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Federal Environmental
Assessment Review Office

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Report of the Environmental Assessment Panel

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Eastern Arctic Offshore Drilling — South Davis Strait Project

PANEL REPORTS

TO THE MINISTER OF THE ENVIRONMENT

ON PANEL PROJECTS

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. Shikwak Highway Project, Yukon Territory - British Columbia.
(June 1978)

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EXECUTIVE SUMMARY

In the summer of 1976, a consortium of oil companies composed of Imperial Oil Limited, Aquitaine Company of Canada Limited, and Canada-Cities Service Limited presented a proposal to the Department of Indian and Northern Affairs (DINA) to conduct exploratory offshore drilling programs to test the sedimentary basin of southern Davis Strait for hydrocarbons. DINA stated that drilling in Davis Strait would not be permitted until a comprehensive environmental assessment had been conducted and that studies associated with this assessment be developed in consultation with local communities.

The Proponent has been conducting environmental studies in southern Davis Strait area since 1976. The information collected formed the basis for the Environmental Impact Statement (EIS) and supporting documentation. In late 1976, the Department of Indian and Northern Affairs initiated a new program that integrated environmental studies for Eastern Arctic offshore drilling proposals into one program known as the Eastern Arctic Marine Environmental Studies (EAMES).

The EIS and supporting documentation were prepared by the oil company consortium and progressively submitted to DINA and FEARO in the first half of 1978. DINA identified information deficiencies in the EIS and the 1978 EAMES Program was designed to accommodate these.

The Proponent proposes to drill exploratory wells commencing in 1979, to evaluate the hydrocarbon potential of the prospective area. Drilling would take place during open water seasons in water depths ranging to 6,000 feet, utilizing dynamically-positioned drill ships or semi-submersible platforms. The exploratory drilling program, at this time, is planned to last two to three years.

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Thus, the Panel recommends that the project be allowed to proceed as proposed, only if the following conditions meet the satisfaction of the relevant regulatory agencies.

ii) A government contingency plan be developed and in place prior to drilling that would delineate the responsibilities of all government agencies when oil spills occur in the Davis Strait area.

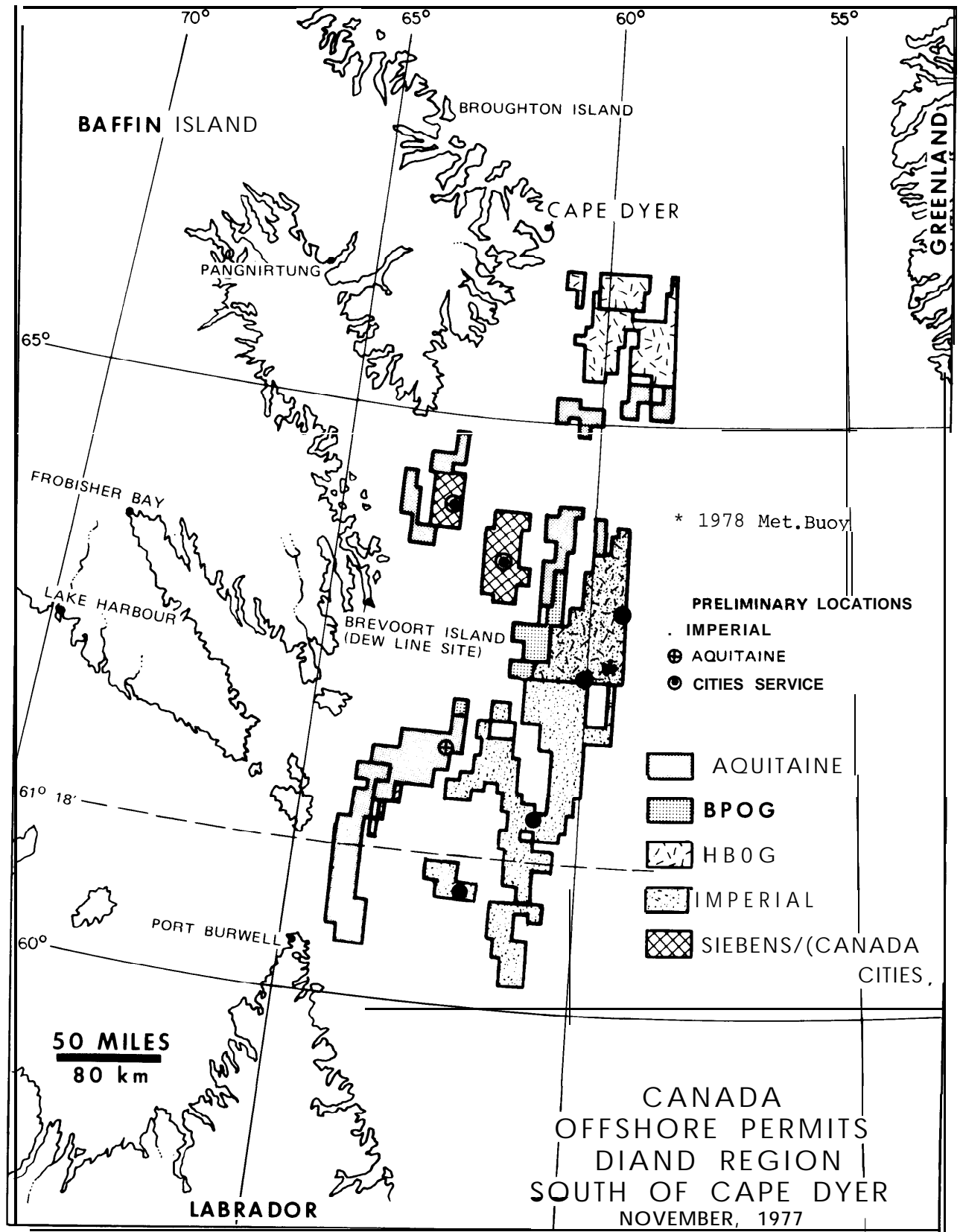
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SETTING AND PERSPECTIVE

In the summer of 1976, a consortium of oil companies composed of Imperial Oil Limited, Aquitaine Company of Canada Limited, and Canada-Cities Service Limited submitted a proposal to the Department of Indian and Northern Affairs (DINA) to conduct exploratory offshore drilling programs to test the sedimentary basin of southern Davis Strait for hydrocarbons. The Department of Indian and Northern Affairs stated that drilling in Davis Strait would not be permitted until a comprehensive environmental assessment had been conducted and that the studies associated with this assessment would be developed in consultation with local communities.

In accordance with the 1973 Cabinet directive establishing the federal Environmental Assessment and Review Process (EARP), the Department of Indian and Northern Affairs referred the proposal for exploratory drilling in southern Davis Strait to an Environmental Assessment Panel in the summer of 1977.

This Environmental Assessment Panel was established to review the potential environmental consequences of the proposed project and to provide recommendations to the Minister of the Environment on its environmental acceptability. It should be noted that a regional approach encompassing southern Davis Strait (generally between 61° 18'N and Cape Dyer at approximately 66° 20'N) was taken to the proposed drilling program, rather than a site-specific approach.

1. Effective September 1, 1978, Imperial Oil Limited transferred its interests in this project to Essor Resources Canada Limited.

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The members of this Panel were:

Mr. J.S. Klenavic
Federal Environmental Assessment
Review Office
Panel Chairman, Ottawa

Mr. J.R. MacDonald
Environmental Protection Service
Fisheries and Environment Canada
Halifax

Mr. M.J. Morison
Northern Program
Indian and Northern Affairs
Yellowknife

Mr. K. Yuen
Ocean and Aquatic Sciences
Fisheries and Environment Canada
Ottawa

Observers: Mr. A. Kooneelusie, Broughton
Island
Mr. S. Alainga, Frobisher
Bay.

Brief biographies of the Panel members may
be found in Appendix 1.

Guidelines for the preparation of the
Environmental Impact Statement (EIS) were
given to the industry by DINA in July
1976. Upon referral of the project to the
Panel in the summer of 1977, these
guidelines were modified to reflect the
requirements of the Panel and were then
re-issued to the Proponent by the
initiating department (DINA).

The Proponent had been conducting
environmental studies in southern Davis
Strait area since 1976. The information
collected formed the basis for the
Environmental Impact Statement and
supporting documentation. In late 1976,
the Department of Indian and Northern
Affairs initiated a new program that
integrated environmental studies for
Eastern Arctic offshore drilling proposals

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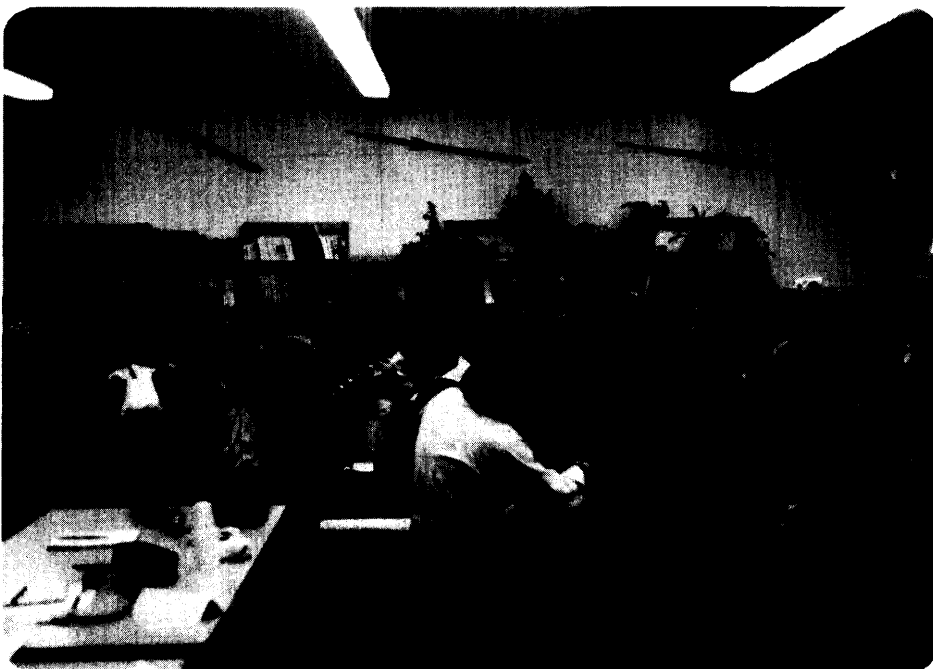
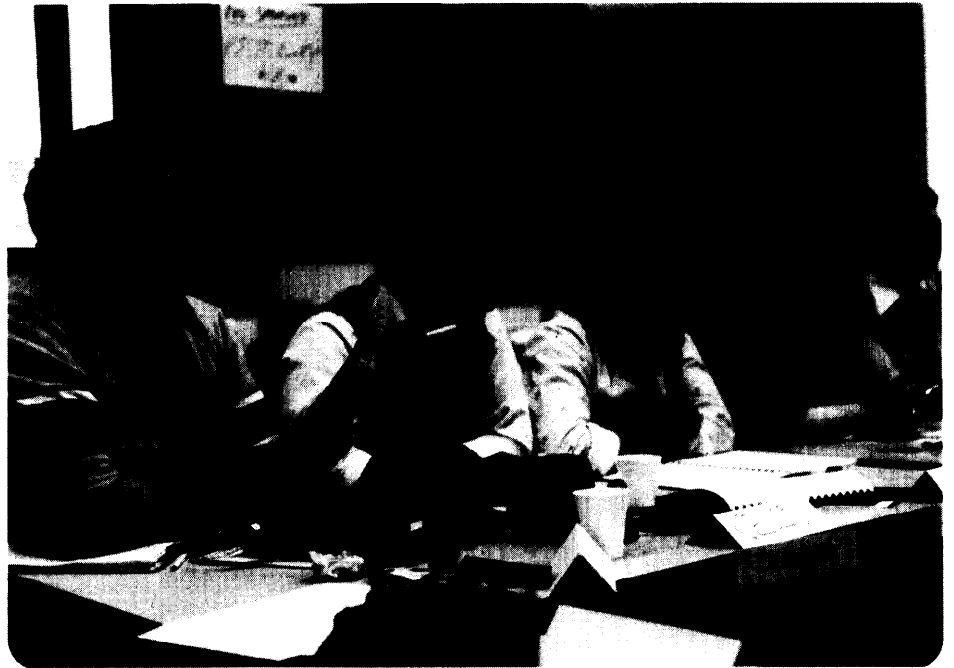
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in one program known as the Eastern Arctic Marine Environmental Studies (EAMES). EAMES, became an official government program in November 1977 although the funding and management of the field studies is largely provided by industry. The program included an Advisory Board which consists of one representative from each of the communities in the Baffin Island area and four scientists and two representatives from industry. Two Inuit, the Chairman and Vice-Chairman of the EAMES Advisory Board, were appointed as observers to the Environmental Assessment Panel.

[illegible]

main purpose of these meetings was to acquaint the local residents, with the proposed project, delineate its potential benefits and consequences, and provide information on the completed and on-going environmental studies.

The Environmental Impact Statement and its summary were made available at the Hamlet Office of each of the respective communities. Copies of an Inuktitut translation of the summary were also distributed to each community. In addition, copies of the EIS and its summary were placed in government offices (federal, territorial, and settlement), the C.B.C. and the Nunatsiaq News in Frobisher Bay. Extensive local radio and newspaper announcements provided the public with information on the community hearings and the formal general hearing in Frobisher Bay.

Commencing September 13, 1978, the Panel held a two-day public hearing in

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Frobisher Bay where a more structured set of procedures was followed. At this hearing, a number of written and oral briefs were presented to the Panel, all of which were read into the record of the hearing.

(Copies of the transcripts may be received by submitting a written request to the Federal Environmental Assessment Review Office, Ottawa, K1A 0H3).

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James Arvaluk (President, Baffin Region
Inuit Association)

It takes time for a delicate and
harsh environment to be understood and it
also takes time for white people to
understand the Tnuit.

. . .We Inuit want all the issues to be
examined carefully with our active and
informed participation.

Akeeshoo (Allen Island Resident)

I feel that the people of Allen
Island will help any government agency
understand our way of life - today the
people will never return to their
traditional way with the presence of
southerners and their type of food
supply.

Leah d'Argencourt ((Inuit Tapirisat of
Canada)

. . .talk to them, make them understand
exactly what is going to happen, and don't
leave anything out of it.

a strong concern that their food supply could be seriously affected as a result of a major blowout or oil spill and thus requested a guarantee by the Proponent for compensation for damages if such did occur.

2.2 Probability of Oil Well Blowout

[illegible][illegible]

The Panel was presented with estimates of the probability of blowouts ranging from 3 in 10 for water blowouts in the Beaufort Sea to 1 in 3,000,000 (Proponent's estimate) for oil blowouts based upon world industry experience.

The Proponent evaluated the probability of a major oil blowout and determined it to be minimal. The Panel concluded that in view of a high degree of technology that had been developed by the oil industry and its historical performance elsewhere that the probability of oil blowout is low.

The EIS describes the plume behaviour and subsequent slick path trajectory for both calm and rough sea conditions. In each case the oil rises in diffuse droplets to the surface where some will agglomerate into a thin slick. Lighter fractions will be vaporized and some oil will be mixed in the upper 25 feet of the water column.

A total of 955 cases were simulated from six potential sites in Davis Strait

[illegible][illegible]

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The primary criticism voiced by the Department of Fisheries and Environment (DFE) regarding the model was the use of average weather data as opposed to the inclusion of weather extremes. The Panel was satisfied that the calculations provided an adequate basis for the Proponent's oil spill contingency planning.

Some residents in Pangnirtung and Allen Island **were** concerned that oil contamination could occur in their regions. A Pangnirtung resident felt that currents in Cumberland Sound should be studied since he had witnessed, in the past, pieces of trees and other objects floating in the sea that must have originated elsewhere. The residents of Lake Harbour and Frobisher Bay had seen similar evidence in Hudson Strait and Frobisher Bay respectively.

[illegible][illegible][illegible][illegible]

Dick Brown (Canadian Wildlife Service)

. ...probably two million birds are involved in each migration route. The vulnerability hardly needs to be overemphasized. At the wrong place at the wrong time you could wipe out a whole year's class.

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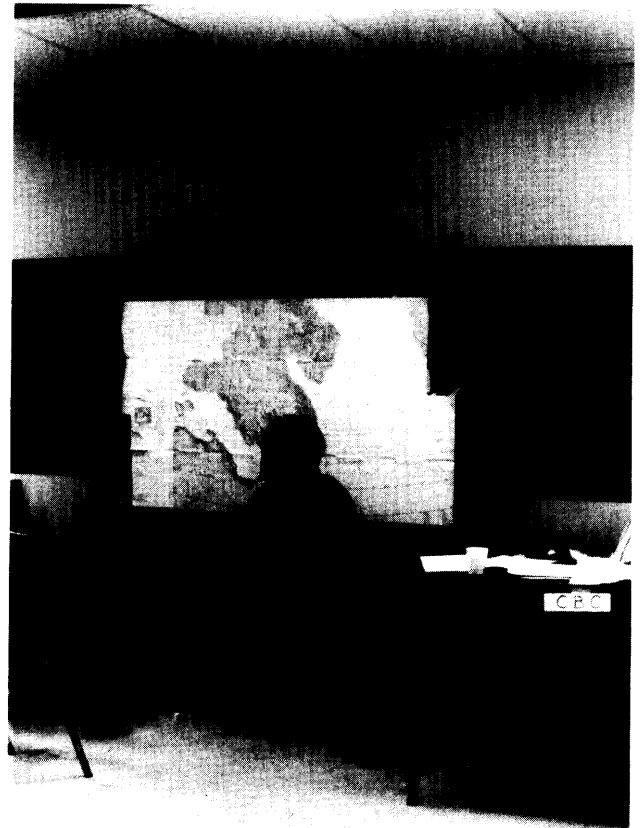
Tom Beck ((Aquitaine Company of Canada Limited)

If a spill occurs, the company will be responsible for damages without question.

We want residents to participate and need their inputs as well as the scientists.

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and aircraft. The contingency plans must recognize the vulnerability of this species during the migration period, and consideration must be given to the use of mitigating measures including the judicious use of dispersants.

Further information on migratory patterns to develop adequate counter measures is essential. The Panel considers this issue of major importance and thus recommends that the responsible regulatory agency ensures that the Proponent's contingency plan be designed to give these birds the best possible protection; even to the extent of temporary suspension of drilling operations during the migratory period, should this be judged appropriate.

2.5 Marine Mammals

The major issue associated with the effect of an oil spill on marine mammals was the potential impact on the residents' food supply. The possible loss of revenue due to a decrease in animals or damage to furs and skins was also mentioned. At one community a concern was directed towards the possibility of contaminated mammals migrating to an area outside the spill and being eaten by other animals or residents. Also, some residents mentioned that the exploration operation activity might change the migration patterns of certain types of sea mammals.

Although no numerical estimates of sea mammals were available in the area of the proposed drilling, it was stated that the ringed seal was abundant in the Allen Island area and was the most important marine mammal for the Inuit. The importance of the harvest of beluga whales and walrus was also stated.

The Panel noted the available information on the abundance of marine mammals in the Davis Strait region. Many

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2.7 ΓΡΟΗΔ ΣΠΕΔΕΩ ΣΕΝΟ

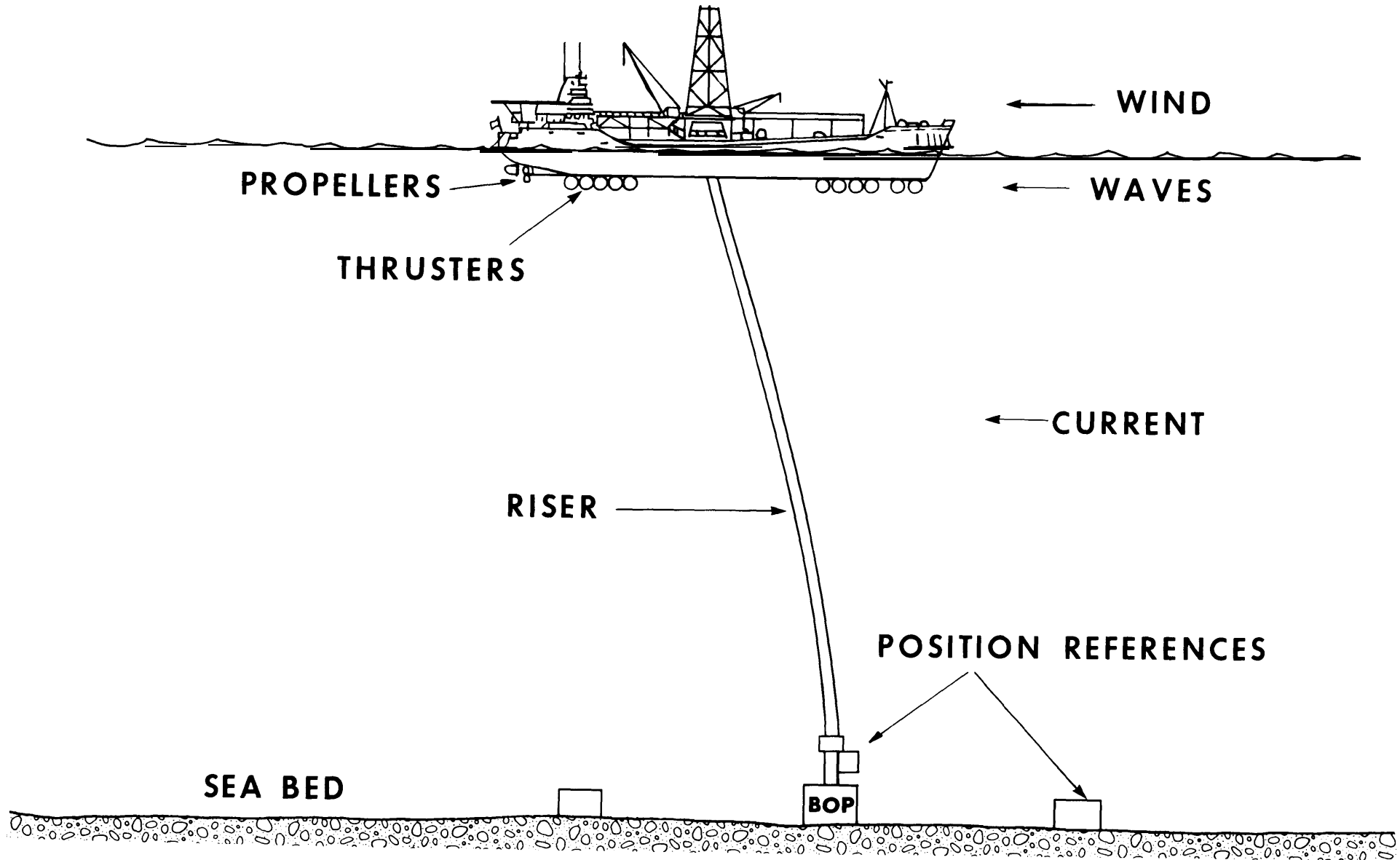
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The EIS has predicted that in the event of a serious blowout the lower levels of biota could be affected but not in a major way. The EIS further suggests that effects would most likely be greater in selected areas such as the near-ice edge or at the nearshore area. The inference is drawn that recovery to pre-spill levels would be expected to occur over a relatively short period of time. The criticisms voiced over the adequacy of the information is understandable given the magnitude of the task of studying the lower level biota and their contributions to the food chain. Such criticisms are not restricted to arctic environment studies but are rather universal. The low probability of a single spill which could affect the lower trophic levels as described is believed to be an acceptable risk but the chances for additional oil spills, particularly should oil production become feasible, will dictate the need and allows time for future work in this field.

The Panel felt that adequate regulatory mechanisms are currently in effect to ensure that safe and environmentally sound operating procedures will be followed throughout the drilling program. The Panel noted with concern the additional complexity of drilling from a moveable platform in the deepest arctic waters that the industry has encountered to date. It was recognized that the industry had previously drilled from moveable (dynamically positioned) platforms, and had also drilled in deeper waters as well as having faced the iceberg menace before; but not in the same combination of hazards that the southern Davis Strait presented.

[illegible][illegible]

DYNAMIC POSITIONING



the variability of currents, the Panel recommends that the monitoring of surface and subsurface currents in the vicinity of the drill ships should also be undertaken on a real-time basis. Both wind-wave, and current data will also be needed for operational prediction of slick movements in the event of a blowout and to improve predictive capabilities for ice movement.

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9) $\Delta^c b \rightarrow \Delta^c b' \ell \sigma$ $p \rightarrow \Delta^c \sigma \ell$

[illegible]

The Panel agrees that the probability of damage by ice is remote and therefore agrees that steps to lower the well head below the sea floor are presently not required. This matter should be left to the judgement of the regulatory agencies involved. However, it should be recognized that the probability of ice scour will increase in shallower waters and that each drilling site will require an evaluation based upon thorough knowledge of the historical ice scour in the area to determine what protective action need be taken.

The Panel endorses the Proponent's intentions to introduce pack-ice prediction system to ensure same season relief capability.

The seismic loading (earthquake potential) in the proposed area has been estimated to be **3 to 4** percent of gravity. The Proponent stated that the well head equipment is designed to withstand forces in excess of this figure. It was indicated by Energy Mines and Resources that sedimentation rates in the Davis Strait region are low and therefore there is little potential for slumping (sea-bed mud slides). Nevertheless, the Proponent noted that site-specific sea bed studies are conducted to ensure that the well head is not placed in a location having a

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potential for slumping.

2.10 Contingency Plan

In considering containment and physical recovery of oil with existing equipment, the Proponent stated four foot significant wave heights represented the present day limit for effective operations with no break through in technology envisaged. With present day equipment it was indicated that up to 20% of any spilled oil might be recovered from calm waters, with a further 50% dissipated by evaporation. In rougher water conditions mechanical containment and recovery could be impossible but the increased wave energy would cause the slick to break up and disperse into the water column. To supplement the capacity and availability of equipment, the need for inter-industry mutual aid programs was noted.

The Proponent has indicated that the contingency plan will be in place by the end of 1978 or six months prior to the commencement of drilling in accordance with the drilling program approval requirements. This plan will have the benefit of the results of the additional 1978 studies and must meet the standards of the responsible regulatory agency.

Clearly identified at the Frobisher Bay hearing was the need for a Government Contingency Plan similar in nature to the Beaufort Sea Government Contingency Plan which would delineate the response of all government agencies when oil spills occur in the Davis Strait area. In the Davis Strait Government Contingency Plan there is a need to clarify authorities on such matters as approval for use of dispersants, authorities south of 60°, and authorities necessary for entrance into Greenland waters. The Government Plan must be completed before the drilling program commences and should be co-ordinated with the Proponent's

2.10 ՀԱՌՈՐԴՔԱԳԵՏՐ

ԱՐԼԻՆԵՔՈՐԴՈՅԻ ՇԼՁՎ ՀԱՌՆԵՔՈՐԴՈՅԻ յԱՅ ՎԼԱ ՇԼՁ ԵՐՎԱ ԺԱՐԼԷ ԱՇՏՈՐԴՈՅԻ ՎՃԱՌՈՒ ԼՁԵՐԴ ՏՊԵԱԶՈՐԻՆԴ, ԵՐՎԱՇՈՒԹ ԵՊԵՇՉ ԴՇԼՏ ՈՐԼՏ ԼԵՏ ՆՉՏՊԵՇՏ ԼՁԵՐԴ ԲՐՎՏ ԿԱԼԿՇԵՅԵԼԸ ՏՊԵԱԶՈՐԻՆՈ ԵՅԴԵՐԴ ՎՃՈՅԻ. ԼՁԵՐԴ ԵՅԴԵՐԴ ՏՊԵԱԶՈՐԻՆԵՇՏԻ ՎՃՈՅԻ ԵՔՆ 20%. ԲԻ ԺԱՐԼԷ ԵՐՎԱ ԱՅԵՅԵՅԻ ՎՊԵՈՅԻ, ՎԵՐԵԵՅԻ ԵՔՆ 50%. ԴԵԱՅԻ ՎԵՐԵԵՅԻ ՏՊԵԱԶՈՅԼ ԵՐՎԱ ՇԼՁ. ՎՊԵՈՅԻ ՇԼՁ ԿԱԼԿՇԵՅԵԼԸ ՎԼԱ ԱՅԵՅԵՅԻ ԵՐՎԱ ՇԼՁ ՎԵՅԵԼ ԲՐՎՏ ՆՉԴԵՇՈՅԻ ԼԵ ԴՊՈՐՆԵԼԸ ԵՐՎԱԴ ԺԱՐԼԷԴ ՎԵՐԵԵՅԻ ԼԻ. ԱԵՏՐ ՎԼԱ ՏՊԵԱԶՈՐԵՏՐ, ՇԼՁ ԵՐՎԱԴՈՒ ՏՊԵԱԶՈՐԵՅԻՆԸ ԵՊԵՇՉԵԼ ՆՉ.

ԵՐՎԱՇՈՒԹ ՏՊԵՇՈՒ ՀԱՌՈՐԴՔՈՐԴՏԵՏ ՊԵՇԵՆՈՒ ՉՏԵԵՇՉԻ ՊԵՇՈՅ 1978 ԵՔՏ ՇՐԵԵՏ 6-Տ ԴՊԵՇՉ ՈՇՇՈՒՆԻ. ԱՊԵՈՒ ՇԱԼՇԵՐԼԸ ՈՇՇՈՒՆԻ. ՇԱԼՇԵՇՏՐ ՏԵՐԼՈՒԸ ՊԵՇԿՇՏՈՐՇԵԼԸ 1978-՝ ԱՐՈՐԻ ՎԼԱ ԱՊԵՇՈՒՅԵԼ ԵԼԻՆԵՇԵԼՏ.

ՉԿՇՈՒՇՈՐԼԸ ՏՊԵՏ ԵՈՒԱՐՎՈՅԻ ՇԼՁ ԼԵԼՈՒ ՈՇՈՐՇՈՒ ՀԱՌՆԵՅԵՅԻ ԱՊԵՇՈՒՅԵՅԻՆ ՎՊԵՅՈՒՆԵՏ ԵՇՇՈՒ ՇՈՒՆԸ ԼԵԼՈՒ ՀԱՌՈՐԴՈՒ ՎՐԼԸՐՇԼՏ ՇԼՁ ԼԵԼՈՒ ԵԼՆԵՊԵՐ ԵՐՎԱԴ ԺԱՐՆԵՇՇՇ ՇԱՏԻ ԴՉԴԸ. ՇԵՏ ՇԱՏԻ ԴՉԴ ՀԱՌՆԵՅԵՅԻ ԵՊԵՈՒՆԵՐԼԸ ԵԼՇԵՅԻ ՎՐԵՅԻՇՈՒ ՎՊԵՅԻ, ՎՊԵՅԻՅԻ ՊԵՏ ՊԵՏՈՐՇՈՒ, ՎԼԱ ՎՊԵՅԻՅԻ ԴՊԵՐՈՒ ՎՊՇ ՈՒՇՈՒՆ. ԼԵԼՈՒ ԵԼՆԵՅԻՅԻ ԴՊԵՐՈՒ ՎՊՇ ՈՒՇՈՒՆ. ԼԵԼՈՒ ԴՊԵՐՈՒ ԱՅՈՒՇՈՒՆԸ ՈՇՇՈՒՆԸ ՈՇՇՈՒՆԸ ՎԼԱ ՎՇՇՈՒՆԸ ԵՐՎԱՇՈՒԹ ՀԱՌՈՐԴՔՈՐԴՏԵՏ.

Recognizing that the Davis Strait region is ice covered for a large part of the year, the Panel stresses the need for same season relief well capability. Dynamically positioned vessels have the capability to move off site in the event of a blowout and can return to drill the relief well. The Proponent therefore stated that a standby drilling vessel was not required. The Proponent indicated some questions require resolution with respect to location of a substitute marine riser and a blowout preventer (BOP) to allow for relief well drilling. The Panel recommends that identification of a back up drilling vessel and the ready availability of substitute relief well equipment should be included in the Proponent's contingency plans. Further biological information required for contingency planning purposes is addressed in other sections of the report.

Concern for the loss of food and livelihood as a result of an oil spill was expressed in every community in which the Panel held hearings. The Proponent assured the residents that they would be compensated in full should they incur losses. The Arctic Water Pollution Prevention Act provides liability for damages and clean-up costs (in that order) in an amount up to \$10 million per well. This liability becomes effective at the time the authorities are issued.

[illegible][illegible]

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the present regulatory level for compensation is not commensurate with the present day values of potential losses. In addition the Panel recommends that a mechanism is required to compensate affected people south of 60° as well as residents of Greenland.

2.12 Energy Policy, Tax Incentives, and Exploration Permits

The Panel has noted the national energy policy, respecting "need to know" of Canada's frontier energy resources. The Panel has also noted the special investment tax credit incentives under the Canada Income Tax Act which apply up to July, 1980. The proposed drilling program is in direct response to these government policies. Furthermore, the exploration permit arrangements for the acreage in question (secured by performance deposit) are due to expire variously in the period 1981-1983. As a result, the Proponent is pursuing the acquisition of environmental approvals with considerable urgency.

Taxation incentives in particular have encouraged the Proponent to perform within a time frame that is inconsistent with the comprehensive environmental studies and impact analysis being done. As a result, information deficiencies have had to be rectified subsequent to the preparation of the EIS in order to obtain a timely environmental clearance. In this case the new information has not altered the Proponent's assessment but it does place the public, the intervener, and the Panel in the disadvantageous position of not having the completed report for review.

2.13 Employment

The Proponent mentioned that of the 150 jobs necessary to operate a drilling platform, 20 to 40 would be available to the local residents. As personnel acquire additional skills through

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on-the-job training, more jobs would become available. Employment of local residents had been done in the past to assist the proponents with their environmental studies.

At the community hearings, the residents expressed a desire for meaningful, long-term positions with on-the-job training. Some also expressed concern over language needs as many of the jobs demanded a good working ability in a common language. As indicated earlier by the Proponent, such needs would be based on factors such as ship and crew safety. The Proponent also pointed out that failure on their part to discover oil or gas would lead to curtailment of the drilling program in as little as two years. This would of course affect the viability of any long term or permanent employment for local residents.

2.14 Public Information by Proponents

Although most of the residents in the communities were happy with the Proponent's visits to the settlements in order to explain the proposed project, many felt that a continued public information should be pursued.

The Proponent indicated that this would be done and mentioned that some workers employed for the drilling operation would be hired from the communities. These workers could keep communities informed of drilling operations.

The Panel appreciated the concern expressed by the communities for more in-depth project information and public participation by the Proponent and thus encourages the Proponent to continue its communication with the related communities. Special attention should be given to advising the communities of oil spill contingency plans in an effort to

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2.15 Land Claims

2.16 Environmental Assessment and Review Process (EARP)

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2.15 માર્ગ અંશ C5H4O

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ለረባረቢ ወደ ረዳ ሲረዳረቢ
ረዳረቢ ለረዳረቢ ሲረዳረቢ.

2.16 $\mathbb{L} \leq \mathbb{L} \text{ d } \sigma' \mathbb{L} \supset \triangleleft \mathbb{L} \cap \mathbb{C} \cap \mathbb{L} \triangleright \triangleright \mathbb{L} \text{ 'b } \Delta \mathbb{C} \triangleright \triangleleft \sigma' \mathbb{L}$

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Eastern Arctic.

"עליון".

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The Panel concluded that the effects upon the lower part of the food chain from a single oil spill would not be major and would likely be localized near the ice edge and in near shore areas. The use of oil dispersing chemicals may increase this impact to some extent although dispersants may provide a degree of protection to birds.

The Panel concluded that existing regulatory mechanisms and codes of good practices are adequate to ensure safe and environmentally sound operating procedures including waste management, at both sea-borne and land-based facilities.

The Panel concluded that the probability of a blowout caused by iceberg scour is remote. The Panel noted that additional data on scouring may be necessary prior to approvals to drill in shallower waters in the region (nearer to shore).

The Panel concluded that comments pertaining to land claims by the Inuit were not related to the Panel's mandate to advise the Minister of the Environment on the environmental acceptability of the proposed project.

THE PANEL CONCLUDED THAT THE ENVIRONMENTAL RISK OF THE PROJECT IS ACCEPTABLE PROVIDED THE CONDITIONS OUTLINED BELOW ARE FOLLOWED.

[illegible]

4. საქმიანობის შესახებ ინფორმაცია

[illegible]

Λ. $\exists \sigma \in \Sigma^{\mathbb{N}} \text{ s.t. } \sigma \in \mathcal{A} \text{ and } \sigma \in \mathcal{B}$

[illegible]

9. $\langle P \rangle \subseteq \langle Q \rangle \wedge \langle Q \rangle \subseteq \langle P \rangle$

[illegible][illegible]

10. $\Delta_c \Gamma \vdash b \sigma \Gamma \prec C \vdash \Delta' \triangleleft_m \wedge d \vdash c \triangleright_m$
 $\Delta' L \Gamma \vdash c \triangleright_m$

[illegible][illegible]

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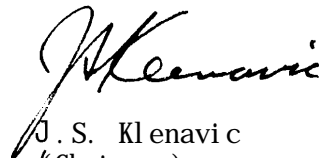
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ENVIRONMENTAL ASSESSMENT PANEL
EASTERN ARCTIC OFFSHORE DRILLING
- SOUTH DAVIS STRAIT PROJECT



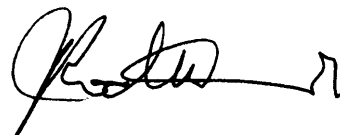
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J. S. Klenavic
(Chairman)



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J.R. MacDonald



ፊት ሪፖርተር



M. J. Morrison



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K. B. Yuen

APPENDIX I

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PRESENTATION TO THE PANEL

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ABELSON, Emil
Greenland

ALAINGA, Simonie
Vice-Chairman, EAMES Advisory Board

ARVALUK, J.
President, Baffin Regional Inuit Association

BALDWIN, D.D.
Imperial Oil Limited

BARRET, Jim
Department of Indian and Northern Affairs

BECK, T.
Aquitaine Company of Canada Limited

BERRY, M.
Atmospheric Environment Service, Toronto
Fisheries and Environment Canada

BIRCHARD, E.C.
Imperial Oil Limited

BRINKER, Jim
Aquitaine Company of Canada Limited

BROWN, R.G.
Canadian Wildlife Service
Fisheries and Environment Canada

BURCH, J.
Fisheries and Marine Service, Arctic Biological Station
Ste. Anne de Bellevue

CONOVER, S.A.M.
MacLaren-Marex

DAFOE, T.
Environmental Protection Service, Yellowknife
Fisheries and Environment Canada

D'ARGENCOURT, Leah
Inuit Tapirisat of Canada, Ottawa

EETOOLOOKANAINGA, Frank
Hunters and Trappers Association

GRAINGER, E.
Fisheries & Marine Service, Arctic Biological Station
Ste. Anne de Bellevue

GREENE, G.
Imperial Oil Limited

HUNTER, J.G.
Fisheries & Marine Service, Arctic Biological Station
Ste. Anne de Bellevue

KOONEELUSIE, Mr.
Hunters and Trappers Association

LAWRENCE, M.J.
Fisheries and Marine Service, Winnipeg

MACKAY, S.
Imperial Oil Limited

MCCART, P.
Aquatic Environment Limited

MELNYK, T.
Imperial Oil Limited

OOKPIK, Abe
EAMES Advisory Board

PARSON, J.
MacLaren-Marex

PATERSON, R.J.
Fisheries and Marine Service, Winnipeg

PATTERSON, D.
Eastern Arctic Bar, Frobisher Bay

SANDSTROM, H.
Imperial Oil Limited

SKINNER, R.G.
Department of Energy, Mines and Resources

SMITH, T.
Canadian Wildlife Service

SNOW, N.B.
Department of Indian and Northern Affairs

STIRLING, I.
Canadian Wildlife Service, Edmonton

TELFORD, A.
Imperial Oil Limited

TOD, J.
Imperial Oil Limited

UNDERHILL, J.C.
Imperial Oil Limited

WALLACE, Ron
Ecologist

WATMORE, T.
Imperial Oil Limited

APPENDIX II

PANEL MEMBERS

CHAIRMAN

JOHN KLENAVIC, (Federal Environmental Assessment Review Office, Department of Fisheries and the Environment).

Mr. Klenavic was born in St. Catharines, Ontario and attended schools in Ontario, British Columbia and Manitoba. He graduated from the Royal Military College, Kingston, and Queen's University with a degree in Chemical Engineering (B.Sc.).

He served in the Canadian and British Armies from 1960 to 1968 and subsequently worked as an industrial engineer and quality control chemist in the food processing industry in Toronto. In 1973 he was appointed Acting Director of the Environmental Emergency Branch, Environmental Protection Service of the Federal Department of the Environment. This Branch is concerned with the prevention of, and response to, spills of pollutants into the environment.

Mr. Klenavic was appointed to his present position of Director, Operations, Federal Environmental Assessment Review Office in mid-1977 and is currently chairman of fifteen Environmental Assessment panels.

Mr. Klenavic is a member of the Association of Professional Engineers of Ontario.

MEMBERS

J.R. MacDONALD, Department of Fisheries and the Environment.

Born in Baddeck, Nova Scotia, Mr. MacDonald received his early education there and in Ottawa. He received his B.Sc. (Biology) from St. Francis Xavier University in Antigonish, Nova Scotia. Mr. MacDonald joined the Department of Fisheries in 1960 and after the formation of the Department of Fisheries and the Environment, joined the Environmental Protection Service in 1972. Mr. MacDonald is currently Acting Director of the Environmental Services Branch, Atlantic Region.

M.J. MORISON, Department of Indian and Northern Affairs

Mr. Morison was born in Fredericton, New Brunswick. He graduated from the University of Toronto with a degree in Forestry in 1959. Upon graduation he was employed with the Ontario Department of Lands and Forestry where he held various positions related to land use and resource management in Northern Ontario.

He joined the Department of Indian and Northern Affairs in 1973 being positioned in both Fort Smith and Yellowknife. In these capacities he was attached to the Land Use Committee, North West Territories Water Board and Arctic Water Advisory Committee. As part of his duties in the Department of Fisheries and Environment in Vancouver in 1975-77 he was responsible for coordinating the studies and presentation to be made by the Department in preparation of the Panel hearings related to the Alaska Highway Gas Pipeline proposal. In 1977 he returned to Yellowknife to assume the position of Assistant Director, Non-Renewable Resources where he is responsible for the N.W.T. mines, mineral and oil and gas interests of DINA.

KENNETH B. YUEN, Department of Fisheries and Environment.

Mr. Yuen was born in Victoria and received his education at the University of British Columbia and at Waterloo University. Currently, Mr. Yuen is Chief, Ocean Science Affairs Division, Fisheries and Environment Canada. In 1970, he was assistant to the Scientific Coordinator for "Operation Oil" - the government response to the Arrow oil spill. Subsequently he was appointed Secretary of the Departmental Coordinating Committee of the development of deep water oil ports study and has served as Assistant to the Chairman, NATO Colloquium on Oil Spills. He worked with Transport Canada in developing the Termopol Code for the prevention of pollution at Marine Terminals. Mr. Yuen has had substantial involvement on a number of working groups involving the Maritime Code and Anti-Pollution Sections of the Canada Shipping Act within the 200 mile limit.

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APPENDIX III

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