and for Executive Policy Board liaison.

Executive Policy Board (EPB) - Established by Executive Order No 12142, the EPB is composed of high level representatives of the Departments of Labor, Agriculture, Energy, Transportation, and Interior, the Corps of Engineers, the Federal Energy Regulatory Commission and the Environmental Protection Agency. The EPB will advise the Federal Inspector on matters relating to the overall management of the program or to specific agency concerns or authorities.

Advisory Council - The Federal Inspector has decided to establish a citizen advisory council to provide an avenue for citizen input into certain major decision areas.

Agency Authorized Officers (AAO) - Each Federal agency with statutory responsibilities relating to the ANGTS has appointed an AAO in accordance with the provisions of the President's Decision and the Reorganization Plan. During the permitting phase, the AAOs will be the primary official responsible for expediting the issuance of their agency's permits and other authorizations. The AAO's will work closely with their agencies and will be responsible to the Federal Inspector for assuring timely completion of all necessary actions during this phase. During the enforcement phase, the AAO's will review the enforcement effort of the Federal Inspector's staff to assure that their agency's policies and procedures are being properly carried out. In addition, the AAOs will provide substantial input into all major enforcement decisions.

The Office of External Affairs will handle Congressional and Canadian liaison, public affairs, and Intergovernmental affairs, including State, Native American and Alaskan Native concerns.

The Office of Administration will be responsible for all normal personnel and financial management functions. In addition, this office will provide contract management, procurement, internal audit, and management evaluation. This office may also be responsible for internal EEO/MBE programs.

The Office of Policy Analysis will analyze major policy and economic issues as they arise.

The Office of the General Counsel will provide legal advice and interpretation to the Federal Inspector on matters related to compliance with environmental, contract and administrative laws.

The Office of Engineering Review will review pipeline design and construction plans, quality assurance and control programs, change orders and requests, cost estimates, and provide both compliance guidance and technical advice and assistance to field inspections.

The Office of Environmental Review's functions will be similar to those of the Office of Engineering Review, except that this office will focus its attention on solving environmental problems. Although structurally separate, these two units will work closely to ensure that both engineering and environmental considerations are addressed in a coordinated manner.

The Office of Audit and Cost Control will be a focal point for gathering and integrating information from the other OFI offices including: all cost and schedule information received from the project sponsors; information on permitting and their schedules from the Office of Permits and Compliance and information as to the disposition of all enforcement actions, such as stop work orders from a number of sources. It will also implement the incentive rate of return mechanism and conduct audits of the sponsors' records. These activities will enable the Federal Inspector to quickly determine the impact of major decisions on cost and scheduling and to anticipate any potential significant cost or schedule deviations on the part of the project sponsors. An interactive automated management information system will be designed to assist in these efforts.

OFFICE OF THE FEDERAL INSPECTOR
ORGANIZATION CHART

REVISED 9-11-79

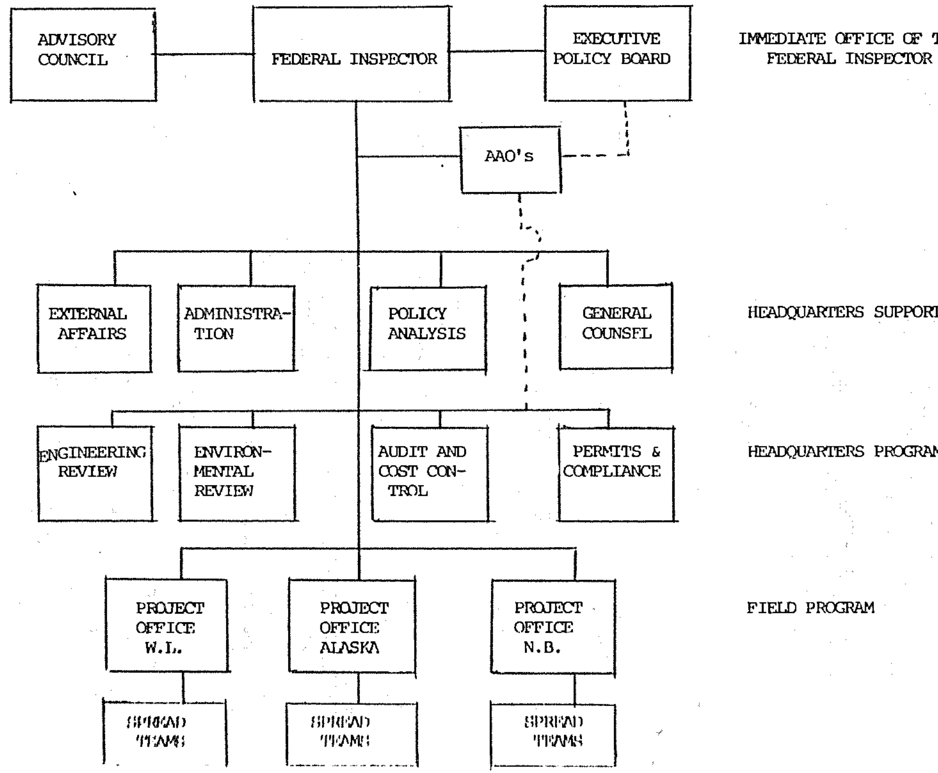

Figure 2

The Office of Permits and Compliance will track, expedite, and coordinate permit issuance. It will also generally oversee the regulatory process by monitoring the field staff and will enforce terms and conditions, laws, and regulations; administer the joint surveillance and monitoring agreement; issue enforcement guidance, and establish enforcement protocol for both the field and headquarters staff. This office may also provide all external MBE and EEO matters including the development and implementation of the affirmative action plans and regulations required by Section 17 of ANGTA and Title VI of the Civil Rights Act of 1964.

Project Offices and Field Spread Teams will monitor sponsors' and contractors' field compliance with terms and conditions and other requirements including taking appropriate enforcement actions. These units will also be responsible for making necessary decisions on any actions necessitated by unanticipated field conditions.

Although we plan a functional organization, we intend to utilize our staff in a very flexible manner. With this concept, the Federal Inspector and the Deputy Federal Inspector will be able to divide the responsibilities in a manner which will result in the most effective leadership.

The responsibilities of the Agency Authorized Officers (AAO) can be executed in several ways as needs change. Their accessibility to and by the Executive Policy Board will enhance the relationship of the Board with the OFI. Their organizational placement, with direct access to the Federal Inspector, and with access to all functional organizational elements of the OFI assures that agency concerns and agency policies and procedures are properly integrated into any decision of the Federal Inspector that relates to their agency. Discussions are presently taking place to arrive at an agreement relative to specific operating authorities and responsibilities that each AAO will exercise on behalf of his agency and on behalf of the Federal Inspector.

The most critical upcoming action is recruitment. The OFI received an initial allocation of 13 Senior Executive Service (SES) positions. Several additional positions are under consideration as well. These allocations will be utilized to staff the key support and program functions. The remaining SES positions need to be filled during FY 1980. The fact that the majority of the staff will relocate to Alaska in FY 1981, combined with the fact that the organization will be abolished one year after the project becomes operational, will present some unique recruitment problems. The SES system provides some built-in flexibilities for movement of individuals to best utilize their skills and accommodate changes throughout the life of the project, including the demobilization phase. Because the regular career service does not offer these flexibilities, a demobilization plan will be developed for outplacement of all personnel upon project completion. In addition, the general and EEO recruitment programs will be designed to compensate for these unique factors.

Executive Order 11222 directs all agencies to establish an employee code of conduct to encompass financial disclosure, employee activities and other potential conflict of interest areas. Executive Order 12142 expressly applies that requirement to the Office of the Federal Inspector. OFI is actively working to develop this code of conduct, devoting special attention to Title V of the Ethics in Government Act. All SES positions have been proposed to constitute "senior employees" for the purpose of post-employment conflict of interest. In the interim before formal regulations can be promulgated, the General Counsel has been advising employees as conflict of interest questions arise.

The OFI has filled its FY 1979 personnel ceiling of 25. In FY 1980, the Federal Inspector has a ceiling of 130. It is anticipated that OFI will require over 200 positions in FY 1981 to accommodate the expected workload. Figure 3 shows the proposed functional distribution of these positions.

Field Offices

The majority of OFI staff will be located in Washington, D.C. until shortly before construction commences in Alaska. At that time, most of the Headquarters staff in Washington, D.C. will be relocated to Alaska. In addition, as work progresses, it may become necessary to establish a small office near Northwest (Fluor) headquarters in Irvine, California to assure effective Federal Inspector - sponsor communication during the design phase. (Fluor, Inc., an international construction and engineering company, has been selected by the Northwest Alaskan Pipeline Company to manage the construction phase of the pipeline.) A separate project office will be established for each leg of the ANGTS in the Lower 48 when field activities reach a level which requires the presence of Federal Inspector staff. Omaha, Spokane and Seattle are currently being considered as possible Lower 48 field office locations. Finally, liaison in San Francisco may be required before the commencement of construction.

Budget

For FY 1979, $400,000 in budget authority, and an employment ceiling of 25 full-time permanent and 2 Other positions were approved by OMB. These resources were based on the most feasible level of recruitment and start-up that could be sustained during the remaining months of FY 1979.

Our 1980 estimate was based on the assumption that financing issues would be resolved on a timely basis, and that construction would proceed according to the currently published schedule. The 1980 budget estimate also reflected the results of preliminary organizational and staffing studies. These studies indicated that the staff would be based primarily in the Washington office, and would be required for administrative management and for extensive planning and development activities in the technical, environmental and cost control areas prior to construction. The studies also indicate the need for small field offices for oversight of the Northern Border and Western Leg segments.

In June, OMB approved $15,000,000 in budget authority, and an employment ceiling of 130 full-time permanent and 10 Other positions for FY 1980. The approved budget included a transfer of approximately $150,000 in funds from the Department of Transportation's Research and Special Programs Administration, which was written into the Determination Order of July 12, 1979.

The President formally transmitted the OFI FY 1980 budget request to Congress on July 20, 1979. Final Congressional action on the FY 1980 request is expected in October. Prior to action, the Office of the Federal Inspector will be funded by a continuing resolution, the amount of which will be based on the FY 1980 request.

The budget estimate for FY 1981 was submitted to OMB on September 7, 1979 and is currently under review.

PART III - Major Items of Interest

Key Federal Energy Regulatory Commission Decisions

Incentive Rate of Return

The President's Decision directs that the Federal Energy Regulatory Commission shall establish a variable rate of return on equity for the ANGTS to reward project sponsors for completing the project under budgeted cost and to penalize them for incurring cost overruns. The Incentive Rate of Return (IROR) was developed to achieve this objective. Because this is the first attempt to implement a variable rate of return in the natural gas transportation industry, FERC carefully considered several different options presented during the 17-month development process. FERC's Order No. 31-B, issued on September 6, 1979, revised some portions of the original Order No. 31 of June 8, 1979. Taken together, these orders establish the IROR mechanism for the Alaska and Northern Border segments to the ANGTS (the Western Leg of ANGTS is not included in the IROR).

Allocation of Gas Conditioning Costs; Pipe Size and Pressure

FERC Order No. 45, issued August 24, specifies that the producers of Alaskan gas shall bear the cost of constructing the gas conditioning facility. This facility is necessary to remove certain impurities from the natural gas so that it meets the necessary standards for transportation in the pipeline. At present, it is estimated that the cost of constructing this facility will be $2-3 billion. To date, no entity has filed for the necessary permits for this facility. The FERC also determined that, except for the cost of removing carbon dioxide below 3%, the producers shall also bear the actual costs of conditioning the gas.

Although further debate on these issues is expected, these decisions constitute an important step forward in the critical area of cost allocation. Determination of the costs (and the allowed rate of return) to be borne by the producers, the shippers, and the gas consumers is a necessary prerequisite to the development of the sponsors' financing plan. These recent FERC decisions also obviously affect both the wellhead and the transportation costs of the gas -- and thus the ultimate cost to the consumer.

During the past several years, a number of different proposals have surfaced with regard to pipe sizes and pressures. On August 6, FERC issued its "Order Approving Alaska Segment Design Specifications and Initial System Capacity" which determined that the Alaska segment would consist of 48-inch diameter pipe, with 1,260 pounds per square inch as the maximum allowable operating pressure, and compressor station size and spacing for an initial capacity of 2.0 - 2.4 billion cubic feet per day capable of expansion, through additional compression, to an average daily volume of 3.2 billion cubic feet per day. Resolution of this issue will allow Northwest Alaskan to proceed with its planning and design development process.

An outgrowth of these FERC decisions has been in effect, a decision that the gas conditioning facility, for technical reasons, must be located on Alaska's North Slope rather than in Fairbanks. Employment benefits and potential for utilization of some of the conditioning by-products are the major reasons given for locating the plant in interior Alaska.

Project Schedules

Construction of the ANGTS will occur in two stages. Prior to the completion of the Alaskan and northern Canadian portions necessary to deliver Alaskan natural gas to the Lower 48, parts of the Northern Border and Western Leg systems will be constructed to transport natural gas from Alberta. Early delivery of the Alberta gas will require the approval of the Canadian National Energy Board and construction of 633 miles of the proposed system in Canada south of James River Station, 809 miles of the Northern Border Leg from the U.S./Canadian border to Ventura, Iowa, and 160 miles of the PGT System from Idaho to Stanfield, Oregon. In addition, Northwest Pipeline Corporation will install 350 miles of 24 and 30-inch looping from Stanfield, Oregon to Burley, Idaho to provide additional capacity in its existing system. At Burley, the Alberta gas will begin to flow through the existing El Paso system on its way to markets in Southern California.

The development of project schedules is both a complex and integral part of the total project sponsor planning process. Schedules must be realistic, detailed and constantly updated to reflect new data and developments. All relevant activities must be addressed and their interrelationships must be carefully integrated into the planning process. The first step in schedule formulation is the development of certain key assumptions from which subsequent activity timeframes are developed. Failure to realize any of these key assumptions necessitates re-adjustment of the remainder of the schedule.

Current sponsor schedules are based on the assumptions that certain major issues will be finalized in a satisfactory and timely fashion. These major issues are the issuance of the Federal Energy Regulatory Commission Certificates of Public Convenience and Necessity and the Department of the Interior Grants of Right-of-Way and attached Stipulations; the development of a financing package; gas conditioning facility ownership; successful implementation of the concept of a staged design development and approval process; and resolution of remaining cost allocation and tariff issues. The sponsors are now re-evaluating existing schedules.

Taking these caveats into account, construction of the Western Leg Pre-Delivery segment is scheduled to commence in early 1980. Northern Border, Inc., will start construction of its Pre-Delivery segment sometime thereafter. Delivery of some Alberta gas through the Western Leg is anticipated in late 1980. Completion of the Northern Border segment, should an expedited construction schedule be followed, might allow delivery of the remaining Alberta gas by the winter of 1981. Construction in Alaska will commence in January 1982. Work to complete the Lower 48 systems will begin in April 1984. Currently, Alaska gas is scheduled to begin flowing from Prudhoe Bay to the Lower 48 states in November 1984.

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Transfer of FERC Functions to OFI

There are several areas of regulatory activity which traverse the missions of both the Federal Energy Regulatory Commission and the Office of the Federal Inspector. These include construction cost control (for example, cost estimates), audit, incentive rate of return, rate base formation, and procurement. It is important that the exercise of these functions be assigned to the agency best able to efficiently perform them. The division of these functions is proceeding, but it is a very complex issue which requires substantial legal, technical, and administrative analysis by both agencies before any transfers can be effected. These transfers will be carefully developed to assure that all appropriate requirements are effectively covered.

Incentive Rate of Return Cost and Schedule Tracking by OFI

According to ANGTA and the President's Decision, the Office of the Federal Inspector is required to monitor the construction activity of the project sponsors, insure adequate pre-planning and design on the part of the sponsors, and to coordinate the activities of the Federal government in the permitting and approval process for this project. This project oversight will require a great deal of coordination, cooperation, and planning to assure that good management control is employed by the sponsors, and to prevent government caused delays and cost overruns. State-of-the-art techniques for cost and schedule control and project monitoring will be employed by the Office of the Federal Inspector on this project. The system is currently in the design and development stage. OFI staff is investigating project management techniques used throughout the construction industry and within the Department of Defense and the Department of Energy. The experience relating to the TAPS oil pipeline in Alaska and other multi-billion dollar construction projects is also being evaluated. These systems and techniques will be implemented as the project schedule moves forward.

Each sponsor, including the Canadians, is developing cost/schedule control systems and techniques which will minimize the potential for cost overruns and schedule delays, and provide the Federal government and the public with current information on the cost and schedule status of the project. Extensive, cooperative, and informal discussions have been held with the project sponsors and Canadian officials to assure that the systems employed by all entities will be compatible. This dialogue will continue in order to provide for a coordinated and effective management approach to controlling cost overruns and schedule delays.

A cost/schedule control or tracking system will only be one subsystem of an anticipated integrated Federal Inspector Management Information System (FIMIS). The FIMIS will consist of both computerized and manual systems designed to meet the functional, administrative, and legislative requirements of the entire Office of the Federal Inspector.

In addition to a cost/schedule control subsystem, other subsystems that will be included are a:

1) permit tracking system,
2) environmental information database,
3) compliance/enforcement database,
4) engineering/technical review system,
5) administrative database, and a
6) report generation system.

These various components have not had as much development and investigative work as the project control system, but they will be included in a total FIMIS design. It is expected that this work will be completed by mid-1980.

Audit of Construction Costs

Legal requirements imposed by the President's Decision thrust the Federal government deeply into project cost control. Between the Federal Inspector and the Federal Energy Regulatory Commission, there will have to be substantial on-site review and even auditing of project cost estimates and actual expenditures. Because this is a unique situation with regard to government audit of privately financed construction, the Office of the Federal Inspector is evaluating the merits of the government either developing the in-house audit capability or contracting for those services. As cost control procedures are developed, the Office of the Federal Inspector and the Federal Energy Regulatory Commission will work closely together to answer this question.

Legal Issues Under Analysis

Cost Reimbursement

Under Section 28(l) of the Mineral Leasing Act, applicants for rights-of-way across, and temporary use permits on, Federal lands are required to reimburse the U.S. for the costs of processing the applications and monitoring compliance once the right-of-way or permit has been issued. The Department of the Interior is the main agency involved in this reimbursement. Due to the substantial Federal lands crossed by the pipeline alignment, this reimbursement provision is of concern to the project sponsors and they have previously expressed these concerns to Interior. At the present time there is pending litigation over reimbursement, brought by the Alyeska Pipeline Service Company and some of the Arctic Gas Group members.

During the permit issuance stage, Interior will administer reimbursement. Nevertheless, if such administration hinders the progress of the project, the Federal Inspector is required to intercede. During the enforcement stage, however, Interior's monitoring activity will be performed by the Office of the Federal Inspector. It is at this stage that reimbursement becomes even more significant. Because the Reorganization Plan requires a unified budget for the Federal Inspector, an important and complex issue is raised: How are the reimbursement provisions reconciled with the unified budget requirements?

The Office of the General Counsel has solicited the views of all interested parties on this question and has done substantial legal and policy research on this issue. Following further analysis within the agency, the Federal Inspector will move the matter to a resolution.

Technical Issues

Design Review

One of the major responsibilities of the Office of the Federal Inspector is that of review and approval of the pipeline system design. The current concept is to have the design developed, submitted, and approved in stages to allow for careful consideration of the various elements. The option of utilizing contractors to supplement the Office of the Federal Inspector staff for field monitoring of construction activities is under consideration, and a study to assess the possible benefits that can be obtained from contracting the design review is currently underway.

Negotiations are proceeding for the Office of the Federal Inspector to eventually assume and administer a contract for this type of support which is currently being completed within the Department of Transportation.

Other Areas Under Study

Northwest Alaskan Pipeline Company, and to a somewhat lesser degree Northern Border Pipeline Company and Pacific Gas Transmission Company and Pacific Gas and Electric Company, have initiated a series of tests designed to insure that subsequent design decisions are made in the most technically sound, environmentally acceptable, and cost-effective manner. Due to the constraints which construction of a gas pipeline in an Arctic environment imposes, and the unique nature of the undertaking, Northwest has developed a series of tests on selected problems so that they can then develop designs to avoid them.

Of particular note are the full-scale pipe burst tests currently being conducted in England. These tests, conducted under field conditions, will provide Northwest with valuable guidance on proper pipe toughness and other related matters.

Northwest is conducting other tests to analyze various options for dealing with a number of technical concerns directly related to Arctic construction. Although Northwest faces some challenging logistic issues arising from the remote construction location and certain constraints arising from weather conditions, the most difficult issues relate to the parameters of constructing and operating a gas pipeline in permafrost. Northwest is currently pursuing a detailed soil boring program to determine the location of the permafrost. Studies to determine the nature and extent of the long-term interaction of a chilled pipeline and permafrost soils are also underway.

A final concern relates to protecting the integrity of the Trans Alaska Pipeline System (TAPS). The ANGTS and the TAPS generally follow the same corridor for 540 miles. For this portion of Northwest's system, special care must be taken to prevent damage to TAPS or its attendant structures from construction equipment, blasting operations, and other factors. These areas are being given much attention by Northwest, Alyeska Pipeline Service Company and the Office of the Federal Inspector.

Environmental Activities

Citizen's Advisory Committee

At various points throughout the process of selecting this transportation system and establishing the Federal monitoring organization, certain public interest groups have expressed a desire to be a part of the Federal decision-making process. As active participants in the selection process, the Conservation Intervenors (The Sierra Club, The Wilderness Society and the Audubon Society) have been one of the strongest supporters of establishing a mechanism to allow for citizen input into Federal Inspector decisions.

The formal mechanism available to the Federal government for utilizing such input is to establish an advisory committee, under the provisions of the Federal Advisory Committee Act (P.L. 92-463). In late 1978, the Federal agencies began developing a charter for an advisory committee which would fulfill the requirements of the Act and address the concerns of the Conservation Intervenors. One of the primary areas under study is that of the scope of representation on this Advisory Committee. After the final details of the Charter are determined, the Federal Inspector will seek appropriate Federal agency review and approval.

Terms and Conditions and Stipulations

Many different kinds of Federal government authorizations will be issued to the project sponsors to allow them to construct this pipeline. The two major ones are the Federal Energy Regulatory Commission Certificates of Public Convenience and Necessity which authorize the overall project and include specific requirements for the crossing of private lands, and the Department of the Interior's Agreements and Grants of Right-of-Way which authorize the construction of the system across Federal lands. A large number of site-specific permits will also be issued to authorize various stream crossings, material site developments, pollutant discharges, and other activities.

In accordance with applicable laws and regulations, including ANGTA, and the President's *Decision*, each authorization will also contain a number of conditions and requirements which the sponsors must agree to satisfy in order to receive the specific permit. These requirements fall into three categories:

1. The President's terms and conditions, contained in the *Decision*, establishing general requirements in a number of different areas, including finance, cost and schedule control, minority business enterprise participation, and environmental protection.

2. Stipulations establishing general administrative procedures and standards of environmental and construction performance.

3. Site-specific terms and conditions, which will be developed on a case-by-case basis, immediately prior to the issuance of the specific authorization.

Because they establish general overall project guidelines, the President's terms and conditions will be included in all authorizations. Two separate sets of stipulations have been developed. One, developed by the Federal Energy Regulatory Commission for inclusion in its Certificates, will apply to private lands. The other set will be attached to the Department of the Interior's Grants and will apply to Federal lands. These stipulations have been developed jointly by the concerned Federal agencies to assure uniformity of requirements imposed on Federal lands. To comply with the requirement in the Decision, that the terms and conditions and stipulations which pertain to State and Federal lands shall be as similar as possible, the State of Alaska has participated in the development of these stipulations from the beginning. All project sponsors have also had continued input into the process.

Both sets of stipulations were made available for public review and comment and are now in the final review stages. The Office of the Federal Inspector is actively participating in this final review to assure that the stipulations are compatible, technically and environmentally sound, and procedurally effective.

Socioeconomics

Construction of the Alaska oil pipeline created substantial strains on the existing social infrastructure in Alaska, especially in small towns and communities adjacent to the right-of-way. In addition to impacts on public services and facilities, problems arose concerning employment and training of Alaskan residents and general social and economic dislocations were created by the massive influx of construction workers.

The State of Alaska has assumed the lead responsibility for developing and implementing measures to help offset the negative socio-economic impacts expected to result from the construction of the ANGTS. These efforts have been coordinated with Northwest Alaskan Pipeline Company. Under the current proposal, the State will identify potential problems as early as possible to allow sufficient time to develop countermeasures. Although Northwest Alaskan will be asked to provide funding for Impact Centers to handle problems arising during construction, the proposal requires no financial commitments by Northwest prior to obtaining final project approvals. The details of the proposed mechanisms are being negotiated by the sponsors, the State of Alaska Pipeline Coordinator's Office and local officials.

Although similar socioeconomic impacts are expected to occur in communities in the Lower 48, the severity is not anticipated to be substantial enough to require special measures such as those currently being developed for Alaska. As OFI relations with affected Lower 48 States develop, specific socioeconomic concerns may be surfaced and will be dealt with in an appropriate manner.

Equal Employment Opportunity and Minority Business Enterprise (EEO/MBE)

Section 17 of ANGTA requires that Federal officers and agencies take affirmative action to assure equal opportunity for all persons regardless of race, creed, color, national origin or sex in any activity connected with the construction and operation of ANGTS. Condition 11 of the President's Decision directs the project sponsors to develop plans to ensure that discrimination on the basis of certain prohibited grounds does not occur. The Equal Employment Opportunity and Minority Business Enterprise plans developed to implement these requirements will be approved by the Federal Inspector.

Prior to nomination of the Federal Inspector, the involved Federal agencies formed a work group to draft a uniform set of requirements to implement Section 17 and the President's Decision. The Department of the Interior and the Federal Energy Regulatory Commission, due to their prior experience with the Trans-Alaska Pipeline Act and their lead role in granting certificates of necessity and rights-of-ways, were chosen to lead this task. This working group has developed draft regulations which have been reviewed by the project sponsors, all concerned Federal agencies, and other interested parties. It is expected that these regulations will be published in the Federal Register in the near future. The final regulations will then be prepared and hearings will be held in Alaska. When published in final form, they will be implemented and enforced by the Federal Inspector.

To meet Federal equal opportunity requirements within the Office of the Federal Inspector, an Internal EEO Affirmative Action Plan has been drafted. Meetings held with the Office of the Federal Inspector and EEO representatives culminated in an understanding that the Office of the Federal Inspector, as a brand new agency, would be expected to submit a limited Affirmative Action Plan for FY'80 and that the Equal Employment Opportunity Commission representatives would provide assistance if requested. A draft Affirmative Action Plan, Phase One, due on November 1, 1979, has been prepared and will be submitted on or before the due date.

The Office of the Federal Inspector presents unique challenges in this area. First, as a new organization, there is no past record of achievements and thus projections for recruitment of minorities, women, and other disadvantaged persons are difficult to make. Recruitment is further complicated by the fact that the Office of the

Federal Inspector will ultimately be relocated to Alaska. Finally, the Reorganization Plan provides that the Office of the Federal Inspector be terminated one year after initial operation of the pipeline. Recruitment, therefore, of the necessary high level and specialized skill category personnel poses a special problem. The Federal Inspector and his staff have directed that special recruitment programs for minorities and women who meet these requirements be developed and that additional programs be initiated to develop training programs for minorities and women who have the potential of meeting the special needs of the OFI.

Federal/State Relations

Since his confirmation in July of this year, the Federal Inspector's staff has begun the process of building a cooperative relationship between OFI and the Governors of the several States involved in the Alaska Natural Gas Transportation System. Initial efforts have focused on consultations with the Governors and their top energy advisers to offer cooperation and assistance to the State governments, as appropriate, and to explore areas of mutual concern so that coordinated, expedited actions can be taken to preclude delays in System construction and initial operation. Cooperative Federal/State relations are essential to the success of this project and OFI is actively promoting a partnership approach between the project sponsor, and Federal, State, and local governments. In general, the States have exhibited a genuine desire to cooperate with the Office of the Federal Inspector. Although they have also properly made it clear that their actions will be taken from the viewpoint of what is in their best interest, it does not currently appear that there are any major problems in the States which will delay the project.

We are pleased to acknowledge in this first report the excellent cooperation we have received from the State of Alaska. The Governor moved promptly in naming a State Pipeline Coordinator and staffing his office. As a result of that action, the State has played a vital, dynamic role in all matters relating to the project in Alaska. We view our current relationship with Alaska as a standard of excellence to be followed as we continue working with the 48 contiguous States.

ANGTA directs the Federal Inspector to establish a joint Federal/State surveillance and monitoring agreement with the State of Alaska, to be approved by the President. The President's Decision calls for cooperation with the States and recognizes the possible need for joint surveillance and monitoring agreements with States other than Alaska. The Federal Inspector is now working with appropriate State of Alaska representatives on the agreement and expects to make considerable progress on this matter in coming months. The question of possible need for joint Federal/State agreements in the Lower 48 States is being held in abeyance pending further consultations with the State governments.

Canadian Relations

In recognition of the international nature of the project, and in further recognition of the need for close coordination of U.S./Canadian interests, the Federal Inspector's first official act following confirmation was to meet with his counterpart, Honorable Mitchell Sharp, Commissioner, Northern Pipeline Agency, and members of his staff. Subsequent visits to both Calgary and Ottawa have furthered both understanding and cooperation in areas of mutual political and technical interest.

The Office of the Federal Inspector has also established and will continue to maintain close liaison with appropriate staffs in the Department of State and the Canadian Embassy in Washington, D.C. Such contacts are vital to proper coordination of this important energy project, and efforts to date have elicited only solid support of the Office of the Federal Inspector efforts from both groups.

Commissioner Sharp and the Federal Inspector have discussed and agreed to the need for continuing liaison and cooperation between their respective staffs, if necessary, on a day-to-day basis. To help assure that we uphold that commitment to the Canadians, the Federal Inspector will have an experienced person on his staff who will be responsible for assuring that our relationships with Canada remain strong and cooperative.

Future Actions

In the immediate future the Office of the Federal Inspector's staff will continue to pursue a number of internal issues. Recruitment of key staff will of course be a top priority. In addition, contract negotiations, administrative procedures, organization options, and management information systems will also receive priority attention and evaluation. Depending upon the level and timing of the sponsors' activities, it may be necessary to establish some field offices early next year. The Office of the Federal Inspector's staff will actively be analyzing various locations and developing the necessary plans to assure that field offices can be established, organized, and staffed as soon as they are required.

Externally, the Office of the Federal Inspector's staff will concentrate on furthering cooperation and coordination between all involved entities and on assuring that all necessary review, approval, and permitting actions are taken in an expedited manner. Extensive effort will be devoted to coordinating actions so that project sponsor submissions and Federal approvals occur in a synchronized fashion. In this regard, particular attention will be paid to the Federal Energy Regulatory Commission Certification process and the issuance of the Department of the Interior's Right-of-Way Grants.

Finally, project sponsor activities in many areas will be followed closely to begin implementing the concept of a staged design review and approval process. The Office of the Federal Inspector's staff, with the assistance of the Federal agencies, will maintain close liaison with the sponsors' engineers to keep apprised of their most recent testing programs, technical decisions, and other activities. Maintenance of a close, day-to-day liaison will enable the Federal agencies to respond more quickly to sponsor requests for reviews, approvals, and related actions.

OFFICE OF THE FEDERAL INSPECTOR
ALASKA NATURAL GAS TRANSPORTATION SYSTEM

The Office of the Federal Inspector, established by the President through Reorganization Plan Number 1 of 1979, is responsible for coordinating and serving as the focal point for all Federal activities directly related to the construction of the 4,748 mile Alaska natural gas pipeline, which is scheduled for completion in the mid 1980's.

The Federal Inspector will: assure that all Federal permits and other authorizations are issued in a timely fashion; monitor the construction of the pipeline to assure that the natural environment is protected, that construction schedules are maintained and cost overruns are minimized; and assure, through enforcement and other means, that all permits, authorizations, terms and conditions, regulations and other requirements are complied with.

STATEMENT OF JAMES W. CURLIN, DEPUTY ASSISTANT SECRETARY FOR LAND AND WATER RESOURCES, DEPARTMENT OF THE INTERIOR, BEFORE THE SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS OF THE HOUSE INTERIOR AND INSULAR AFFAIRS COMMITTEE ON THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM.

OCTOBER 16, 1979

I AM PLEASED TO APPEAR BEFORE YOU TODAY ON BEHALF OF SECRETARY ANDRUS TO DISCUSS THREE ISSUES OF INTEREST TO THE SUBCOMMITTEE IN THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM. THESE ARE: (1) DEPARTMENTAL STIPULATIONS, (2) ALIGNMENT OF THE PIPELINE RIGHT-OF-WAY, AND (3) THE HAINES RIGHT-OF-WAY. ALTHOUGH THEY ARE INTERRELATED, I WILL DISCUSS EACH ISSUE INDIVIDUALLY.

RIGHT-OF-WAY GRANTS

RIGHT-OF-WAY GRANTS WILL BE ISSUED FOR ALL SEGMENTS OF THE PIPELINE SYSTEM LOCATED ON FEDERAL LAND; AT LEAST ONE TO EACH OF THE FOLLOWING COMPANIES:

* NORTHWEST ALASKAN PIPELINE COMPANY - ALASKAN LEG
* NORTHERN BORDER PIPELINE COMPANY - EASTERN LEG
* PACIFIC GAS TRANSMISSION COMPANY (PGT) - WESTERN LEG FROM THE UNITED STATES/CANADIAN BORDER TO OREGON/CALIFORNIA STATE LINE

* PACIFIC GAS AND ELECTRIC COMPANY (PG&E) - WESTERN LEG WITHIN THE STATE OF CALIFORNIA

ACCORDING TO CURRENT SCHEDULES, CONSTRUCTION WILL BEGIN FIRST ON THE EASTERN LEG AND THE PGT SEGMENT OF THE WESTERN LEG FROM THE US/CANADIAN BORDER TO STANFIELD, OREGON. THE RIGHT-OF-WAY GRANTS COVERING THESE PORTIONS OF THE SYSTEM WILL BE EXECUTED UPON COMPLETION OF THE STIPULATIONS. THE GRANTS COVERING THE ALASKAN LEG, THE PGT SEGMENT OF THE WESTERN LEG FROM STANFIELD, OREGON TO THE OREGON/CALIFORNIA LINE, THE PG&E SEGMENT OF THE WESTERN LEG, AND POSSIBLY AN EXTENSION OF THE EASTERN LEG WILL BE EXECUTED IN ACCORDANCE WITH THE CONSTRUCTION SCHEDULE.

THE COMPANIES HAVE WORKED CLOSELY WITH THE FEDERAL INSPECTOR AND OTHER FEDERAL AGENCIES TO DEVELOP THE STIPULATIONS WHICH WILL GOVERN THE USE OF RIGHTS-OF-WAY ACROSS FEDERAL LANDS. HOWEVER, SEVERAL FACTORS COMPLICATE THE FORMULATION OF STIPULATIONS. PART OF THE PROBLEM LIES IN THE CONFLICT IN THE GOALS OF TWO STATUTES: THE MINERAL LEASING ACT AS AMENDED (P.L. 93-153) AND THE ALASKA NATURAL GAS TRANSPORTATION ACT (P.L. 94-586).

SECTION 28 OF THE MINERAL LEASING ACT IS THE BASIC AUTHORITY FOR GRANTING RIGHTS-OF-WAY FOR OIL AND GAS PIPELINES ACROSS FEDERAL LANDS, AND REQUIRES REGULATIONS OR STIPULATIONS FOR THE FOLLOWING:

* Restoration, revegetation, and curtailment of erosion
* Protection of air and water quality
* Control or prevention of environment and property damage and hazards to public health and safety
* Protection of the interests of individuals living in the general area of the Right-of-Way who rely upon the resources for subsistence.

Because of the extent of the pipeline - four thousand miles in length - there is to be expected a variety of environmental problems. For example, Artic permafrost is a fragile feature of the northern environment. Removal of the insulation layer of vegetation may result in the thawing of the underlying soil and can lead to additional thawing and erosion. Construction through permafrost involves considerable environmental risk. It is not a conventional construction problem that can be handled through "standard" engineering practice. Techniques for construction in permafrost are still being developed and tested and new innovative construction methods may be perfected while the project is under construction. In that event, we want to maintain the flexibility to consider using new engineering developments where feasible.

An additional environmental concern is the impact which pipeline construction may have on spawning beds for fish

WITHIN THE RIVERS TRAVERSED BY THE PIPELINE ROUTE. HUNDREDS OF SPAWNING BEDS FOR COMMERCIAL AND SPORTS FISH LIE IN THE GENERAL PATH OF THE PIPELINE. AN EFFORT IS BEING MADE TO AVOID THESE BEDS ENTIRELY BECAUSE DISTURBANCE COULD DESTROY OR REDUCE FUTURE FISH POPULATIONS. IN SOME CASES, DAMAGE CAN BE FURTHER MITIGATED BY CAREFULLY SELECTING THE TIME OF YEAR THAT CONSTRUCTION IN OR ADJACENT TO THE STREAMBED TAKES PLACE. UNFORTUNATELY, THE EXACT LOCATION OF EACH SPAWNING BED IS NOT KNOWN, AND IN SOME CASES THEY MAY NOT BE DISCOVERED UNTIL AFTER THE PROJECT IS UNDER WAY. THUS, SOME UNFORESEEN DAMAGE TO SPAWNING BEDS WILL INEVITABLY OCCUR.

WHILE RECOGNIZING THE NEED FOR ENVIRONMENTAL PROTECTION, THE ALASKA NATURAL GAS TRANSPORTATION ACT ESTABLISHES A NATIONAL GOAL FOR EXPEDITING THE CONSTRUCTION OF THE PIPELINE. THE URGENT NEED FOR THE PIPELINE COMBINED WITH THE CONSTRAINTS IMPOSED BY THE INCENTIVE RATE OF RETURN CONCEPT CREATES ECOMOMIC TENSIONS BETWEEN THE LEAST COST ENGINEERING SOLUTIONS AND THE ACHIEVEMENT OF ACCEPTABLE ENVIRONMENTAL PROTECTION. IN ADDITION TO THE CONSIDERATION OF CAPITAL COSTS FOR ENGINEERING AND CONSTRUCTION ADJUSTMENTS FOR ENVIRONMENTAL REASONS, THE DEPARTMENT SUGGESTS THAT LIFE-CYCLE COSTING FOR MAINTENANCE OF THE LINE BE CONSIDERED IN FORMULATING THE INCENTIVE RATE OF RETURN. AS A RESULT, A GREAT DEAL OF GIVE-AND-TAKE HAS EVOLVED IN THE PROCESS OF FINDING MUTUALLY ACCEPTABLE SOLUTIONS TO EACH ENVIRONMENTAL PROBLEM. IT IS TOO MUCH TO EXPECT A PERFECT BALANCE BETWEEN ENGINEERING ECONOMICS AND ENVIRONMENTAL PROTECTION; HOWEVER,

IT IS ANTICIPATED THAT MUTUALLY ACCEPTABLE STIPULATIONS FOR THE RIGHT-OF-WAY GRANTS WILL BE READY BY NOVEMBER. THE NEXT STEP WILL BE TO PREPARE A HANDBOOK FOR USE DURING CONSTRUCTION, EXPLAINING THE MEANING AND INTENT OF THE STIPULATIONS TO GUIDE THE COMPANIES AND THE FEDERAL AGENCIES IN APPLICATION AND ENFORCEMENT OF THE PROVISIONS.

PIPELINE ALIGNMENT

SECOND, THE ALIGNMENT ISSUE - AS OUTLINED IN THE PRESIDENT'S DECISION AND REPORT TO THE CONGRESS IN SEPTEMBER 1977, THE ALASKAN PORTION OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEMS (ANGTS) WILL PARALLEL THE ALYESKA OIL LINE TO DELTA JUNCTION AND THEN FOLLOW THE ALASKA HIGHWAY TO THE CANADIAN BORDER. THE PRECISE LOCATION AND SEPARATION DISTANCES WERE NOT SPECIFIED. THE DEPARTMENT OF THE INTERIOR HAS BEEN ATTEMPTING TO BETTER DEFINE THE ALIGNMENT, SEPARATION DISTANCE AND OTHER RELATED FACTORS NECESSARY FOR THE NORTHWEST ALASKAN PIPELINE COMPANY TO PROCEED WITH THE PIPELINE DESIGN. (HEREIN AFTER CALLED THE COMPANY.)

IN MAY 1979, FOLLOWING A SERIES OF LETTERS BETWEEN THE DEPARTMENT AND THE COMPANY, THE DEPARTMENT ASSEMBLED A WORKING GROUP IN SALT LAKE CITY TO DISCUSS THE WIDE RANGE OF TECHNICAL CONCERNS IN ESTABLISHING THE LOCATION OF THE PROPOSED BURIED, CHILLED GAS LINE. THE WORKING GROUP WAS COMPOSED OF THE BEST AVAILABLE TECHNICAL PEOPLE FROM THE

Federal Government and the State of Alaska. Also in attendance were experts representing the Trans-Alaska Pipeline System (TAPS), owner companies, and Northwest Alaskan Pipeline Company. The working group was subdivided into eight (8) technical teams to examine the available information and outline areas of concern. These teams were Construction, Thermal, Geotechnical, Proximity, Hydrology, Cost, Erosion Control, and Biological. These technical teams identified a number of concerns and problems to be resolved before final approval of any alignment can be granted. However, during the interim, the Company was allowed to proceed with planning and design based on its proposed alignment provided the Company resolved twelve major concerns of the working group, considered a number of route proposals, and affirmed several assumtions and conclusions of the working group. The Company responded by assembling the technical, engineering and environmental expertise to obtain the necessary technical information and knowledge to meet the conditions required by the Department.

The first of three (3) follow-on meetings between the Company and the working group was held in September and the second is scheduled for the last week in October. While there remain some technical concerns, the Department is pleased with the progress, the cooperation of the Company and the general approach the Company is taking to resolve the concerns of the working group.

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SOME OF THE MAJOR AREAS OF CONCERN WHICH ARE BEING ADDRESSED BY THE COMPANY BUT HAVE NOT YET BEEN RESOLVED ARE: EFFECT OF FROST HEAVE ON THE CHILLED BURIED LINE, EFFECT ON GROUND WATER, THERMAL INTERACTION WITH THE HOT OIL LINE, (IF BURIED IN CLOSE PROXIMITY), IMPACT OF BLASTING ON THE OIL LINE, RISK ANALYSIS OF THE MUTAL IMPACT BETWEEN OIL AND GAS LINES DURING CONSTRUCTION AND OPERATION, SLOPE STABILITY OF THAW-UNSTABLE SOILS, CROSSINGS OF THE OIL LINE, AND MITIGATION MEASURES FOR FISH AND WILDLIFE AND THEIR HABITATS. SOME OF THESE CONCERNS WILL NOT BE RESOLVED SATISFACTORILY IN THE NEXT FEW MONTHS, BUT WE ARE PLEASED THAT THE COMPANY IS PROCEEDING TO GATHER THE NECESSARY DATA AND EXPERTISE TO SEEK TO RESOLVE THESE PROBLEMS SO THAT THE PROJECT MAY CONTINUE ON SCHEDULE. THE DEPARTMENT HAS OFFERED ITS TECHNICAL ASSISTANCE, WHERE APPROPRIATE, TO HELP THE COMPANY FIND SOLUTIONS AND AVOID DUPLICATION OF DATA COLLECTION. WORKING RELATIONSHIPS AT THE TECHNICAL LEVEL ARE GOOD AND GETTING BETTER WITH EACH CONTACT.

HAINES RIGHT-OF-WAY

THE THIRD AND LAST AREA OF CONCERN THAT I WILL BRIEFLY ADDRESS IS THE HAINES RIGHT-OF-WAY.

THE STATUS OF OWNERSHIP OF THE PIPELINE RIGHT-OF-WAY IS EXCEEDINGLY COMPLEX AND INVOLVES FEDERAL, STATE AND PRIVATE RIGHTS, SOME OF WHICH ARE CURRENTLY UNDER ADJUDICATION.

FEDERAL INTERESTS INVOLVE THREE (3) AGENCIES: DEPARTMENT OF THE INTERIOR, GENERAL SERVICES ADMINISTRATION, AND DEPARTMENT OF THE ARMY.

THE INTERIOR DEPARTMENT'S JURISDICTION TO GRANT OIL OR GAS PIPELINE RIGHTS-OF-WAY UNDER SECTION 28 OF THE MINERAL LEASING ACT (30 U.S.C. 185 (1974)), EXTENDS TO ALL FEDERAL LANDS INVOLVED IN THE RIGHTS-OF-WAY. THE DEPARTMENT HAS NO JURISDICTION REGARDING THOSE PORTIONS OF THE HAINES-FAIRBANKS PIPELINE THAT TRAVERSE STATE OR PRIVATELY OWNED LANDS AND, CONSEQUENTLY, CANNOT MAKE THOSE AREAS AVAILABLE TO NAPLINE. THOSE AREAS MUST BE OBTAINED BY NAPLINE THROUGH NEGOTIATION WITH THE STATE OR PRIVATE OWNERS.

THE DEPARTMENT INTENDS TO GRANT A RIGHT-OF-WAY TO NAPLINE ACROSS ALL FEDERAL LANDS ALONG THE HAINES-FAIRBANKS ROUTE AT THE EARLIEST POSSIBLE TIME. AN IMPEDIMENT TO IMMEDIATE ACTION IS THE EXISTENCE OF SEVERAL LAND CLAIMS FILED BY ALASKA NATIVE CORPORATIONS FOR MUCH OF THOSE LANDS. THESE CLAIMS ARE NOW IN THE PROCESS OF ADJUDICATION BEFORE THE ALASKA NATIVE CLAIMS APPEAL BOARD OF THIS DEPARTMENT AND DECISIONS ARE EXPECTED WITHIN THE NEXT FEW MONTHS.

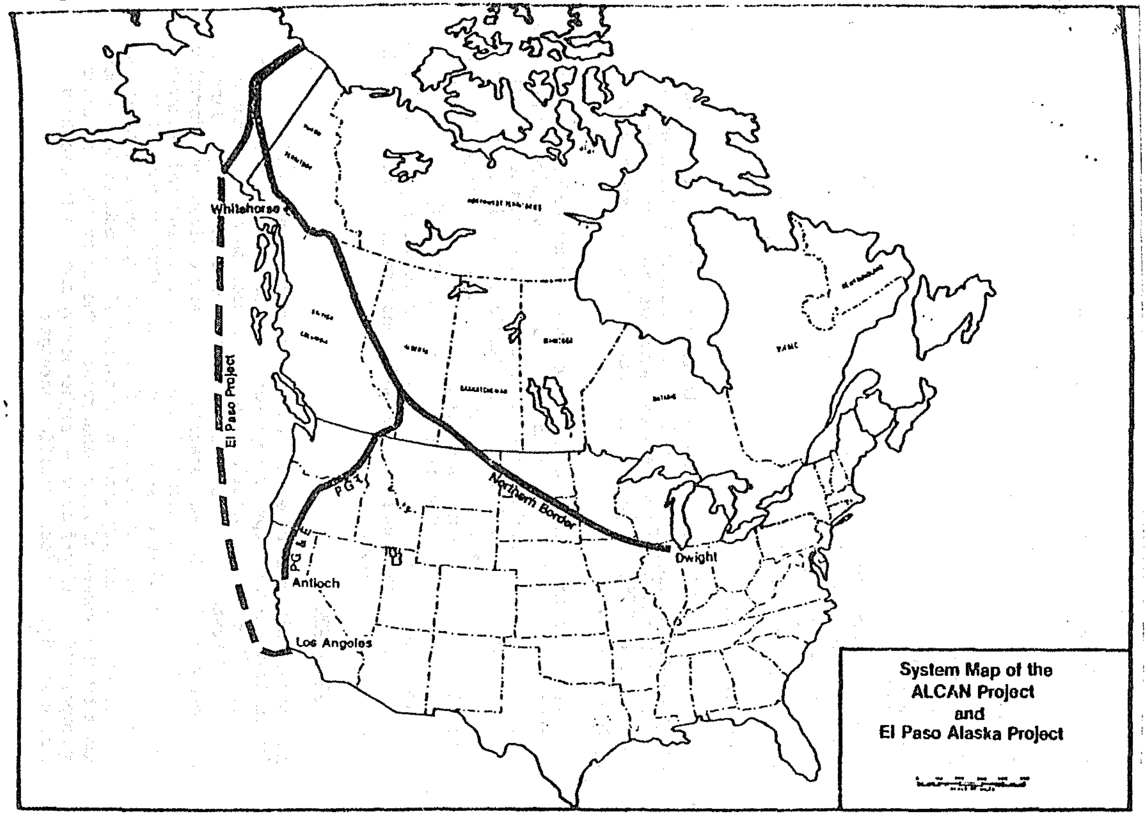
WITH RESPECT TO LANDS DETERMINED TO REMAIN IN FEDERAL OWNERSHIP, THE DEPARTMENT WILL PROCEED EXPEDITIOUSLY TO GRANT THE RIGHT-OF-WAY. IT IS ANTICIPATED THAT THE GENERAL SERVICES ADMINISTRATION WILL EITHER SELL OR LEASE SEVERAL HAINES-FAIRBANKS PIPELINE PUMP STATIONS TO NAPLINE IF, AFTER

ADJUDICATION, IT IS DETERMINED THAT THOSE AREAS ARE FEDERAL, RATHER THAN NATIVE, LANDS. WITH RESPECT TO LANDS DETERMINED TO BE NATIVE LANDS, THOSE WILL BECOME PRIVATE LANDS AND RIGHTS-OF-WAY WILL HAVE TO BE ACQUIRED BY PRIVATE NEGOTIATION WITH THE NATIVES.

IN ORDER TO FURTHER EXPLAIN THE HIGHLY COMPLEX LAND OWNERSHIP SITUATION ALONG THE HAINES-FAIRBANKS RIGHT-OF-WAY, WITH YOUR PERMISSION, I WOULD LIKE TO INTRODUCE INTO THE RECORD A LETTER OF JUNE 15 FROM OUR SOLICITOR'S OFFICE TO THE GENERAL SERVICES ADMINISTRATION.

IN CONCLUSION, MR. CHAIRMAN, LET ME NOTE THAT THE DEPARTMENT OF THE INTERIOR RECOGNIZES THE HIGH PRIORITY OF THIS IMPORTANT ENERGY PROJECT, AND WE PLEDGE OUR BEST EFFORTS TO ENSURE THAT IT IS CONSTRUCTED AND IN OPERATION AS SOON AS POSSIBLE. WE ARE WORKING CLOSELY WITH THE FEDERAL INSPECTOR, HIS STAFF, AND OTHER RESPONSIBLE FEDERAL AND STATE AGENCIES AND ANTICIPATE SUCCESSFUL AND TIMELY COMPLETION OF THE PROJECT.

MR. CHAIRMAN, MY COLLEAGUES AND I WILL BE PLEASED TO ANSWER QUESTIONS WHICH THE SUBCOMMITTEE MAY HAVE.



System Map of the
ALCAN Project
and
El Paso Alaska Project

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

INTERIOR DEPT.

JUN 18 1979
SOLICITOR'S

JUN 15 1979

Mr. Paul E. Goulding
Acting Administrator
General Services Administration
18th & F Streets, N.W.
Washington, D.C. 20405

Dear Mr. Goulding:

In February of this year, I met with former Administrator Solomon and Mr. Markon to discuss the existing Alaska Petroleum Pipeline System, Haines-Fairbanks Division, (Haines-Fairbanks pipeline) and its relationship to the proposed Alaska Natural Gas Transportation System (ANGTS).

Northwest Alaskan Pipeline Company, which proposes to construct the Alaskan leg of ANGTS, has indicated its desire to acquire appropriate portions of the Haines-Fairbanks pipeline and has requested advice from this Department and the General Services Administration as to how this may be done expeditiously. Because the pipeline traverses several different categories of lands, the matter is quite complex. The purpose of this letter is to analyze the situation and present a strategy for resolving the various issues as quickly as possible, as mandated by the Alaska Natural Gas Transportation Act, 15 U.S.C. § 719, et seq. (1976).

I Background

The Haines-Fairbanks pipeline was constructed in the 1950's by the United States Army Corps of Engineers for use by the Department of Defense. Much of the pipeline was constructed on public lands of the United States, and the lands were set apart for the pipeline by two methods: (a) the pump station and terminal sites were formally withdrawn from the operation of the public land laws and reserved for pipeline purposes by several Public Land Orders; and (b) the linear right-of-way for the line of pipe was appropriated by actual construction of the pipeline and notation of the public land tract books by the Bureau of Land Management. The tract book notations appropriated a fifty-foot wide right-of-way and the Public Land Orders withdrew various specified acreages.

Over the years, much of the public lands traversed by the linear portions of the pipeline has been conveyed out of Federal ownership. Each land conveyance was issued with a clause excepting and reserving the right-of-way; in effect, conveying the land subject to the Federal right-of-way. Some of the public lands occupied by the pipeline that are still in Federal ownership have been selected by Alaskan Natives or claimed by the State of Alaska.

In 1973, the Corps of Engineers initiated procedures under the Federal Property and Administrative Services Act to relinquish Defense Department jurisdiction over the pipeline. The General Services Administration is presently asserting jurisdiction over the system.

II <u>Nature of 44 L.D. 513 Notations</u>

As was previously mentioned, the linear right-of-way for the pipeline was appropriated by actual construction of the pipeline and notation of the tract books. These notations, commonly referred to as "44 L.D. 513 notations" were made by the Bureau of Land Management pursuant to the Instructions set forth at page 513 of volume 44 of the Land Decisions of the Department.

Prior to the recent enactment of the Federal Land Policy and Management Act 1/, there was no general statutory provision for the setting aside of rights-of-way for Federal agencies, and the Bureau customarily employed the procedures set out in the 44 L.D. 513 Instructions to accomplish that purpose. The 44 L.D. 513 Instructions, issued in 1915 pursuant to the Secretary of the Interior's general management authority over the public lands, advised the General Land Office (now the Bureau of Land Management) regarding procedures to: put the public on notice of the existence and location of Federal improvements on the public lands; and to protect those improvements when the public lands upon which they were constructed were conveyed out of Federal ownership. The Instructions directed the Bureau to make appropriate notations in the tract books to accomplish the first purpose and to insert exception clauses in the land patents to accomplish the second 2/.

The principle underlying the Instructions is that the construction of a Federal facility on public lands appropriates the lands to the extent of the ground actually used and occupied by that facility and for so long as the facility is used and occupied by the United States. <u>United States v. R.G. Crocker, et al.</u>, 60 I.D. 285 (1949). No third

1/ P.L. 94-579, 43 U.S.C.A. §§ 1701, et seq.

2/ A copy of the Instructions is enclosed. (Exhibit A).

party may take any action, such as mining, that would interfere with the Federal use and occupancy. A.J. Katches, A-29079 (1962). Notation of the tract books did not withdraw or reserve the land. Appeal of Paug-Vik, Inc., Ltd., ANCAB No. VLS 77-2 (1978). Nor did it purport to grant an interest in the land to a Federal agency or to transfer jurisdiction over the land to an agency. However, as a matter of practice, such notations were the usual vehicle for the Bureau of Land Management to authorize other Federal agencies to use the public lands for right-of-way purposes, and exercise jurisdiction thereover. See 43 CFR § 2800.0-1(b)

If the public lands traversed by the facility were later disposed of by the United States pursuant to the public land laws, the conveyancing documents were to contain exception language, similar to that set forth at 44 L.D. 514 for a telephone line. This exception served to reserve a right-of-way to the United States for the purposes described in the exception and for so long as the exception specified.

III Present Agency Jurisdiction Over Public Land Traversed by the Pipeline

When the Department of Defense determined that the pipeline system was no longer needed for military purposes, it initiated procedures, through the Corps of Engineers, to relinquish its jurisdiction. At that time, the General Services Administration considered that the entire system might be sold as an operating entity because several prospective purchasers had expressed interest in acquiring the line.

As part of the relinquishment procedures, the Corps sent a "Notice of Intention to Relinquish" to the Bureau of Land Management on August 20, 1973, as required by 43 CFR § 2372.1. 3/ The purpose of the report was to obtain a determination by the Bureau as to whether the lands should be turned over to the General Services Administration for disposal or returned to the public domain, pursuant to the Department of Interior regulations at 43 CFR § 2372.3 and 43 CFR § 2374.1. 4/

3/ A copy of the notice is enclosed. (Exhibit B).

4/ A copy of the text of these regulations is enclosed. (Exhibit C).

The Notice of Relinquishment stated that the lands proposed to be relinquished had not been changed in character other than by the construction of improvements. It requested the Bureau to determine which portions, if any, "of the lands hereby relinquished" were suitable for return to the public domain. It recommended that the improved areas be approved for final reporting to the General Services Administration for disposal due to the fact that otherwise it would not be feasible for the General Services Administration to consider sale of the system as an operating entity.

The following general description was given in the notice:

> "The portion of the pipeline system being excessed begins at the Haines Terminal located on Lutak Inlet approximately 3 miles north of Haines, Alaska, and follows the Haines Highway into Canada to Haines Junction with the Alaska Highway, then along the Alaska Highway in Canada, and back into Alaska via Tok and Big Delta, to the termination of the excess at pipeline milepost 599 on Eielson Air Force Base in Section 18, T.3S., R.4E, F.M. Included in the pipeline system proposed for disposal, in addition to the main 8-inch fuel line, are the land and facilities situated on the booster pumping sites located at Border Station, Blanchard River, Haines Junction, Destruction Bay, Donjek, Beaver Creek, all in Canada; Lakeview, Sears Creek, Timber and terminals at Haines and Tok, all in Alaska. Of these pumping stations and terminals, Haines, Tok, Timber, Lakeview, and Sears Creek involve land held by withdrawal from the public domain."

The notice specifically described the pumping and terminal sites, together with the public improvements thereon. The following sites were identified as withdrawn public lands:

1. Haines Terminal (Tract A). Withdrawn by PLO 1032 dated November 17, 1954.

2. Haines Terminal (Tract N-Parcel 2). Withdrawn by PLO 837 dated June 19, 1952.

3. Lakeview Pumping Station (Portion of Tract F). Withdrawn by PLO 3689 dated June 10, 1965.

4. Tok Terminal (Tract C). Withdrawn by PLO 1887 dated June 26, 1959.

5. Sears Creek Pumping Station (Portion of Tract F). Withdrawn by PLO 3689 dated June 10, 1965.

6. Timber Pumping Station (Portion of Tract F). Withdrawn by PLO 3689 dated June 10, 1965.

This description clearly includes the pumping sites and terminal sites that were withdrawn by the several Public Land Orders, together with the facilities within such sites. It also clearly included the line of 8-inch pipe across the public lands. But it expressly excluded those public lands which were appropriated by 44 L.D. 513 notations, as follows:

> "The major portion of the main 8" pipeline in the United States and a waterline in the Haines area, are covered by 44 L.D. 513 notations on the Bureau of Land Management land records. These 44 L.D. 513 notations will not be relinquished until such time as the system is disposed of, as to do so would leave the pipeline and waterline in such areas without any land rights."

Apparently the Corps of Engineers, aware that 44 L.D. 513 notations are not withdrawals, was concerned that a relinquishment by the Corps might terminate the Federal appropriation of the lands. To ensure that this did not occur, the Corps chose not to relinquish the notation lands until the General Services Administration finally disposed of the pipeline. Once the line of pipe and any other facilities were sold and removed from the notation lands, the appropriation would terminate in fact and the tract book notations could be safely cancelled.

That this exclusion of the 44 L.D. 513 notations from the relinquishment was definitely intended by the Corps is further demonstrated in its "Preliminary Report of Excess Real Property" which it had previously sent to the General Services Administration. 5/

That report contained the following statement:

> "We will not relinquish to BLM any of the 44 L.D. 513 notations covering the pipeline until such time as the pipeline is finally disposed of, as to do so would leave the pipeline on lands without Government rights. As you are aware, 44 L.D. 513 notations protect the Federal Government but are not transferable except to another Federal Government agency."

It is therefore abundantly clear that the Corps did not intend to relinquish the 44 L.D. 513 notations. The Bureau of Land Management responded to the Notice of Intention to Relinquish by letter dated November 12, 1973. In this response, the Bureau stated as follows:

> "The specific sites involved in your notice of relinquishment are the Haines Terminal, withdrawn by Public Land Order No. 837 of June 19, 1952; the Tok Terminal, withdrawn by Public Land Order No. 1887 of June 26, 1959; and the Lakeview, Sears Creek, and Timber Pumping Stations, withdrawn by Public Land Order No. 3689 of June 10, 1965."
>
> "Your notice stated that the Department of the Army will retain the main 8-inch pipeline in Alaska and a waterline in the Haines area...."
>
> "Mr. Vern L. Barnes, Director, Real Property Division, General Services Administration at Auburn, Washington, has informed us that General Services Administration has a lessee for the excèssed pipeline and he requested that we formally advise you to report the line and stations to General Services Administration for disposition."

5/ Letter dated June 11, 1973, from Earl R. Tubach, Chief, Real Estate Division, Alaska District, Corps of Engineers, to V.L. Barnes, Chief, Real Property Division, Property Management and Disposal Service, General Services Administration, Region 10, Auburn, Washington. A copy is enclosed. (Exhibit D).

"Your agency, therefore, now has authority to make the transfer to General Services Administration." 6/

Although the Bureau's letter did not specifically discuss the line of pipe on public lands or the 44 L.D. 513 notations, it does reflect that the Bureau understood the Corps' proposed action. The reference to the specific withdrawn areas indicates that there was no confusion regarding those areas. With regard to the 44 L.D. 513 notations, the Bureau understood the Corps as saying that it intended to retain the rights-of-way across the public lands for the main pipeline and the waterline. Accordingly, the Bureau's letter made no express reference to the 44 L.D. 513 notations, and addressed only the specified pumping station and terminal sites. Consequently, the Bureau consented to the transfer of jurisdiction to the General Services Administration for only those sites.

Accordingly, we conclude that at the present time the General Services Administration has administrative jurisdiction over the six pump station sites and terminal sites that were withdrawn by Public Land Order and particularly described in the August 20, 1973, Corps of Engineers Notice of Intention to Relinquish. We also conclude that jurisdiction over the 44 L.D. 513 notation areas has not been transferred to the General Services Administration but remains either in the Corps of Engineers, if the Corps has not terminated its use and occupancy, or in the Bureau of Land Management.

IV Agency Jurisdiction to make Land Available for Construction of the ANGTS

In order to determine what actions may be taken by the General Services Administration and this Department to make lands available for construction of ANGTS, it is necessary to consider Section 28 of the Mineral Leasing Act, as amended, 30 U.S.C. § 185 (1976). This is because subsection (q) of Section 28 provides that Section 28 is the sole

6/ Letter dated November 12, 1973, from Sue A. Wolf, Acting Chief Adjudicator, BLM State Office, Anchorage, Alaska, to George Gregory Moen, Chief, Real Estate Division, Alaska District, Corps of Engineers, Department of the Army, Anchorage, Alaska. A copy of this letter is enclosed. (Exhibit E). The Bureau of Land Management sent a second letter to the Corps on this subject on November 12, 1974. This second letter is identical to the 1973 letter except for the date and the fact that it was signed by Carol F. Shobe, Acting Chief Adjudicator, BLM State Office, Anchorage.

authority under which Federal agencies may grant rights-of-way for oil or gas pipelines across Federal lands. That subsection, in pertinent part, provides as follows:

> "(g) No rights-of-way for the purposes provided for in this section shall be granted or renewed across Federal lands except under and subject to the provisions, limitations, and conditions of this section. ..."

The compass of this provision is very broad since "Federal lands", as used in the Section, is defined in subsection (b)(1) as follows:

> "(b)(1) For the purposes of this section 'Federal lands' means all lands owned by the United States except lands in the National Park System, lands held in trust for an Indian or Indian tribe, and lands on the Outer Continental Shelf. ..."

Thus, on its face, Section 28 applies to all Federally owned lands except those in the three enumerated categories, irrespective of which Federal agency otherwise has administrative jurisdiction over the lands. The definition is not limited to public domain lands.

In addition, Section 28 of the Mineral Leasing Act gives jurisdiction to grant rights-of-way across Federal lands for oil and gas pipelines only to the Secretary of the Interior in situations where the pipeline right-of-way will traverse lands of two or more Federal agencies. See subsection (c) of Section 28, 30 U.S.C. § 195(c) (1976), which provides that:

> "(1) Where the surface of all of the Federal lands involved in a proposed right-of-way or permit is under the jurisdiction of one Federal agency, the agency head, rather than the Secretary [of the Interior], is authorized to grant or renew the right-of-way or permit for the purposes set forth in this section. (2) Where the surface of the Federal lands involved is administered by the Secretary or by two or more Federal agencies, the Secretary is authorized, after consultation with the agencies involved, to grant or renew rights-of-way or permits through the Federal lands involved. The Secretary may enter into interagency agreements with all other Federal agencies having jurisdiction over Federal lands for the purpose of avoiding duplication, assigning responsibility, expediting review of rights-of-way or permit applications, issuing joint regulations, and assuring a decision based upon a comprehensive review of all factors involved in any right-of-way or permit

> application. Each agency head shall administer and enforce the provisions of this section, appropriate regulations, and the terms and conditions of rights-of-way or permits insofar as they involve Federal lands under the agency head's jurisdiction."

The reasons for this provision of the law were explained in the Senate Committee's report 7/ on the legislation:

> This subsection authorizes the Secretary to grant, issue or renew rights-of-way across Federal lands where a particular right-of-way crosses land subject to the joint jurisdiction of two or more different Federal agencies or where the right-of-way would cross separate tracts of land subject to the jurisdiction of more than one Federal agency. An example of the first instance might be a tract subject to the jurisdiction of the Bureau of Land Management but temporarily withdrawn for a specific military purpose. An example of the second might be an application for a right-of-way crossing both public domain subject to jurisdiction of the Bureau of Land Management and a military installation subject to the jurisdiction of the Department of Defense.
>
> The purpose of the section is to authorize the Secretary of the Interior to coordinate the processing and review of applications for such rights-of-way so that an applicant or holder of a right-of-way will have a single point of contact in the Federal Government.
>
> Prior to the granting of any right-of-way under this subsection it is contemplated that the Secretary would transmit the application to the appropriate agency heads and that they would make the determination as to whether the right-of-way should be granted and, if it should, prepare the terms, conditions, and stipulations for inclusion in the right-of-way.
>
> The Secretary and other agency heads are authorized and encouraged to enter into interagency agreements for the purpose of avoiding duplication, assigning responsibility, expediting review of rights-of-way applications, issuing joint regulations, and assuring that decisions are based upon a

7/ S. Rep. No. 93-207, 93d Cong., 1st Sess. 32, 1973. Report of the Senate Committee on Interior and Insular Affairs to accompany S. 1081.

comprehensive review of all factors involved in any rights-of-way application. Each agency head will, of course, administer and enforce the provisions of this Act, appropriate regulations, and terms and conditions of rights-of-way insofar as they involve Federal lands under that agency head's jurisdiction.

A. Withdrawn Areas

The General Services Administration must make the ultimate decision as to the impact of Section 28 on its land management and disposal authorities and whether it can sell or lease any lands under its jurisdiction for ANGTS purposes. We see no difficulty with the General Services Administration selling or leasing lands to the pipeline builders where the lands are disposed of for purposes other than use as a right-of-way. Where a right-of-way is involved, it appears to us that only the Secretary of the Interior could act to grant the right-of-way. However, we will interpose no objection to any decision reached by the General Services Administration with regard to its authority to sell or lease the Haines-Fairbanks pipeline system pump station sites and terminal sites that were withdrawn by Public Land Order and are now under the jurisdiction of the General Services Administration.

B. 44 L.D. 513 Notation Areas

A different situation exists with respect to the 44 L.D. 513 notation areas. Inasmuch as these notations are not withdrawals or reservations of public lands and are still a part of the public domain, it is our view that lands subject to such notations are not within the operation of the Federal Property and Administrative Services Act. They do not fall within the definition of "property" in Section 3(d) of the Act, as amended, 40 USC § 472 (1976), which is as follows:

> "(d) the term 'property' means any interest in property except (1) the public domain;...and lands withdrawn or reserved from the public domain except lands or portions of lands so withdrawn or reserved which the Secretary of the Interior, with the concurrence of the Administrator, determines are not suitable for return to the public domain for disposition under the general public land laws because such lands are substantially changed in character by improvements or otherwise...."

Because such lands at all times remain a part of the public domain, albeit subject to the use and occupancy of the military, they automatically become subject to the jurisdiction of the Bureau of Land Management when the military use and occupancy terminates, without the necessity of following the excess property procedures.

It is important to keep in mind the fact that, unlike withdrawals and reservations, 44 L.D. 513 notations do not continue in effect once the Federal Government's use and occupancy terminates. The notations draw their efficacy from the Federal use and occupation. They have no existence separate and apart from that Federal use and occupancy. Once the Federal use and occupancy terminates in fact, the notations have no segregative effect even though they still remain on the land records. Hence, it is not possible for the General Services Administration, or any other Federal agency, to transfer 44 L.D. 513 notations to third parties. In order for the Federal Government to grant a gas pipeline right-of-way to the builders of the ANGTS over the public lands now subject to 44 L.D. 513 notations, recourse must be had to Section 28 of the Mineral Leasing Act. If the Corps terminates its use and occupation, then the Bureau of Land Management may proceed to issue rights-of-way for the ANGTS pursuant to Section 28 of the Mineral Leasing Act, as amended, 30 U.S.C. § 185 (1976), provided that the lands are not required to be conveyed to the Alaskan Natives.

Even assuming for the sake of argument that the 44 L.D. 513 notation areas survive the termination of Federal use and occupation of the land and are within the operation of the Federal Property and Administrative Services Act, the normal procedures would have to be followed; i.e., this Department would make a determination pursuant to 43 CFR Part 2370 as to whether the lands are suitable for return to the public domain or unsuitable for return because they are substantially changed in character by improvements or otherwise. Without prejudging the matter, it is possible to conclude that the existence of a pipeline does not have the effect of substantially changing the character of the land so as to render it unsuitable for return to the public domain. If the Department should reach that conclusion, the land would return to the public domain and the Bureau of Land Management could grant a right-of-way under Section 28 of the Mineral Leasing Act.

If, on the other hand, the Department should determine that the character of the land had changed so as to render it unsuitable for return to the public domain, it is questionable whether the General Services Administration could grant the right-of-way to Northwest Alaska Pipeline Company for a gas pipeline. This is because, as previously discussed, Section 28 of the Mineral Leasing Act provides that it is the sole authority for the grant of rights-of-way across any Federally-owned lands for oil and gas pipelines and further provides that the Secretary of the Interior shall issue such grants in cases, such as that of the proposed Alaska Natural Gas Transportation System, where the pipeline right-of-way will traverse the lands of more than one Federal agency.

C. Patented Lands

Turning next to the former public lands that have been patented subject to rights-of-way for the Haines-Fairbanks pipeline, we are still of the view we previously expressed in our letter to you of April 6, 1978. 8/ We do not believe that the rights-of-way excepted from the patents can survive the termination of the Haines-Fairbanks pipeline. The exceptions in the patents are not uniform in language. In addition to the example contained in our April 6, 1978, letter, some other typical examples of such exceptions may be helpful to you:

"Excepting however from this conveyance that certain pipeline and all appurtenance thereto, constructed by the United States, through, over, or upon lots 13, 14, 15, and 16, said Sec. 20, and the right of the United States, its officers, agents, or employees to maintain, operate, repair, or improve the same, so long as needed or used for or by the United States". 9/

"As to the right-of-way, Fairbanks 010143, and all appurtenances thereto, constructed by the United States through, over, or upon the land herein described and the right of the United States, its agents or employees to maintain, operate, repair, or improve the same so long as needed or used for or by the United States." 10/

"Excepting and reserving to the United States ... that Haines-Fairbanks pipeline right-of-way, Fairbanks 010143, and all appurtenances thereto, constructed by the United States through, over, or upon the land herein described and the right of the United States, its agents and employees, to maintain, operate, repair, or improve the same so long as needed or used for or by the United States." 11/

8/ Letter to Mr. Roy Markon, Assistant Commissioner, Office of Real Property, Public Building Service, General Services Administration, from John D. Leshy, Associate Solicitor, Division of Energy and Resources, Office of the Solicitor, Department of the Interior. Copy enclosed. (Exhibit F).

9/ Patent No. 1229079 issued to Joseph Anthony O'Day, 10-11-62,

10/ Patent No. 50-77-0088 issued to Allen J. Druckemiller, 4-8-77.

11/ Patent No. 50-72-0368, issued to Hollis Melvin Allen, 4-11-72.

> "Also excepting from this conveyance that certain pipeline and telephone lines and all appurtenances thereto, constructed by the United States, through, over, or upon the land herein described, and the right of the United States, its officers, agents, or employees to maintain, operate, or repair, or improve the same so long as needed for or by the United States." 12/

Our analysis of these provisions lead us to conclude that the United States has not retained an interest in the land sufficient to enable this Department to issue a right-of-way across them under Section 28 of the Mineral Leasing Act, supra. Whether the General Services Administration may sell or lease the excepted Haines-Fairbanks right-of-way or the pipe and other facilities thereon to third parties for construction of the ANGTS is a matter for determination by the General Services Administration.

V Pending Adjudications of Native Selections Before ANCAB

At present, there are three administrative cases pending before this Department's Alaska Native Claims Appeal Board (ANCAB) involving the Haines-Fairbanks pipeline.

Appeal of Doyon, Ltd., ANCAB No. RLS 78-1, involves 44 L.D. 513 notation areas. In 1975 Doyon, a Native regional corporation, filed its selection of certain lands traversed by the pipeline, pursuant to the Alaska Native Claims Settlement Act, 43 U.S.C. §§ 1601, et seq. (1976). The Bureau of Land Management rendered a decision approving the conveyance with a reservation to the United States of the Haines-Fairbanks pipeline right-of-way. Doyon appealed this reservation to ANCAB, arguing that 44 L.D. 513 notations are neither withdrawals nor reservations; that the United States has abandoned the Haines-Fairbanks right-of-way; and that the conveyance should be issued without the right-of-way reservation. The Bureau of Land Management has conceded that the conveyance should not include such reservation, but advised ANCAB that the General Services Administration is asserting an interest in the right-of-way. ANCAB joined the General Services Administration as a party to the litigation, but the General Services Administration has not submitted any views to the Board.

12/ Patent No. 1146842, issued to Leonard G. Davis, 9-22-54

In Appeal of Tranacross, Inc., ANCAB No. VLS 78-51, the issue is whether the Tok Pumping Station is available for Native selection. The linear right-of-way, F-010143, is not in issue. The Bureau of Land Management's position is that the pump station was formally withdrawn by PLO 1887 and is therefore not available for Native selection. The General Services Administration has been made a party to the adjudication but has not appeared. On March 30, 1979, ANCAB ordered the record closed.

Northway Natives, Inc., ANCAB No. VLS 78-57, involves Native selection of both 44 L.D. 513 notation areas and the Lakeview Pump Station site withdrawn by PLO 3689. The Bureau of Land Management has taken the position that the Haines-Fairbanks pipeline right-of-way should not be reserved from the conveyance to the Natives, but that the withdrawn pump station site is not available for Native selection. The General Services Administration has been made a party to the ligitation, but has not appeared.

These three cases are still under consideration by ANCAB.

VI Proposed Action

We intend to pursue the following course of action with respect to making the Haines-Fairbanks pipeline right-of-way available to the builders of the ANGTS.

A. Areas withdrawn by Public Land Orders.

Since these areas (pump station and terminal sites) have been transferred to General Services Administration jurisdiction, this Department believes that the General Services Administration should determine whether, taking into account the provisions of Section 28 of the Mineral Leasing Act previously discussed, it may sell or lease these areas to the builders of the ANGTS. This Department will defer to any determination reached by the General Services Administration in this regard. Because of the pendency before ANCAB of Native selection adjudications involving some of these areas, we caution that no disposals should be made until those adjudications have been completed.

B. Areas subject to 44 L.D. 513 notations.

This Department will grant the necessary rights-of-way to the builders of the ANGTS once the Corps of Engineers terminates its use and occupancy and the Native selection adjudications have been completed. The General Services Administration may then proceed to dispose of the pipe and other pipeline facilities on such areas, inasmuch as jurisdiction over those fixtures has been transferred to the General Services Administration.

C. Rights-of-way across private lands.

This Department believes it has no jurisdiction over such lands and therefore will not undertake to issue any rights-of-way over them for the ANGTS. If the General Services Administration, taking into account Section 28 of the Mineral Leasing Act, concludes that it has authority to sell the pipeline right-of-way or pipeline facilities thereon, this Department will defer to that conclusion.

We feel that this course of action will provide the most expeditious course of action by the Federal Government in accordance with the directives of the Alaska Natural Gas Transportation Act and the President's Decision thereunder and at the same time protect the interests of the United States and the Alaskan Natives.

Sincerely,

/s/ Guy R. Martin

Assistant Secretary for
Land and Water Resources

Enclosures

cc:
Secy's Files
Secy's RF (2)
Land & Water (2)
Land & Water/Martin (1)
Docket
DER-RF
Branch of Realty
Mr. McHale ✓

JJMcHale:vl:kwl:6-12-79:x4444

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

October 23, 1979

Mr. James W. Curlin
Deputy Assistant Secretary for
Land and Water Resources
Department of the Interior
Washington, D.C. 20240

Dear Mr. Curlin:

As I indicated at the beginning of the hearings on the Alaska Natural Gas Transportation System, I am providing you with some written questions. Your responses will be included in the record. The Subcommittee would appreciate answers to the following questions:

1. In your opinion, is Northwest doing sufficient engineering testing to settle the technical questions associated with the alignment issue?

2. Section 28 (x) of the Mineral Leasing Act requires that the Department of the Interior promulgate regulations on pipeline liability. Have you issued regulations? If not, when do you expect to issue them? How will they change Alyeska's absolute liability under the Trans Alaska Pipeline Act?

3. How much of the Alyeska workpad will be used?

4. The Subcommittee received testimony on October 15 which expressed concern over the proposed EEO/MBE regulations. Does the Department have a cost analysis of the impact of these regulations?

5. What arrangements have been made for the owners of the TAPS line to review and comment on the proposed criteria and construction plans?

October 23, 1979
Page two

It is requested that your response to these questions be sent to the Subcommittee as soon as possible in order to make the complete hearing record available to the public in a timely manner.

Sincerely,

HAROLD RUNNELS
Chairman
Oversight and Investigations
Subcommittee

jgh

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply
Refer To:
AL01.0401

The Honorable Harold Runnels
Chairman
Subcommittee on Oversight and Investigations
Committee on Interior and Insular Affairs
House of Representatives
Washington, D.C. 20515

DEC 19 1979

Dear Mr. Chairman:

I am enclosing, for your information and for inclusion in the record of the hearing on the Alaska Natural Gas Transportation System, answers to your questions as stated in your letter of October 23, 1979.

If I can be of further assistance please do not hesitate to contact me.

Sincerely yours,

James W. Curlin

James W. Curlin
Deputy Assistant Secretary
Land and Water Resources

Enclosure

Mr. Runnels: In your opinion, is Northwest doing sufficient engineering testing to settle the technical questions associated with the alignment issue?

Mr. Curlin: Northwest's engineering testing, both now and planned, is probably sufficient for settling most of the technical questions which control alignment. The current or future series of tests may indicate, however, that additional tests are required. One of the most difficult and important matters to be resolved will be the frost heave problem. The tremendous number of subsurface conditions which will be encountered, the long term over which frost heave can occur, and the lack of any past frost heave experience for a chilled gas line are major hinderances to the solution of this problem. Because this solution is critical for the design of a safe, reliable, economical pipeline, the Federal Inspector has asked the Corps of Engineers' technical specialists to set up a group of experts from government, and at some later date, from the private sector as well to analyze the problem. These experts are to provide advice on whether Northwest's solutions will work, and if necessary, to determine what additional work may be required to resolve them. It is important to understand that even though a guaranteed direct solution may not be achieved by engineering testing and analysis, a safe economical project may be built and operated using strategies of monitoring and preventative maintenance.

Of equal importance with an adequate and inovative testing program is the requirement for talented and experienced people to convert tests to usable solutions. Northwest has already hired an array of consultants who have Trans-Alaskan Pipeline experience and/or experience with Arctic Gas or other northern engineering projects. These firms include:

Fluor, Project Management Contractor
EPB Ltd. - Frost Heave Consultant, Edmonton
Hardy and Associated, Frost Heave Consultants, Edmonton
R&M Consultants, Inc., Soil Testing and Engineering Firm, Alaska
Gulf Interstate, Pipeline Engineering Firm, Houston
Michael Baker, Jr., Civil Engineering Firm
PMS. Geotechnical Consultants
Dr. Powell - Structural Consultant, University of California
Dr. Newmark - Structural/Seismic Consultant, University of Illinois

Some of the testing which has been, or is being, conducted by the company which is specific to the alignment issue is:

- Blast testing completed in 1977 and 1978.
- Burst testing in England and in frozen ground this winter near Rainbow Lake in Alberta.
- Large scale frost heave testing near Fairbanks, Alaska.

- Small scale frost heave testing at three independent laboratories.
- Plate heave tests in Alaska and near Calgary.

Testing which is in the planning stage by the company is:

- Drill frost bulbs at Fairbanks large scale test site.
- Continue lab test to develop emperical predictive frost heave capability.
- Conduct trenching and drilling across faults.
- Conduct full scale slope stability tests.
- Trench stability and blasting tests during the summer.
- VSM construction compatability tests with full scale piling.
- Drill and conduct measurements and tests for ground water flow at critical locations.
- Drilling and studying tunneling the Atigun Canyon.

We believe from current and projected programs and the quality of people being brought in the project by Northwest that all management and technical problems can be resolved and that the pipeline can be safely constructed.

Mr. Runnels: Section 28 (x) of the Mineral Leasing Act requires that the Department of the Interior promulgate regulations on the pipeline liability. Have you issued regulations? If not, when do you expect to issue them? How will they change Alyeska's absolute liability under the Trans Alaska Pipeline Act?

Mr. Curlin: Regulations implementing Section 28 of the Mineral Leasing Act, 30 U.S.C. ss 185 (1976), were promulgated as final rulemaking on October 9, 1979, and are effective as of November 8, 1979, 44 F.R. 58126. The liability provisions are found at 43 CFR ss 2883.1-4. A copy of the regulations is enclosed.

The strict liability imposed upon the owners of the Trans-Alaska Pipeline System (TAPS) by Section 204 of the Trans-Alaska Pipeline Authorization Act, 43 U.S.C. ss 1653 (1976), is unaffected by the new regulations.

Mr. Runnels: How much of the Alyeska workpad will be used?

Mr. Curlin: Northwest's proposed route has a total of 376 miles on the Alyeska workpad. The proposed ALCAN route covers a total of 741.2 miles with about one half of this on the Alyeska workpad. At Delta the TAPS line goes southwest and the Alaska Natural Gas Transportation System goes east to the Canadian Border. The Proposal is to use the Haines-Fairbanks right-of-way.

The working group and the Executive Coordinating Committee recommended relocating the line to the haul road in 16 different places. These recommended relocations are being studied by the Department of the

Interior working group and Northwest in accordance with a June 13, 1979 letter from the Assistant Secretary of Land and Water.

Mr. Runnels: The Subcommittee received testimony on October 15 which expressed concern over the proposed EEO/MBE regulations. Does the Department have a cost analysis of the impact of these regulations?

Mr. Curlin: These regulations are not likely to have a substantial economic effect on the entire economy or on a particular region, industry, or level of government.

These regulations are patterned, in large measure, upon those promulgated by the Department to implement equal opportunity requirements under the Transportation Alaska Pipeline Act (TAPS) (43 CFR Pt. 27). Our experience in implementing 43 CFR Pt. 27 supports this determination. The only substantial economic effect from the TAPS Equal Opportunity regulations was on the minority and the female business community, and that was a positive effect. We anticipate a greater degree of economic benefits accruing to the minority and female business community through the implementation of these regulations.

The recipients, contractors, and subcontractors affected by these regulations are required to comply with Title VII of the Civil Rights Act of 1964, as amended, by the Equal Opportunity Act of 1972 and Executive Order 11246. Records and reports required of recipients, contractors, and subcontractors by these proposed regulations will be similar in content and quanity to those required of all government contractors and should add no significant cost to require an assesment of economic impact.

Mr. Runnels: What arrangements have been made for the owners of the TAPS line to review and comment on the proposed criteria and construction plans?

Mr. Curlin: The draft stipulations require Northwest Alaska Pipeline Company to coordinate all plans and programs which directly affect TAPS with the owners of the line. Northwest has submitted new wording for this particular stipulation and is working with the Federal Inspector to finalize acceptable wording.

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply
Refer To:
AL01.0401

NOV 1 1979

The Honorable Harold Runnels
Chairman
Subcommittee on Oversight and Investigations
Committee on Interior and Insular Affairs
House of Representatives
Washington, D. C. 20515

Dear Mr. Chairman:

This is in response to Mr. Clausen's request for information on the length of time taken by the Department of the Interior in issuing the Right-of-Way grants for the Alaska Natural Gas Transportation System and specifically the Grant of Right-of-Way for Pacific Gas Transmission Company (PGT).

There are a number of factors that contribute to the time that has elapsed since this project was begun, namely: (1) the Executive Policy Board was established to guide the project with members from the Federal agencies most involved and whose purposes and goals are very diverse and sometimes incompatible; (2) the two laws governing the project contain conflicting elements (already cited in the testimony); (3) the pipeline is to be built by three different companies in three separate areas having environmental, social and technical diversity and requiring different construction techniques and standards.

Preparing the stipulations required substantial input and coordination for the Federal agencies, the companies, the States and concerned private groups. The task of balancing the perceived needs of the many interested parties with their diverse administrative, environmental and technical concerns has been substantial.

I am enclosing for your information and for inclusion in the record of the hearing proceedings of October 16, 1979, a chronology of major actions on the Alaska Natural Gas Transportation System.

I would like to point out some key dates that may be helpful to you and the Committee:

March 21, 1974	The Artic Gas Consortium filed an application for a Certificate of Public Convenience and Necessity with the Federal Power Commission.
July 9, 1976	The Northwest Pipeline Corporation filed an application with FPC.
October 22, 1976	The Alaska Natural Gas Transportation Act took effect.
July 29, 1977	The Arctic Gas Consortium withdrew its application and announced its support of the Northwest Pipeline Corporation proposal known as the Alaska Highway Pipeline Project.
November 8, 1977	The Congress passed a joint resolution approving the President's selection of a route for the gas line and the companies to build it. This, essentially, was the beginning of the project as we know it today.
January 1978	The Executive Policy Board began to write stipulations for the Alaska Natural Gas Transportation System, that would satisfy all interested Parties, and that could be attached to all grants, certificates and permits issued by Federal agencies.
November 1978	A draft was completed.
December 1978	The companies rejected the stipulations as totally unacceptable.
January 9, 1979	Agreement was reached that the concept of EPB Stipulations applicable to all Federal grants, certificates and permits was unworkable, and that only the Department of the Interior's and the President's Stipulations would be attached to grants pertaining to Federal Lands.
May 7, 1979	Notice of Availability of a complete draft set of DOI Stipulations was published in the Federal Register for review and comment.

Since May 1979, representatives of the interested agencies have continued to travel throughout the involved States and Canada, holding numerous meetings to resolve differences.

Today, most of the major areas of conflict for the Right-of-Way grants for the Eastern and Western legs have been resolved within the Department of the Interior and we expect to issue these grants in November 1979 The PGT grant could have been issued earlier, but the integrated approach implicit in the Act and the President's Decision has prevented issuance of a grant for one leg until we have reasonable assurance that the major issues involving any of the three legs have been settled. Most of the difficult issues are in Alaska and we believe these remaining issues can be resolved during the next several months.

I hope this additional information has clarified the status of the Grants for the Committee. If, however, there are further questions, please do not hesitate to call me on 343-6932.

Sincerely yours,

s/ James W. Curlin

James W. Curlin
Deputy Assistant Secretary
Land and Water Resources

cc: F.I.
LWR (2) ✓
Congressman Don Clausen Oversite and Investigation Subcommittee
Ann Neese (105)
Subject, Reading, Hold (105)

A NEESE: bp 10/29/79 6932/4063

Statement of

Charles B. Curtis

Chairman, Federal Energy Regulatory Commission

Before the

Subcommittee on Oversight and Investigations

of the

Interior and Insular Affairs Committee

U.S. House of Representatives

October 16, 1979

Mr. Chairman and Members of the Subcommittee:

I come before you today to discuss the Commission's activities in implementing the Alaska Natural Gas Transportation System (ANGTS).

Your invitation requested that I address the Commission's regulatory actions pertaining to the ANGTS, and the progress of talks with the Government of Canada regarding agreements with respect to procurement policy for the pipeline. I will cover the key Commission actions briefly in my statement, but attached to my statement you will find a more complete account of what the Commission has done and is doing. With regard to procurement policy, I have also attached to my statement a copy of a letter sent by then Commissioner Don S. Smith to Congressmen Dingell and Eckhardt, reporting on the outcome of his most recent discussions with Canadian Government representatives on that subject. I would like to defer to the State Department and the Office of the Federal Inspector for any further information on progress in formalizing the agreements referred to in Commissioner Smith's letter.

Pursuant to the provisions of the Alaska Natural Gas Transportation Act, the President selected the Alcan project, predecessor to the current project sponsor consortium, for delivery of the Prudhoe Bay gas reserves to lower-48 markets.

The President's selection was forwarded to the Congress for approval on September 22, 1977.[1/] The Indian Affairs and Public Lands Subcommittee of this Committee, along with the Energy and Power Subcommittee of the House Commerce Committee, held hearings in September and October of that year to consider the President's selection. The President's recommendation was approved by joint resolution of the Congress on November 2, 1977, and signed into law by the President on November 8, 1977.

Following enactment of the joint resolution, the Commission began an evaluation of the various authorizations it would have to grant in the course of completing the certification process for the ANGTS, in an effort to identify those which might be necessary or helpful in assisting the private parties involved in the project in moving it forward. Although our normal posture is to respond to applications by sponsors of projects which require our authorization, the Commission has taken the initiative in several areas to provide timely resolution of the many complex issues affecting the ANGTS without awaiting a request by the applicant.

1/ Executive Office of the President, Energy Policy and Planning, Decision and Report to Congress on the Alaska Natural Gas Transportation System, September, 1977.

The Commission has now completed the principal decisions required from us to permit the sponsors to formalize and complete project financing plans. These have to do with the rate of return on equity investment in the project, and with the project company tariff. The rate of return on equity is important to attracting equity support for the project. The project company tariffs establish the contractual conditions which govern provision of the transportation service. Under the financing framework recommended by the President and approved by the Congress, the tariff provides an essential piece of security for the project's debt once operations commence. Thus, early resolution of these questions was important to negotiations over financing.

The Commission has also resolved a key design question, the size and maximum allowable operating pressure of the Alaska segment. Although not normally considered until final certification, application for which is not expected before June of 1980, this issue was selected by the Commission for early resolution in order to facilitate preparation of detailed cost estimates for the Alaska segment. Such estimates are also important to obtaining financing.

The Congress itself has provided perhaps the most important of the decisions which remained after passage of the joint resolution authorizing the ANGTS, namely those with regard to the pricing of the Prudhoe Bay gas. Passage of the Natural Gas Policy Act in late 1978 provided a ceiling for the field price of the gas, and rolled-in pricing treatment for that price plus the cost of transporting the gas to market. In the absence of Congressional action, the Commission would have had to make these decisions pursuant to its authority under the Natural Gas Act. Commission decisions would almost inevitably have taken longer than was required for Congressional action, as a proceeding under the Natural Gas Act would have required allocation of Prudhoe Bay Field production costs between gas and oil.

These three sets of decisions - rate of return and tariff, Alaska segment design, and pricing treatment - provide a foundation for development of a definitive financing plan for the ANGTS. Because the ANGTS will be the largest privately - financed construction project ever attempted, we share the view expressed in the report accompanying the President's Decision that "...skillful financial packaging and risk-benefit balancing will be required."

(Decision at 106.). However, we are confident that the financial institutions of this country, and others if necessary, are up to the task.

The Commission currently has in progress a proceeding before an administrative law judge to consider applications for the "pre-build project." This is a proposal to construct certain of the lower-48 ANGTS facilities in advance of when they would be required for Alaska gas service, in order to deliver net new imports of Canadian gas if authorized by the Government of Canada. The Commission is scheduled to consider action in the first phase of that proceeding this week, and we are hopeful of completing action in all phases early in 1980.

With regard to the Alaska segment, the principal Commission actions which remain are evaluation of the cost estimates and financing plans for it. As mentioned above, the project sponsors do not currently plan to file for these approvals until June of 1980.

If Commission action can be completed on the schedule we currently project, and if counterpart Canadian authorizations are forthcoming in a timely manner, deliveries of Canadian gas to the West could begin in the fall of 1980, and to the Midwest in the fall of 1981. Alaskan gas deliveries are currently scheduled to commence in late 1984.

There is today a justifiable public concern that government agencies are incapable of making prompt decisions consistent with national needs. I would like to leave the members of the Subcommittee with some feeling for what an agency like mine is up against in making decisions with respect to a project of this dimension and complexity. The first attachment to my statement lists 9 different matters the Commission has considered or is considering. For just one of those 9, the rate of return and tariff proceeding, the Commission considered almost 1000 pages of consultant reports, staff reports and comments from the more than 40 parties with standing in that proceeding. In that instance, the Commission utilized a modified notice and comment procedure authorized by Section 403 of the Department of Energy Organization Act (P.L. 95-91) to accomplish in 2 months what could have required up to 3 years of on-the-record, trial-type proceedings.

The Commission and its staff have worked hard and diligently in all of these matters. I believe the record of our endeavors amply demonstrates a conscientious effort to carry out our statutory responsibilities in an effective manner.

That concludes my prepared statement, Mr. Chairman. I will attempt to respond to any questions that you or other members of the Subcommittee may have.

ATTACHMENT 1

Federal Energy Regulatory Commission
Actions for the
Alaska Natural Gas Transportation System

(Actions listed in chronological order, according to when they were initiated.)

1. Alaska Segment Pipe Size and Pressure

The Agreement on Principles between the U.S. and Canada authorizing the ANGTS[1/] called for a technical study group to consider alternative size and pressure combinations for the joint-use segment between Whitehorse, in the Yukon Territory, and the bifurcation point in central Alberta. A group of U.S. and Canadian technical representatives met intensively through December, 1977 and January, 1978 to discuss this issue, and the Canadian National Energy Board (NEB) issued its decision in late February, 1978. The NEB chose a large-diameter, low-pressure (56" diameter, 1,080 psig operating pressure) alternative for that joint-use segment.

1/ "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. Inasmuch as the Decision was approved by Congress, it (including the Agreement) has the legal status of a statute.

Soon after the Canadian decision, the FERC's Alaskan Delegate initiated an inquiry to resolve any residual size and pressure questions for the segments north of Whitehorse. This inquiry involved a series of informal meetings in the Spring and Summer of 1978; a draft report circulated in September, 1978 to all parties to the final certification proceeding; a conference to discuss that draft report in December, 1978; and a filing by the project sponsors in early March, 1979 in response to a request made at the conference. The final Delegate report went to the Commission in May, 1979.

The Commission issued the Delegate's report for public comment on May 17, 1979.[2/] The Commission's notice invited interested parties to file comments and/or request a formal hearing if anyone wanted to test the report's recommendations. Comments were filed by three parties; no party requested a hearing. On August 6, 1979, the Commission issued an order approving the project sponsors' requested pipe size and pressure specifications.[3/]

2/ "Notice of Delegate Report and Order Inviting Comments," Docket Nos. CP78-123, *et al*. (Issued May 17, 1979).

3/ "Order Approving Alaska Segment Design Specifications and Initial System Capacity," Docket Nos. CP78-123, *et al*. (Issued August 6, 1979).

On September 28, 1979, various state and local government bodies from Alaska petitioned the Commission to vacate that order and study this matter further. The Commission denied that petition on October 4, 1979 (order to be issued October 12 or 15, 1979)[4/]. The same group then filed a petition for review of the Commission's order in the U.S. Court of Appeals (D.C. Circuit) on October 5, 1979.

2. Conditional Import Authority

On April 3, 1978, Northwest Alaskan Pipeline Company filed applications with the Commission to import 1.04 billion cubic feet per day (bcfd) of Canadian gas through portions of the lower-48 ANGTS facilities. Applications were subsequently to be filed to construct these facilities in advance of when they would be required for deliveries of Alaskan gas, and to use them to transport the new imports of Canadian gas in the interim. The Commission conditionally approved the applications to import on June 7, 1978.[5/]

4/ A private firm in Alaska filed a comparable petition to vacate, which was similarly denied.

5/ "Order Granting Intervention, Establishing Intervention Procedures for the Overall Alaska Gas Proceeding, and Granting Conditional Import Authorizations," Docket Nos. CP78-123, et al. (Issued June 7, 1978).

The Commission received two petitions for rehearing or reconsideration of the June 7 order, both of which were denied. Midwestern Gas Transmission Company and Michigan-Wisconsin Pipeline Company filed petitions for review of the Commission's order in the U.S. Court of Appeals (D.C. Circuit) in early August, 1978. The Court of Appeals issued its decision upholding the Commission's order on November 2, 1978.

3. Environmental and Technical Terms and Conditions

An interagency effort was begun in the spring of 1978 to develop relatively uniform, government-wide environmental and technical terms and conditions and stipulations for each of the project segments. That work culminated in the issuance by the Department of the Interior of a comprehensive set of proposals for terms and conditions and stipulations for Federally - owned lands on May 7, 1979. The Commission issued counterpart proposals for private lands on May 17, 1979.[6/] Comments were received on the Commission's proposals on June 20, 1979, and reply comments on July 6, 1979. Final Commission action in this matter is pending further consultations and coordination with the Office of the Federal Inspector.

6/ "Order Proposing Terms and Conditions," Docket Nos. CP78-123, *et al*. (Issued May 17, 1979).

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4. <u>Equal Employment Opportunity/Minority Business Enterprise (EEO/MBE) Program</u>

An interagency working group was also established in the Spring of 1978 to develop a comprehensive and uniform program to ensure equal employment opportunity and minority business enterprise participation. Work continued on the development of program proposals through the remainder of 1978, with initial proposals for regulations developed within the working group in early 1979. An informal public conference regarding an EEO/MBE program was held at the Commission on May 21, 1979, and further interagency review and revision followed in light of the testimony received. A staff draft was developed in conjunction with the working group, which was adopted in principle by the Commission on August 9, 1979, subject to further interagency review and coordination. Further informal conferences were held at three Alaska locations during the first week in September.

Proposed regulations are to be issued by the Department of the Interior on October 12, 1979. A Commission notice referencing those proposals will be issued on October 12 or 15, 1979. Comments from interested parties will be sent to the Department of the Interior, but will be considered by the Commission preparatory to final Commission action. Final action by both the Department of the Interior and the Commission is pending receipt of formal comments and convening public hearings to discuss the proposals.

5. Incentive Rate of Return (IROR) Mechanism

A variable, or incentive, rate of return mechanism was required to be developed by the Decision and Report to Congress on the Alaska Natural Gas Transportation System (Decision) approved by the Congress in November, 1977. The Commission issued its first proposals for an IROR mechanism on May 8, 1978.[7/] Revised proposals were issued on September 15, 1978,[8/] with comments received October 6, 1978. Order No. 17 was issued December 1, 1978,[9/] and reaffirmed with Order No. 17-A, issued on January 17, 1979.[10/] Those orders established the IROR mechanism, but left the scope change and inflation adjustment procedures for further consideration, along with setting of appropriate rate of return values to fill out the IROR schedules.

7/ "Notice of Proposed Rulemaking," Docket No. RM78-12 (Issued May 8, 1978).

8/ "Revised Notice of Proposed Rulemaking," Docket No. RM78-12 (Issued September 15, 1978).

9/ Order No. 17, "Order Attaching Incentive Rate of Return Conditions to Certificates of Public Convenience and Necessity," Docket No. RM78-12 (Issued December 1, 1978).

10/ Order No. 17-A, "Order Confirming the Incentive Rate of Return Mechanism and Denying Petition for Reconsideration and Clarification," Docket No. RM78-12 (Issued January 17, 1979).

6. Pre-build Project

Applications to construct the lower-48 ANGTS segments for the pre-build project were received by the Commission in November, 1978 (Western Delivery System) and late January, 1979 (Eastern Leg). These filings were for the facilities required to be constructed to transport the gas conditionally authorized to be imported by the Commission's earlier order. Conferences regarding these facilities were held in March, and the applications were set for hearing on April 20, 1979.[11/]

The hearing order for consideration of these applications required that the proceeding be phased. Testimony and briefing for phase has been completed and an order is scheduled for Commission consideration during the week of October 15, 1979. The other phases are still in progress, and are expected to be completed in late 1979 or early 1980.

11/ "Order Consolidating Proceedings, Establishing Procedures, Granting Interventions and Initiating Hearings," Docket Nos. CP78-123, *et al*, Docket No. CP79-56, 57, 58, 59, 60, 170 and CP78-124 (Issued April 20, 1979).

7. Responsibility for Production-Related Costs

The Decision stressed the importance to further progress in financing the ANGTS of early establishment of a field price for the gas, and called for a gas pricing approach similar to that contained in the President's National Energy Plan, then pending before the Congress. The Natural Gas Policy Act, signed into law in November, 1978, set a ceiling for that field price, but provided discretion for the Commission to increase that price if the Commission saw fit.

The Commission issued a proposal regarding the exercise of its discretion in this matter on February 2, 1979.[12/] Comments were received on March 19 and reply comments on April 2. In late May, the Commission received two proposed contracts for the sale of the gas, and a staff study assessing the distribution of benefits associated with Prudhoe Bay gas sales. On May 31, the Commission distributed those materials for further comment by June 15 (later extended to June 22).[13/] Order No. 45 was issued on August 24, 1979.[14/] Petitions for rehearing of that order were filed on September 24, and an opportunity for oral presentation was provided on September 27. Further action with regard to this matter is pending.

12/ "Notice of Proposed Rulemaking and Statement of Policy," Docket No. RM79-19 (Issued February 2, 1979).

13/ "Notice Inviting Comments," Docket No. RM79-19 (Issued May 31, 1979)

14/ Order No. 45, "Regulations and Statement of Policy," Docket No. RM79-19 (Issued August 24, 1979).

8. Approval of Project Expenditures

On February 2, 1979, the project sponsors filed a request with the Commission for approval of project development expeditures, past and future. The Commission began an audit of past project expenditures in early March. The project sponsors filed a supplemental request for approval on August 14, 1979. The audit is still in progress, and Commission action is pending receipt of the audit report.

9. Incentive Rate of Return Values, Scope Change and Inflation Adjustment Mechanisms, and Project Company Tariffs

The Commission's Alaskan Delegate filed a report on tariff issues in February, 1979. On February 22, the Commission noticed the Delegate's report, ordered the filing of the project company tariffs, and recommended consolidation of all remaining IROR issues into a single rulemaking proceeding.[15/] A notice of proposed rulemaking was issued for that proceeding on April 6, 1979,[16/] with comments received on May 4, and reply comments on May 16. Order No. 31 resolving all of those issues was issued on June 8, 1979.[17/] Petitions for rehearing

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15/ "Notice of Delegate Report and Order Directing Tariff Filing," Docket No. RM78-12 (Issued February 22, 1979).

16/ "Notice of Proposed Rulemaking to Set Values for Incentive Rate of Return, Establish Change-of-Scope and Inflation Adjustment Procedures, and Request Comments on Filed Tariffs," Docket No. RM78-12 (Issued April 6, 1979).

17/ 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).

were received on July 8, and an order on rehearing was issued on September 6,[18/] completing Commission action on all IROR issues.

Among the matters considered in approving the project company tariffs were quality standards for gas to be introduced into the pipeline systems. In accordance with the Alaskan Delegate's recommendations in the pipe size and pressure inquiry, the carbon dioxide content standard was segregated out for further consideration. A Commission order requesting the submission of further information on this subject was issued on May 16, 1979,[19/] with comments received by June 1, and reply comments by June 15 (later extended to June 22). Further Commission action in this matter is pending.

18/ "Order No. 31-B on Rehearing," Docket No. RM78-12 (Issued September 6, 1979).

19/ "Order Requesting Further Submission of Data, Views and Comments," Docket Nos. RM78-12 and RM79-19 (Issued May 16, 1979).

ATTACHMENT 2

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON 20426

May 16, 1979

Honorable John D. Dingell
Chairman, Subcommittee on
Energy and Power
Room 2125
Rayburn House Office Building
Washington, D. C. 20515

Dear Chairman Dingell:

Thank you for your letter of February 9, 1979, to Secretary Schlesinger regarding U.S. Government efforts to ensure that U.S. firms will have a fair chance to compete for the supply of goods and services to the Canadian portion of the Alaska Gas Pipeline Project. The Secretary has asked me to respond on his behalf, as the FERC has been most closely involved in U.S. Government efforts to deal with this issue.

The interim response to your letter indicated a more detailed response would be forthcoming before the end of March. Please accept my apologies for the delay, but we have been engaged in a series of discussions on this point with the Canadian Government throughout this period, and I believe we may now have some progress to report to you.

Since your Baytown hearings, reasonable progress has been made in the area of articulating the respective concerns of the U.S. and Canadian Governments on the range of procurement issues. This has been made in the context of the circumstance that the two governments had different objectives in mind when they reached the understandings which are embodied in the "Agreement Between the United States of America and Canada on Principles Applicable to a Northern Natural Gas Pipeline", which was incorporated into the President's Decision and Report to Congress on the Alaska Natural Gas Transportation System (the Decision.)

For its part, the U.S. sought access to additional gas supplies, on the North Slope of Alaska and through enhanced potential for access to Canadian gas supplies. The latter would be achieved through construction of a transportation system within ready reach of Canada's Mackenzie Delta reserves and by the potential for additional exports from Canada's conventional producing areas. Canada, on the other hand, although anticipating delivery of the Mackenzie Delta reserves, was primarily interested in the economic stimulus the project would provide to Canadian industry.

Honorable John D. Dingell

Canadian representatives have been clear and consistent in expressing Canada's interest in maximizing contracting opportunities for Canadian firms on the Canadian segments of the pipeline project, and in taking advantage of opportunities to utilize the pipeline project to develop Canada's industrial capability. In fact, the authorizing legislation for the pipeline in Canada requires that industrial benefit to Canada be an explicit criterion for Government approval of major procurement actions. However, the Canadian Government has informed us that Canada's objectives in developing industrial and technical capabilities which might be marketed throughout the world would not be attempted by unduly protecting Canadian businesses from foreign competition. Canadian officials have assured us in our discussions that they have no interest in protecting Canadian firms which are not "generally competitive."

The objective that both U.S. and Canadian Governments share is a common commitment to build an efficient, low-cost, natural gas transportation system to bring frontier gas to consumers in their respective countries. Toward this objective, the two governments included in the Agreement on Principles an incentive rate of return provision whereby the project rate of return will vary with the companies' success in controlling cost overruns. The purpose of this device is to provide maximum incentives to the project sponsors to complete the project at the lowest possible cost. Similarly, the Agreement on Principles also contains a provision for the two countries to share the costs of extending the pipeline system from Whitehorse to Dawson, both in the Yukon Territory, with the U.S. share to be determined by Canada's success in controlling cost overruns. The result of this framework is that both the Canadian companies and the Canadian Government have incentives to ensure that procurement in Canada is made on the basis of the lowest possible costs. These incentives form an important element in the framework within which our discussions of mechanisms to ensure compliance with the provisions of the Agreement on Principles are proceeding.

During the course of our discussions, we have taken a considerable interest in the view of the Canadian Government that there should be full reciprocity, both as to access to information and as to opportunities for contracting to provide goods and services to both the U.S. and Canadian segments of the pipeline project. On this point, both governments may find it helpful to devise a mechanism or procedure whereby each would receive timely information about contracting opportunities for both segments, and would then make that information available for dissemination to interested firms on both sides of the border. I am hopeful that Canada's interest in reciprocity will contribute to our ability to reach an acceptable accommodation on the question of availability of adequate information.

Honorable John D. Dingell

With respect to our discussions regarding mechanisms for implementing the Agreement, the U.S. side has consistently expressed the following concerns in each forum available to us.

1. Broad access to the bidding process - The U.S. view is that the terms of competition for any particular contract could be affected by any restriction which might be placed on who was allowed to bid. Thus, the first step in developing a process through which awards are made on the basis of "generally competitive terms" is to ensure that firms which are qualified to supply are not excluded from the bidding process. "Generally competitive terms" would afford little protection if only a restricted group of firms were allowed to bid.

2. Criteria for award - Although the U.S. and Canada may have different criteria which might form the basis for the award of any particular contract, the primary criterion for every contract must be that awards are made on "generally competitive terms." Bids must be generally competitive in order to be included in the group from which the final selection will be made.

3. Transparency in award - On the assumption that both sides are committed to broad access to the bidding competition for each item, and to awards on competitive terms, there must be sufficient transparency in the awards process that a) U.S. regulatory authorities can make legally defensible regulatory determinations to pass through costs to consumers, and that b) the U.S. public is assured that the terms of the Agreement on Principles between the U.S. and Canada are being complied with.

I believe that the Canadian Government understands these concerns. Our difficulty has been to devise a process which is consistent with the objectives of both sides, is fair to both sides, and does not impose an undue administrative burden on the project sponsors. We continue to work on developing such a process.

Our last meeting on this issue was held in Ottawa on April 5 and 6, 1979. Some progress was made, primarily in the area of designing procedures for "designated items", which are those items identified by the Northern Pipeline Agency (NPA) as being particularly significant to Canada's realization of its industrial benefit objectives. */

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*/ Identification and designation of certain items is required by Schedule III, Paragraph 10 of the Northern Pipeline Act, the authorizing legislation for the pipeline in Canada.

Honorable John D. Dingell

With respect to the question of access, the Canadian Government has agreed to furnish the U.S. with a copy of the initial bidders' list for each designated item. This initial list will be developed by the project sponsors in Canada from among the firms which they believe are qualified to supply the particular item being sought. The U.S. will then be able to recommend other firms for addition to the list of qualified bidders.

With respect to the basis for an award, the Canadian Government has agreed to provide appropriate U.S. authorities with an opportunity to review the bid documents in advance of initial bidder selections by the Canadian sponsor companies. Additionally, the Canadian Government has assured us that final selection would be made from among firms which are generally competitive.

Finally, the Canadian Government has agreed to take measures appropriate to each individual competition to review with appropriate U.S. Government officials the results of that competition. This review would take place between the time of the award and the time of expenditures under any given contract. This will provide time to request renegotiation of bids or reopening of the contracting process as provided for by Section 7(b) of the Agreement on Principles, should those remedies seem appropriate. Additionally, in each instance, Canada will make public the winning bid during the course of the audit process, which will be part of the regulatory determinations required to be made by the National Energy Board (NEB.)

We are continuing to discuss these matters with our Canadian counterparts and will keep you advised of further progress. The whole question of a U.S. procurement program remains open at this time, as the procurement process is not as far advanced for the U.S. segments as for the Canadian segments. However, I would expect that we would try to finalize our arrangements for the Canadian segments over the course of the next several weeks, then start to work on counterpart arrangements for the U.S. segments.

For items that are considered as nondesignated by the NPA, we expect normal commercial practices will apply to the procurement process. Public hearings before the NEB, required as part of the ratemaking process, will be the procedure available to test competitiveness. We are working to develop a better definition of the schedules for implementation of the project, including identifying the timing of future procurements, in order that interested firms might have more complete access to contracting opportunities. As we discussed at the

Honorable John D. Dingell

hearings in Baytown, Texas, we expect to utilize a special section of the Office of the Federal Inspector, to make grievance procedures available to any bidders who believe that they have been unfairly treated.

Throughout our discussions both with our colleagues at the State Department and with our counterparts in the Canadian Government, we at the FERC have been constantly mindful of our regulatory responsibilities with respect to the passthrough to U.S. consumers of charges incurred in Canada and our obligation to develop the appropriate practices and procedures for approval of those charges. The Commission has already directed its Chief Accountant to undertake an audit of expenses incurred through July 31, 1978, with further audits to be conducted as needed. We expect that audits on the U.S. portions will be run on an essentially continuous basis during the construction phase. We are in the process of developing a procedure for what would effectively be a continuing, open rate case to convert audited construction expenditures into a rate base. I expect that the NEB will be doing something similar, and our respective staffs have had some contact and discussions with regard to possible coordination of our respective efforts.

One of our major concerns has been to ensure that the evidentiary development in NEB's rate case would produce information appropriate to the type of "just and reasonable" determination the FERC would make. We have discussed with the NEB our interest in having formal representation of U.S. consumer interests in Canadian proceedings. One of the things we have been considering is some type of <u>ad hoc</u> group of U.S. interests formed specifically for this purpose. Such a group could participate through a representative with Canadian counsel, but could be backed up by an advisory body which might include representatives of state public utility commissions, U.S. consumer groups, congressional committee staff members, etc. This group could receive analytic support, and perhaps some organizational support as well, from the FERC.

Such a group could function at least for the duration of the construction phase. Once operations commence, we will expect NEB to communicate through our consultative channel for regulatory matters with regard to further audit and ratemaking matters. In addition, the Commission may consider it necessary to condition the U.S. shippers' transportation agreements with the Canadian companies, which will have to be submitted to the FERC for approval, to require them to notify FERC of regulatory proceedings in Canada which might address any matter not contemplated and provided for at the time of certification. For example, any substantial subsequent addition to the rate base would be the type of change that would require the U.S. shippers to formally notify FERC.

Honorable John D. Dingell

Such notification would be required to be made in time for the FERC to exercise discretion whether to request regulatory consultation under Section 9 of the Agreement on Principles.

Further discussions regarding formalizing our respective regulatory arrangements are currently proceeding. We will be reporting to you from time to time regarding the evolution of those procedures.

A final matter I would like to report to you on is the status of bidding for the supply of mainline pipe to the project in Canada. I believe that our experience with the bidding for pipe is illustrative of the development of our relationship on procurement issues with the Canadian Government.

When the Foothills group first expressed their intentions with regard to seeking suppliers for mainline pipe, we had some concern that access to the bidding process as described seemed unduly restricted. We expressed these concerns to the Canadian Government, and I am pleased to report that the result of our efforts was a process whereby no qualified bidder who expressed an interest, whether a U.S. firm or some third country supplier, was excluded from consideration. The initial evaluation process resulted in the selection of two Canadian companies for further detailed negotiations, with a Japanese firm selected for backup supplier status.

The Canadian Government also furnished us a copy of the bidding document for the line pipe competition. U.S. Government experts reviewed the document in some detail for its competitive aspects, and found it to be generally fair. The question of review of the results of the bidding with appropriate U.S. authorities remains an open one at this time, but we are hopeful that it can be resolved without too much difficulty.

The Department of State has provided you, in response to your letter of February 9 to Secretary Vance, with a chronology of the contacts between the U.S. and Canadian Governments with regard to various aspects of procurement issues. In addition, we have utilized our regulatory contacts to further these discussions as appropriate. Our concern from a regulatory perspective has been the development and disclosure of adequate information to ensure that appropriate regulatory determinations can be made. Discussions of these points, among other regulatory matters, were held on the following dates:

Honorable John D. Dingell

January 22-23, 1979 - Discussions were held in Washington with two members of the National Energy Board regarding the respective roles of the National Energy Board and the Northern Pipeline Agency. Our interest was in how NEB practice and precedent would guide NPA approvals of specific procurement actions, and what relationship NPA approvals would have to the NEB process for approving costs incurred by the project companies for inclusion in the project's rate base.

March 12-13, 1979 - Further discussions were held in Washington on the same subject.

Thank you again for your letter. Again, please accept my apologies for the delay. I think that the delay has afforded us the opportunity to be more responsive to your inquiry. In my judgment, we must make more progress before asserting that all Baytown assurances have been met. We will be reporting to you on our further progress on this important issue in the future.

Sincerely,

Don S. Smith
Vice Chairman

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

October 23, 1979

The Honorable Charles B. Curtis
Chairman
Federal Energy Regulatory Commission
825 North Capitol Street, N.E.
Washington, D.C. 20454

Dear Mr. Curtis:

As I indicated at the beginning of the hearings on the Alaska Natural Gas Transportation System, I am providing you with some written questions. Your responses will be included in the record. The Subcommittee would appreciate answers to the following questions:

1. Has your relationship with the Canadian National Energy Board been an open and successful one?

2. Will you please provide for the record the names and respective positions of the individuals within the National Energy Board who serve as counterparts to the Commissioners at the Federal Energy Regulatory Commission?

3. What will prevent the Incentive Rate of Return mechanism from leading to engineering shortcuts during the construction phase of the pipeline?

4. The sponsors of the pipeline indicate a need to receive approval of actual expenditures on a periodic basis and that filings are pending for those approvals. What is the status of your review and when will that order be issued?

5. How long will it take the Commission to issue its final certificate from the date the sponsors file the final cost estimate and financing plan?

October 23, 1979
Page two

It is requested that your response to these questions be sent to the Subcommittee as soon as possible in order to make the complete hearing record available to the public in a timely manner.

Sincerely,

HAROLD RUNNELS
Chairman
Oversight and Investigations
Subcommittee

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FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON 20426

December 26, 1979

Honorable Harold Runnels
Chairman
Oversight and Investigations Subcommittee
Committee on Interior and Insular Affairs
U.S. House of Representatives
Washington, D.C. 20515

Dear Chairman Runnels:

Enclosed please find the responses to the questions you forwarded to us by letter of October 23, 1979. Please excuse the delay in our reply as we experienced some delay in receiving your letter.

Please do not hesitate to contact me if I can be of any further assistance.

Yours truly,

Charles B. Curtis

Charles B. Curtis
Chairman

Enclosures

57-087 0 - 80 - 63

1. Has your relationship with the Canadian National Energy Board been an open and successful one?

Yes. We have had occasion to consult with the NEB frequently during the development of the interface between our respective jurisdictions, and have found them always willing to listen to and consider our concerns. The Commission and the NEB have made a considerable effort to harmonize regulatory treatment in the U.S. and Canada in order to facilitate financing.

2. Will you please provide for the record the names and respective positions of the individuals within the National Energy Board who serve as counterparts to the Commissioners at the Federal Energy Regulatory Commission?

The NEB is composed of nine members, which form into panels to hear cases. The panel considering matters affecting the Alaska Natural Gas Transportation System (ANGTS) is one dealing with tariffs and financing for the system. That panel is chaired by C. Geoffrey Edge, Vice-Chairman of the NEB, and includes Livia M. Thur and R. B. Horner as Members. Order No. RH-2-79 (copy attached) establishes the subject matter and conduct of the panel hearings.

Another NEB panel is considering applications for net new exports of Canadian gas, among them those sought by the U.S. and Canadian sponsors of the proposal to "pre-build" the southern segments of the ANGTS. The Presiding Member of that panel is NEB Chairman J. G. Stabback, and includes J. R. Jenkins and J. Farmer as Members. Order No. GH-2-79 (also attached) establishes the subject matter and conduct of those hearings.

3. What will prevent the Incentive Rate of Return mechanism from leading to engineering shortcuts during the construction phase of the pipeline?

   Under the terms and conditions which were made part of the President's Decision and Report to Congress on the Alaska Natural Gas Transportation System (the Decision), the project sponsors are required to submit detailed designs to the Federal Inspector for review and approval.1/ Under this procedure, he should be able to prevent inadequate project engineering.

   Another consideration is that many final authorizations for construction will be issued with site-specific terms and conditions. In this manner, government permitting authorities clearly will have adequate opportunity to prevent unwarranted shortcuts in proposed construction techniques.

   The Incentive Rate of Return mechanism, and its impact on project sponsor plans and actions during the course of project design and construction, should be looked at as one of a number of government influences on those

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1/ See, e.g., Condition 5.I.5. at page 29 of the Decision, and all of the Safety and Design conditions at pages 32-33.

plans and actions. Whereas some of those various influences might have peculiar or unintended effects by themselves, each must be considered in the context of all the others. In this context, we are convinced that the Federal Inspector will be able to achieve the appropriate balance among all of the influences on project sponsor plans and actions.

4. The sponsors of the pipeline indicate a need to receive approval of actual expenditures on a periodic basis and that filings are pending for those approvals. What is the status of your review and when will that order be issued?

The first petition for review of those expenditures was filed in February of this year. The Commission initiated an audit of those expenditures essentially immediately. However, because of the complexity of the cost allocation problems inherent in the expenditures which have been incurred to date, the report of that audit has not yet been delivered to the Commission.

The Commission understands the requirement to receive periodic approval of expenditures, and will consider the audit report as soon as possible after receiving it.

5. How long will it take the Commission to issue its final certificate from the date the sponsors file the final cost estimate and financing plan?

The critical path analysis currently being developed by the Federal Inspector allows six months for final Commission certification after the filing of all materials by the project sponsors. This process would normally take at least a year. However, the Commission has considered a number of matters, such as pipe size and pressure, project company tariffs and rates of return on equity, in advance of the final certification proceeding.

The Commission is hopeful of being able to meet the six month schedule established by the Federal Inspector through the use of special procedures such as the type of advanced consideration mentioned above.

NATIONAL ENERGY BOARD — CANADA — OFFICE NATIONAL DE L'ÉNERGIE

ORDER NO. GH-4-79

IN THE MATTER OF the National Energy Board Act and the Regulations made thereunder;

AND IN THE MATTER OF applications made by Alberta and Southern Gas Co. Ltd., Canadian-Montana Pipe Line Company, Columbia Gas Development of Canada Ltd., ICG Transmission Limited, Niagara Gas Transmission Limited, ProGas Limited, Sulpetro Limited, and Westcoast Transmission Company Limited for licences under Part VI of the National Energy Board Act for the export of natural gas to the United States of America;

AND IN THE MATTER OF a joint application made by Pan-Alberta Gas Ltd., TransCanada PipeLines Limited, and Consolidated Natural Gas Limited for licences under Part VI of the National Energy Board Act for the export of gas to the United States of America;

AND IN THE MATTER OF applications by Q & M Pipe Lines Ltd., TransCanada PipeLines Limited, and ICG Transmission Limited for certificates of public convenience and necessity under Part III of the National Energy Board Act;

B E F O R E the Board on Monday, the 7th day of May, 1979.

UPON Alberta and Southern Gas Co. Ltd., hereinafter referred to as "Alberta and Southern", having filed with the Board an application dated the 5th day of April, 1979, for a licence under Part VI of the National Energy Board Act authorizing the export of natural gas at a point on the international boundary between Canada and the United States of America near Kingsgate, in the Province of British Columbia;

AND UPON Canadian-Montana Pipe Line Company, hereinafter referred to as "Canadian-Montana", having filed with the Board applications dated the 21st day of March, 1979, and the 21st day of April, 1979, for licences under Part VI of the National Energy Board Act authorizing the export of natural gas at points on the international boundary between Canada and the United States of America near Aden and Cardston, in the Province of Alberta;

AND UPON Columbia Gas Development of Canada Ltd., hereinafter referred to as "Columbia", having filed with the Board an application dated the 2nd day of April, 1979, for a licence under Part VI of the National Energy Board Act to export natural gas at a point on the international boundary between Canada and the United States of America near Huntingdon, in the Province of British Columbia;

AND UPON ICG Transmission Limited, hereinafter referred to as "ICG", having filed with the Board an application dated the 30th day of March, 1979, for a certificate of public convenience and necessity under Part III of the National Energy Board Act, and for a licence under Part VI of the National Energy Board Act to export natural gas at a point on the international boundary between Canada and the United States of America near Fort Frances, in the Province of Ontario;

AND UPON Niagara Gas Transmission Limited, hereinafter referred to as "Niagara", having filed with the Board an application dated the 24th day of April, 1979, for a licence under Part VI of the National Energy Board Act to export natural gas at a point on the international boundary between Canada and the United States of America near Cornwall, in the Province of Ontario;

AND UPON ProGas Limited, hereinafter referred to as "ProGas", having filed with the Board an application dated the 26th day of February, 1979, for a licence under Part VI of the National Energy Board Act to export natural gas at a point on the international boundary between Canada and the United States of America near Emerson, in the Province of Manitoba;

AND UPON Sulpetro Limited, hereinafter referred to as "Sulpetro", having filed with the Board an application dated the 13th day of June, 1978, for a licence under Part VI of the National Energy Board Act to export natural gas at a point on the international boundary between Canada and the United States of America near Niagara Falls, in the Province of Ontario;

AND UPON Westcoast Transmission Company Limited, hereinafter referred to as "Westcoast" having filed with the Board applications dated the 30th day of April, 1979, for licences under Part VI of the National Energy Board Act to export natural gas at points on the international boundary between Canada and the United States of America near Kingsgate and Huntingdon, in the Province of British Columbia;

AND UPON Pan-Alberta Gas Ltd., TransCanada PipeLines Limited, and Consolidated Natural Gas Limited, hereinafter referred to jointly as, "Pan-Alberta, TCPL, and Consolidated", having filed with the Board a joint application dated the 4th day of May, 1979, for licences to export natural gas at points on the international boundary between Canada and the United States of America, which joint application replaced the individual application sections of the March 26, 1979, filing of Pan-Alberta, the January 25, 1979, filing of TCPL, and the March 28, 1979, filing of Consolidated, but which joint application is supported by the materials filed with the individual applications listed;

AND UPON Q & M Pipe Lines Ltd., hereinafter referred to as "Q & M", having filed with the Board an application dated the 20th day of October, 1978, for a certificate of public convenience and necessity under Part III of the National Energy Board Act;

AND UPON TransCanada PipeLines Limited, hereinafter referred to as "TCPL", having filed with the Board an application dated the 4th day of April, 1978, as amended by an application dated the 27th day of April, 1979, for a certificate of public convenience and necessity under Part III of the National Energy Board Act;

IT IS HEREBY ORDERED THAT:

1. The above-noted applications shall be heard together at a public hearing in the Hearing Room of the National Energy Board, 473 Albert Street, in the City of Ottawa, in the Province of Ontario, commencing on Tuesday, the 10th day of July, 1979, at 9:30 a.m. local time and continuing in such other places and at such other times as the National Energy Board may direct. Such proceedings will be conducted in either of the two official languages and simultaneous interpretation will be provided should a party to the proceedings request such facilities in his intervention.

2. In the first phase of the hearing, to be referred to as the "Licence Phase", the Board will hear the evidence respecting the applications for licences for the export of natural gas made under Part VI of the National Energy Board Act and the application by ICG for a certificate of public convenience and necessity under Part III of the Act. The second phase of the hearing, to be referred to as the "Certificate Phase", will consider the applications of Q & M and TCPL for certificates of public convenience and necessity under Part III of the Act. Procedural orders will be issued by the Board with respect to the conduct of the hearing.

3. The Applicants shall arrange among them to have the Notice of Hearing in the form prescribed by the Board as set forth in the Notice attached hereto and which forms part

of this Order, published not later than the 25th day of May, 1979, in one issue each of the "Times" and the "Colonist" in the City of Victoria, in the Province of British Columbia; the "Herald" in the City of Calgary and the "Journal" in the City of Edmonton, in the Province of Alberta; the "Leader Post" in the City of Regina and the "Star-Phoenix" in the City of Saskatoon, in the Province of Saskatchewan; the "Free Press" in the City of Winnipeg, in the Province of Manitoba; the "Citizen" and "Le Droit" in the City of Ottawa, and the "Globe and Mail" and the "Financial Post" in the City of Toronto, in the Province of Ontario; "Le Devoir", the "Gazette", "La Presse", and the "Financial Times of Canada", in the City of Montreal, and "Le Soleil" in the City of Quebec, in the Province of Quebec; the "Telegraph Journal" in the City of Saint John and the "Gleaner" in the City of Fredericton, in the Province of New Brunswick; the "Chronicle Herald" in the City of Halifax, in the Province of Nova Scotia, the "Guardian" in the City of Charlottetown, in the Province of Prince Edward Island; the "Telegram" in the City of St. John's, in the Province of Newfoundland; the "Star" in the Town of Whitehorse, in the Yukon Territory; the "News of the North" in the Town of Yellowknife, in the Northwest Territories; and as soon as possible in the Canada Gazette.

4. Notice of the hearing shall forthwith be given by each of the applicants, by service of a true copy of this Order together with a copy of the application filed, upon the Attorneys General of all of the provinces of Canada; the British Columbia Energy Commission; the Energy Resources Conservation Board of Alberta; the Ontario Energy Board; Régie de l'electricité et du gaz du Québec; and the Canadian Federation of Agriculture.

5. Any respondent or intervenor intending to oppose or intervene in the hearing shall file on or before the 8th day of June, 1979, with the Secretary of the Board, thirty-five (35) copies of a written statement, in either of the two official languages, containing his reply or submission, together with any supporting information, particulars, or documents, which shall contain a concise statement of the facts from which the nature of the respondent's or intervenor's interest in the proceedings may be determined; which shall indicate whether the respondent or intervenor is interested in intervening in both phases of the hearing or only in the Licence Phase or in the Certificate Phase; which may admit or deny any or all of the facts alleged in any of the applications in which the intervenor is interested; which shall be endorsed with the name and address of the respondent or intervenor or his solicitor to whom

communications may be sent; and which shall state in which of the two official languages the party wishes to be heard. Any respondent or intervenor shall, in addition, serve, on or before the 8th day of June, 1979, three (3) copies of his reply or submission and supporting information, upon each of the Applicants in the phase or phases in which he is interested and one (1) copy upon each of the parties named in paragraph 4 of this Order.

6. Any interested party may examine all of the applications at the offices of the National Energy Board, Trebla Building, 473 Albert Street, in the City of Ottawa, in the Province of Ontario, and 205 Fifth Avenue S.W., Room 3020, Bow Valley Square II, in the City of Calgary, in the Province of Alberta, and individual applications of the respective applicants at the following addresses:

Alberta and Southern Gas Co. Ltd.,
Alberta and Southern Building,
240 Fourth Avenue S.W.,
Calgary, Alberta.
T2P 0H5

Canadian-Montana Pipe Line Company,
4th Floor,
Humford Building,
608 - Seventh Street S.W.,
Calgary, Alberta.
T2P 1Z1

Columbia Gas Development of Canada Ltd.,
1000 Standard Life Building,
639 - 5th Avenue S.W.,
Calgary, Alberta.
T2P 0M9

Consolidated Natural Gas Limited,
1300 Elveden House,
717-7th Avenue S.W.,
Calgary, Alberta.
T2P 0Z3

ICG Transmission Limited,
Inter-City Gas Building,
1800 - 444 St. Mary Avenue,
Winnipeg, Manitoba.
R3C 3T7

Niagara Gas Transmission Limited,
Suite 4200,
P.O. Box 90,
1 First Canadian Place,
Toronto, Ontario.
M5X 1C5

Pan-Alberta Gas Ltd.,
350, 202 Sixth Avenue S.W.,
Calgary, Alberta.
T2P 2R9

ProGas Limited,
#820, 444-5th Avenue S.W.,
Calgary, Alberta.
T2P 2V1

Sulpetro Limited,
3300 Bow Valley Square 2,
205 Fifth Avenue S.W.,
Box 9115,
Calgary, Alberta.
T2P 2W4

Westcoast Transmission Company Limited,
1333 West Georgia Street,
Vancouver, British Columbia.
V6E 3K9

Q & M Pipe Lines Ltd.,
202 Sixth Avenue S.W.,
1710 Bow Valley Square One,
P.O. Box 2535,
Calgary, Alberta.
T2P 2N6
or
Q & M Pipe Lines Ltd.,
620 Crown Trust Building,
1130 Sherbrooke Street West,
Montreal, Quebec.
H3A 2M8

TransCanada PipeLines Limited,
P.O. Box 54,
Commerce Court West,
Toronto, Ontario.
M5L 1C2

In addition, any interested party may examine the applications for certificates of public convenience and necessity of Q & M and TCPL at the following locations:

Quebec Public Service Board,
2875 Laurier Boulevard,
Quebec, Quebec.
G1A 1G8

Board of Commissioners of Public Utilities,
110 Charlotte Street,
Saint John, New Brunswick.
E2L 2J4

Board of Commissioners of Public Utilities,
1526 Dresden Row,
Halifax, Nova Scotia.
B3J 3G7

DATED at the City of Ottawa, in the Province of Ontario, this 7th day of May, 1979.

NATIONAL ENERGY BOARD

B. H. Whittle

Brian H. Whittle,
Secretary.

NATIONAL ENERGY BOARD
NOTICE OF HEARING

TAKE NOTICE that pursuant to the National Energy Board Act and Regulations made thereunder, the Board has ordered a hearing to be held in the Hearing Room of the National Energy Board, Trebla Building, 473 Albert Street, in the City of Ottawa, in the Province of Ontario, on Tuesday, the 10th day of July, 1979, commencing at the hour of 9:30 a.m. local time, and at such other places and at such times as the Board may direct to hear the applications of Alberta and Southern Gas Co. Ltd., Canadian-Montana Pipe Line Company, Columbia Gas Development of Canada Ltd., ICG Transmission Limited, Niagara Gas Transmission Limited, ProGas Limited, Sulpetro Limited, Westcoast Transmission Company Limited, and the joint application of Pan-Alberta Gas Ltd., TransCanada PipeLines Limited, and Consolidated Natural Gas Limited for licences under Part VI of the National Energy Board Act for the export of natural gas to the United States of America; and to hear the applications of Q & M Pipe Lines Ltd., TransCanada PipeLines Limited, and ICG Transmission Limited, for certificates of public convenience and necessity under Part III of the National Energy Board Act to construct and operate pipeline facilities. Such proceedings will be conducted in either of the two official languages and simultaneous interpretation will be provided should a party to the proceedings request such facilities in his intervention.

AND THE BOARD HAS FURTHER ORDERED THAT:

1. In the the first phase of the hearing, to be referred to as the "Licence Phase", the Board will hear evidence respecting the applications for licences for the export of natural gas made under Part VI of the National Energy Board Act and the application by ICG Transmission Limited for a certificate of public convenience and necessity under Part III of the Act. The second phase of the hearing, to be referred to as the "Certificate Phase", will consider the applications of Q & M and TransCanada for certificates of public convenience and necessity under Part III of the Act. Procedural orders will be issued by the Board with respect to the conduct of the hearing.

2. Any respondent or intervenor intending to oppose or intervene in the hearing shall file on or before the 8th day of June, 1979, with the Secretary of the Board, thirty-five (35) copies of a written statement, in either of the two official languages, containing his reply or submission, together with any supporting information, particulars, or documents, which shall contain a concise statement of the facts from which the nature of the respondent's or intervenor's interest in the proceedings may be determined; which shall indicate whether the respondent or intervenor is interested in intervening in both phases of the hearing or only in the Licence Phase or in the Certificate Phase; which may admit or deny any or all of the facts

alleged in any of the applications in which the intervenor is interested; which shall be endorsed with the name and address of the respondent or intervenor or his solicitor to whom communications may be sent; and which shall state in which of the two official languages the party wishes to be heard. Any respondent or intervenor shall, in addition, serve, on or before the 8th day of June, 1979, three (3) copies of his reply or submission and supporting information upon each of the Applicants in the phase or phases of the hearing in which he is interested and one (1) copy each upon the Attorneys General of all of the provinces of Canada; the British Columbia Energy Commission; the Energy Resources Conservation Board of Alberta; the Ontario Energy Board; Régie de l'electricité et du gaz du Québec; and the Canadian Federation of Agriculture.

3. Any interested party may examine all of the applications at the offices of the National Energy Board, Trebla Building, 473 Albert Street, in the City of Ottawa, in the Province of Ontario, and 205 Fifth Avenue S.W., Room 3020, Bow Valley Square II, in the City of Calgary, in the Province of Alberta, and individual applications of the respective Applicants at the following addresses:

Alberta and Southern Gas Co. Ltd.,
Alberta and Southern Building,
240 Fourth Avenue S.W.,
Calgary, Alberta.
T2P 0H5

Canadian-Montana Pipe Line Company,
4th Floor,
Humford Building,
608 - Seventh Street S.W.,
Calgary, Alberta.
T2P 1Z1

Consolidated Natural Gas Limited,
1300 Elveden House,
717-7th Avenue S.W.,
Calgary, Alberta.
T2P 0Z3

Columbia Gas Development of Canada Ltd.,
1000 Standard Life Building,
639 - 5th Avenue S.W.,
Calgary, Alberta.
T2P 0M9

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ICG Transmission Limited,
Inter-City Gas Building,
1800 - 444 St. Mary Avenue,
Winnipeg, Manitoba.
R3C 3T7

Niagara Gas Transmission Limited,
Suite 4200,
P.O. Box 90,
1 First Canadian Place,
Toronto, Ontario.
M5X 1C5

ProGas Limited,
#820, 444-5th Avenue S.W.,
Calgary, Alberta.
T2P 2V1

Pan-Alberta Gas Ltd.,
350, 202 Sixth Avenue S.W.,
Calgary, Alberta.
T2P 2R9

Sulpetro Limited,
3300 Bow Valley Square 2,
205 Fifth Avenue S.W.,
Box 9115,
Calgary, Alberta.
T2P 2W4

Westcoast Transmission Company Limited,
1333 West Georgia Street,
Vancouver, British Columbia.
V6E 3K9

Q & M Pipe Lines Ltd.,
202 Sixth Avenue S.W.,
1710 Bow Valley Square One,
P.O. Box 2535,
Calgary, Alberta.
T2P 2N6
or
Q & M Pipe Lines Ltd.,
620 Crown Trust Building,
1130 Sherbrooke Street West,
Montreal, Quebec.
H3A 2M8

TransCanada PipeLines Limited,
P.O. Box 54,
Commerce Court West,
Toronto, Ontario.
M5L 1C2

57-087 0 - 80 - 64

In addition, any interested party may examine the applications for certificates of public convenience and necessity of Q & M and TransCanada at the following locations:

Quebec Public Service Board,
2875 Laurier Boulevard,
Quebec, Quebec.
G1A 1G8

Board of Commissioners of Public Utilities,
110 Charlotte Street,
Saint John, New Brunswick.
E2L 2J4

Board of Commissioners of Public Utilities,
1526 Dresden Row,
Halifax, Nova Scotia.
B3J 3G7

DATED at the City of Ottawa, in the Province of Ontario, this 7th day of May, 1979.

NATIONAL ENERGY BOARD

Brian H. Whittle,
Secretary.

NATIONAL ENERGY BOARD — CANADA — OFFICE NATIONAL DE L'ÉNERGIE

ORDER NO. RH-2-79

IN THE MATTER OF the National Energy Board Act and the Regulations made thereunder, and the Northern Pipeline Act; and

IN THE MATTER OF a public hearing respecting tariffs, tolls to be charged by Foothills Pipeline (Yukon) Ltd. (hereinafter referred to as Foothills), the financing of the pipeline, and other related matters. File No.: 1510-2-2.

B E F O R E the Board on Thursday, the 12th day of April, 1979.

WHEREAS pursuant to the National Energy Board Act, the tolls to be charged by Foothills must be just and reasonable,

AND WHEREAS pursuant to the Northern Pipeline Act, the Board may approve the form and content of a tariff filed at the time the financing of the pipeline is being considered,

AND WHEREAS Foothills has filed a submission on the form and content of the tariff for the pipeline dated 21 March 1979 and, at the request of the Board, additional information dated 21 March 1979,

AND WHEREAS Foothills has applied to have certain expenses incurred prior to 1 January 1979 included in its rate base,

AND WHEREAS the National Energy Board has issued a "Proposed Method for the Regulation of Tolls and Tariffs of the Foothills Pipeline", on 18 April 1979, and wishes to receive the views of Foothills and interested parties on this proposal,

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AND WHEREAS the National Energy Board has issued a "Proposed Approach to Incentive Rate of Return for the Northern Pipeline" on 5 October 1978 and has received submissions on it and reissued its "Proposed Approach to Incentive Rate of Return for the Northern Pipeline" on 24 January 1979, and deems it desirable to hold a public hearing for the purpose of issuing regulations on the Incentive Rate of Return scheme,

AND WHEREAS Foothills has announced its intent to prebuild the southern segments of the pipeline, for which segments the form and content of the tariff and the tolls to be charged during the initial period may be different from those during the later period when Alaskan gas is flowing,

AND WHEREAS the financing of the pipeline including any prebuilt segments has not yet been established to the satisfaction of the Board pursuant to condition 12 of Schedule III of the Northern Pipeline Act,

IT IS ORDERED THAT

1. A public hearing shall be held in the Hearing Room of the National Energy Board, Trebla Building, 473 Albert Street, in the City of Ottawa, in the Province of Ontario, commencing on Tuesday the 12th day of June, 1979, at 9:30 a.m. local time, for the purpose of hearing evidence respecting tariffs and tolls to be charged by Foothills, the Incentive Rate of Return scheme,

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financing of the pipeline, and related matters. Such proceedings will be conducted in either of the two official languages, and simultaneous interpretation will be provided should a party to the proceedings request such facilities in his intervention.

2. Evidence and submissions shall be heard in three Phases:

PHASE I -

(a) to enable the Board to determine whether the National Energy Board's Proposed Method for the Regulation of Tolls and Tariffs of the Foothills Pipeline, dated 18 April 1979, is an appropriate method for regulating Foothills' transportation tolls and charges; and

(b) to enable the Board to determine whether the form and content of the Proposed Tariff, filed on 21 March 1979 by Foothills Pipe Lines (Yukon) Ltd., is an appropriate method to use in the determination of just and reasonable transportation tolls for the movement of gas through Zones 1 to 11 of the Canadian Segment of the Alaska Highway Gas Pipeline System;

(c) to enable the Board, upon reading Foothills' application dated 12 April 1979, to determine whether certain preliminary expenditures made up to 31 December 1978, as recorded on the books of account of The Alberta Gas Trunk Line Company Limited, Westcoast Transmission Company Limited, Alberta Natural Gas Company Ltd., Foothills Pipe

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Lines Ltd. and Foothills Pipe Lines (Yukon) Ltd. and its subsidiary companies, up to that date, qualify for inclusion in the Rate Base of Foothills Pipe Lines (Yukon) Ltd. and its subsidiary companies for the Alaska Highway Gas Pipeline System in Canada;

PHASE II

(d) to enable the Board to determine whether the form and content of the Proposed Tariff, to be filed by Foothills by 1 May 1979, is an appropriate method to use in the determination of just and reasonable tolls for the movement of Alberta gas through the proposed southern portion (the portion to be prebuilt) of the Alaska Highway Gas Pipeline System.

PHASE III -

(e) to finalize the approach to Incentive Rate of Return for the Northern Pipeline; and

(f) to establish to the satisfaction of the Board that financing has been obtained for the pipeline and for any prebuilt sections of the pipeline, pursuant to Condition 12 of Schedule III of the Northern Pipeline Act.

The date for the commencement of Phase II and Phase III will be announced later.

3. Foothills shall serve, as soon as possible, but not later than 15 May 1979, a true copy of the form and content of the

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tariff for the pipeline; the form and content of the tariff relating to prebuilt sections of the pipeline; the Board's Proposed Method for the Regulation of Tolls and Tariffs of the Foothills Pipeline, dated 18 April 1979; Foothills' application, dated 12 April 1979, which includes statements of preliminary expenditures on the Alaska Highway Gas Pipeline Project, as recorded on the books of account of the companies referred to in paragraph 2(a), together with a copy of the NEB audit report on these expenditures; the Board's Proposed Approach to Incentive Rate of Return for the Northern Pipeline, dated 24 January 1979; and a true copy of this Order upon all of its potential shippers and customers in Canada and the United States, upon the Attorneys-General of the Provinces of British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, and Quebec, upon the Commissioner of the Yukon and the Commissioner of the Northwest Territories, and upon the United States Federal Energy Regulatory Commission, and, as soon as may be possible, upon those persons who have intervened pursuant to paragraph (5) hereof, and Foothills shall file proof of service thereof with the Board at the opening of the hearing.

4. Notice of the said hearing in the form prescribed by the Board, as set forth in the Notice attached to and forming part of this Order, shall be published on or before the 27th day of April, 1979, in one issue of each of "The Colonist" in the

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City of Victoria, in the Province of British Columbia; "The Herald" in the City of Calgary and "The Journal" in the City of Edmonton, both in the Province of Alberta; "The Leader-Post" in the City of Regina, in the Province of Saskatchewan; "The Free Press" in the City of Winnipeg, in the Province of Manitoba; "The Globe and Mail" and "The Financial Post" in the City of Toronto, and "The Citizen" and "Le Droit" in the City of Ottawa, all in the Province of Ontario; "The Gazette", "Le Devoir", and "Financial Times of Canada" in the City of Montreal, in the Province of Quebec; and as soon as may be possible in the Canada Gazette.

5. Any respondent or intervenor intending to oppose or intervene in the said hearing shall, on or before the 1st day of June 1979, file with the Secretary of the Board thirty (30) copies of a written statement, in either of the two official languages, containing his reply or submission, together with any supporting information, particulars or documents, which shall include a concise statement of the facts from which the nature of the respondent's or intervenor's interest in the proceedings may be determined, which may admit or deny any or all of the facts alleged in the submission and/or additional information filed by Foothills, and which shall be endorsed with the name and address of the respondent or intervenor or his solicitor to whom

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communications may be sent. Any respondent or intervenor shall, on or before the 1st day of June, 1979, serve three (3) copies of his reply or submission and supporting information, particulars or documents upon Foothills and one (1) copy each upon the Attorneys-General of the Provinces of British Columbia, Alberta, Saskatchewan, Manitoba, Ontario and Quebec, the Commissioner of the Yukon Territory, the Commissioner of the Northwest Territories, and the United States Federal Energy Regulatory Commission.

6. In order to make potential interested parties in the United States aware of the proceedings, the National Energy Board has served copies of the notice of this hearing on all parties of record in the United States Federal Regulatory Commission Docket CP 78-123 et al, a proceeding on the United States portion of the Alaska Highway Gas Pipeline Project.

7. The National Energy Board Rules of Practice and Procedure shall apply mutatis mutandis to the proceedings.

8. Any interested party may examine a copy of the submission and additional information filed by Foothills as well as the Board's documents referred to in this Order at the office of:

National Energy Board,
Trebla Building,
473 Albert Street,
Ottawa, Ontario
K1A 0E5

or at the following addresses:

...8

Foothills Pipe Lines (Yukon) Ltd.,
1600 Bow Valley Square II,
205 - Fifth Avenue S.W.,
Calgary, Alberta
T2P 2W4

Alaska Gas Project Office,
Federal Energy Regulatory Commission,
941 North Capitol Street, N.E.,
Room 3004,
Washington, D.C.
20426

DATED at the City of Ottawa, in the Province of Ontario, this 12th day of April, 1979.

NATIONAL ENERGY BOARD

B.H. Whittle

Brian H. Whittle,
Secretary

NATIONAL ENERGY BOARD
NOTICE OF HEARING
IN THE MATTER OF TOLLS, TARIFFS AND FINANCING OF
FOOTHILLS PIPE LINES (YUKON) LTD.

WHEREAS pursuant to the National Energy Board Act, the tolls to be charged by Foothills must be just and reasonable,

AND WHEREAS pursuant to the Northern Pipeline Act, the Board may approve the form and content of a tariff filed at the time the financing of the pipeline is being considered,

AND WHEREAS Foothills has filed a submission on the form and content of the tariff for the pipeline dated 21 March 1979 and, at the request of the Board, additional information dated 21 March 1979,

AND WHEREAS Foothills has applied to have certain expenses incurred prior to 1 January 1979 included in its rate base;

AND WHEREAS the National Energy Board has issued a "Proposed Method for the Regulation of Tolls and Tariffs of the Foothills Pipeline", on 18 April 1979, and wishes to receive the views of Foothills and interested parties on this proposal,

AND WHEREAS the National Energy Board has issued a "Proposed Approach to Incentive Rate of Return for the Northern Pipeline" on 5 October 1978 and has received submissions on it and reissued its "Proposed Approach to Incentive Rate of Return for the Northern Pipeline" on 24 January 1979, and deems it desirable to hold a public hearing for the purpose of issuing regulations on the Incentive Rate of Return scheme,

.../2

AND WHEREAS Foothills has announced its intent to prebuild the southern segments of the pipeline, for which segments the form and content of the tariff and the tolls to be charged during the initial period may be different from those during the later period when Alaskan gas is flowing,

AND WHEREAS the financing of the pipeline including any prebuilt segments has not yet been established to the satisfaction of the Board pursuant to condition 12 of Schedule III of the Northern Pipeline Act,

TAKE NOTICE that the Board has ordered that a public hearing shall be held commencing on Tuesday, the 12th day of June, 1979, at 9:30 a.m. in the Hearing Room of the National Energy Board, Trebla Building, 473 Albert Street, in the City of Ottawa, in the Province of Ontario for the purpose of hearing evidence respecting tariffs and tolls charged by Foothills, the Incentive Rate of Return scheme, financing, and other related matters. Such proceeding will be conducted in either of the two official languages and simultaneous interpretation will be provided should a party to the proceedings request such facilities in his intervention.

AND THE BOARD HAS FURTHER ORDERED THAT:

1. Evidence and submissions shall be heard in three phases:

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PHASE I -

(a) to enable the Board to determine whether the National Energy Board's Proposed Method for the Regulation of Tolls and Tariffs of the Foothills Pipeline dated 18 April 1979 is an appropriate regulatory method for regulating Foothills' transportation tolls and charges; and

(b) to enable the Board to determine whether the form and content of the Proposed Tariff for the pipeline, filed on 21 March 1979 by Foothills Pipe Lines (Yukon) Ltd., is an appropriate method to use in the determination of just and reasonable transportation tolls for the movement of gas through Zones 1 to 11 of the Canadian Segment of the Alaska Highway Gas Pipeline System;

(c) to enable the Board, upon reading Foothills application dated 12 April 1979, to determine whether certain preliminary expenditures made up to 31 December 1978, as recorded in the books of account of The Alberta Gas Trunk Line Company Limited, Westcoast Transmission Company Limited, Alberta Natural Gas Company Ltd., Foothills Pipe Lines Ltd. and Foothills Pipe Lines (Yukon) Ltd. and its subsidiary companies, up to that date, qualify for inclusion in the Rate Base of Foothills Pipe Lines (Yukon) Ltd. and its subsidiary companies for the Alaska Highway Gas Pipeline System in Canada;

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PHASE II -

(d) to enable the Board to determine whether the form and content of the Proposed Tariff, to be filed by Foothills by 1 May 1979 is an appropriate method to use in the determination of just and reasonable tolls for the movement of Alberta gas through the proposed southern portion (the portion to be prebuilt) of the Alaska Highway Gas Pipeline System;

PHASE III -

(e) to finalize the approach to Incentive Rate of Return for the Northern Pipeline; and

(f) to establish to the satisfaction of the Board that financing has been obtained for the pipeline and for any prebuilt sections of the pipeline, pursuant to Condition 12 of Schedule III of the Northern Pipeline Act.

The date for the commencement of Phase II and Phase III will be announced later.

2. Any respondent or intervenor intending to oppose or intervene in the said hearing shall on or before the 1st day of June, 1979, file with the Secretary of the Board thirty (30) copies of a written statement, in either of the two official languages, containing his reply or submission together with any supporting information, particulars or documents, which shall include a concise statement of the facts from which the nature of

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the respondent's or intervenor's interest in the proceedings may be determined, which may admit or deny any or all of the facts alleged in the submission and/or additional information filed by Foothills and which shall be endorsed with the name and address of the respondent or intervenor or his solicitor to whom communications may be sent. Any respondent or intervenor shall, on or before the 1st day of June 1979, serve three (3) copies of his reply or submission and supporting information, particulars or documents upon Foothills and one (1) copy upon each of the Attorneys-General of the Provinces of British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, and Quebec, upon the Commissioner of the Yukon Territory and the Commissioner of the Northwest Territories, and upon the United States Federal Energy Regulatory Commission,

3. In order to make potential interested parties in the United States aware of the proceedings, the National Energy Board has served copies of the notice of this hearing on all parties of record in the United States Federal Regulatory Commission Docket CP 78-123 et al, a proceeding on the United States portion of the Alaska Highway Gas Pipeline Project.

4. The National Energy Board Rules of Practice and Procedure shall apply mutatis mutandis to the proceedings.

5. Any interested party may examine copies of

(a) the submission and additional information filed by Foothills on the form and content of the tariff.

.../6

(b) Foothills' application, dated 12 April 1979 and the Board's audit report on the preliminary expenditures as recorded in the books of account of The Alberta Gas Trunk Line Company Limited, Westcoast Transmission Company Limited, Alberta Natural Gas Company Ltd., Foothills Pipe Lines Ltd., and Foothills Pipe Lines (Yukon) Ltd. and its subsidiary companies, up to 31 December 1978, which may qualify for inclusion in the Rate Base of Foothills Pipe Lines (Yukon) Ltd. and its subsidiary companies on the Alaska Highway Gas Pipeline System;

(c) the National Energy Board's proposals concerning the regulation of tolls and tariffs, the incentive rate of return scheme, and submissions received, at the office of

National Energy Board,
Trebla Building,
473 Albert Street,
Ottawa, Ontario
K1A 0E5

or at the following addresses:

Foothills Pipe Lines (Yukon) Ltd.,
1600 Bow Valley Square II,
205 - Fifth Avenue S.W.,
Calgary, Alberta
T2P 2W4

Alaska Gas Project Office,
Federal Energy Regulatory Commission,
941 North Capitol Street, N.E.,
Room 3004,
Washington, D.C.
20426

DATED at the City of Ottawa, in the Province of Ontario, this 12th day of April, 1979.

NATIONAL ENERGY BOARD

Brian H. Whittle
Secretary

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

ANGTS

Before Commissioners: Charles B. Curtis, Chairman;
Georgiana Sheldon, and Matthew Holden, Jr.

Alaskan Northwest Natural Gas Transportation Company-- Pipeline Design and Capacity	)	Docket Nos. CP78-123, et al.

ORDER APPROVING ALASKA SEGMENT DESIGN SPECIFICATIONS AND INITIAL SYSTEM CAPACITY

(Issued August 6, 1979)

On March 2, 1979, Alaskan Northwest Natural Gas Transportation Company (Alaskan Northwest) filed an application pursuant to the Alaska Natural Gas Transportation Act of 1976 (ANGTA), the President's Decision 1/ and Section 7 of the Natural Gas Act, requesting that the Commission issue an order setting the design specifications and initial capacity for the Alaskan segment of the Alaska Natural Gas Transportation System. Notice of the application was issued on March 16, 1979. 2/ On May 17, 1979, the Commission issued an Order serving on all parties a copy of the Report of the Alaskan Delegate on the System Design Inquiry, 3/ and inviting comments on the Report as well as on Alaskan Northwest's application. Comments were received from Alaskan Northwest, the State of Alaska, and Earth Resources

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1/ Executive Office of the President, Energy Policy and Planning, Decision and Report to Congress on the Alaska Natural Gas Transportation System (September, 1977).

2/ The Notice was published in the Federal Register on March 26, 1979 (44 FR 18060).

3/ The Delegate's Report addressed the matters which were the subject of the application, i.e., the diameter of and maximum allowable operating pressure of the pipeline.

DC-B-23

Company of Alaska. The May 17 Order also specified a procedure by which a hearing could be requested on the factual questions involved in determining the diameter and operating pressure of the pipeline. No party has requested such a hearing pursuant to the procedures specified.

The Delegate's Report contained a review of the relevant portions of the President's *Decision*, and the Report accompanying the *Decision*, that bear upon these issues, as well as various studies, reports, and comments that were considered by the Delegate in evaluating the design specifications for the pipeline. The Delegate's Report, including all of the materials cited or used in the preparation of the Report, 4/ and the application of Alaskan Northwest and exhibits thereto, along with the comments received in response to the May 17 Notice, constitute the record in this proceeding.

The Delegate's essential conclusions and recommendations in his Report were that the President's *Decision* set the diameter of the pipe at 48 inches, that the maximum allowable operating pressure should be set at 1260 psig, and that the carbon dioxide

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4/ These materials include, *inter alia*, written comments (including information responses) received by the Delegate during the course of preparation of an earlier draft of his Report, that earlier draft report, the comments received on that draft, the transcript of the conference he held, and various studies he had consulted in reaching his conclusions. Those studies include, *inter alia*, "September 1978 Study Report, Sales Gas Conditioning Facilities, Prudhoe Bay, Alaska," prepared by the Ralph M. Parsons Company, and sponsored by a group of North Slope producers and potential shippers of the gas; that study was made available to the Delegate and to other government representatives in early October, 1978. As indicated in the Report, all of these materials are maintained in a public file in the Delegate's office, as required by the Commission's Order of December 16, 1977, and have been available for reference and inspection by all parties.

content of the gas stream should be considered in a separate order. 5/ The specifications recommended by the Delegate are the same as those proposed by Alaskan Northwest in its application, 6/ and are also the same as those in the Alcan proposal approved by the President's Decision.

The President's Decision decided that the diameter of the pipeline will be 48 inches. 7/ Moreover, the Decision creates a predisposition that the 1260 psig system is the one authorized by the President and the Congress, by stating that the facilities approved and subject to the provisions of ANGTA are those included in the revised Alcan filing submitted to the Federal Power Commission (FPC) on March 8, 1977. 8/ The Alcan proposal was to operate the pipeline at a maximum pressure of 1260 psig. The language in the Report accompanying the Decision suggesting that

> . . . Alcan should consider increasing the operating pressure and wall thickness of its 48-inch diameter pipeline in order to allow for more efficient increases in throughput rate for additional reserves which might be committed to the system from either Alaskan or Canadian sources. . . 9/

5/ The Commission's May 17 Order stated that the carbon dioxide content issue would not be decided in response to comments received in this proceeding. On May 16, 1979, the Commission issued an order in Docket No. RM78-12, requesting submission in that docket of studies and comments with respect to the carbon dioxide content issue.

6/ Alaskan Northwest also seeks authorization for their proposed compressor station size and spacing. These were not addressed in the Delegate's Report but were part of the Alcan proposal. No comments were received on that subject.

7/ Decision at 13: "the gas transportation system will utilize a 48-inch diameter pipeline from Prudhoe Bay to James River, Alberta . . . except as modifications to those facilities are required by the Agreement on Principles between the U.S. and Canada. . ."

8/ Decision at 13.

9/ Report accompanying Decision at 193.

would make the predisposition a rebuttable one on appropriate showings. The President's Decision also stated that the capacity of the system should be adequate for an average daily throughput of up to 2.4 billion cubic feet per day (Bcfd), and with increased compression, capable of increasing to an average daily capacity of 3.2 Bcfd. 10/ Those requirements would be satisfied by a combination of 48-inch pipe and 1260 psig pressure. The comments did not offer any new information as to the amount of gas that is expected to be available for transportation through the pipeline, nor any other information that would call for a different conclusion about the required capacity of the pipeline from that stated in the President's Decision.

The choice of operating pressure is important, not only because of the relationship of the pressure to the capacity throughput of the pipeline, but also because there is some relationship between the pressure and the ability of the gas stream to carry natural gas liquids. This latter relationship was the major focus of the comments received from the State of Alaska and Earth Resources. The State of Alaska 11/ expressed concern about the ability of the gas stream to carry natural gas liquids because Alaska would like to preserve the option of developing, in Alaska, a world-class petrochemical industry using the natural gas liquids. Alaska is concerned that an operating pressure of 1260 psig, in conjunction with other factors, such as the standard for carbon dioxide content in the gas stream and the type of process utilized for carbon dioxide removal, could preclude the development of a petrochemical industry in Alaska. Alaska is also concerned about the location of the conditioning facility, and believes that alternative sites (i.e., other than Prudhoe Bay) for the facility should be given serious consideration, either in this proceeding or in connection with the

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10/ Decision at 13, 17.

11/ The State of Alaska filed two sets of comments, one on April 5, 1979, and another on July 2, 1979.

environmental analysis. 12/ The decision as to operating pressure bears upon the location of the conditioning facility because one proposal, involving location of the facility in Fairbanks, would require a higher operating pressure between Prudhoe Bay and Fairbanks. 13/

The comments filed by Earth Resources also focused upon the location of the conditioning facility, and supported locating the facility at Fairbanks. Both Earth Resources and Alaska referred to a study which purportedly shows that the costs of constructing the conditioning facility in Fairbanks would be lower than the costs of constructing it at Prudhoe Bay. 14/

The Delegate's Report indicates that the amount of natural gas liquids carried in the gas stream is dependent upon the carbon dioxide content of the gas as well as the pressure. 15/ The Commission has previously indicated, by its Order issued May 16, 1979 in Docket Nos. RM78-12 and RM 79-19, that it will decide the appropriate carbon dioxide standard in an order to be issued in Docket No. RM78-12. For the reasons stated below, the Commission prefers to consider the complex liquids carrying issue in the context of the carbon dioxide proceeding rather than delaying a decision on the pressure.

No party questions the choice of 48 inches as the appropriate diameter for the pipe. In its comments Alaska does not specifically oppose the choice of 1260 psig as the appropriate pressure, nor does Alaska specifically advocate any particular alternative pressure. Instead, the basic thrust of Alaska's position is that the issue of the appropriate pressure is complex; that it is related to other issues, such as the liquids carrying capacity of the pipeline, the carbon dioxide content of the gas stream, and the various facilities that might be appropriate for processing and conditioning the gas; and that the Commission ought to delay its decision pending further factual inquiry.

12/ The Draft Environmental Impact Statement assessing *inter alia* the alternative sites for the conditioning facility was issued July 27, 1979.

13/ Comments of Earth Resources Company of Alaska (July 2, 1979).

14/ Other evidence in the record indicates the contrary. See the Delegate's Report at pp. 9-10, 12.

15/ Delegate's Report at pp. 19-21, 61-66.

Docket Nos. CP78-123,
et al.

Alaskan Northwest, the project sponsor, specifically advocates the selection of 1260 psig as the appropriate operating pressure, and indeed, as discussed above and in the Delegate's Report, the President's Decision itself creates a strong presumption in favor of that choice. The record before us supports the choice of 1260 psig, and does not support any other choice.

The basic issue, therefore, is whether the Commission should decide the pressure now, or delay its decision pending further proceedings to compile a more extensive record. In this regard, Alaskan Northwest states in its comments that a choice of any pressure other than 1260 psig would substantially delay the project:

> . . . The partnership continues to assume the pipe size, design pressure and system capacities for which approval has been requested in connection with engineering, test programs, and field programs which have been completed and are currently in progress. Any deviation from these specifications will result in a major delay of the project.

In light of the presumptions set forth in the President's Decision, the partnership's reliance on its stated assumptions was certainly reasonable and well founded.

We would also note that the design of the system has a direct bearing on its cost, that a decision on the operating pressure is an essential predicate to refining the design, and that the project sponsors' ability to prepare detailed cost estimates has an obvious bearing on their ability to proceed with arrangements to obtain financing for the project. Thus, a delay in determining the pressure could have serious and wide ranging consequences in delaying the entire project.

The Congress, through its enactment of ANGTA, and the President, through his Decision, have declared the ANGTS to be uniquely important to our nation's ability to obtain new sources of domestic energy. The entire thrust and purpose of ANGTA, as well as its explicit mandate, is to expedite the authorization, construction and operation of the ANGTS. Thus, the one decision that we cannot and will not make is a decision to delay making a decision.

We recognize that our decision may have some effect on the liquids carrying capacity of the pipeline, but the capacity is also affected by other factors, such as the carbon dioxide content of the gas stream as well as the nature of the conditioning and processing facilities. We also recognize that our decision may have some effect on the location of those facilities. All of those considerations, however, are secondary consequences of our decision. In light of the President's Decision, the overriding consideration in determining the operating pressure of the pipeline is the pipeline's throughput capacity. 16/ As discussed above, absent evidence as to a need for increased capacity, the President's Decision creates a presumption that the operating pressure should be 1260 psig. There is no evidence in the record that the volume of gas expected to be transported through the pipeline from Prudhoe Bay has changed such as to indicate that increased pressure, and thereby increased capacity, are required. Accordingly, upon consideration of the record, the Commission has determined that the Alaska segment of the ANGTS should be operated at a maximum allowable operating pressure of 1260 psig.

The Commission finds:

The design specifications and initial system capacity for the Alaskan segment of the Alaskan Natural Gas Transportation System, as proposed by Alaskan Northwest in its application filed on March 2, 1979, are required by the public convenience and necessity and should be incorporated as part of the conditional certificate of public convenience and necessity issued by the Order of December 16, 1977 in this docket.

The Commission orders:

(A) The design specifications for the Alaskan segment of the Alaskan Natural Gas Transportation System shall be as follows:

1. 48-inch diameter pipe size;

2. 1260 psig maximum allowable operating pressure;

16/ See Delegate's Report at p. 58.

Docket Nos. CP78-123,
et al.

3. compressor station size and spacing for an initial capacity of 2.0 to 2.4 Bcfd capable of expansion, through additional compression, to an an average daily volume of 3.2 Bcfd;

all as proposed by the application filed on March 2, 1979, in this docket.

(B) The requirements of ordering paragraph (A) above shall be incorporated into the conditional certificate of public convenience and necessity issued by the Commission's Order of December 16, 1977 in this docket, pursuant to the provisions of the Alaskan Natural Gas Transportation Act, the President's Decision, and the Natural Gas Act.

(C) This Order shall become effective on its date of issuance. Pursuant to sections 9 and 10 of the Alaska Natural Gas Transportation Act, this Order constitutes final agency action and is not subject to the provisions for rehearing set forth in § 19 of the Natural Gas Act and in § 1.34 of the Commission's Rules of Practice and Procedure.

By the Commission.
(S E A L)

Lois D. Cashell,
Acting Secretary.

STATEMENT FOR THE RECORD

BY

BRIGADIER GENERAL HUGH G. ROBINSON

DEPUTY DIRECTOR OF CIVIL WORKS

OFFICE, CHIEF OF ENGINEERS

DEPARTMENT OF THE ARMY

BEFORE THE

SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

UNITED STATES HOUSE OF REPRESENTATIVES

FIRST SESSION, 96TH CONGRESS

16 OCTOBER 1979

ALASKA NATURAL GAS TRANSPORTATION SYSTEM

NOT FOR PUBLICATION
UNTIL RELEASED BY THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
UNITED STATES HOUSE OF REPRESENTATIVES

Mr. Chairman and Members of the Subcommittee:

I am Brigadier General Hugh G. Robinson, Deputy Director of Civil Works, Office of the Chief of Engineers, Department of the Army. I am accompanied by COL Robert Bauchspies, also from the Office, who was recently assigned as Agency Authorized Officer (AAO).

I appreciate the opportunity to appear at these hearings on the Alaska Natural Gas Transportation System (the System) and to make a statement on behalf of the Chief of Engineers, U.S. Army. I will briefly outline the Corps of Engineers role in the System and relate our participation in some of the various interagency activities which have taken and are taking place, and which relate to the planning for a natural gas pipeline system from the State of Alaska to the lower 48 states.

Historically, the Corps of Engineers role evolved from Congressional enactment of the Alaska Natural Gas Transportation Act of 1976 (Public Law 94-586). Although this Act did not assign a specific role to the Corps, it did make clear that Federal agencies, such as the Corps of Engineers, were to assist the then Federal Power Commission and the President, within the scope of their existing statutory authorities, in carrying out their respective responsibilities pursuant to the Act. Further, Public Law 94-586 indicated clearly that actions necessary or related to the construction and initial operation of the approved transportation system, such as the issuance of permits under the statutory regulatory program of the Corps of Engineers, would continue to be an agency responsibility but would also be expedited and take precedence over other similar permit actions before the agency.

Subsequent to the 1976 Act, the President's Decision and Report on the Alaska Natural Gas Transportation System to the Congress on 22 September 1977, and the approval by the Congress of the President's decision by enactment of Public Law 95-158, approved 8 November 1977, the Executive Policy Board (EPB) envisioned in the 1976 Act came into existence on an Ad Hoc basis. The Corps of Engineers, the Environmental Protection Agency, the Federal Energy Regulatory Commission, and the Departments of Transportation and Energy were the first members of the EPB. The Corps was active in all aspects of the work of the EPB to include, of particular relevance to these hearings, active participation in the technical advisory committee to include - by mid 1978 - one technical subcommitee concerned with permafrost and another technical subcommittee concerned with geology.

At the request of representatives of the Department of the Interior, a multi-disciplinary Working Group has been meeting since first convened in Salt Lake City, Utah, in May 1979, to make a technical review of a request in December 1978 by the Northwest Alaskan Pipeline Company (NAPLINE) for provisional approval by the Department of the Interior of its alignment (route) in Alaska. Members of the Corps of Engineers are actively contributing to this effort with the Geotechnical Group (1 of 8 groups) chaired by a Corps of Engineers representative.

With Congressional approval of Reorganization Plan No. 1 of 1979 (Office of the Federal Inspector for Construction of the Alaska Natural Gas Transportation System) by 31 May 1979, and by virtue of Executive Order 12142, The Alaska Natural Gas Transportation System, dated 21 June 1979, the role of the Corps of Engineers changed from that of an active agency participant in interagency technical review and study activities and membership on an Ad Hoc Executive Policy Board to that of full membership by Presidential designation on an Executive Policy Board with a specific charter and a concurrent responsibility to appoint an Agency Authorized Officer. Specifically, since 1 July 1979 (the effective date of both the Reorganization Plan and the Executive Order), the role of the Corps of Engineers (acting through the Chief of Engineers) is to serve on a Board which is responsible for advising the Federal Inspector "on policy issues in accord with applicable law and existing Departmental or Agency policies" and for appointing an Agency Authorized Officer "to represent that authority on all matters pertaining to preconstruction, construction, and initial operation of the system."

This Subcommittee knows, of course, that the Senate confirmed John T. Rhett to be Federal Inspector for the Alaska Natural Gas Transportation System on 12 July 1979. There has been an exchange of ideas between the Chief of Engineers and the Federal Inspector and members of their staffs, upon the Federal Inspector's initiative, with a view to identifying areas in which the Corps of Engineers could - as a Federal agency - provide technical assistance within its many areas of engineering and related expertise to the Federal Inspector and his Office on matters pertaining to the preconstruction, construction, and initial operation of the System.

At the moment, the Corps of Engineers is working with the Federal Inspector to achieve a formal agreement for the Corps to provide cold weather engineering technical support to the Federal Inspector on frost heave problems and provide assistance in the review and design of a cost/schedule control system for the Federal Inspector's Office while further exploring means to provide Corps support on such matters as the review of engineering designs, plans, and specifications; field enforcement of permits and other authorizations (including their terms and conditions); and audit and cost control including application of the incentive rate of return.

In summary, the Corps of Engineers (acting through the Chief of Engineers) currently occupies a policy advisory role through its membership on the recently established Executive Policy Board and is represented within the Alaska Natural Gas Transportation System through its appointed Agency Authorized Officer. The Corps is ready to provide, and to study further means of providing, technical assistance support to the Federal Inspector and his Office as determined to be necessary, and requested, by the Federal Inspector in the public interest for the economical and expeditious completion of the approved transportation system.

This concludes my statement. I will be glad to answer any questions that you may have. Thank you.