Federal Environmental Assessment and Review Process

Federal Environmental
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Beaufort Sea
Hydrocarbon
Production and
Transportation

Summary
of the Final Report
of the Environment
Assessment Panel

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July 1984

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Panel Reports

- 1. Nuclear Power Station at Point Lepreau. New Brunswick, (May 1975)
- 2. Hydro Electric Power Project, Wreck Cove, Cape Breton Island. Nova Scotia, (August, 1976)
- 3. Alaska Highway Gas Pipeline Project, Yukon Territory. (Interim report, August, 1977)
- 4. Eldorado Uranium Refinery Proposal, Port Granby, Ontario. (May 1978)
- 5. Shakwak Highway Project. Yukon Territory-British Columbia. (June, 1978)
- 6. Eastern Arctic Offshore Drilling-South Davis Strait Project. N.W.T. (November, 1978)
- 7. Lancaster Sound Offshore Drilling Project. N. W.T. (February, 1979)
- 8. Eldorado Uranium Hexafluoride Refinery. Ontario. (February, 1979)
- 9. Roberts Bank Port Expansion. British Columbia. (March, 1979)
- 10. Alaska Highway Gas Pipeline, Yukon Hearings. (August, 1979)
- 11. Banff Highway Project (east gate to km 13). Alberta. (October, 1979)
- 12. Boundary Bay Airport Reactivation. British Columbia. (November, 1979)
- 13. Eldorado Uranium Refinery, R.M. of Corman Park. Saskatchewan. (July, 1980)
- 14. Arctic Pilot Project (Northern Component). N. W.T. (October, 1980)
- 15. Lower Churchill Hydroelectric Project. (December, 1980)
- 16. Norman Wells Oilfield Development and Pipeline Project. N. W.T. (January, 1981)
- 17. Alaska Highway Gas Pipeline, Yukon Territory. (July 1981) (Routing Alternatives Whitehorse/Ibex Region)
- 18. Banff Highway Project (km 13 to km 27). Alberta. (April, 1982)
- 19. Beaufort Sea Hydrocarbon Production Proposal. (Interim Report) (April, 1982)
- 20. CP Rail Rogers Pass Development, Alberta. (Preliminary Report) (April, 1982)
- 21. Alaska Highway Gas Pipeline, Yukon Territory. (Final Report) (October, 1982)
- 22. CP Rail Rogers Pass Development, Alberta. (Final Report) (August, 1983)
- 23. CN Rail Twin Tracking Program, British Columbia. (Interim Report) (September, 1983)
- 24. Venture Development Project, Nova Scotia. (December, 1983)
- 25. Beaufort Sea Hydrocarbon Production and Transportation. (Final Report) (July, 1984)

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Beaufort Sea Hydrocarbon Production and Transportation Proposal



Summary

of the Final Report of the Environmental Assessment Panel

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July, 1984 → ¬∠∆, 1984

The Honourable Charles Caccia Minister of the Environment Ottawa, Ontario

and

The Honourable Doug Frith Minister of Indian Affairs & Northern Development Ottawa, Ontario

Dear Ministers:

In accordance with the Terms of Reference provided to the **Beaufort** Sea Environmental Assessment Panel, June 14, 1981, the Panel is pleased to submit for your consideration the Report of its review of the **Beaufort** Sea hydrocarbon production and transportation proposal.

The Panel Report focuses on the proposal submitted by Dome Petroleum Limited, Esso Resources Canada Limited, and Gulf Canada Resources Inc. on behalf of all acreage holders in the Canadian **Beaufort** Sea-Mackenzie Delta region for the purposes of the review process. The Proponents' proposal concentrated on offshore oil production and on both land and sea transportation. The Panel Report, therefore, includes only limited observations on gas production and transportation facilities.

Because of the preliminary nature of the proposal, the Panel directed its review, for the most part, toward the identification and assessment of major issues and concerns associated with the proposal. As a result, the Panel Report discusses potential effects, both positive and negative, upon the physical, biological and socio-economic environments and makes recommendations on how adverse effects should be controlled or avoided. In addition, the Panel Report includes comments on the capability of governments to control Beaufort Sea oil development and on the need for any subsequent public

As soon as the attached report is released to the public, the Panel recommends that you institute a process which will assist northerners to be aware of and to understand its contents. That process is needed because of the importance of direct involvement of northerners, especially those in the potentially affected areas, in the planning for and implementation of **Beaufort** Sea oil production and transportation, should it be approved.

Finally, the Panel wishes to express its gratitude to all of the participants-community residents, special interest groups, individuals, Proponents and federal and territorial governments-for their substantial and most helpful contributions to the review process.

Yours sincerely,

John S. Tener Chairman Beaufort Sea

Environmental Assessment Panel

John S. Ziner

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ር•>ኊ‹ (Doug Frith) Δຼρς, Δ•∩▷ሌ▷ ላህረቴኒ‹ ላጋሩ, Δ•∩▷ሌ▷

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(John S. Tener) פֿר

John S. Tener

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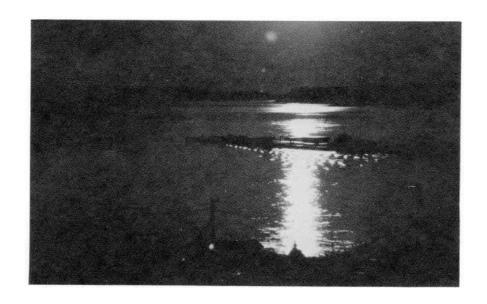
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Executive Summary

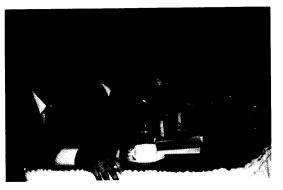


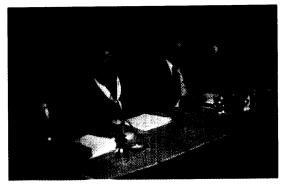
Review Process











The **Beaufort** Sea Environmental Assessment Panel, after reviewing the Environmental Impact Statement (EIS) and associated documents on a proposal to produce and transport hydrocarbons from the **Beaufort** Sea-Mackenzie Delta region, after holding a comprehensive set of public sessions, and after assessing all the information presented to it, concludes that:

- i) Beaufort Sea oil and gas production and transportation is environmentally and socio-economically acceptable if subjected to certain terms and conditions and carried out in a small-scale and phased manner;
- ii) upon approval, oil production can commence within that region in a small-scale (about 15,000 m³ oil/day) manner;
- iii) a small-diameter (e.g. 400 mm) oil pipeline can be built through the Mackenzie Valley;
- iv) oil tanker traffic through the Prince of Wales Strait and Parry Channel from the Beaufort Sea-Mackenzie Delta region should commence only after a government Research and Preparation Stage is completed, followed by the completion of an experimental Two Tanker Stage using Class 10 oil-carrying tankers and under specified conditions of use;
- v) a gas pipeline can be built through the Mackenzie Valley only if the anticipated socio-economic impacts do not exceed those associated with oil production at a rate of about 15,000 m³/day.

All of these conclusions are based upon the premise that appropriate research will have been completed, monitoring and surveillance mechanisms will be in place prior to project approval and mitigative measures will be applied.

Further hydrocarbon production is possible only if it is phased in and if the monitoring programs indicate to governments that the mitigative measures applied during the first phase have been successful.

Background

Over the past 20 years there have been significant sustained levels of exploratory activity for oil and gas both onshore and offshore in the **Beaufort** Sea-Mackenzie Delta region. As a result, sufficient reserves of hydrocarbons have been discovered to warrant consideration of production and transportation of oil and gas to southern markets.

In July of 1980, the Minister of Indian Affairs and Northern Development (DIAND) initiated a formal public review of oil and gas production and transportation in the **Beaufort** Sea, by asking the Minister of the Environment for a panel review under the Environmental Assessment and Review Process (EARP). Seven members were appointed to the **Beaufort** Sea Environmental Assessment Panel between January and May of 1981.

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On behalf of the over 40 companies holding exploration permits in the Beaufort Sea-Mackenzie Delta region, three companies, Dome Petroleum Limited, Esso Resources Canada Limited and Gulf Canada Resources Inc. (the Proponents), prepared and submitted to the Panel in November of 1982 a detailed Environmental Impact Statement for the production and transportation of oil and gas from the region. At the request of the Panel, the Proponents also submitted additional background and supplementary information in June, 1983.

The Panel reviewed all these documents and subsequently received numerous submissions from the public and the Proponents at sessions held across the Northwest Territories, in Yukon, in Labrador, and in Calgary and Ottawa in southern Canada. These sessions began at Tuktoyaktuk on September 14, 1983, and ended at Ottawa on December 16, 1983. The public sessions consisted of Community Sessions, which northern residents were invited to attend, and other, more formal, General Sessions, which were open to all participants.

On the basis of its evaluation of all the information received, the Panel has prepared this report for the Minister of the Environment.

The Proposal

Since 1965, some 150 exploratory wells have been drilled in the Beaufort Sea-Mackenzie Delta region. In 1972 the first artificial island was constructed in the Beaufort Sea and 23 others have been completed to date. In recent years islands have been built using steel and cement caissons, reducing dredging requirements and making year-round drilling more economical.

Drillships and associated support vessels also have been used since 1976, the latest of which is the Kulluk, a floating conical drilling unit. Innovative approaches to offshore drilling have been developed to expand the safe drilling periods throughout various depths of the icy waters of the Beaufort Sea.

The oil and gas industry considers that the present recoverable reserves of oil (120 million cubic metres) and gas (290 billion cubic metres) found under the Beaufort Sea-Mackenzie Delta region warrant consideration for production and transportation, especially should significant, new reserves be discovered. Planning and engineering by the oil industry have focused on confirmation of commercial hydrocarbon reserves, and on the preliminary design of primary production and transportation systems. Oil could be transported to market by an overland pipeline along the Mackenzie Valley from Richards Island in the Mackenzie Delta to Edmonton, Alberta, or in icebreaking tankers travelling through the Parry Channel to eastern Canada, or both. If constructed, such production and transportation systems would require investments of tens of billions of dollars.

In addition to these transportation systems, offshore islands or other types of platforms would provide the foundations for drilling systems, production wells and associated processing facilities, while oil from onshore reservoirs could be produced by methods similar to those used in southern Canada.

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The Proponents, in their submissions to the Panel, have described a range of options and scenarios for oil and gas production and transportation from the Beaufort Sea. These options ranged from oil production levels of about 15,000 m³/day (about 100,000 bbls/day) to the "highest technically achievable" level of about 200,000 m³/day (about 1,250,000 bbls/day). Recent exploration results suggest a likely production rate toward the lower end of this range. Associated with these production rates could be a variety of options for production and transportation of oil and gas, operational support systems and variations of population growth associated with different options. Further, a variety of alternative programs for managing the effects of growth on the people of the North were discussed. It is apparent that the Proponents are prepared to make significant adjustments to accommodate the public interest.

The Assessment

For the purposes of its review, the Panel developed two objectives. These are that:

- northerners, developers and governments must ensure:
- -that northerners are able to manage the effects of changes and to derive long-term benefits from developments; and
- -that the degree of risk to renewable resources from oil and gas production and transportation activities will be acceptable to them.

The Panel has determined that in order to satisfy these objectives a "phased approach" to hydrocarbon production and transportation is needed. This approach will see a number of "small" projects following each other rather than one largescale development project.

The potential benefits of oil and gas production and transportation would come from the substantial economic stimulus such activity could bring. Benefits could include the provision of employment for northerners, opportunities for northern business, and revenues to communities and territorial governments. These revenues would support improved education and training, social services, community infrastructure, and community and social development.

The Panel recognizes that, in some communities, oil and gas production could have adverse impacts on the northern way of life. For instance, the oil and gas industry might not bring all of the employment and business opportunities that individuals expect. The arrival of southern workers, increased income, new careers in industry and more extensive experiences and contacts with southern cultures could alter traditional lifestyles and values, and could affect community and family cohesion. Social services, community infrastructure and housing, and the management capabilities of local communities and other governments could be overwhelmed by large population increases. The Panel has concluded that with small-scale

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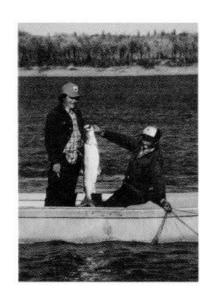
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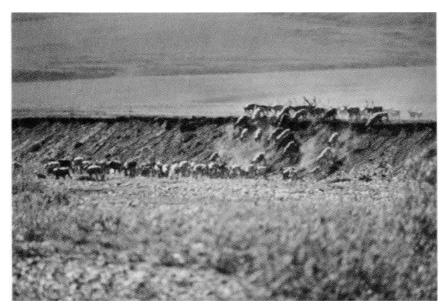
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development, these changes and adverse effects can be managed; with large-scale development, they cannot be effectively managed.

Although northerners generally expressed support for Beaufort Sea oil and gas production and transportation, they recognized that development could bring problems. They welcomed the employment and business opportunities which could result. Many northern intervenors spoke in favour of some form of continued oil and gas development in the North, although the Dene Nation and the Baffin Region Inuit Association, in particular, called for a settlement of land claims prior to development.

Most northerners emphasized, however, that development would not be beneficial unless it were properly controlled and managed.

The earliest possible date for commercial shipments of oil from the **Beaufort** region would probably be 1988. The interval between now and then should allow government and the Proponents sufficient time to take steps to permit orderly, safe production and transportation of hydrocarbons in the North. During that time, however, government agencies must implement a management control system to include northern communities, and must establish effective, comprehensive programs to obtain baseline data on aspects of oil production and transportation relevant to potential Beaufort Sea region developments.

Shipping of oil and gas by Arctic Class 10 tankers or by pipeline up the Mackenzie Valley or by both means was proposed by the Proponents. The number of tankers and the diameter of a pipeline would be determined by the rate of production achieved in the Beaufort Sea-Mackenzie Delta region, the extent of anticipated adverse effects and the ability of northerners to deal with these effects.

Small-Diameter Pipelines

The Panel concludes that a small-diameter, buried pipeline (e.g. 400 mm) would be the most acceptable alternative for transporting oil from the Beaufort Sea region because the drilling and production activities which support such a pipeline would provide benefits to the North and would have minimal negative impacts. There is also a broad consensus among federal and territorial government departments that a smalldiameter pipeline could be built in an environmentally acceptable manner, given appropriate regulations, regulatory enforcement and monitoring procedures.

Tankers

Although the Panel prefers that the phased approach begin with a small-diameter pipeline, it is aware that certain factors may make a phased approach beginning with tanker transportation the favoured mode of oil transport. The Panel believes Δ ' \rightarrow C \wedge C Δ /LLJ(Δ D(Δ +C- Δ)CD+C-C+LC. C+3 Δ 60L Δ 4 רף אלי-סחיחילכ כבים סויז אלי-סהי שיאן-LIPP (UALP PARTY P

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that oil-carrying tankers could be allowed initially on a demonstration scale (two tankers only), subject to a careful, step-bystep testing of the tankers and their operations.

Since the Proponents did not provide specific information on the effects of an Alaskan tanker route at the public sessions, this option was not addressed by the Panel.

Large-Diameter Pipeline

Although the transportation of oil through a large-diameter pipeline (e.g. 1,000 mm) was presented as an option at the public sessions, there was little discussion of the environmental effects of such a pipeline by either the Proponents or intervenors. The Panel, in studying the potential adverse socioeconomic effects of a large-diameter oil pipeline, concludes that those effects arising from the much larger population associated with that required to operate a production facility to fill such a pipeline (as contrasted to a small-diameter pipeline) would be much more severe. The Panel therefore concludes that, if a large-diameter oil pipeline is proposed in the near future, the detailed routing and potential socioeconomic effects must be subject to a comprehensive public review process, unless the lessons learned from the construction of several small-diameter pipelines in the Mackenzie Valley have removed the concerns of the local communities, the Government of the Northwest Territories (GNWT) and the Government of Canada. In the event that a gas pipeline is proposed as the initial phase, it should be of such capacity that the adverse socio-economic impacts resulting from the production of gas and the operation of the line will not be greater than those arising from a 15,000 m³/day oil production facility, unless a similar comprehensive public review is held.

Oil Spills

While the risks of an oil spill may appear small, the costs would be borne by local wildlife populations, some of which could be devastated, and by the people who depend upon them. In some situations, a major oil spill cannot be cleaned up, given present technology.

The development of standards for oil-spill clean-up capabilities in all-weather and seasonal conditions is recommended by the Panel as one aspect of preparation for future regulatory controls. These standards should be determined by the Minister of the Environment and the Government Leaders of the Northwest Territories and the Yukon in consultation with the regulatory agencies and local people, and be revised as necessary from time to time.

Government Management and Regulatory Control

In order to facilitate phased Beaufort Sea oil and gas production and transportation, the Panel recommends that a Beaufort

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Δ'Λ'σSea Coordinator's Office be instituted, based in Inuvik, and headed by a senior federal public servant at the deputy minister level. The Panel supports the recent initiative of DIAND and the GNWT to establish a coordination office in Inuvik. This, however, should be regarded only as a first step. The establishment of an office with more seniority and responsibility is required to guide phased Beaufort Sea oil production and transportation effectively.

Firm government leadership expressed through explicit and sound development decisions must be given to facilitate orderly development, and to minimize negative environmental and socioeconomic impacts in the region. While planning processes make the successful mitigation of adverse effects of industrial projects in the region more likely, a stable economic and development climate is a prerequisite to sound community development and to business or investment decisions.

The Coast Guard should issue instructions for the operation of vessels including those which recognize areas or times of environmental sensitivities. NORDREG, the Arctic Vessel Traffic Management System, should be made mandatory for all shipping in Canadian Arctic waters. A polar icebreaker of at least Arctic Class 8 specification should be constructed immediately. The Minister of Transport should appoint an independent port authority to control and manage all port and harbour developments in the Beaufort Sea region. The authority should have representation from local communities, aboriginal organizations and territorial governments. In order to prevent the proliferation of duplicate facilities, the construction and operation of only multi-user ports should be approved and kept at a minimum. In addition, a single government contingency plan for oil-spill clean-up in Arctic marine waters should be planned, administered and directed by the Canadian Coast Guard.

For coastal developments, no port or shore base should be permitted west of Kay Point, Yukon. Only one deep-draft port should be permitted on the Beaufort Sea coast, unless offshore production areas are so far apart that two such ports become necessary. It is generally expected that supply base facilities would be associated with a deep-water port, but it is also possible that alternative ports and supply bases will be proposed, particularly if the oil and gas reserves to be developed are in near-shore waters. The Panel has concluded that, although the environmental effects at sites east of Kay Point on the Yukon North Slope and sites east of the Mackenzie Delta can be made acceptable, it is also desirable that these facilities should be developed only on a common-user principle. Preferably, ports and supply bases should be limited to existing sites, or to one new site, if a deep-water port facility is eventually needed.

Research and Monitoring

The Panel has concluded that research and monitoring activities of both the territorial and the federal governments require additional support, if **Beaufort** Sea-Mackenzie Delta region developments are to be managed effectively. Some information and research gaps are identified in this report such as the

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Conclusion

The Panel concludes that small-scale oil production and transportation is acceptable on environmental and socio-economic grounds, provided that:

- the Government of Canada, the Government of the Northwest Territories and the Government of the Yukon put in place the Panel's recommended social and economic infrastructures and programs prior to the commencement of construction of hydrocarbon production and transportation facilities, to minimize adverse social effects on, and to maximize lasting benefits to, northern people;
- northern residents have an effective voice in monitoring and managing problems that may come with changes to their way of life;
- the collective risks to northern residents from various project components be offset by increased benefits;
- the development of yet-to-be-proven approaches to producing and transporting oil be by phased development, with intensive research and careful monitoring;
- the standards for environmental protection and risk prevention be at least equal to the standards proposed by the Proponents in their EIS, in their other documents and in their statements at public sessions before the Panel;
- the commitments by the Proponents regarding socioeconomic mitigative measures be met on a continuing and responsible basis;
- oil-spill response and clean-up capability be in place well in advance of oil production, and that the Proponents be capable of controlling spilled oil effectively;
- the Proponents share, where possible, facilities such as pipeline systems, shore bases and other required infrastructure;
- compensatory programs be in place to address real damages caused by the Proponents or others; and
- the Government of Canada, as the main approval authority, sufficiently develop its administrative, legislative, operational, and research capability to ensure a full and effective review of proposed component projects, and to carry out the necessary licensing and regulation of their development and operation.

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List of Recommendations

LIST OF RECOMMENDATIONS

It should be noted that the Panel has nine **principal** recommendations; two in the Human Environment Section, four in the Natural Environment Section and three in the Government Management Section.

The Process

The Environmental Assessment and Review Process is constantly evolving. As a result of the Panel's experience in the Beaufort Sea Environmental Assessment Panel Review process it recommends that:

- intervenor funding be made available for all future EARP reviews, and that funding be restricted to those participants who would be significantly affected by the proposal under review:
- the Department of Indian Affairs and Northern Development assume responsibility for the document entitled "Information Survey-Kinds and Sources-for the Environmental Assessment and Review Process: Beaufort Sea Hydrocarbon Production and Transportation Proposal" and have it updated annually.

Oil Spills and Risk

The Panel has made a number of recommendations on the subject of oil spills, and the importance of preventing them and being fully prepared in the event that one occurs. The Panel recommends that:

- the Proponents, the Department of the Environment and the Department of Fisheries and Oceans, cooperate in a program to improve and validate oil-spill trajectory models that would be workable by the time production commences;
- 4. the Proponents complete sensitivity mapping of all areas potentially affected by oil spills in the production zone and along transportation routes before any transportation of oil takes place:
- 5. the Minister of the Environment and the Leaders of the Government of the Northwest Territories and the Government of the Yukon jointly set minimum standards for oil-spill cleanup capability under various conditions and seasons of the year in the **Beaufort** Sea production zone and along any subsequent transportation corridors, recognizing that sensitive areas will require especially stringent standards;
- 6. the Proponents' oil-spill contingency plans be formally reviewed and subject to approval by the appropriate government agencies before production drilling is allowed, and that regular test exercises be held to verify emergency response procedures and capabilities of the Proponents;
- local people continue to be trained and employed through local businesses in the use of oil-spill clean-up procedures and equipment, and that these opportunities be extended to include other types of environmental protection programs;

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- 8. the Government of Canada establish an effective funding mechanism immediately to ensure that the Department of the Environment, with the cooperation and participation of the Department of Fisheries and Oceans and the Department of Indian Affairs and Northern Development, continue research on oil-spill clean-up equipment and on the behaviour, detection and effects of oil spills in the Arctic marine, fresh water and terrestrial environments.

The Human Environment

The **principal** recommendations in the Human Environment Section are that:

- arrangements be put in place by the federal and territorial governments, upon approval of oil and gas production and transportation, to enable social agencies and the communities to manage the socio-economic effects of growth;
- upon application, only small-scale, phased production and transportation of oil and gas resources from the **Beaufort** Sea region be authorized.

The Panel has made several other recommendations relating to the human environment. The Panel recommends that:

- 11. camps be used for the temporary construction workforce. These camps must be located well away from communities, except where a community agrees to accept a camp. The Proponents and communities must cooperate to determine rules governing employee access to local communities;
- the Proponents continue to develop public information campaigns in cooperation with government agencies to inform southern job seekers that northern employment can only be obtained through southern hiring halls;
- before oil or gas production commences, the Proponents develop contingency plans for abandonment satisfactory to governments, and that such plans be reviewed periodically;
- governments give to the communities and local hunters and trappers a stronger role in harvesting studies, fish and wildlife resource planning and decision making, monitoring and enforcement;
- licensing authorities ensure that adequate supplies of sand and gravel are reserved to meet the long-term needs of northern communities;
- 16. the feasibility of establishing post-secondary, higher educational facilities at Inuvik and in the Eastern Arctic be explored thoroughly and immediately by governments and community representatives, and that the results be published and distributed in the communities for discussion purposes and for subsequent government and community action;
- the communities, governments and Proponents work together to integrate cross-cultural orientation with existing training programs;

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- 18. the Proponents and the Government of the Northwest Territories establish cross-cultural orientation programs that are developed and delivered by northerners who are thoroughly familiar with native and non-native cultures and with experience in the industry's oil fields;
- 19. the Government of Canada and the Government of the Northwest Territories establish an agreement, after consultation with labour unions, that includes legislation, if necessary, to ensure that unions are neither a barrier to employment for northerners nor to the development of northern businesses;
- the Government of Canada and the Government of the Northwest Territories establish an agreement designating responsibility for regular inspection of the Proponents' facilities with respect to occupational health and safety;
- the Government of the Northwest Territories provide more effective assistance to local businesses for bonding purposes.

The Natural Environment

The Panel has made four **principal** recommendations in the Natural Environment Section. The Panel **recommends** that:

- 22. the Government of Canada approve the use of oil tankers to transport **Beaufort** Sea oil only if:
 - a) a comprehensive government Research and Preparation Stage is completed by governments and industry, and
 - b) a Two Tanker Stage using Class 10 oil-carrying tankers demonstrates that environmental and socio-economic effects are within acceptable limits;
- upon application, the transport of oil from the Beaufort Sea-Mackenzie Delta region through the Mackenzie Valley only be authorized to begin through a single, small-diameter buried pipeline;
- a comprehensive public review on socio-economic grounds for a future large diameter oil pipeline (e.g. 1000 mm) be undertaken if it is the initial mode for transporting oil through the Mackenzie Valley;
- 25. no port or supply base be permitted west of Kay Point.

With respect to pollutants entering the marine environment, the Panel recommends that:

- 26. the discharge of formation waters containing hydrocarbons and trace metals to the **Beaufort** Sea be avoided. Formation waters containing these substances must be **reinjected** to the reservoir at the earliest date feasible. Until that date, any discharge of formation waters must meet government environmental standards:
- 27. an integrated regional hazardous and toxic chemical management strategy be prepared by the Department of Indian Affairs and Northern Development in consultation with the Department of the Environment, the Department of Fisheries and Oceans, the territorial governments and the Proponents for the handling, transport, storage, use and disposal of hazardous and toxic substances;

- 19. ቴሬርኮና ፴ሬናበላቴጋ じኖርኮያዣና ጳፕቼበቦቴጋበኑ, ▷ቼቼበ-ቼቴኒሮፕጋበኑ ቴጋናትቼበቦቴኑ, Lctcኮየበσቴጋ CΔLΔՐላቼ-Ժ?በኑ, ለናረበርቴጋЈ ▷የኮፕሮፕጋፐኮና Δቼቴልፊታቼበርኮህቴጋ-ሮና ላቴርጋ ፌቴቦኖና Δቼቴልፊታቼፕርቲኖኖፕ<C;
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- 24. ልፌተና ጋኒኦዜበርኦናበፋናልበኑ 4ለሞ/ሞርኦሞቴናልበና ቴልና ል/ዜቴዜኒዕር ቁጥታናኒ የነራው ላይ ነኒኮኑ (ቁጥታል 1000 mm) Γ-የተና ሩተልና;
- 25. Kay Point-Γ ጋር ነር ነለ የው ላዣ ነጋበነ.

- 26. Þፕ/ላጋነ ላ느ጋ የ/2ጏታልና ላናርናቈናጋና ርሒኦና괴ላናርል--느ևሉ፡ጋናና ቴውጋልተቈና ላናርናቈናጋና ልσቼበናላውበነጋናና />σላσ. ላ느ጋ />፦፦፣ ላናርላል፦>‹ኦነበተቈናና /፦ ላ-ፕሎርኦቶቴሒላቴፐረና ኮላኒነተውና;

- 28. the Proponents' contingency plans for responding to spills and other accidents involving hazardous or toxic chemicals be subjected to regulatory review and approval;
- 29. the Department of Fisheries and Oceans and the Department of the Environment design a program to determine the fate of hydrocarbons, trace metals and hazardous substances in the Beaufort Sea originating from industry activities.

With respect to ice and icebreaking, the Panel recommends that:

- further research be carried out by the Proponents, the Department of the Environment and the Department of Fisheries and Oceans to determine the influence of artificial islands on the growth and break-up of landfast ice;
- the effects of icebreaking on ice regimes be further studied by the Proponents and the Government of Canada and that these studies include field research and monitoring during the Two Tanker Stage;
- in order to assess the effects of icebreaking on human travel and safety:
 - a) the Government of Canada and the Proponents, in consultation with the communities in the affected areas, gather information on the frequency and extent of human activity on the ice in relevant locations along the proposed tanker route:
 - b) in areas of concern, the Government of Canada and the Proponents carry out experiments to evaluate the potential hazard created by vessel tracks;
 - c) the Proponents, in areas where ship track crossing may be a potential problem, establish with local communities an effective notification system about the approach of ship traffic:
- necessary navigation and communication systems, and weather, ice and hazard detection systems be operational before transportation of oil by any tanker is permitted;
- hydrographic charting for the proposed tanker route be completed before transportation of oil by any tanker is permitted.

On the matter of wildlife, birds and fish, the Panel recommends that:

- 35. the Government of Canada provide adequate funding to the Government of the Northwest Territories to resume an effective monitoring program on polar bears of the **Beaufort** Sea and Parry Channel regions to enhance management and protection of this species;
- 36. the Department of Fisheries and Oceans conduct the research programs necessary to:
 - a) identify distribution of seals along the proposed tanker route; and
 - b) determine the effects of icebreaking on seal behaviour and mortality, including the loss of pups due to flooding of dens;

- 31. ለ<- ϵ ብናነቡትና ቴ ϵ ር>-> ሀ< ϵ ሁነትና %>ት\ና>ብሶ የፅዖት ለዕሎ- ሰና ϵ የታሴ የመናጋ ላ> ϵ የበሁታናኒኒር ለ<- ϵ ብናበራንበት የ>- ϵ ናሩር;
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 - ላ) ለ<-- (4) የነጋርት ዕማ የነጋርት ጋርት ይመር የመደረ ነው።ላይ የመርመው ነው።ላይ የመርመ ነው።ላይ የመርመ ነው።ላይ የመርመ ነው።</
- 33. Þᡪ᠈Ϥͻ᠈ᢗᡄϷᡪᠬ᠈ᡄ৫、᠈ᠳᢗ᠋ᡫ᠈ᡌᡆ᠑ᢣ᠙᠘ᠺ᠕᠅᠆ ᢐᢧ᠘᠈ᠳᡆᢦ ᠈ ᠘ᠳ᠘᠆᠘ ᠙ᢗᡲᢐ᠘᠘ᢐᢐ᠘ᢎ᠘ᡮ᠑᠅ ᠘ᢥ᠆ ᠙᠈᠈ᡪᢗÞᠵᡥᡪ᠘ᡶ᠘ᡣ᠈:
- 34. Þ፣ዖላጔኑር፣ኇ፣ചና 4%ፅበኑኒና በበናርÞኖቮ፣ጔበኑ ለኖ፦፫ላ-በናበረÞ፣በቴልቦና ፖር.

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- 37. the Government of Canada explore the possibility of an international research program on the biology, distribution and ecology of the bowhead whale;
- 38. the Department of Fisheries and Oceans undertake research programs on beluga whales to develop effective monitoring and mitigation programs;
- 39. the Department of Fisheries and Oceans conduct research to better define both narwhal distribution patterns and the potential impacts of tanker traffic upon the species;
- 40. the Department of Fisheries and Oceans, as part of an Arctic coastal and estuarian fisheries research and management program, identify and study fish habitats within the Beaufort Sea coastal area, and fish species which could be sensitive to oil and gas production and transportation to develop effective monitoring and mitigation programs;
- 41. the Canadian Wildlife Service of the Department of the Environment expand the existing commitments to research on the most important Arctic marine and terrestrial bird species likely to be affected by the proposed development so that adequate baseline data are available for monitoring and mitigation programs;
- 42. ship passage through polynyas be conducted in a manner that will minimize impacts on marine mammal and bird populations, and that further studies be conducted of the Cape Bathurst and Eastern Lancaster Sound polynyas to help define the best procedures to minimize impacts from ship traffic impacts and from oil spills;
- 43. the Government of Canada provide full financial support to the Canadian Wildlife Service of the Department of the **Environment and the Department of Renewable Resources** of the Government of Yukon to undertake the following to allow the design of effective mitigation and monitoring programs:
 - a) specific research related to the reaction of caribou to vehicle traffic and to overflight by jet aircraft;
 - b) specific research on the Yukon North Slope caribou range ecology, particularly summer ecology, including the importance of insect relief habitat; and
 - c) computer simulation modelling of caribou population dynamics.

The Panel has made a series of recommendations on the subject of research related to vessel sound. The Panel recommends that:

- 44. The Department of Fisheries and Oceans continue and expand the research activities necessary to understand the potential impacts of vessel traffic upon Arctic marine mammals by;
 - a) identifying the characteristics of sounds propagated by icebreaking tankers to be used to carry Beaufort Sea oil to southern markets to confirm present predictions about the nature of those sounds,
 - b) obtaining baseline data on ambient sound before tanker traffic occurs, and
 - c) determining propagation paths and energy losses of sound from tankers for representative marine coastal habitats;

- 37. נכבשיו שבילים לבילסהבי בנוסחשן שבילי σ⊲∩C⊳ጋ∆•<u>α</u>ռ⊲%σዣ•ዾ[‹];
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- 43. נכבשישי ו פבסדיה יחחשים וי שבכד בלבל בתרישישים י **₫%ቆበዣዮኇኯ ፌ**⅃ሢናርናኇዣኇኇጏ:
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- 45. the Department of Fisheries and Oceans gather baseline data on sea mammals distribution, movements, numbers and migrations prior to tanker traffic;
- 46. the Department of Fisheries and Oceans undertake research on the behavioural response of marine mammals to the sounds produced by icebreaking ships in Arctic waters;
- 47. the Department of Fisheries and Oceans undertake research on the extent to which vocal communication and echolocation used by marine mammals are masked or otherwise interfered with by ship-produced sounds and the effects of such interference on the mammals;
- 48. the Department of Fisheries and Oceans undertake research on the extent of any acute and sub-acute physiological responses resulting from ship-produced sound.

The Panel, on a variety of other matters, further recommends that:

- 49. the Canada Oil and Gas Lands Administration have the Proponents' proposed under-ice repair methods for subsea pipelines tested under field conditions prior to operation of the pipelines;
- only one deep-draft port be permitted on the Beaufort Sea coast unless offshore production areas are so far apart that two separate deep-draft ports become necessary;
- each deep-draft port proposal be subject to a formal public review process, preferably the regional land use planning process;
- 52. development of a quarry at Mt. Sedgewick not be permitted pending a further public review (preferably through the regional land use planning process) of the need for such rock and alternative sources of rock such as Mt. Fitton;
- if there is a proven necessity for use of a quarry at Mt. Sedgewick, the Porcupine Caribou Management Board regulate access to the quarry;
- the Beaufort Sea Coordinator's Office coordinate the monitoring and research projects associated with the production and transportation of Beaufort Sea-Mackenzie Delta oil and gas;
- 55. for the purpose of implementing an effective monitoring program, the **Beaufort** Sea Coordinator's Office coordinate the establishment of suitable criteria and standards to be developed by the Government of the Northwest Territories, the Government of the Yukon and relevant federal government departments.

Compensation

The Panel has made only one recommendation concerning compensation, but this may well prove to be one of the most difficult recommendations to implement. The Panel recommends that:

- 45. ΔL፣ΓΡር-ኢትነፅና ቴΡትዮ∢፣ለነነው፣ ቴበ፣/Δጔበነ ΔL፣ΓΡ-CΔና <ናለነነርÞውዣር Γነነውና, ፌግሩጋ ውናር፣ውዣር Γነነውና CΔLΔCÞጋበነ ΡΓ4፣ላላውና;
- 47. ΔL፣ΓÞር፦ሲትና ቕÞትኣ፣ጋበ፥ ጜቇ፣ Þ፟Lጚና ጋኣÞLጜበቮ•ኇዣና ノ፥ፈርÞበՐ⊦Lኒዕር ÞΓፈ፣ፈፈና ቃለፈቃና;

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56. the Government of Canada, the Government of the Northwest Territories and the Government of the Yukon develop and implement a comprehensive compensation plan for the North encompassing the objectives set out by the Beaufort Sea Environmental Assessment Panel before production and transportation of Beaufort Sea oil and gas proceeds.

Government Management

The principal recommendations made by the Panel on the subject of government management are that:

- 57. the federal and territorial governments ensure that their respective departments and agencies prepare effective policies and programs now for managing Beaufort Sea-Mackenzie Delta hydrocarbon production and transportation with a goal of strengthening local management roles;
- 56. the federal and territorial governments negotiate as soon as possible the further transfer of administrative control to the Territories;
- 59. the role of the Beaufort Sea Coordinator's office be expanded to make it the coordinating office not only among the community-based Development impact Zone Group and governments, but also among industry and governments.

With regard to government research, the Panel recommends

- 60. the Government of Canada make a commitment to a fifteenyear program of accelerated Arctic research that includes the following elements:
 - a) a federal policy for Arctic research which provides a national focus for short- and long-term Arctic research and provides a mechanism for funding this research;
 - b) a commitment to encourage research in the North by northerners:
 - c) increased support for basic research during this period for federal agencies such as the Arctic Biological Research Station, the Canadian Wildlife Service, the Ocean Sciences and Surveys Directorate, the Polar Continental Shelf Project, and other centres of Arctic expertise;
 - d) a program designed to strengthen university centres for Arctic research;
 - e) a special tax write-off for the cost of industry-sponsored research in the Arctic that is made public within two years of the completion of fieldwork; and
 - f) funding for NOGAP.

The Panel, on a variety of other matters, further recommends that:

61. the senior governments cooperate in designing funding mechanisms for the regulatory surveillance for any Beaufort Sea-Mackenzie Delta project which will avoid such problems as those identified by the Norman Wells experience;

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- all parties proceed to establish a regional land use planning process and to complete land use plans for the Beaufort Sea-Mackenzie Delta region as soon as possible;
- 63. if no regional land use plan is in place, a process, preferably the regional land use process, be used to ensure local public involvement in the site selection for major facilities;
- 64. a single authority, the Canadian Coast Guard, be empowered to administer, plan and direct a government contingency plan for any oil spill in Arctic marine waters whether it originates from production platforms, pipelines, artificial islands, any form of shipping or from a source on shore that contaminates marine waters:
- 65. the Canadian Coast Guard have a consultation mechanism with all government agencies responsible for marine environmental management and protection throughout the region;
- 66. the Arctic Seas Contingency Plan for oil-spill containment and clean-up take into consideration the necessity for cooperation between international agencies;
- 67. the Canadian Coast Guard be empowered, through amendments or additions to existing Acts and Regulations, to direct shipping away from, or issue instructions for the safe operation of vessels within, specific areas, at times or locations of environmental sensitivity;
- 68. the present vessel traffic management system, NORDREG, be made mandatory for all vessels which enter Canadian Arctic Waters. The management system must be extended now to the Beaufort Sea region so that the Canadian Coast Guard and all others concerned can become familiar with the system before Arctic tankers enter these waters;
- the Government of Canada immediately commence the construction of an icebreaker that would meet at least Arctic Class 8 specifications;
- the Minister of Transport establish a single port authority to control and manage all port and harbour developments on the Beaufort Sea coast;
- 71. the port authority include northern residents selected from nominations made by local communities, native **organizations** and the territorial governments;
- multi-user ports be encouraged so that the proliferation of facilities is minimized;
- for each recommendation made in the Panel report the appropriate funding agency provide adequate and timely funds for its implementation;
- the federal government provide funds now for the develop ment of both social and environmental monitoring systems for the Beaufort Sea region;
- 75. those government departments having surveillance and enforcement responsibilities form a surveillance working group that would include representatives from northerners, both native and non-native. This group should work through the **Beaufort** Sea Coordinator's Off ice;
- 76. a **Beaufort** Sea Coastal Archaeological Program be established with the National Museum of Man as the lead agency. The participants in the Program should include the **Beaufort** Sea-Mackenzie Delta communities, the Proponents and the

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- agencies responsible for archaeological heritage matters at the territorial and federal levels;
- 77. the Government of Canada provide additional financial assistance to develop further the local education, interpretation and training components of the heritage preservation programs of both Yukon and the Northwest Territories;
- 70. the responsible government agencies, through contract if necessary, acquire expertise of the highest calibre, where it is not now present, to evaluate designs, construction techniques and operating procedures proposed by the Proponents and new to these agencies;
- 79. the Department of Indian Affairs and Northern Development, in consultation with the territorial governments, prepare for the increased development of northern energy resources which may result from approval of a Beaufort Sea transportation project to ensure that the rate and pace of growth of these developments is consistent with a small-scale, phased approach for each region of activity;
- 80. the Minister of the Environment either:
 - a) appoint with the Government of Newfoundland an independent review body to conduct a public review on the environmental and socio-economic effects of tanker traffic in the Labrador Sea; or
 - b) sponsor a review of this issue at a conference called for that purpose to be held in Newfoundland. Recommendations made at the conference should be published and the Department of the Environment should attempt follow-up action where appropriate;
- 81. the Government of Canada, the territorial governments and the native groups strive to resolve the outstanding aboriginal claims as soon as possible;
- 82. the Beaufort Sea Environmental Assessment Panel Report be made available by the Department of External Affairs to the Government of the United States, the Government of the State of Alaska, the North Slope Borough of Alaska, the Government of Denmark and the Home Rule Government of Greenland;
- 83. the initiator of this review, the Department of Indian Affairs and Northern Development, publish a yearly report describing the progress that has been made in addressing the recommendations of the Panel or the reasons why the recommendations were not accepted.

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The Beaufort Sea Environmental Assessment Panel

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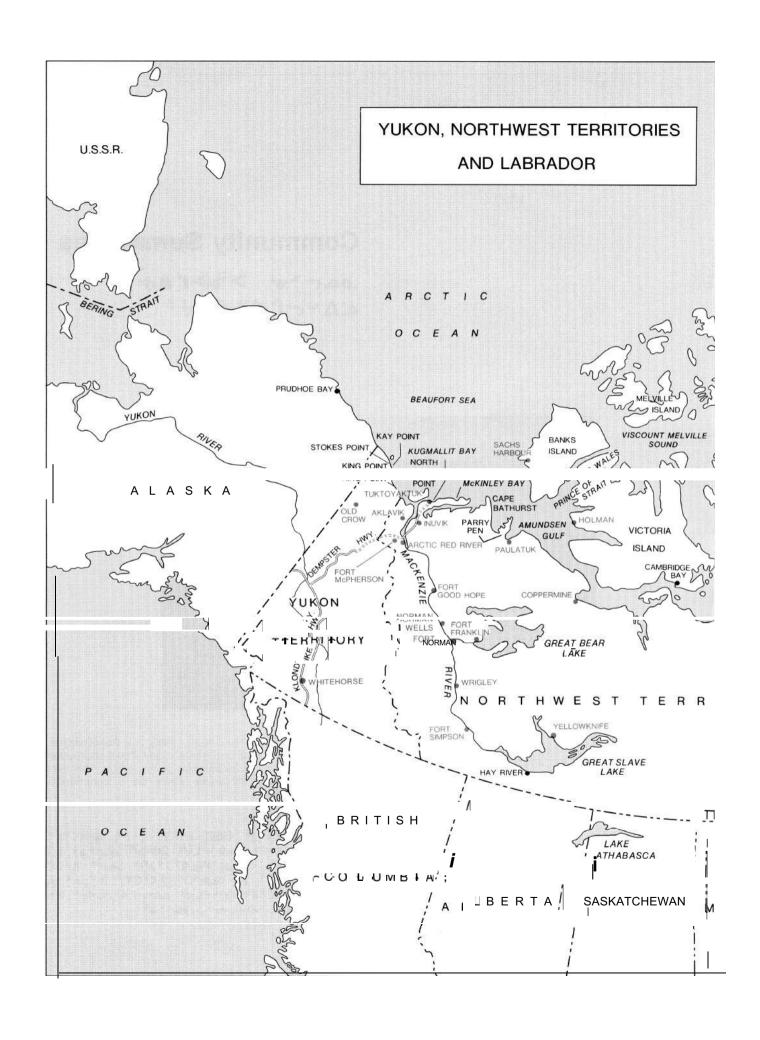
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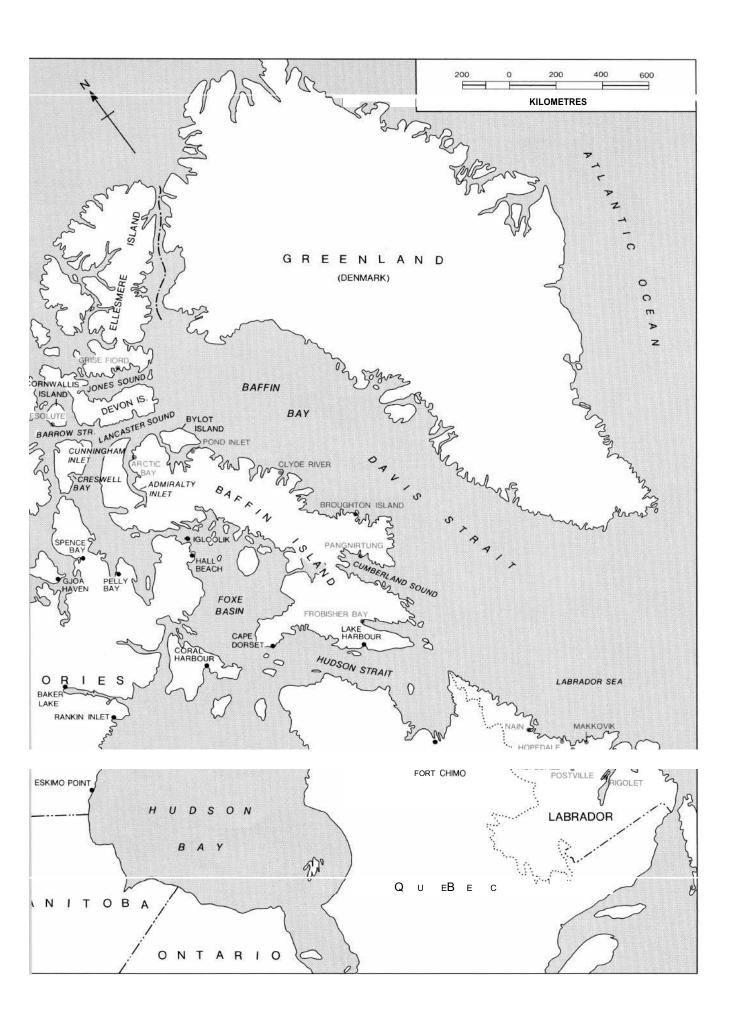
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Community Summaries



From September to November, 1983, the Panel visited 20 northern communities and heard many views and concerns from the residents of 29 different communities. This section summarizes many of these views on a community-by-community basis.





Beaufort Sea-Mackenzie Delta Communities

AKLAVIK, N.W.T.

September 15, 1983

In Aklavik, the Panel listened to concerns about training, alcohol problems, government programs and employment. Frustration was expressed about training programs which lead nowhere and are often inadequate to get graduates jobs beyond a menial level. People would like to see more opportunity for northern businesses and for participation in project activities at a more senior management level. It was felt that cross-cultural orientation programs for southern workers and supervisors would help them in understanding the northern lifestyle and culture.

The Mayor of Aklavik, Mr. George Edwards, suggested that there would be little employment for natives after the construction phase of major projects. He also expressed concern about shore base development at Stokes Point which might drive the caribou away.

Mr. Freddy Greenland asked what had happened to the recommendations of the Berger Report, especially the recommendation for park status for the Yukon North Slope. He emphasized the sensitivity of the area and supported the concept of no development on the North Slope. Other concerns which he mentioned related to future employment possibilities, social problems, the high suicide rate at Tuktoyaktuk and Fort McPherson, and the low attention that governments give to community concerns.

The Honourable Richard Nerysoo, MLA for Mackenzie Delta, explained that the GNWT supports a phased approach to Beaufort development using the pipeline transportation mode. The GNWT does not support an exploration base at Stokes Point. Funding requirements and financial assistance must be seriously considered. He also discussed establishment of the Beaufort Sea Development Impact Zone and explained his government's policy for the funding of training and higher education for native northerners and other northerners.

Other concerns expressed at the meeting included the longterm effect of the Proponents' proposal on people's lives, alcoholism and the need for professional counsellors, money management counselling, and the Proponents' different definitions of a northerner.

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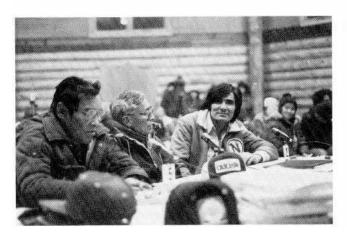
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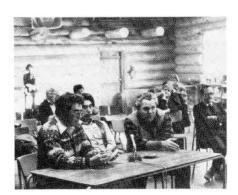
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COPPERMINE, N.W.T.

September 19, 1983

The Hunters and Trappers Association (HTA) of Coppermine voiced support for the presentation by the Sachs Harbour and Holman Hunters and Trappers Association regarding oil spills and tankers in Prince of Wales Strait. Residents generally supported the pipeline alternative over icebreaking tankers. Problems of migrating animals encountering possible oil spills was another issue addressed.

Mr. Ernie Bernhardt, of the Department of Social Services of the GNWT, pointed out the difficulty in accepting progress while at the same time retaining a traditional way of life. He suggested three areas which may assist the community in the adjustment: general and supportive counselling at the community level and on the job; budgeting or assistance in money management; and the employment of an expeditor, not just in terms of logistics, but as a liaison/information person at the community level.

Other questions were raised about the size of the Tuktovaktuk training centre (Tuk Tech), how candidates are selected, and plans for expansion. It was pointed out that northerners would prefer to train in a northern community rather than going south.

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FORT MCPHERSON AND ARCTIC RED RIVER, N.W.T.

September 21, 1983

The primary issue for residents attending this Community Session was the importance of the Mackenzie River and Delta to the food supply and traditional lifestyle of the communities. Examples were cited of environmental damage created by previous oil company activities. Concern about the caribou and damage to their calving grounds was expressed. Plans for development at Stokes Point were also questioned. It was noted that there is considerable concern for the land, as evidenced by the number of people at the meeting even though the trapping season had started.

It was stated that goods and services will remain expensive as long as the oil companies pay high wages. Changes which have occurred from development have not helped the people. Mr. Ernest Firth stated, "They studied the environment, the waters, the land-they haven't taken a serious look at the people that live around this area." The opinion was that, while development should go ahead, the people should also be heard

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ረበለሴ, 21, 1983

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to and prepared for development. Cross-cultural training would help native people and southerners understand each other, and training in money management would help people deal with a wage economy. There have been some economic advantages to Fort McPherson resulting from development, but some serious social and economic problems have also ensued.

Mr. Robert Simpson presented an overview of the concerns of the Mackenzie Delta Dene Regional Council. Concerns highlighted were: funding, the Panel's mandate, the impact of the project on lifestyle and land claims, planned development and control, land use planning, economic and social problems, and research.

HOLMAN, N.W.T.

September 17, 1983

Most of the concerns and comments heard at the Holman meeting were about icebreaking tankers and the impacts they would have on wildlife and harvesting activities. Mr. Roy Kuneyuna pointed out that ringed and bearded seals, found throughout Prince of Wales Strait, are vulnerable in the spring to any disturbance, contrary to the view of the Proponents. He recommended no ship traffic anywhere in the Northwest Passage in spring when there is the potential for disruption in areas where young seals are born.

Residents questioned the Proponents about possible oil spills, clean-up capability, percentage of recovery, response capability and timing, and accident probability. They also emphasized the need for onboard oil-spill equipment aboard the tanker. They also suggested that the answers given by the Proponents seemed more speculation than fact.

A further presentation emphasized wildlife resources, critical areas and concerns of the people of Holman for protection of the land, sea and animals. Concerns focused on disruptions and changes to animal life such as migration, ship tracks as barriers to travel over the ice and waste problems created by ships.

Other concerns included importance of sport hunting to the local economy, compensation for hunters and trappers, loss of employment as the project is abandoned, separation of family members for extended periods during employment, money management, and training.

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INUVIK, N.W.T.

November 22, 1983

The Panel heard a wide range of opinions and concerns expressed about development in the Beaufort Sea region ranging from strong support of the project to caution about the social and environmental problems that are often associated with mega-projects.

Concern about impacts on the Town of Inuvik ranged from increased social problems to the loss of recreational facilities because of housing requirements. Current youth problems of suicides and delinquency, a recognition that there are insufficient professional resource people to deal with stress-related problems, especially in the mental health and family life areas, and an appeal for handicapped facilities and equal opportunities for industry-related employment were raised before the Panel.

The Panel was informed that while industry cannot be blamed for all the social ills of the North, native people have paid a high price in terms of social impact wherever industrial activity has occured in the North. The plight of residents of the westend of Inuvik especially was brought to the Panel's attention. It was suggested that large-scale natural resource projects in peripheral regions invaribly leave the indigenous inhabitants worse off than before. A need for northern people to be involved in and part of any boom situation was raised by the Native Women's Association of NWT.

A number of suggestions to help residents with socioeconomic impacts were presented. These were counselling of individuals in financial and money management, lifeskills training, native counsellors for employees and families, health workers, transient centres and cross-cultural workshops for government and industry.

Special requirements of education in the North were raised with the Panel. The educational system must accommodate the needs of a limited industrial economy with those of a hunting and fishing economy. Industry and governments should be encouraged to set up cooperative educational programs.

Some concerns were raised about training opportunities, compensation for native hunters, and the hiring of southerners with northern addresses.

Some criticism of the Panel review process was heard from the Inuvik Chamber of Commerce. It was suggested that the review process duplicated the work of other agencies, that there were inequities in intervenor funding and that delays for development resulted from the review process. Mr. A. Pluim stated that "you have to live and work here in order to understand what really is taking place. Those of us who have lived and worked here are not being listened to."

A number of residents said that development should proceed as quickly as possible so that benefits such as much-needed services for recreation and other community activities could be built. The bottom line was that the town be given ample opportunity to plan properly for increased oil and gas activity.

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۵۸->۱ 22, 1983

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OLD CROW, Yukon

November 11, 1983

The first community speaker was Chief Johnny Abel who stated that the Yukon North Slope, particularly Stokes Point with its abundant wildlife, should not be tampered with. This was a recurring concern which cited the importance of the Porcupine Caribou to the culture and way of life for the Loucheux Band at Old Crow. Residents supported the recent government decision not to allow development of the North Slope-at least until land claims were settled. The idea of a wilderness park was encouraged for protection of the animals. Game is a main source of food for the people of Old Crow.

Questions were raised about the need for ports on the North Slope and which locations are preferred. It was recognized that development would mean roads which would bring tourists and others. The people felt that this would be devastating to the environment. The importance of monitoring, mitigation and a formula for compensation was stressed. Mr. W. Thomas related his experiences with industry and the concerns he has about Beaufort Sea development. It was also stated that "what we expect to happen and what actually happens are sometimes two different things. No one is sure what exactly will happen to the caribou herd." The Panel was asked to listen to what the people are saying. They should have a say in what is going to happen in their lives. Only after land claims are settled, and management boards are set up, could development be controlled by the people of the North.

Concern was expressed about how people are affected spiritually, mentally and physically by the impacts of development. In the final presentation, Mr. G. Njootli said that, although some residents expressed an interest in obtaining potential employment with industry, this concern was secondary to the wellbeing of the animals the community was dependent upon for food. Mr. Njootli called for no development until land claims are settled, and there is some form of protection for the North Slope.

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PAULATUK, N.W.T.

September 20, 1983

Gilbert Ruben presented, on behalf of the settlement of Paulatuk, a submission to the Panel based upon a fieldworker survey on the effects of Beaufort Sea development. The three principal concerns related to damage to the environment, availability of local training and opportunities for people to continue to live off the land. In summary, the survey determined that development would be beneficial, provided environmental and socioeconomic issues were adequately addressed.

Other environmental concerns were heard on potential oil spills and their impact on wildlife and the impacts of land and air traffic on migratory birds. The Panel also heard Mr. Edward Ruben tell of his personal experiences with the Proponents' ship track experiments at McKinley Bay.

Residents outlined social concerns about money management, housing, training, the cost of living, the COPE (land claims) Agreement-in-Principle and the impact of the abandonment phase of the project on employment.

SACHS HARBOUR, N.W.T.

September 16, 1983

The residents of Sachs Harbour expressed concern primarily about the impacts of underwater sound, icebreaking tankers and air traffic on hunting activities and wildlife.

Questions about the effects of noise from icebreaking tankers and aircraft on bearded and ringed seals and whales and resulting effects on polar bears and arctic foxes were raised. There was concern about seal pupping areas in or near Prince of Wales Strait, oil spills, prolonged spring break-up, the ability to use the Strait for hunting and transportation to and from Victoria Island and compensation for lost hunting opportunities.

Employment opportunities and advancement within industry, skill development and training, and economic benefits for northerners were the subjects of questions from community residents. Other topics raised were the possibility of a compensation board to review claims and determine awards for loss of commercial or traditional subsistence, adequate community consultation before decisions are made, the loss to the community of local employees seeking higher wages with industry, and recognition of Inuvialuit experience and expertise in many areas where the Proponents have employed southern consultants.

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ረበለሒ 16, 1983

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TUKTOYAKTUK, N.W.T.

September 14, 1983

The Tuktoyaktuk Community Session began with a presentation by the **Beaufort** Hunters and Trappers Association which expressed concerns related to the importance of the environment to their subsistence and way of life. Specific concerns mentioned included the potential impacts of tankers on bearded and ringed seals, the effects of underwater noise on sea mammals, the possible abandonment of seal pups by adult seals and the disruption of hunting patterns resulting from development activities. The group presented suggestions for a harbour authority for the Tuktoyaktuk Harbour, for **cross**-cultural orientation for southerners, for ways to improve work motivation, for the need for community infrastructure and for measuring the changing social values in the **Beaufort** communities.

The Hamlet Council also supported the idea of a harbour authority with local representation to control and monitor ship traffic and harbour development and expansion.

The local Tuktoyaktuk Hunters and Trappers Association and the Hamlet Council commented on problems caused by the airport which is experiencing increased traffic. Concern was voiced that the airport blocks access to important hunting areas, that air traffic has impacts on wildlife and that increased airport activity results in increasing dust and noise.

Environmental concerns included requests for further research on the effects of noise on marine mammals, on the effects of abandoned artificial islands, on the impact of artificial islands in prolonging ice break-up, and requests for additional oil-spill experiments under real-life conditions. This latter subject was further discussed at the Inuvik General Session by Tuktoyaktuk Mayor **Vince** Steen.

Social issues included a local petroleum industry training centre proposal; ongoing, long-term training and employment of Inuvialuit to raise skill levels; union concerns; northern contracting opportunities; special impact funding; abandonment; compensation for loss or damage to subsistence income from the land; the loss of traditional skills and culture; and the need for a land claims settlement. The Social Services Advisory Committee of Tuktoyaktuk brought further concerns to the Panel's attention in Inuvik. The problem areas identified were alcohol and drug problems, juvenile delinquency, spouse and child abuse and the need for improved social service facilities in Tuktoyaktu k.

ረ∩ለሒ 14, 1983

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Mackenzie Valley Communities

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FORT FRANKLIN, N.W.T

September 23, 1983

Several references were made to the Berger Inquiry where Dene submissions stressed land claims settlement before development. Without a settlement, "our land is getting smaller and smaller," as land is leased without consultation and resources are exported without benefit to the native people. The importance of the land and animals to the people was noted on several occasions. "We love our land . . . because we make a living on it . .."

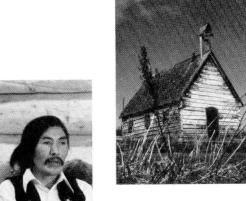
Frustration was expressed by the three Chiefs from Fort Franklin, Fort Good Hope and Fort Norman, and others in attendance, over the number of meetings where concerns have been presented again and again but nothing has happened. Native people have concluded that they "have to be part of it" to get any benefit. Residents requested the Panel to take into consideration the desire to get something in return for what is being taken out of their land. The people stated their preference to settle their land claims before considering development. People would be supportive of the Proponents' proposal if they and their children could benefit from the proposal.

Better communication with the communities and information distribution were stressed. People wanted to know how the project fits into the land use planning framework, Water Board hearings and wildlife management schemes.

A monitoring agency was suggested to look at people's problems related to discrimination, training, compensation, small business and native business opportunities, and the high cost of living. It was suggested that the Panel make use of experience gained from the Norman Wells Project.

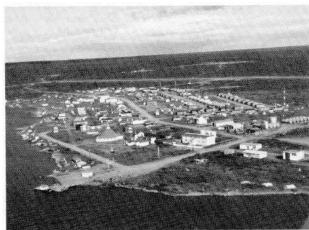
Other local concerns related to alcohol abuse in construction camps, in communities, and on the job, and to the possibility of damming the Great Bear River to provide electricity for pipeline pumping stations.

ረበለ⊾ 23, 1983- r



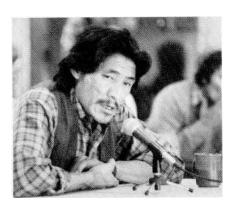


















FORT GOOD HOPE, N.W.T.

September 27, 1983

At the Fort Good Hope Community Session, residents related their experiences with the Norman Wells Expansion Project and their concerns about the current proposal. Many of the concerns and issues were similar to those presented to the Berger Inquiry. Some positions have not changed.

The Panel heard about the importance of traditional activities such as trapping, hunting and fishing-"... land is our money; we trap on it and we live on it." It was suggested that an interim agreement on protection of lands and resources should be implemented prior to land claims settlement. Questions of royalty payments and compensation for loss must also be considered.

Some frustration was expressed about governments' slow implementation of the recommendations of the Norman Wells Panel and the repetitiveness of hearings without recognition of many of the local concerns. "We have said many things in the past and more than likely it ends up on a shelf somewhere in Ottawa collecting dust. The government has before it recommendations from previous enquiries which are not being implemented but which could turn negative impacts into positive ones.'

Other concerns heard in the community related to training and native employment. Even after having taken training courses, and with some experience, people are having difficulty finding a job with industry.

Ms. D. Delancy, on behalf of the Fort Good Hope Band Council, made the point that governments should not leave it to the Proponents to come up with their own compensation policy. Government must ensure that an agreed-upon policy is in place before regulatory approval of any project. She also made the point that the regulatory process is backwards-all the approvals were given before a contingency plan was prepared, or the EARP Panel recommendations on the Norman Wells Expansion Project satisfactorily dealt with.

FORT NORMAN, N.W.T.

September 28, 1983

Many Fort Norman residents expressed a close relationship with the land and spoke of the importance of wildlife to them. Trapping is a part of their life and they want to maintain it. They brought to the Panel's attention the traditional activities of hunting, trapping and living off the land, and the need for protection of wildlife, as well as the issue of compensation for damages. Concerns about the timing of the Norman Wells pipeline crossing of Great Bear River, blasting, water quality and access to the construction camp at Great Bear River were also raised.

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ረበለ_∿ 27, 1983-r

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ረበለ_∿ 28, 1983-r

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The experiences of many with the Norman Wells Expansion Project were related. Of concern were the issues of communications, union employment, northern contracting, training, the cost of living and alcohol. Information distribution and the timeliness of community consultation about jobs and contract opportunities were cited as problems. Bonding, the ability of small community contractors to compete with large southern firms, and a lack of training opportunities were identified as barriers to northern participation in the Norman Wells Expansion Project. Unions are a concept foreign to many native people. A need was expressed for more information on unions, such as what a union is, the qualifications needed to join a union and why unionized contractors are used.

Chief Paul Wright spoke of the importance of communication and about his disillusionment with major development. He said through the translator, "... he's weary, he doesn't expect anything from it, and says it's pretty hard for my people because it seems like they're not going to participate in it and they wouldn't get anything from it." The Dene and oil companies must come to mutual agreement so everyone can benefit from development. He said "... if we listen to one another . . . it will be a better future for us . .. " and " ... if we don't listen to one another, . . . there will be more problems ... '

FORT SIMPSON/WRIGLEY, N.W.T.

September 29, 1983

Chief Jim Antoine was the first speaker at the Fort Simpson Community Session. His presentation made reference to the Berger Inquiry and clearly indicated that the position and feelings of the community about land claims had not changed. The feeling is that land claims are being jeopardized by development, since leased or alienated lands cannot be part of a land claim; yet land is still being leased with no Dene input. Royalties should be paid on resources taken from the ground of the native people to ensure programs are established to meet their needs.

The recommendations of the Norman Wells Panel were referred to the Beaufort Sea Panel for consideration. People objected to the fact that a second pipeline is being considered before the effects of the first are realized. Several people expressed concern about the pipeline crossing of the Mackenzie River upstream from Fort Simpson and about the fact that a major part of the Norman Wells line would be built in the coming winter season, without a monitoring agency in place.

Fort Simpson Mayor J. Villeneuve pointed out that Fort Simpson is still burdened by a municipal services and infrastructure which were expanded in anticipation of an earlier pipeline that never materialized. No special impact funding or assistance has been provided.

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Housing shortages, the high cost of living, alcohol problems, unemployment and poor social and economic conditions among the native community were noted. Dissatisfaction with employment, training and contract opportunities was expressed, as was skepticism about project studies carried out and the motives of government and industry.

NORMAN WELLS, N.W.T.

September 26, 1983

The focus of the Norman Wells Community Session was on the Norman Wells Expansion Project and impacts related to it. Project impacts on the community infrastructure included soaring operating and maintenance costs and general administration expenses, inadequate water delivery service, lack of recreation facilities, housing shortages, lack of residential planning, and the loss of autonomy for the hamlet.

Unionized jobs, definition of a northerner in terms of NWT residency requirements, lack of community cohesiveness because of rotational schedules, the timing of work training programs and lack of government assistance were issues raised by others.

One of the biggest disappointments associated with the Norman Wells Expansion Project was the inadequacy of impact funding and the failure to establish a Development Impact Zone group. While many "do not disagree with resource development . . . we do not wish to become a victim of circumstance." Further to this issue it was recommended that governments and proponents of mega-projects in the North should establish special capital expenditure funding for resource towns and agencies before future projects are implemented. Governments were inadequately prepared for the Norman Wells Expansion Project.

The **Metis** Association had concerns about wildlife and the lack of protection from transient hunters, the lack of communication between companies and native organizations, the lack of statistics on native employment, housing that is inaccessible to northerners while southern workers are taken care of, and the inability of northern contractors to compete with large southern companies. Other concerns related to environmental issues such as oil-spill response capability at critical times in terms of weather and ice, construction impact on the land and the effect of winter road access to wildlife.

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ረበለ_ಒ 26, 1983-୮

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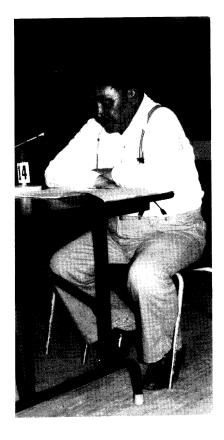
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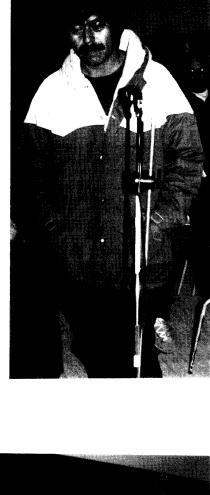












Eastern Arctic and Labrador Communities

۹۲۶۲ خر۱۹۲۲ میدز

ARCTIC BAY, N.W.T.

October 14, 1983

The meeting began with a presentation by the Development Review Committee of Arctic Bay and the Hamlet Council. Mr. G. Williams pointed out that information collected to date by government scientists and industry has only been collected during the summer months. Seldom have people collected environmental data in fall or winter. The question was asked about how assumptions or accurate predictions can be made when data for the full year are not available. Examples of some of the unknowns included cod spawning areas and the distribution of wildlife species.

Discussions and concerns involved icebreaking tankers, oil spills, ship track crossing, changes to the ice regime, noise, tanker routing and impacts on wildlife. Noise concerns centred on possible frightening of the animals and the possibility of interfering with the ability of seals to echo-locate, particularly during the dark period. Dangers were expressed about icebreaking activities which could prevent hunters from using Lancaster Sound safely, increased seal pup mortality in birth dens, and increased multi-year ice in Admiralty Inlet which would interfere with hunting and fishing activities. The possibility was raised of alternative ship routing in order to avoid some of the problems.

Oil spills were seen as one of the greatest threats to the environment. The questionable effectiveness of dispersants, ignitors and clean-up of oil in moving ice or a sea state greater than one and a half metres were raised as concerns. The local people's dependence on wildlife for consumption was raised in terms of compensation for adverse effects. Residents stressed that wildlife losses in terms of food, clothing and culture cannot be compensated. "We must stress to you again that the environment has been and still is today the base that Inuit culture and economy has been built on and maintained."

A number of requests were made to slow down development so that Inuit can prepare to participate. Few benefits are perceived for Inuit in terms of jobs and "it is impossible to have full participation due to a lack of education." It was suggested that the concerns and recommendations of Inuit are being ignored. The settlement of land claims and other political developments should take priority.

Other issues brought to the Panel's attention were training of tanker officers and crew, employment of non-Canadians, preference for a pipeline rather than tankers, more studies in areas of social concern, Inuit participation on any committee dealing with tanker operations and the psychological impacts of a loss of lifestyle. "The oil companies have really got to convince us that they can carry out this responsibility."

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FROBISHER BAY, N.W.T

October 23, 1983

Environmental issues discussed at the Frobisher Bay Community Session were mainly related to wildlife concerns. Questions were asked about disturbances of narwhal and beluga along the shipping route. Another concern related to polar bear research and how Inuit hunters might contribute.

A question was raised about the validity and quality of research being carried out since it was being conducted by the same companies that want to drill.

There was some discussion about education and training which would allow Inuit to participate in development. It was suggested that education should come before development. The Proponents' reactions to the question of land claims and job training were also sought.

The meeting concluded with a discussion by BRIA representatives of the potential for Inuit people to participate in Arctic environmental studies. The Proponents were asked whether or not they had tried or if they intended to try, to access systematically the body of environmental knowledge which the Inuit people inherently possess.

NAIN, LABRADOR

October 27, 1983

The Nain Community Session was attended by representatives of the Labrador communities of Makkovik, Hopedale, Postville and Rigolet. Each community made a presentation to the Panel, and in general each was opposed to tankers travelling through the Labrador Sea.

Specific tanker concerns related to the testing of the ships, oil spills, seaworthiness in freezing spray, contingency and clean-up plans, and the impact of noise and traffic on wildlife. The success of clean-up techniques in the Labrador Sea was questioned where high winds, waves, currents and tides could impair their effectiveness.

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It was stated that coastal residents rely almost entirely on the resources of the Labrador Sea. An oil spill could jeopardize the livelihood of fishermen and seal hunters on the northern Labrador coast. Concern was expressed about oil mixed with drifting pack ice being released into the water column as the ice melts at a time sensitive for hatching cod eggs.

A communication gap is perceived between the Labrador people, government and industry. The Labrador Inuit Association pointed to the lack of credibility of governments with the Labrador people in terms of environmental protection for the ocean and coastline. They requested that the Government of Canada take action to include the area south of 60° N Latitude in the review process and to ensure that environmental requlations are legislated. It was stated that, "Arctic waters do not stop north of 60°... nor would the tankers."

Socio-economic issues centred on concern for sea mammals and the fisheries that might potentially be affected by the project and the direct impact such effects would have on the traditional way of life and culture of the northern coast. Compensation for losses resulting from the project was questioned since there is a heavy reliance on the resources of the sea to supplement the high cost of southern foods.

PANGNIRTUNG, BROUGHTON ISLAND AND CLYDE RIVER, N.W.T.

October 22, 1983

The Pangnirtung Community Session was attended by residents from Broughton Island and Clyde River. The Panel listened to concerns about ship traffic in Davis Strait, such as the possible impacts this may have upon wildlife, the effects of underwater noise and oil spills. The importance of wildlife such as narwhal, seals, and polar bear to the Inuit culture and lifestyle of the people of east Baffin was stressed, as money could not bring back a way of life or compensate for the loss of wildlife.

Contingency plans and response capability under adverse conditions of weather, waves, on-shore currents and ice were questioned. The Panel heard from residents that at times immediate response to an accident would be impossible, as demonstrated by personal accounts of the difficulty in searching for lost individuals.

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8 Residents suggested more community and Inuit involvement in research studies and monitoring. Local credibility of monitoring results could be improved by Inuit participation on ships.

Questions were raised about the social issues of employment and training opportunities which would allow for Eastern Arctic Inuit participation in development activities. Apparent barriers to employment and training were discussed such as education levels, language ability, distance and transportation problems, and the degree to which Beaufort area jobs are advertised in the Eastern Arctic.

It was also suggested that ships returning empty from the South may be able to bring in goods or equipment which would be expensive by air or would have to wait until sea lift.

POND INLET, N.W.T.

October 13, 1983

Concerns raised at the Pond Inlet Community Session ranged from educational matters and employment opportunities to the risks and impacts of tanker traffic through Lancaster Sound. Sam Omik put the issue in perspective when he said, "Don't take the non-renewable resources from our land until our people can play a meaningful role in these developments." Other remarks suggested, "No development until we are ready; no development until land claims are settled or no development until oil spills can be cleaned up."

Concern was expressed that the Proponents did not understand the environmental effects of its activities, nor did they understand the cultural and subsistence importance of wild-life. "If there is a big change in our land we would be very sad ... ", "wildlife has a great deal to do with our lives." Compensation could not cover a lost lifestyle or culture.

Some residents stated that in governments' preoccupation with resource development they tend to forget about people development.

The need for better education standards and facilities in the North was stressed. Schooling is substandard and children should neither have to leave home to go to high school, where they are compelled to live in residence away from their families, nor should they have to leave the North for a technical school or university. "If education is not going to improve, I would rather not see the oil being transported through the sea."

More specific concerns were raised about the relocation of marine mammals, difficulties with crossing of ship tracks, underwater noise effects and oil spills. The Proponents were questioned about the risk of oil spills, clean-up capability and experience, and the impact on birds, beluga, narwhal and seals. Also raised were the issues of the manoeuvrability of the ships in relation to seal dens and the possibility of hunters being set adrift because of cracks formed from ship traffic. Monitoring of impacts from ship operations was also suggested.

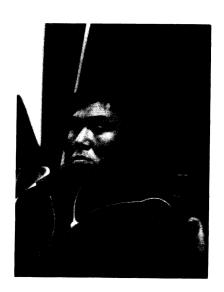
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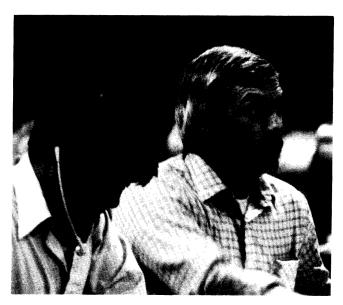
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▶**¹**⊅>¹ 13, 1983

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Socio-economic concerns expressed included benefits to the people of the North from further shipping development, the speed of development, employment opportunities, the definition of northerners, barriers to employment such as unions, low education and transportation problems. It was stated that it was difficult to look favourably on a development if job opportunities are unlikely and there are no benefits.

RESOLUTE BAY/GRISE FIORD, N.W.T.

October 18, 1983

The Resolute Bay Community Session was also attended by representatives from Grise Fiord. Most of the concerns raised at the meeting focused on oil tanker traffic and the impact of ships on wildlife and hunting activities.

Resolute Bay Mayor George Eckalook pointed out that the Beaufort Sea proposal was different from the Arctic Pilot Project and consequently more serious in terms of impact. He raised questions on oil spills and the difficulty of cleaning up oil in cold water. He also questioned the credibility of the Proponents' oil spill experiments, which were taken in ideal spring and summer conditions.

The inevitability of an oil spill during the life of the project was mentioned in regard to the lack of guarantees that accidents or oil spills would not have an impact on the wildlife. The importance of wildlife to lnuit people for food and clothing was demonstrated.

It was stated that people did not want to see ships in the winter because they use the ice for transportation to their hunting grounds. Concerns were raised about the re-freezing of ship tracks, rough ice and the danger, if it were covered with drifting snow, that a ship track would not re-freeze right away. Also of concern were the impacts of tankers on birth dens of seals, and on narwhal which may follow a re-freezing ship track. Solutions to the danger of people camped or crossing the ice of Barrow Strait at night were also addressed.

Questions concerning employment on the tankers, education as a barrier to employment and compensation for wildlife losses were raised. It was stated that while the Proponents discuss all the good things their proposal has to offer, there is not much said about the negative impacts. People from the Arctic have a lot to offer people from the South in the way of experience when they come North to work.

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Participants at Community Sessions

PARTICIPANTS AT COMMUNITY SESSIONS

TUKTOYAKTUK, September 14, 1983 ついづらって、イハヘ 14, 1983

ALLEN, Roger BEZAIRE, Ğeorge CARPENTER, Ada COCKNEY, Kennedy Jr. DILLON, Eddie FELIX, Emanual GOOSE, Rov GRUBEN, Roger HOOS, Rick KIKOAK, Edward KIKOAK, Lena KIKOAK, Roy LYONS, Mary POKIAK, Calvin WHITE, Agnes WISWELL, Andrew WOLKIE, Fred

BEZAIRE, George
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DIXON, Geoffrey
EDWARDS, George
FURLONG, Charles
GARDLUND, Sarah Ann
GREENLAND, Freddie
HOOS, Rick
KARNES, Rose Marie
MORRISON, Bob
NERYSOO, The Honourable Richard
OKPIK, Abe
SITTICHINLI, Jim Edward
SITTICHINLI, Lazarus
WISWELL, Andrew

SACHS HARBOUR, September 16, 1983 ムらいで、 イハヘム 16, 1983

BEZAIRE, George CARPENTER, Andy CHURCHER, Archie ESAU, Shirley ESAU, Peter GOOSE, Roy HOAGAK, Charles HOOS, Rick KUPTANA, William OKPIK, Abe SIDNEY, Floyd WHITE, Agnes

HOLMAN, September 17, 1983 トン・くづに、 イハヘ 17, 1983

ALEEKUK, Issaac BEZAIRE, George CHURCHER, Archie ELIAS, Albert HOOS, Rick KATAOYAK, Simon KUNEYUNA, Roy KUPTANA, Robert OKPIK, Abe ROSE, John SIMMS, Allen

COPPERMINE, September 19, 1983 もつじ、 イハム 19, 1983

ALGIAK, Alec BERNHARDT, Ernie BEZAIRE, George GUTHRIE, Jim HAVIOYAK, Donald HOOS, Rick KARNES, Rose Marie PIGALAK, Tommy WISWELL, Andrew

PAULATUK, September 20, 1983 くトこく「「、 イハム 20, **1983**

BEZAIRE, George HOOS, Rick RUBEN, Edward RUBEN, Garrett RUBEN, Gilbert THRASHER, Tom WHITE, Agnes

FORT MCPHERSON, September 21, 1983 > 4 いっている これ 1983

ANDRE, Hyacynth BEZAIRE, George CHARLIE, Johnny FIRTH, Ernest HOOS, Rick KOE, Charles MACDONALD, William NORBERT, Nap SIMPSON, Bob SNOWSHOE, Charlie WISWELL, Andrew

FORT FRANKLIN, September 23, 1983 >dና >ናልነርነር, ረበለ_ቤ 23, 1983

BARNABY. Charlie BATON, Paul **BEZAIRE**, George BLONDIN, George HOOS, Rick KODAKI N. George T'SELEIE, John WIDOW, Fred WRIGHT, Paul YALLEE, Alvin

NORMAN WELLS, September 26, 1983 **△ላ∟• >**ላ⁴୮,/በ∧⊾ 26.

ARNETT, Mike BJORNSON, Kathy BYRNE, William CALDWELL, Ed DANIELSON, Liz DOOLITTLE, Violet HARBURN, Norm LINTON, Phyllis MYERS, Rick SCHMITKE, Warren STEVENS, Sandra WISWELL, Andrew

FORT GOOD HOPE, September 27, 1983 1983

ARNETT, Mike BARNABY, Charlie BENSON, Mel BEZAIRE, George CALDWELL, Ed DELANCY, Debbie GRANDJAMBE, Edward HOOS, Rick JACKSON, Lucy KOCHON, Charlie MCLAUGHLAN, Letha POPE, Frank SHAE, Dolphus T'SELEIE, Frank T'SELEIE, John WISWELL, Andrew

FORT NORMAN, September 28, 1983 > 4 • ወ L • ୮ , ረ በለፈ 28, 1983

ANDREW, Fred ARNETT, Mike BENSON, Mel BLONDIN, John CLEMENT, Robert ERHARDT, Phil HALEY, Susan MENACHO, Victor MENDO, Maurice NEYELLE, Jonas WIDOW, Fred WISWELL, Andrew WRIGHT, Paul YAKELEYA, Elizabeth YALLEE, Alvin

FORT SIMPSON, September 29, 1983

ANTOINE, Don ANTOINE, Jim ARNETT, Mike CALDWELL, Ed LAFFERTY, William MCARDY, John MENICOCHE, Betty MENICOCHE, Kevin PEARCE, Bill RODH, Mrs. SAKE, William VILLENEUVE, Jim WISWELL, Andrew

POND INLET, October 13, 1983 r'∩LC~L トゥッシャ 13, 1983

ALLOOLOO, Margaret ATADJUAT, Joanasee AWA, Appia CATTANACH, Rory CHURCHER, Archie ERKLOO, Elijah HOOS, Rick IDLOUT, Paul JAMES, Bob KALYNIUK, Gerry KILLIKTEE, Nigeoo KOMANGAPIK, Dorothee KOONARK, Stephan KOONOO, Joseph MCDERMOTT, Noel NASHAK, James NUTARAK, Jobie NUTARAK, Jemiama NUTARAK, Jesse OMIK, Sam PANIPAKOCHO, Elijah QITSUALAK, Rebecca SANGOYA, Paniloo UKALIANUK, Lucien WISWELL, Andrew

ARCTIC BAY, October 14, 1983 Δ ト Λ Δ ′ マ ト Γ 、 ト ト ブ > ′ 14, 1983

AOLA, Lasaloosie ARNATSIAQ, Peter CHURCHER, Archie HOOS, Rick INURAQ, Charlie IPEELEE, Attagutak KADLOO, Levi KADLOO, David KADLOO, Levi LEVI, Leah MCIVER, Jim NAQITAQVIK, Olayuq PEARCE, Frank QAMANIRQ, Peter SHAPPA, Kik UYUKULUK, Moses WILLIAMS, Glen WISWELL, Andrew

RESOLUTE, October 18, 1983 %⊳/∆′⊃୮.▷¹⊃>⁵ 18, 1983

AKEEAGOK, Gamalie AMAGOALIK, Simeone AUDLALUK, Larry AUDLA, Walter CATTANACH, Rory ECKALOOK, George GREYELL, Bob HOOS, Rick NUNGAQ, Levi NUNGAQ, Philip NUTARAJUK, Immooshie PUDLUK, Ludy WISWELL, Andrew

PANGNIRTUNG, October 22, 1983 <*゙ヮ゚ゔ゚゙゙ヷ゙ヾ**ゝ**゚ゔ゚>゚ 22, 1983

ARNAQUQ, Davidee AUDLAKIAK, Steve CURRIE, Jim FISHER, Maurice HOOS, Rick **IKARIALUK** KOONEELIUSIE, Jaco KOMOARTOK, Norman LUISEE, Jaco MARSHALL, Paul METUK, IOLA OSLER, Steven PUDLOO, Koonark WISWELL, Andrew

FROBISHER BAY, October 24, 1983 ∆ኈታ•ኇ、▷•ጛ>ና 24, 1983

ALLOOLOO, Margaret BRADETTE, Denis DONALDSON, Judith **GUENETTE Christine** HOOS, Rick MCNEIL, Ian NASHUK, Rita NESBITT, Tom OKPIK, Abe WISWELL. Andrew

NAIN, October 26 27, 1983 **Δ**Δ•Γ, ▷•Ͻ> 26, 27, 1983

ANDERSEN, August ANDERSON, William BOBBIT, Judith BROOMFIELD, Henry EDMUNDS, Randy EDMUNDS, Sharon EDMUNDS, Silpa EGEDE, Ivalo ETTULAK, Julius HOOS, Rick HUNTER, Renatus IGLIORTE, Philip JOSHUA, John LEO, Able MAGGO, Paulus MURPHY, Reuben OBED. Paul OKKAUTSIAK, Tom PALLISER, Bob PENNY, Danny ROWELL, Judy SAIMAT, Julius SILLET, Gerry STARR. T. UVLORIAK, Tom WARREN, Garfield WILLIAMS, Frances WISWELL, Andrew

OLD CROW, November 11, 1983 ▷ - d ፟ን. ፴ ለ - > ፣ 11, 1983

ABEL, Charlie ABEL, Johnny ABEL, Rosalie BEZAIRE, George BRUCE, Robert BRUCE, Robert Jr. CARLICK, Wayne

CHARLIE, Alfred CHARLIE, Ben CHARLIE, Carl CHARLIE, Effie CHARLIE, Lazarus DRAGGERMAN, Cathy FROST, Alice FROST, Steven HOOS, Rick KASSI, Mary KAY, Elizabeth KENDI, Randall LINKLATER, Effy LINKLATER, Irwin MITCHELL, Katherine NETRO, Hanna NETRO, Lorraine NJOOTLI, Grafton NJOOTLI, Stanley PETER, Abraham PETER, Mary SAX, Don TETLECHI, Randy THOMAS, Willie WISWELL, Andrew

INUVIK, November 22, 1983 סל גר אים, 1983

ALLEN, Bertha BEAUDREAU, Vicki BILLINGSLEY, Doug BURLINGAME, Stamatia CARDINAL, Elaine COADY, Bill CURRIE, Doreen CURTIS, Peggy HEINE, Dr. HICKS, Jack HILL, Cynthia HILL, Dick HOOS, Rick HUSKEY, Susie KISOUN, Delma LEE, Jim LOUIS, Ed MCEACHERN, John PLUIM, AI SCHNEIDER, Ken WARK, Lee WEIR, Bob WESTAWAY, Peter ZUBKO, Tom

Acknowledgements ΔcC元ケトペナト ^c

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Communities gave unstintingly of their knowledge and hospitality. The Panel was welcomed in each of the communities it visited and learned much from these visits.

The Panel wishes to extend special thanks to its Executive Secretary, David Marshall, and his staff, for their contributions to the work of the Panel.

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Allan Geldart, Hamish MacDonald, Peter Geldart, Robert Geldart.

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Gwen Saund, Diana Wetzel, Roberta Lauer, Theresa Salway, Evelynne Major, Charlotte Peters, Patricia Benoit.

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Wayne Bryant, Environmental Protection Service, Stephan Fuller, Robert Greyell, Native Press.