

A Dene fishing camp at Willow Lake.

## A Summary

The announcement by the Canadian government, quoted above, represents one step in a long decision-making process. The bilateral negotiations will begin as soon as possible. The Canadian government will seek the assurances that it would require concerning the routing of the pipeline through the southern Yukon, the timing of its construction, the financial feasibility of the system and provision for a connecting link that would give access to Canadian gas in the Mackenzie Delta (which might be necessary to meet Canadian domestic needs and to fulfill existing contracts for export of gas to the United States).

Such systematic consideration of international hydrocarbon transportation proposals is a reflection of the world energy crisis and the interdependence of Western industrialized nations. (Both Canada and the US are signatories to the International Energy Program, by which the Western nations, Japan and New Zealand agreed to seek to reduce their dependence on imported oil.) In this instance, as indicated, the consideration process has been concerned with the possibility of building a natural gas pipeline across Alaska and the Canadian northwest.

There already are major international pipelines in existence, and four of them either carry Canadian gas or oil across part of the United States or US gas or oil across Canada, but the pipeline proposals discussed in this issue of Canada today/D'AUJOURD'HUI are of particular significance. All would be of great length — up to forty-seven hun-

dred miles — and enormously expensive. The construction of any would involve significant problems of environment, economics, technology and what might be termed social engineering.

Two factors encouraged the building of pipelines. Both countries have a continuing and rising need for energy, and both have large but as yet untouched reservoirs in the western Arctic. Interest first focussed on oil. It culminated in a project to move crude oil from Prudhoe Bay through a 789-mile, forty-eight-inch pipeline to Valdez on the southern coast of Alaska and then by tanker to the "lower 48" states. (The oil began flowing through the completed pipeline this summer.)

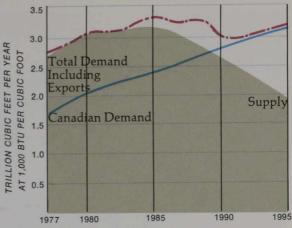
Between 1967 and 1969 a number of Canadian and United States companies began studying methods for moving Arctic gas to US markets. One study, initiated by Alberta Gas Trunk Line, resulted in a plan to build a 1,550-mile pipeline from Prudhoe Bay to Grande Prairie, Alberta. The plan - known as the Gas Arctic Project - acquired six sponsors, some from Canada and some from the US. In 1972 the sponsors of the Gas Arctic Project joined the six sponsors of a plan known as the Northwest Project to form Canadian Arctic Gas Studies Limited (CAGSL). By early 1973, CAGSL had twenty-five members; and in 1974, as Canadian Arctic Gas Pipeline Limited (CAGPL), it applied to Canada's National Energy Board for authority to build a pipeline to move Alaskan and Canadian Arctic gas to US and Canadian markets.

That same year Canada and the United States began negotiations for a pipeline treaty — one which would guarantee uninterrupted transmission and nondiscriminatory treatment for hydrocarbons in transit across either country. It was signed in Washington last January and approved by the US Senate this summer.

The CAGPL application was the first of several. In 1975, Alberta Gas Trunk Line (which had withdrawn from the CAGPL group) joined with another Canadian company, Westcoast Transmission, and applied to the National Energy Board for a certificate to build a pipeline to move Canadian gas down the Mackenzie Valley. This proposal became known as the Maple Leaf project, and the association of companies was called Foothills Pipe Lines Limited.

Foothills Pipe Lines filed an application for authority to move Alaskan gas across the southern Yukon and British Columbia to the US in 1976 and amended it a number of times during the first half of 1977. This is known as the Foothills (Yukon) or the Alaska Highway Project. The US portion, sponsored by Northwest Pipeline, is called the Alcan Project.

All projects required the resolution of complex questions; and in March 1974, the Canadian gov-



Gas Supply and Demand Balance for Conventional Producing Areas

The National Energy Board's "Most Likely" Forecast Source: National Energy Board, Reasons for Decision: Northern Pipelines, Volume I, p. 76.

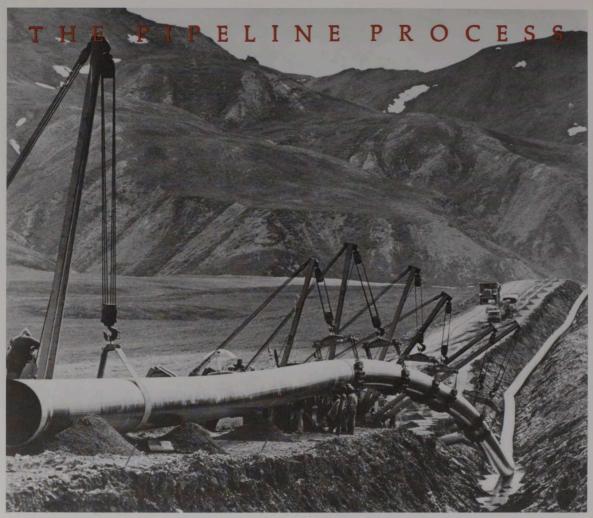
ernment established a Royal Commission of Inquiry, headed by Mr. Justice Thomas R. Berger, to examine the socioeconomic and environmental impacts of a northern pipeline and to suggest conditions governing the granting of a right of way across crown lands in the upper Yukon and Northwest Territories for a Mackenzie Valley pipeline.

In early 1977, to complement the study by Justice Berger, the government named two new boards of inquiry, one headed by Dean Lysyk and one by Dr. Hill, to inquire into the probable socioeconomic and environmental impact associated with a pipeline constructed across the southern Yukon. The specific focus of attention was the Foothills (Yukon) project which had not been reviewed in detail by Justice Berger.

Meanwhile, the National Energy Board had begun its own hearings before a three-member panel, headed by Vice-Chairman J. G. Stabback.

Last May, Justice Berger published the first volume of his report on the Mackenzie Valley proposals. On July 4, the National Energy Board announced its conclusions. On July 27, the Hill panel filed its report on the Foothills (Yukon) proposals. The Lysyk inquiry followed with its report on August 2. A precis of the second volume of the Berger report and a government statement on northern affairs were also released. The entire issue was debated in a special session of the Canadian Parliament on August 4 and 5, and on August 8, the Cabinet announced the results of its review.

Meanwhile the US government was also considering pipeline proposals. The Alaskan Natural Gas Transportation Act of 1976 requires the President to submit an initial route selection to the Congress by September 1 (or ninety days thereafter) and provides for a sixty-day period for congressional review.



The Canadian government began its consideration of pipeline construction with three basic factors:

Sooner or later Arctic gas and oil would be needed in southern Canada.

The Arctic and sub-Arctic environment would be affected by energy development.

Northern native people had legitimate claims which needed to be resolved.

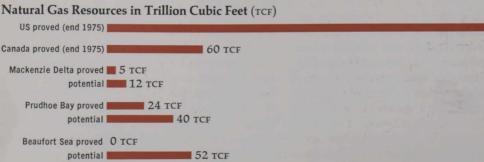
The royal commission study headed by Justice Berger heard three hundred experts at hearings in Yellowknife and almost a thousand northerners at those in thirty-five communities. In its initial report last spring, it discouraged the immediate building of any Mackenzie Valley pipeline.

The National Energy Board - an independent

regulatory body specifically charged with evaluating interprovincial and international hydrocarbon transportation proposals — reported its findings in July. The board was willing, with qualifications, to certify a pipeline not considered by Berger: one along the Alaska Highway, across the southern Yukon, connecting Alaska and British Columbia. The Hill and Lysyk reports also gave qualified support to this proposal.

All of the inquiries were concerned with the likely results of massive construction north of the sixtieth parallel. To understand the decisionmaking process, it is necessary to consider the nature of these singular lands.

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#### The Yukon and the Northwest Territories

This land is vast but thinly populated. Some eleven thousand Athabascan Indians\* live in the Northwest Territories in five tribes - the Kutchin or Loucheux, the Hare, the Slavey, the Dogrib and the Chipewyan - and are known collectively as the Dene nation. There are around twenty-five hundred Inuit or Eskimos - originally members of family groups of less than five hundred. Until recently, they lived in isolated villages, but many now live in the new town of Inuvik. There are one thousand to fifteen hundred Métis, of mixed white and Indian ancestry, who have preserved their Indian cultures to some degree. There are also some fifteen thousand whites. In the Yukon, native people are a minority of the total population of some twenty-two thousand.

The native peoples are linked to the land and the animals. Contrary to romantic notion, the animals of the north are not abundant. Species are few—only nine species of mammals (of the thirty-two hundred known) live in the high Arctic, and about twenty-five species of fish (out of twenty-three \* A language group

hundred) live in Arctic waters. The Arctic also provides nesting grounds for about a hundred species of birds, some quite rare. They depend on a simple ecosystem, based on a few types of natural food. Animals and plants grow slowly; a one-hundred-year-old tree on the edge of the Arctic Circle may be no bigger around than a man's thumb, and the Arctic char in the Sylvia Grinnell River on Baffin Island take twelve years to produce ripe eggs. It takes decades to replace a single mature animal or plant. Justice Berger emphasized the fragility of these life systems:

"Every ecosystem is built on both living and non-living elements. The two are inextricably linked, and the characteristics of the one are reflected in those of the other. . . . [They are distinguished by] the simplicity of the food chains, the wide oscillations in populations, and the slow growth rates."

The land itself — the soil, the tundra and the permafrost — is part of the delicate balance, and the survival of self-sufficient native cultures depends on the stability of the land.

#### The Canadian Arctic Gas Pipeline Project

Canadian Arctic Gas Pipeline Limited applied for certification to build a forty-eight-inch, 3,864-mile pipeline from Prudhoe Bay in Alaska, across the northern Yukon, to the Mackenzie Delta and down the Mackenzie Valley. It would carry gas from continued on page eight



both the United States fields in Prudhoe Bay and the Canadian fields in the delta.

Both Justice Berger and the National Energy Board recommended rejection of the proposal.

The upper Yukon and the Mackenzie Delta are remote, unspoiled and fragile, and they are the birth place of unique species. Justice Berger wrote: "A gas pipeline will entail much more than a right-of-way. . . . It will be necessary to construct wharves, warehouses, storage sites, air strips — a huge infrastructure . . . a network of hundreds of miles of roads built over the snow and ice. The Arctic Gas project [would double] the capacity of the fleet of tugs and barges on the Mackenzie River. There will be 6,000 construction workers required North of 60 to build the pipeline, and 1,200 more to build gas plants and gathering systems in the Mackenzie Delta. There will be about 130 gravel mining operations . . . 600 river and stream crossings . . . aircraft, tractors, earth movers, trucks and trailers."

Such activity would have fewer lasting environmental and socioeconomic effects if it occurred in southern Canada: massive earth moving there is a routine of life. The north — particularly the upper Yukon — is different.

"The Northern Yukon is an Arctic and sub-Arctic wilderness. . . . The Yukon Coastal Plain and the Old Crow Flats provide essential habitat for hundreds of thousands of migratory waterfowl. . . . The Arctic Gas Pipeline . . . would cross this region, either along the coastal route or . . . the interior route. . . . Along the coastal route [it would

pass] through the restricted calving range of the Porcupine caribou [a herd of 110,000] and have highly adverse effects on the animals during the calving and post-calving phases of their life cycle. The preservation of the herd is incompatible with the building of a gas pipeline."

Parts of the delta, the lacy network of land and water on the edge of Mackenzie Bay and the Beaufort Sea, were also found to be undesirable places for pipelines.

West Mackenzie Bay is the birthing place of the white whales — five thousand of them come there each summer. Berger said emphatically that the west bay should be "an area in which oil and gas exploration and development would be forbidden at any time." He also recommended strict limitations on oil and gas facilities on the delta, particularly the outer delta.

The Berger report on the Arctic Gas Pipeline proposal had its positive as well as its prohibitive parts. It recommended that the west Mackenzie Bay be formally made a whale sanctuary and the outer delta, a bird sanctuary. It also proposed that the northern Yukon, north of the Porcupine River, be made a national wilderness park. Oil and gas exploration would be banned, and native people would have the right to hunt, fish or trap there.

The National Energy Board found the Arctic Gas project to be economically feasible but agreed with Justice Berger that the northernmost parts of the route were "environmentally unacceptable." For this and other reasons the board rejected the proposal.

## The Maple Leaf Project

Foothills Pipe Lines Limited\* applied to build a forty-two-inch pipeline some 817 miles long, from Richards Island at the top of the delta, down the Mackenzie River Valley. The Maple Leaf project would carry natural gas from the Canadian field but not from the United States field in Alaska.

Both Justice Berger and the National Energy Board recommended against its immediate construction.

The problems caused by pipeline construction in the Mackenzie River Valley are essentially different from those of the Yukon and the delta. The Mackenzie River is the longest in Canada and one of the longest in the world. It begins in Great Slave Lake, near Yellowknife in the southwestern part of the Northwest Territories, and flows north through

\* The name Foothills is confusing since it is associated with two separate proposals. The two distinct projects are herein referred to as Foothills (Maple Leaf) and Foothills (Yukon).

trees and lakes to the Beaufort Sea.

It is the north's essential line of communications. In the summer, barges move up and down the river, and planes follow it all year round, carrying oil explorers and technicians north and south. Once, thirty thousand years ago, when the rest of Canada and much of the United States were covered by ice, the valley was open. When the first Indians crossed the land mass that is now beneath the Bering Sea, they moved into the valley. Some of their descendants are there today.

In terms of the environment, Justice Berger said valley construction was feasible. "No major wild-life populations would be threatened and no wilderness areas would be violated. . . . We can devise terms and conditions that will allow a pipeline to be built . . . without significant losses."

But, he said there is more to it than that. Permafrost is the basic fact of life in the Arctic and sub-Arctic. It is rock hard, impervious to water and quite literally the foundation on which the north rests. In the Arctic it may be several hundred feet thick. If it were not there, most of the north would be desert. It is the basin which cradles the water in this land of scant precipitation and prevents it from draining deep into the earth.

The Mackenzie Valley is properly called the sub-Arctic. Most of it is south of the tree line, and it is not a frozen desert; rainfall and snowfall are light but adequate (similar to the falls of Saskatoon or Regina). In the southern part the permafrost occurs in patches and is only a few feet thick below the seasonally thawed surface ground.

Permafrost is much affected by the laying of pipelines. Oil or gas piped under pressure is usually warm. A warm pipeline would melt the permafrost and make it an unstable goo. The solution advanced by the pipeline companies is to refrigerate pipeline gas, and that would seem to solve the melting problem. This could work in the Arctic.

In the Mackenzie Valley, however, there is a different problem. There the pipeline would pass under rivers and lakes, which do not have permafrost bottoms, and through the areas of "discontinuous permafrost," where the pipe would freeze the ground causing an ice ring to form around itself, expanding, building pressure, possibly pushing the pipe out of its intended line and causing it to break. The Berger report notes: "The question of frost heave is basic to the engineering design of the [Mackenzie Valley] gas pipeline. Both Arctic Gas and Foothills (Maple Leaf) propose to bury their pipes throughout their length, and to refrigerate the gas to avoid . . . thawing permafrost."

The problem of frost heave, though formidable, could probably be resolved, as Justice Berger suggested ("We can devise terms and conditions that will allow a pipeline to be built"). He was more concerned with a subtler problem: a pipeline's impact on the native people.

The Dene alliance of Indian tribes has claimed a

right of control over a large part of the Northwest Territories. They are convinced that if they do not have that control, their fishing and hunting culture will soon be destroyed by industrialization. It has been suggested that industrialization — caused directly and indirectly by pipeline construction would be a boon to their economy, but Justice Berger questioned that assumption. He pointed out that theirs is an economy they have practiced for thousands of years and that it exists independently of white civilization. "It is an illusion to believe that the pipeline will solve the economic problems of the North. Its whole purpose is to deliver northern gas to the homes and industries in the South. Indeed, rather than solving the North's economic problems, it may accentuate them."

He added: "The concept of native self-determination must be understood in the context of native claims. When the Dene refer to themselves as a nation... they are not renouncing Canada or Confederation. Rather, they are proclaiming that they are a distinct people, who share a common historical experience, a common set of values and a common world view....[They] must be allowed a choice about their own future. If the pipeline is approved before a settlement of their claims takes place, the future of the North — and the place of native people in the North — will, in effect, have been decided for them."

He stated succinctly that "the future of the North ought not to be determined only by our own southern ideas of frontier development," and he recommended that Mackenzie Valley pipeline construction be delayed for ten years, until native claims have been settled and the settlement implemented.

The National Energy Board had additional reasons for rejecting the Foothills (Maple Leaf) proposal. It concluded that such an all-Canadian pipeline from the delta "could not be financed on the basis of the reserves discovered to date."

# The Foothills (Yukon) or Alaska Highway Project

The version of the Alaska Highway pipeline proposal submitted in September 1976 was to connect the Alaskan sections to northern British Columbia and Alberta, where it would tie into the existing Canadian pipeline network, using a forty-two-inch pipeline running through the southern Yukon.

In February of this year the group filed an alternative for a forty-eight-inch "express" pipeline through the Yukon and along existing routes in northern British Columbia and Alberta. It also proposed a west coast line, parallel to the existing Alberta Natural Gas route in southeastern B.C.

The National Energy Board sat for over a year, hearing spokesmen for the applicants, public interest groups, representatives from government and industry, and other interested parties. The conclusions reached were comprehensive.

The board's "most likely" forecast was that some of the approximately five trillion cubic feet of proved natural gas in the Mackenzie Delta onshore area would be needed in Canada as early as 1981. After considering the various proposals, the board focussed on the Foothills (Yukon) project. It stated that a "crucial question is whether the pro-



A Dogrib woman testifying before the Berger inquiry at Fort Rae.

ject has the potential for bringing Delta gas to Canadian markets." It concluded that it did.

It also concluded that the social and economic impact of the project could be held to "tolerable levels" and that problems of the environment could be overcome by "avoidance or mitigative measures."

It proposed an amendment of the Foothills (Yukon) proposition. Instead of following the Alaska Highway precisely, the right of way would be rerouted through Dawson City, in the Yukon, to facilitate the construction of a link to the delta gas fields. This link would follow the almost completed Dempster Highway. (The new routes were labelled the Dawson diversion and the Dempster lateral.)

The board noted that the amended route "would avoid [the border of] the sensitive Kluane National Park and avoid the Shakwak Fault," but that it would affect the lives of about a thousand more native people than the original route and that "mitigative measures" might be needed.

The National Energy Board was not, as noted earlier, the only body considering environmental and social factors. Last spring the Ministry of Fisheries and the Environment appointed a panel, headed by Dr. H. M. Hill, to consider the environmental impact of the Foothills (Yukon) proposal, and the Ministry of Indian and Northern Affairs established a three-member inquiry, headed by Dean Kenneth M. Lysyk, to look into socioeconomic implications.

The Hill report, issued in late July, reached a qualified conclusion: The Foothills (Yukon) pipe-

line as proposed could be constructed and operated in "an environmentally acceptable manner," if certain conditions were met. These were:

- that environmental planning be properly carried on,
- that suitable rerouting or other solutions be found to overcome particular problems in sensitive areas,
- that the permafrost problems (similar to those in the Mackenzie Valley) be overcome by rerouting, effective design and the "development of adequate mitigative measures."

It said that, in addition to the proposed route, other highway routes were also possible and suggested two for consideration. One was the Dawson diversion (as identified by the National Energy Board), along Highway 3 from the Alaska border to Dawson, then along the Klondike Highway to Whitehorse, then along the Alaska Highway to the British Columbia border near Watson Lake. The second possibility involved the selection of a right of way along the Tintina Trench in the southern Yukon. The panel frowned on some suggested routes in the trench which would intrude into wilderness areas, but it said a route following the trench to Carmacks and then following the Robert Campbell Highway to British Columbia could be considered.

It noted that it did not have sufficient environmental information on the Dempster lateral to support a conclusion at this time.

The Lysyk inquiry also found the information on the Dempster lateral insufficient and said that extensive environmental, economic and social research was needed before it could be "seriously considered."

It concluded that from a socioeconomic standpoint a pipeline could be built in the southern Yukon but attached conditions to its approval. The inquiry recommended that the federal government immediately advance fifty million dollars toward settlement of the native land claim in the Yukon. Claim negotiations are more advanced there than in the Northwest Territories and an agreement in principle is expected next year.

The inquiry noted that: "The main benefits from the pipeline will be concentrated outside of the Yukon, largely south of the 49th parallel, whereas the most significant costs, in terms of both economic dislocation and social disruption, will be experienced in the Yukon." It suggested that two hundred million dollars be paid into a Yukon Heritage Fund by project sponsors.

If construction is approved, the inquiry said, the government should establish a single planning and regulatory agency to keep undesirable consequences to a minimum.

The final recommendation was that construction of any pipeline in the southern Yukon be deferred at least until August 1, 1981, "to permit sufficient implementation and to avoid prejudice to a just settlement of the Yukon Indian land claim." (In



An Inuit whaling camp at Whitefish station, north of Tuktoyaktuk.

effect, this delay would be less than four years in any event, because the applicants had not proposed to begin construction before June 1979; and schedules may be rearranged to begin construction on the southern portion before August 1981.)

The task ahead is to join in discussions with the United States to explore whether a basis can be established for agreement.

#### The Pipeline Companies Involved

Project	Canadian	US
Canadian Arctic Gas Pipeline Project	Alberta Natural Gas Company Limited	**Columbia Gas Transmission Corporation
(Alaskan Arctic Gas Pipeline Project in the United States)	The Consumers Gas Company Northern and Central Gas	Michigan Wisconsin Pipe Line Company
	Corporation Limited TransCanada PipeLines Limited	Natural Gas Pipe Line Company of America
	Union Gas Limited	Northern Natural Gas Company
	Gulf Oil Canada Limited	Panhandle Eastern Pipe Line Company
	Imperial Oil Limited Shell Canada Limited	Texas Eastern Transmission Corporation
		Pacific Gas & Electric Company
		Pacific Lighting Gas Development Company
Foothills or Maple Leaf	Foothills Pipe Lines Limited	
Project	(comprised of Westcoast	
	Transmission Company and	
	Alberta Gas Trunk Line	
	Company Limited)	
Foothills (Yukon) or	*Foothills Pipe Lines (Yukon) Limited	Alcan Pipeline Company
Alaska Highway Project	(a subsidiary of Foothills	(a subsidiary of Northwest
(Alcan Project in the United States)	Pipe Lines Limited)	Pipeline Corporation)

<sup>\*</sup> TransCanada PipeLines Limited may also participate.

<sup>\*\*</sup> On July 29, the US members of the Arctic Gas Consortium announced their support of the Alcan proposal and indicated their desire to become active members of the group behind it.

#### The New Ambassador

Mr. Peter Milburn Towe is Canada's new ambassador to the United States, succeeding Mr. J. H. Warren.

Mr. Towe was born in London, Ontario, in 1922. He served as a bomber pilot in the Royal Canadian Air Force during World War II and is a graduate of the University of Western Ontario and Queen's University. He joined the Department of External Affairs in 1947 and has served with Canada's North Atlantic Treaty Organization and Organiza-

tion for European Economic Co-operation delegations. He served twice previously in Washington, as a third secretary from 1947 through 1949, and as deputy head of post and minister responsible for economic affairs from 1967 to 1972. He was ambassador to the Organization for Economic Co-



operation and Development from 1972 to 1975 and, until his appointment, was assistant under-secretary of state for external affairs, in Ottawa. He is married to the former Carol Krum, and they have three children.

Mr. Towe presented his credentials to President Carter on July 29, at which time he noted that the "Western industrialized countries face many challenges in their efforts to ensure for all people a secure, prosperous and

rewarding life in a more stable world. These range from political and security to economic, social and developmental questions and each has a moral dimension. . . . In meeting these challenges there is much that Canada and the United States can do together."

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