Arctic Gas

... a brief summary
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THE NEED FOR ENERGY

Canada needs new supplies of energy to
-- meet demand growth;
-- offset declining supplies of our principal
source of energy, oil and natural gas from the
western provinces.

Western Canada oil production has amounted to
about half of Canada's total energy needs; natural
gas supplies one-quarter.

New reserves of oil and natural gas are not
being found in the western provinces as fast as
they are being produced:

<table>
<thead>
<tr>
<th>Year</th>
<th>Proved Remaining Reserves of Oil and Gas Liquids in Western Canada</th>
<th>Remaining Reserves of Natural Gas in Western Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>10.4 billion bbls.</td>
<td>59.9 trillion cubic feet</td>
</tr>
<tr>
<td>1976</td>
<td>8.2 billion bbls.</td>
<td>59.2 trillion cubic feet</td>
</tr>
</tbody>
</table>

Source: Canadian Petroleum Association

Oil production has declined by nearly 25 percent
from its 1973 peak, and will drop nearly another
25 percent by 1985.

Western Canada Oil Production

1973 -- 1,963,000 barrels per day
1976 -- 1,434,000 barrels per day
1985 -- 1,084,000 barrels per day
1990 -- 757,000 barrels per day

Forecast: National Energy Board, 1976
In 1973, oil production exceeded demand for net exports of 300,000 b/d. In 1977, demand will exceed production, with net oil imports of 300,000 b/d, costing $1.8 billion per year.

Natural gas production from Western Canada is expected to follow a similar pattern, and peak in the early 1980's.

**Western Canada Gas Supply**

1973 -- 6.7 billion cubic feet per day
1976 -- 6.8 billion cubic feet per day
1980 -- 8.3 billion cubic feet per day
1985 -- 7.0 billion cubic feet per day
1990 -- 6.5 billion cubic feet per day

Forecast: National Energy Board, 1975

By 1985, total production of both oil and natural gas from western Canada is expected to be 25 percent below the 1973 peak rate:

**Combined Western Canada Oil & Gas Production**

1973 -- 3,100,000 barrels oil equivalent per day
1976 -- 2,600,000 barrels oil equivalent per day
1985 -- 2,300,000 barrels oil equivalent per day
1990 -- 1,900,000 barrels oil equivalent per day

Assuming domestic demand increases 3.5 percent annually, vs. 5.5 percent historically, supplies of oil and gas will fall short of matching 1985 domestic demand by an amount equivalent to one million barrels per day of oil.
Domestic Demand and Supply of Oil and Natural Gas

(millions of barrels per day of oil equivalent)

<table>
<thead>
<tr>
<th>Year</th>
<th>Domestic Demand</th>
<th>Western Canada Supply</th>
<th>Surplus (Deficit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973</td>
<td>2.3</td>
<td>3.1</td>
<td>0.8</td>
</tr>
<tr>
<td>1976</td>
<td>2.4</td>
<td>2.6</td>
<td>0.2</td>
</tr>
<tr>
<td>1985</td>
<td>3.3</td>
<td>2.3</td>
<td>(1.0)</td>
</tr>
<tr>
<td>1990</td>
<td>4.4</td>
<td>1.9</td>
<td>(2.5)</td>
</tr>
</tbody>
</table>

With an anticipated oil import price of at least $20 per barrel (compared with $14 per barrel now) the cost to import one million b/d of oil in 1985 would exceed $7.5 billion per year.
THE ENERGY ALTERNATIVES

In evaluating alternative sources of energy to supplement declining supplies of oil and gas from the western provinces, two important considerations are:

1) required capital investment, and
2) unit cost of the energy delivered to markets.

Transported by the proposed Arctic Gas pipeline, Delta gas would require less capital investment relative to the amount of daily supply than other major new sources of domestic energy, with the exception of synthetic oil from the Athabasca oil sands:

<table>
<thead>
<tr>
<th>Estimated Capital Investment Per Million BTU Daily Delivered Energy Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta gas*</td>
</tr>
<tr>
<td>Synthetic gas from coal</td>
</tr>
<tr>
<td>Synthetic oil from tar sands</td>
</tr>
<tr>
<td>Hydro-electric (James Bay project)</td>
</tr>
<tr>
<td>Nuclear-electric</td>
</tr>
<tr>
<td>Coal-fired thermal electric</td>
</tr>
</tbody>
</table>


*Capital investment of $9.8 billion for 2.25 bcf/d Delta gas, includes $3.94 billion in Arctic Gas pipeline allocable to Delta gas, plus exploration, production and other pipeline expansion. To produce same volume of daily energy supply would require investment of $65 billion based on James Bay unit costs, $34 billion for nuclear power, and $22 billion for thermal-electric power.
Including operating costs, the 1985 projected cost of imported oil is 20 percent more than the projected cost of Delta gas. The estimated cost of Athabasca tar sands oil is 33 percent more than Delta gas; synthetic gas from coal, 60 percent more; nuclear electric energy, 190 percent more.

<table>
<thead>
<tr>
<th>Cost in Market of Alternative Energy Supplies*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta gas</td>
<td>$3.00 per million BTU</td>
</tr>
<tr>
<td>Synthetic oil from oil sands</td>
<td>4.00</td>
</tr>
<tr>
<td>Synthetic gas from coal</td>
<td>4.80</td>
</tr>
<tr>
<td>Hydro-electric (James Bay)</td>
<td>8.00</td>
</tr>
<tr>
<td>Hydro-electric (Revelstoke)</td>
<td>3.40</td>
</tr>
<tr>
<td>Nuclear-electric</td>
<td>8.80</td>
</tr>
<tr>
<td>Thermal-electric</td>
<td>5.50</td>
</tr>
<tr>
<td>Imported oil</td>
<td>3.60</td>
</tr>
</tbody>
</table>

Source: Averaged figures from "An Analysis of Canada's Energy Alternatives."

Cost of $3.60 per million BTU for imported oil is based on projected 1985 cost of $21.00 per barrel f.o.b. Toronto city gate.

On a projected volume of 2.25 bcf/d of Delta gas, the cost of Delta gas in the market would be $40 million per day less than the cost of synthetic gas, for example.

*Representative costs valid only for order-of-magnitude comparison with Delta gas, reflecting minimum cost advantage anticipated for Delta gas. Costs based on published data. Actual costs and cost relationships could vary significantly, depending on timing and location of specific projects and other factors.
The market cost of domestic energy supplies includes benefits to the Canadian economy in terms of employment, government revenues and return on Canadian investment which are not reflected in the market cost of imported oil.

Although lower in cost, Delta gas obviously cannot meet the need for electric energy. But the cost comparisons do clearly confirm that Delta gas can meet requirements for space heating, water heating and some other requirements far more economically than electric energy.

Two other energy options are:

1) energy savings through conservation, and

2) renewable energy in addition to hydro and nuclear (solar, tidal, wind, geothermal, biomas).

The largest cost savings are those available through conservation. Conservation measures to reduce demand growth rates are essential, but cannot offset declining production of oil and gas from western Canada.

A 1976 study for the federal government (Canada's Renewable Energy Resources: An Assessment of Potential, Middleton and Associates; Toronto) estimates that "renewable sources could supply 2-4% of Canada's energy needs by 1990" and 20 percent or more by the year 2020.
THE DELTA GAS SUPPLY

"...natural gas clearly has to be one of our major options in reducing our dependence on foreign oil"--Energy Minister Alastair Gillespie to the House of Commons Standing Committee on Natural Resources and Public Works, March 8, 1977.

Natural gas provides one-quarter of all the energy used in Canada, but accounts for two-thirds of potential new oil and gas resources.

Thus, reducing dependence on foreign oil may well require increased utilization of natural gas.

The largest potential increase in Canada's natural gas supply lies in the area of northern Canada that would be connected with the proposed Arctic Gas pipeline.

The potential new gas supply that could be connected with the Arctic Gas pipeline is 50 to 100 percent greater than the potential new gas supplies of the western provinces, and up to double the potential gas supply of the Arctic Islands, based on latest estimates by the Geological Survey of Canada.

The Arctic Gas pipeline would connect to markets the discovered and potential gas reserves in the Mackenzie Delta-Beaufort Sea basin, and the Territories mainland area, in and adjacent to the Mackenzie Valley.

The GSC estimates potential new gas reserves for the major exploration regions of Canada as follows.
<table>
<thead>
<tr>
<th></th>
<th>90% Probability</th>
<th>50% Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta-Beaufort &amp;</td>
<td>45 tcf</td>
<td>70 tcf</td>
</tr>
<tr>
<td>Mackenzie Valley</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Canada</td>
<td>30 tcf</td>
<td>38 tcf</td>
</tr>
<tr>
<td>Arctic Islands</td>
<td>24 tcf</td>
<td>53 tcf</td>
</tr>
<tr>
<td>Atlantic &amp; Labrador</td>
<td>27 tcf</td>
<td>62 tcf</td>
</tr>
<tr>
<td>offshore</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Of the potential gas reserves of 45 tcf in the Arctic Gas supply area at the 90 percent probability, the Delta-Beaufort area is credited with 39 tcf, and the Mackenzie Valley region with 6 tcf.

Reserves already discovered in the Arctic Gas pipeline supply area are estimated by the GSC at 6.5 tcf in the Delta-Beaufort basin, and one tcf for the Mackenzie Valley, including less than 0.5 tcf near the NWT-B.C. border which is already connected by pipeline.

These presently discovered reserves could:

- increase present gas supplies used in Canada by 20 percent over 20-year period;
- displace oil imports costing $17 billion at today's prices and $25 billion at projected 1985 prices.
- heat 2.5 million Canadian homes for 20 years.
THE NATIONAL BENEFITS

The Arctic Gas pipeline offers:

-- an improvement in Canada's balance of payments, through a reduction in the growth of oil imports, and export revenues from the transportation of Alaskan gas;

-- savings for the Canadian economy in the cost of energy;

-- increased security of energy supply.

BALANCE OF PAYMENTS

Concern about Canada's balance of payments reflects trends in national output and productivity, the rising cost of interest on foreign debt, and the prospect of large oil imports at high prices.

The deficit in the current account balance of payments (trade in goods and services) has increased from an average of $0.3 billion per year during the decade ended in 1973, to an annual rate of $5.4 billion during the fourth quarter of 1976.

Net foreign debt increased from $28 billion in 1970 to $48.5 billion at the end of 1976, and now amounts to $2,200 per capita. Net outflow of funds for dividends and interest on foreign debt amounted to $2.56 billion in 1976.
The inevitable consequence of a large trade deficit are: 1) increased foreign borrowings; 2) increased foreign holdings of Canadian equities; 3) a reduction in the exchange value of the Canadian dollar; or 4) a combination of these.*

Foreign borrowings may increase the balance of payments deficit by increasing the interest payments on foreign debt; or may help reduce the deficit by increasing national output and productivity, depending on how the borrowed funds are used. Sale of equity abroad increases foreign ownership of Canadian industry. Reduced exchange value of the Canadian dollar worsens terms of Canada's trade "and thus impinges on the real welfare of Canadians" (Beattie).

The Arctic Gas pipeline offers a greater improvement in Canada's trade position than any other proposed new industrial undertaking. It would do this by reducing the growth of oil imports, and by earnings resulting from the transporting of Alaskan gas.

Balance of payments contribution from Delta gas supply plus transportation export earnings would average $1.9 billion per year at initial delivery rates, and $3.2 billion per year at projected pipeline volumes.

Charges for transporting Alaskan gas would earn revenues estimated at $7.8 billion over a 25-year period (more than $300 million per year), after deduction of interest, dividends and debt retirement on all foreign financing for the pipeline.

Initial deliveries of 1.25 bcf/d of Delta gas are equivalent to a supply of 220,000 b/d of oil which, at $20 per barrel, would cost $1.6 billion per year to import.

Projected deliveries of 2.25 bcf/d of Delta gas by the fifth year of pipeline operation is equivalent to a supply of 400,000 b/d of oil which, at $20 per barrel, would cost $2.8 billion per year to import.

ECONOMIC BENEFITS

Government revenues and investor profits are part of the price which is paid abroad for purchases of imported oil, and part of the price which stays in Canada for purchases of domestic energy.

Thus the cost of domestic energy less government revenues and earnings of Canadian-owned investment, compared with the price of imported energy, represents a net economic benefit to Canada. An additional economic benefit of the Arctic Gas pipeline is the export revenues from transporting Alaskan gas.

Measured on this basis, the Arctic Gas pipeline would generate an estimated $47 billion in economic benefits for Canada during a 25-year period, assuming:

-- a price of $20 per barrel for imported oil;

-- pipeline deliveries of 2.25 bcf/d each from the Delta and North Slope, by the fifth year of pipeline operation.

Net Economic Benefits

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of Delta gas delivered by Arctic Gas pipeline</td>
<td>$53.91 billion</td>
</tr>
<tr>
<td>Charges for transporting Alaskan gas</td>
<td>14.03</td>
</tr>
<tr>
<td>Less (1976 costs + escalation)</td>
<td>$67.94</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipeline const. &amp; operation</td>
<td>$6.18 billion</td>
</tr>
<tr>
<td>Interest &amp; dividends on foreign investment</td>
<td>6.24 billion</td>
</tr>
<tr>
<td>Exploration &amp; production</td>
<td>8.49 billion</td>
</tr>
<tr>
<td></td>
<td>$20.91 billion</td>
</tr>
</tbody>
</table>

NET ECONOMIC BENEFIT $47.03 billion

The net economic benefits are available in the form of government revenues, earnings on Canadian investments, and savings to consumers as compared with the price of imported oil. How the benefits will be divided is primarily a function of government policy and regulations.

Government revenues in the form of production royalties and taxes will account for a major portion of the net economic benefits.

Income, property and other taxes on the pipeline alone are estimated at more than $500 million per year by the sixth year of pipeline operations. Of this, charges for the transportation of Alaskan gas would generate more than $300 million per year in Canadian taxes.

ENERGY SECURITY

"The growing gap between our energy demands and our ability to supply them from domestic reserves...carries with it economic and political risks which the Government of Canada views with concern."--Energy Minister Alastair Gillespie, "An Energy Strategy for Canada," 1976.

"The likely growth of United States, European and Japanese (oil) import requirements is a frightening prospect when viewed against OPEC's anticipated total capacity."--Peter Baxendell, managing director, Royal Dutch-Shell Group, Netherlands, in an address to the Empire Club of Toronto, March 24, 1977.
"Enlarging Canada's supply of domestic energy on an economic basis will reduce its exposure to possible constraints on, or disruption of, the future development of its economy which would arise in the event of arbitrary oil price increases or oil supply restraints imposed by foreign suppliers." -- J.R. Beattie, former Senior Deputy Governor, Bank of Canada, in prepared testimony to the National Energy Board, October, 1976.

World oil prices are widely expected to increase at about the rate of inflation until the early 1980's, when a tightening supply situation could lead to price increases in real terms, and an increasing possibility of shortages.

In its studies of energy costs, Arctic Gas has assumed a five percent annual rate of increase in world oil prices until 1983, and seven percent thereafter. This would increase the price of oil imported into Canada from $14 per barrel now to $21 in 1985 and $28 by 1990. This is believed to be a conservative assessment.
THE NORTHERN BENEFITS

Regional benefits which would result from the Arctic Gas pipeline are at least as important to the people of the Northwest Territories as the national benefits are to the rest of Canada. For the N.W.T., the pipeline would:

-- increase employment;

-- promote economic self-reliance and development of regional self-government;

-- offer a means for native land claims settlements to provide economic rewards and opportunities;

-- provide a source of low-cost fuel for northern communities near the pipeline.

EMPLOYMENT

The pipeline is the primary factor in an estimated minimum 4,000 long-term jobs in the Yukon and Northwest Territories, including present petroleum exploration employment.

Estimated direct employment of 2,000 would include:

-- 440 for operation of the pipeline, and the three initial gas processing plants in the Delta.

-- 1,600 in continuing exploration and field development.

Including transportation support, supplies, services and secondary effects, indirect employment resulting from these activities is estimated at 2,000.

This assumes continuing exploration in the western Arctic, as well as in the Mackenzie Delta and the Mackenzie Valley.

Absent a pipeline to provide economic transportation of Delta gas, petroleum-related employment in the north would be only a fraction of these levels.
A total of 828 northern residents, mostly native peoples, were employed either full-time or seasonally in northern petroleum exploration during the year ended April 30, 1976. An additional 100 native peoples are employed full-time in training positions in the Nortran program, sponsored by Arctic Gas and five other pipeline and petroleum companies.

Need for more employment is reflected by a high rate of unemployment, a rapidly growing labor force, and a high level of welfare payments.

Potential labor force in N.W.T. is increasing at a rate of 1,000 per year, and estimated at 17,000 in 1976, with only 10,000 to 12,000 jobs available.

Half the native population of N.W.T. is under 16 years of age, and 40 percent of total N.W.T. population are attending school.

Unless job opportunities increase, those now in school "will have only two choices: relocate to southern Canada or live on welfare." J.R. Witty, Department of Economic Development, Government of the Northwest Territories, in testimony to Mackenzie Valley Pipeline Inquiry.

Welfare payments in 1973 were $1,832 per capita in N.W.T., compared with national average of $204.

Native peoples want jobs.

"Almost every researcher who has seriously studied the situation of native people in the north...has described their increasing disinterest in trapping and their increasingly expressed preference for wage employment." Dr. Charles W. Hobart, professor of Sociology, University of Alberta, in testimony to Berger hearings. Hobart says native peoples have "voted with their feet" in seeking wage employment. This is confirmed by:

- more than 700 native peoples employed in exploration, some full-time, some as supplementary employment;
-- applications by more than 400 native peoples to join the Nortran program, in addition to those already enrolled;

-- employment by Dome Petroleum of 113 native people during 1976 in its first year of offshore drilling in the Beaufort Sea.

POLITICAL DEVELOPMENT

Northern residents, white and native peoples alike, seek greater self-reliance, self-determination and self-government. Reliance on federal government funding now impedes this.

More than 80 percent of the revenues of the N.W.T. government are provided by the federal government. In fiscal 1975-76, this was $196 million or $4,500 per capita -- three times the per-capita budget of the Alberta government. Including other expenditures, total federal spending in the N.W.T. was $7,820 per capita.

Delta gas production and the pipeline would generate hundreds of millions of dollars in annual government revenues, increasing the opportunities for both economic self-reliance and political self-reliance in the north. Government revenues would include:

-- property taxes on the pipeline in the N.W.T. peaking at an estimated $7 million per year;

-- corporate income taxes of more than $200 million per year applicable to that portion of the pipeline in the N.W.T.;

-- production royalties on the Delta gas, likely to exceed $200 million per year;

-- corporate and personal taxes resulting from activities associated with the pipeline.
LAND CLAIMS

Settlement of land claims is as important to native peoples as jobs. But both are needed. Settlement without economic development could leave native peoples with little more than they have now -- unimpeded access to the land.

"Land ownership does not provide self-sufficiency unless it is accompanied by capital investment, by employment opportunities, and the building of a society where there is purpose to life, which is so sadly lacking among many communities in the north." -- Colin Alexander, publisher of The News of the North, Yellowknife, in testimony to the Berger hearings.
A COMPARATIVE ANALYSIS

The Arctic Gas pipeline would transport natural gas from both the Mackenzie Delta and the Alaskan North Slope through a single 48-inch diameter pipeline.

Moving gas from both supply sources through one pipeline would provide for the earliest delivery of the gas at the lowest cost.

Foothills Pipe Lines and its associated companies propose two separate pipelines:

--- the 48-inch diameter Alaskan highway pipeline to transport Alaskan North Slope gas; and

--- the 42-inch diameter Maple Leaf pipeline to transport the Delta gas.

As compared with the single Arctic Gas pipeline, to move the same volumes of gas, the two Foothills pipelines would:

--- require construction of an additional 2,000 miles of pipeline;

--- add some $4.5 billion to the capital cost;

Foothills proposes that construction of the pipeline to move Delta gas would follow construction of the pipeline to move the Alaskan gas. This would delay the first flow of Delta gas until at least 1985, more than two years later than initial deliveries proposed by Arctic Gas. Completion of the Foothills Maple Leaf pipeline assumes discovery of sufficient gas reserves in the Delta to permit financing and construction of this separate pipeline.
ARCTIC GAS PIPELINE AND COMPETING PROPOSALS

THE ALTERNATIVE TO ONE ARCTIC GAS SYSTEM TO TRANSPORT GAS FROM BOTH THE MACKENZIE DELTA AND ALASKA IS TO BUILD TWO PIPELINES – ONE FOR U.S. GAS NOW AND THE OTHER FOR CANADIAN GAS AT SOME UNKNOWN FUTURE DATE.
Without the Alaskan gas, presently discovered Delta gas reserves are not adequate to enable construction of a pipeline. Failure to approve the Arctic Gas pipeline, with its lower transportation costs and earlier delivery, would impair incentives for exploration expenditures in the Delta. How long would be required before adequate reserves were discovered to support construction of a pipeline transporting only Delta gas is uncertain.

At full design capacities, both the Arctic Gas and Maple Leaf pipelines would handle approximately the same volumes of projected Delta gas supply (2.25 bcf/d in the case of Arctic Gas, and 2.30 bcf/d in the case of Maple Leaf).

As compared to the cost of the Arctic Gas pipeline allocable to the transportation of Delta gas, the Foothills proposals would, for Delta gas, result in:

-- an increase in capital cost of $1.8 billion;

-- an increase in transportation cost of $250 to 300 million per year.

The transportation savings available to Canada by moving Delta gas in the same pipeline as Alaskan gas would exceed $6 billion over a 20-year period.
FINANCING

Including interest costs, required capital financing for construction of the Canadian Arctic Gas pipeline, based on 1976 costs escalated to the time of completion, is estimated at $7.48 billion.

Additional funds of $400 million would be generated from initial operating revenues for total cost of $7.9 billion at initial capacity of 3.25 bcf/d. This includes $1.9 billion for cost escalation and contingencies.

The plan of financing provides for reserve commitments by investors and lenders of an additional $1.87 billion.

This would provide a total of $3.8 billion -- or 70% more than 1976 costs -- to cover cost escalation, contingencies and possibility of cost overruns.

Required capital financing includes:

-- $1.87 billion in equity capital;

-- $5.61 billion in debt funds.

Conditional equity investment commitments by Canadian-owned member companies of Arctic Gas total $450 million, plus $150 million contingency financing in the event of cost overruns. Additional Canadian equity would be sought from other Canadian-owned corporations, and by a public offering, in order to seek majority Canadian ownership.

Funds to expand pipeline capacity from 3.25 bcf/d to 4.5 bcf/d would be generated from operating revenues. Total estimated cost at design capacity is $9 billion.
GOVERNMENT FINANCIAL BACKSTOPPING

Arctic Gas foresees a need for a limited contingent role for governments in making its financing plan feasible. This would be required of any project for the movement of gas from frontier areas.

The primary financing problem is in providing security required by lenders in order:

-- to assure completion;

-- following completion, to assure revenues adequate to service the project debt under all circumstances;

-- to repay debt if the project should not be completed or is abandoned after completion.

The Arctic Gas financing plan calls for a maximum effort from the private sector in providing equity funds, including partial funding for possible cost overruns, and in accepting heavy revenue obligations under the cost-of-service tariff. But there is need for stronger parties, whose credit capacity is unquestioned, to backstop the assurances of the private sector. Only governments have the capacity to play this essential, though limited, role.
Completion assurance: Arctic Gas believes that the commitment of $9.35 billion in funds by investors and lenders would be more than adequate to complete the project, given the conservatism already incorporated in the construction plan and basic cost estimate. The recent reduction of inflationary pressures, if maintained, creates a much improved climate for cost control. Nevertheless, Arctic Gas' financial advisors are convinced, and have testified, that lenders will require further assurances before committing the necessary funds. Moreover, they believe this to be the case for any system designed to deliver frontier gas to southern markets.

The assurance required to secure the debt funds could be met by the governments of Canada and the United States agreeing to backstop the large but necessarily limited commitments of the private sector. This could be done by entering into agreements with Canadian Arctic Gas whereby, if it developed during construction that the previously committed funds from the private sector are insufficient, the governments would guarantee additional debt issued by the company or themselves advance additional funds, up to a specified limit, provided it could be certified that the project could be completed with such additional funds. In the absence of such certification, the governments would have the right to avoid further increase in their liabilities by assuming the company's then outstanding indebtedness.

An appropriate basis for sharing this contingent obligation between the two governments would seem to be the relative initial volumes of gas planned to move through the pipeline to each country. On this basis the Canadian government's share of the backstopping completion assurance would be roughly one-third, with the U.S. government providing the remaining two-thirds. Fees for this standby commitment would be paid to the governments by Arctic Gas.
Assurance of revenue: Arctic Gas has applied for approval of a cost-of-service tariff which would assure adequate revenues to service indebtedness and provide a return to equity investors. It would be payable in all events, although the equity return would be reduced if less than normal service was being provided and totally eliminated in a total interruption situation.

Shippers of gas through the pipeline would be prepared to accept this obligation and could perform on it only if they were assured of their ability to recover the charges in all events. If there were a prolonged interruption, however, it is very questionable whether they could do so.

The all-events tariff could be made fully effective if the two governments were to protect the shippers of their countries by providing business insurance against a prolonged interruption for an appropriate premium. The tariff obligation in the event of a short-term interruption would still be borne by the shippers. Logically, the U.S. government would insure U.S. shippers, and the Canadian government would insure Canadian shippers.

Under the role envisioned for government financial backstopping, private lenders will still carry the normal credit risks after completion, and the equity owners of Arctic Gas will still face the risks of loss or diminution of anticipated return on equity and of their original capital investment. Thus, the equity owners will have the usual compelling incentive to see that the project is efficiently constructed and operated.

* * * * *