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ENVIRONMENTAL GUIDELINES
FOR
NORTHERN HYDROCARBON DEVELOPMENT DECISIONS
PROCEEDINGS OF A WORKSHOP

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Prepared By:

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CONTENTS

Summary

1. Environmental information is necessary to the following northern regulatory regimes: land use permits, oil and gas exploration leases and the environmental assessment and review process. It is also used by several other regulators in making decisions or recommendations.

2. Very similar environmental information is used by industry in project planning and in submitting proposals to government for regulatory approval.

3. The original proposal considered by the workshop was to produce "Environmental Guidelines" which were defined as "an information tool to assist in the incorporation of environmental considerations into Northern hydrocarbon development decisions".

   In response to these information needs, of both government and industry, it is proposed to produce a Northern Environment Information Manual.* The manual will provide a guide to:

   (i) the increasing quantity of environmental information on the North;
   (ii) the diversity of information sources and the variation in reliability of data;
   (iii) interpretation of environmental data;
   (iv) requirements for environmental information in support of project proposals.

   The objective of producing this environment information manual is to reduce inefficiencies in use of environmental data by indicating, for known resources, those which are of greatest concern and where more can be learned about them.

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* Originally entitled "Environmental Guidelines", the term "Northern Environment Information Manual" was adopted as it more precisely identifies the format which was proposed by the workshop.

4. These objectives will be met by:

(i) developing an "ALERT" system which can be used by both proponents and regulators to identify the degree of concern for resources in the area under review; and,

(ii) providing a "GATEWAY" to both the data base and information sources used in identifying and analysing environmental resources.

5. Production of the Manual should respect the following format:

ALERT SYSTEM

(i) Environmental data should be analysed and the resource in question classified according to the degree of concern, using a very few broad classes;

(ii) These resource classifications should be geographically referenced;

(iii) Criteria for differentiating these classes should be explicit;

GATEWAY SYSTEM

(iv) A narrative, or "fact sheet", should include information for each resource for each area classified;

(v) Data sources used to derive information for each resource should be identified and referenced to the information indexes for each territory referred to in (6) below.

The Manual should not include management recommendations (e.g. activities which should/should not be permitted; suggested mitigative techniques) but should be restricted to objective statements regarding each area classified and rationale for the classification.

6. No comprehensive and current index of information sources is available for either the Yukon or the Northwest Territories. The Yellowknife Northern Land Use Planning Office is compiling such a document for the NWT which will be available for general use. No similar initiative is planned for the Yukon. A northern information index is an essential component of any solution proposed to improve access to, and interpretation of, current information sources.

7. Lands Directorate should continue in the lead role for the coordination of production of the environment information manual. However, the lead role for the implementation phase may well be transferred to a regulatory agency.

8. A contact point is required in each contributing and potential user agency. Contacts from the key agencies will comprise an informal Steering Committee to advise and assist Lands Directorate in coordinating the production of the information manual. Lands Directorate will seek advice from the Steering Committee, the entire group of contacts and from individuals, as major decision points are reached.

9. Each resource agency should maintain control of its own data and especially the interpretation of this data. The workshop recommends the adoption of the manual format contained in this report for use by all contributing agencies.

10. Information manuals on accessing and interpreting environment data for the North should be produced initially for each of the three NOGAP study regions and ultimately for the entire area north of 60°N.

1.0 INTRODUCTION

The workshop was divided into five sequential discussion topics:

1. Problem definition, issues and the context for use of environmental guidelines;

2. Approaches taken in other jurisdictions to a similar set of problems;

3. Potential applications of environment guidelines in northern regulatory processes;

4. Proposed format for presentation of environmental guidelines;

5. Responsibility and organization for production of environmental guidelines which will be known as "Northern Environment Information Manuals".

In fact, of course, these topics were continually raised throughout the period of the workshop. The logical sequence of presentation in this report reflects the workshop conclusions, rather than a strict reporting of chronological events. A copy of the workshop agenda is found in Appendix 1.

"Environmental Guidelines" were originally defined as "an information tool to assist in the incorporation of environmental considerations into Northern hydrocarbon development decisions". The need for such an information tool was confirmed by the workshop and the new title "Northern Environment Information Manual - accessing and interpreting environmental data for Northern Canada" was suggested. It should be noted that in this report of the Proceedings the original term "Environmental Guidelines" is used up to and including Chapter 4. In Chapters 5 and 6, the new term Northern Environment Information Manual is introduced.

The "Environmental Guidelines Project" was funded under the Northern Oil and Gas Action Program (NOGAP), which aims to prepare government for the commercial production of oil and gas in Canada's North.

The nature and content of the workplan has been elaborated and refined since it was first proposed. These changes have been in response to extensive consultations with industry representatives, federal government agencies and territorial governments. The rationale for the project received widespread agreement and support amongst all sectors. From these consultations (Dec/84, Jan and Feb /85) the suggestion for a workshop arose with the objective of determining the best format for the guidelines. The workshop achieved its objective of establishing agreement on the major components of such a format.

The various interests present at the workshop (Appendix 2) provided a wide diversity of responsibilities and opinions. More work is required both with the participants and others who were not represented, to refine the format and the approach before production of the first, "Northern Environmental Information Manual" can begin. This second consultative step is already underway.

(i) Problem Definition

At the beginning of the workshop the following problem definition was presented to the participants. It had been developed through consultations with industry, territorial and federal government agency representatives.

1. There has been little emphasis on interpretation of environmental data for Northern Canada, although a great deal of data has been collected. As a result:

   (i) industry tends to make its own judgment of "importance"

and "significance" of resources and potential for disturbance;

(ii) the data currently collected may, or may not, be relevant to the decisions which have to be made.

2. In the absence of environment policy and land use planning frameworks, decisions are made individually in an ad hoc and reactive manner. As a result:

(i) no consistent definition of the "adequacy" of environmental data, required in support of development applications, exists;

(ii) it is claimed that "unreasonable" demands are made for collection of environmental data and its interpretation.

3. There has been too little discussion between scientists and decision makers concerning the environmental data required to understand the potential effects of development proposals. As a result:

(i) decisions are sometimes made which do not take into account all of the (available) environmental knowledge;

(ii) environmental research topics pursued may not be those most needed by regulatory decision makers to address the environmental effects of proposed developments.

(ii) Assumptions

The following assumptions were stressed at the workshop. They help to define and limit the scope of the project.

1. Regulatory processes are not in question. A legal and jurisdictional framework broadly similar to that now in operation is assumed to continue. Environment information

requirements will not significantly change when regulatory processes are modified.

As a result of this assumption only the applications of environmental information within the present regulatory regime were examined. Potential for use of environmental information by Northern Land Use Planning was mentioned but the recommendations made by the workshop are premised only on potential applications in: land use permitting (DIAND); lease negotiations (COGLA) and environmental assessment (FEARO).

2. Resource inventory will continue at about the present level. Incremental additions to environmental knowledge will be made. There is no intention to use this project as a prelude to major new resource inventories in the North.

   Interpretations of environmental data for this project will have to be based on existing data. Where this is not possible data gaps will be identified and the responsible agency will have to decide when and whether to adjust its resource inventory priorities.

3. Environmental costs are always associated with every project. The objective is to minimize rather than avoid these costs.

(iii) Regulators' Perspective Presented by E.F. Roots, Science Advisor, Dept. of Environment*

"What is the problem?" The answer to that question is apparent, perhaps in different ways, to each of us here. But it is rather hard to state it clearly, and perhaps that itself is part of our problem.

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* The full original text of this paper is contained in Appendix 4

The issues we are dealing with here have been developing for some time, but they have been highlighted or focussed on by the report of the Beaufort Sea Environmental Assessment Panel report and the report of the Task Force on Northern Conservation.

The problem may be stated in caricature, something like this:

- After the biggest and costliest environmental assessment exercise in Canada's history, which entailed the assembly of the largest amount of focussed environmental data ever brought together, on northern environmental problems;

- A cautiously optimistic approval was given, which is hedged with many reservations and which calls for still more information or more research.

At the same time, there exists a great deal of background environmental information, of varying quality and at varying scales, that is clearly relevant to northern resource development; - but there appears to be a disturbing gap between this information and the Panel recommendations. There is uncertainty about how to use this information in day-to-day operations, and, also, perhaps because of this perceived gap, uncertainty about how to implement the Panel recommendations to design or set in place the next major steps for northern resource development in an environmentally and socially acceptable manner.

Is this gap one of information, of understanding, or of process and procedure?

Is it a gap that is mainly technical, or is it one of conflicting or confused interests, unclear responsibilities, or political or management muddle?

Until - or unless - we can sort out this confusion and link what information presently exists with the needs for action and

knowledge called for in the so-called "decision process", it is hard to see how further action and investment in northern resource development could proceed in an orderly and environmentally responsible manner. In the present economic climate where the freedom of action of both industry and regulatory agencies, and even more of research bodies, is more restricted than it was when the present approval and regulatory system was established, it is of even more importance that available information is systematically linked to the "decision making process".

In fact, what was felt to be needed are "Environmental Guidelines for Northern Hydrocarbon Development Decisions". We need guidelines which are post-Tener, post-Whistler, and future-oriented.

When we started the Polar Continental Shelf Project in the late '50's, we were already aware of the need for integrated and timely scientific data and maps, as a basis for proper development and management of northern resources, in the interests of local people as well as southern interests. In support of this conviction, we were able to get established, with Treasury Board approval, the principle of inter-departmental scientific cooperation which is unique in Canada and still characterizes the "Polar Shelf" activities today.

In 1962 I started the controversial BeauMac (Beaufort-MacKenzie) project, a proposed program of integrated mapping of all renewable and non-renewable resources in the Mackenzie delta and Beaufort Sea area - geology, geophysics, wildlife, fisheries, hydrography, botany and soils, meso-scale meteorology. The project was stopped for what seemed petty jurisdictional, not financial or practical reasons; but wouldn't it have been nice if we'd been able to keep it going, and by now have 20 years of systematic up-dated integrated resource information from that important area on all those subjects?

I cannot help but have a world perspective in mind when I listen to discussions about environmental guidelines for hydrocarbon development in Northern Canada. No matter how narrowly defined the responsibilities of individual agencies, or specifically focussed our individual decisions, the game of northern resource development is being played on a world stage. Whether we wish it to be so or not, our actions are having an influence on the global environment and on international relations.

"Government" is a plural and collective noun; there is no simple "government" responsibility in our pluralistic society. The fact that there are about nineteen different government agencies, from five different governments in Canada, represented at the table here today, and that one of our reasons for being here is to try to achieve better coordination, itself shows the fallacy of thinking of "government" as a single entity.

Our approach up until now with respect to obtaining environmental information for land use decisions has been to consider the environment in terms of its components: - air (weather), water, land, wildlife, etc. The information gathered has been largely descriptive, and classified by geographical location or the environmental medium. We are all aware that the environmental condition is the result of the inter-relation or interaction of these various components; but only tentatively has the information been assembled in terms of environmental processes, or presented in terms of the inter-relations between, say, climate and wildlife.

Increasingly, this traditional approach is proving to be unsatisfactory or inadequate as a basis for obtaining the information needed for decisions about the effect on the environment of new human or industrial activities. It does not provide information that helps us to ask, or answer, important questions such as:-

(i) What are the "valued ecosystem components" (as defined by Beanlands and Duinker) whose identification is central to good assessment decisions?

- to whom are the environmental values important?
- what are the values of other resources? How do environmental values relate or compare to cultural values, the values of archaeological sites, etc.?
- how much will the values change with a given amount of resource or socio-economic development?
- will the environmental values remain the same if "left to Nature" even if there are no human-imposed changes?

(ii) What scale of effect on the environment should the decision-maker consider to be important?

(iii) Should the cumulative effect of many decisions or actions be considered in hindsight, taken into account as a forecast, or ignored in the decision process and left to future changes in regulations (after the damage is done)?

(iv) How does one account for the ripple effect of a single permit or decision, or the distant "downstream" effects? Should the decision-maker take into account the subsequent effects on the environment, on social values and human responses, on economic and political issues? One of the most difficult aspects of northern administration today is how to make responsible decisions when the most important repercussions will be felt in areas or jurisdictions outside one's own administrative responsibility.

For these, and many other complex and sophisticated questions, which are now an inescapable and common part of the day-to-day decision-making on northern resource development, even at the most restricted level, the adequacy and organization of environmental information is a vital input. Those involved in northern decisions are dependent on the information available, but must not be captives of it.

Without in any way denying the essential importance of reliable data and the need to handle it in a rigorous and systematic way, I think that it is fair to state that people who work in environmental data tend to become bemused by it. They come to feel, and may even insist, that factual data and maps can have all the answers needed, if only one can get sufficient data of the right kind. That is rather like insisting that you can tell a good wine by its chemical analysis.

It is important to remember that data, or even facts, are only proxies for the values that we are dealing with when we make an environmental assessment or a development decision.

There is a lot of talk about the need for more complete baseline data; about the idea that much of the existing information is out-dated, or inappropriate for modern needs or of unknown reliability; about there being "mountains of information that has been gathered but never used", or un-indexed, lost, or inaccessible.

A few general comments may be useful:

(i) There is a serious general sparseness or inadequacy of environmental, geophysical and biological baseline data for much of northern Canada. Knowledge of the basic environmental processes and dynamics that link environmental characteristics is reasonably well known in a scientific sense, but has been very inadequately translated into practical knowledge useful to the

decision-maker or nothern developer or resident, and little tested to determine how representative observations or processes in one area are of the environment of surrounding areas. You will reflect that our most useful and complete baseline information services, for example the 1:250,000 topographic map series, or the weather station network, were undertaken for general purposes, not tied to a specific development policy or single need. In most cases, as soon as we began to tie our information-gathering priorities and budgets to particular user needs, our data gathering systems and process studies lost their comprehensiveness and representativeness.

(ii) It is rare that generalized data, which were obtained before the specific questions that we have to answer today were even formulated, are directly useful to give answers to current concerns about environmental sensitivity or the adequacy of resources. But this does not mean that old data are of little value.

(iii) It is important, especially for the "decision-makers" who must use data on a routine basis, to be aware that data needs change as the questions evolve, and not to try to get more information out of the data than they contain, or to attempt to use them to cover subjects for which they do not apply. A change in the type of question being asked may lead to requirements for quite different kinds of data in the same field.

(iv) One must bear in mind that data, no matter how precise, reliable, or representative, is not knowledge. It is useful for everyone concernerd with the use of information about the north to keep in mind the philosopher's hierarchy of "knowing":

data -▶ information -▶ knowledge -▶ understanding -▶ wisdom.

Between each of these stages, there is an important jump of comprehension and perspective. Each of us should stop for a moment and reflect on where on this scale do we fit, and where do we operate when we contribute to decision-making for northern development?

I suggest that it is also useful for each of us to think of some northern resident, preferably from an Indian or Inuit background, who we respect or acknowledge to be particularly capable of contributing to the issues we are dealing with here. Where on this scale does he or she operate?

I hope that this meeting can come to grips with some awkward questions about guidelines.

(i) What are the guidelines for?-

- are they to serve as a check-list for the process of operational decision-making? For would-be developers, are the guidelines to indicate what permits are needed? For the approval agencies, is their purpose to make their decisions as consistent and mechanical as possible?

- are they to be a guide for deciding whether an agency, industry, etc. should get involved in the first place?

- are they to provide a road map and directory so that everyone can find out who the actors are and where the information is, as in the examples of the information index and resource book developed in Nova Scotia?

- are they to be a recipe to follow, to make sure that all the information is assembled, and all the ducks are in line before the shot is fired in asking for approval or giving it?

- are they intended to be an openly visible description of the mechanism for northern resources management, so that others - e.g. the northern residents - can enter the process at the right place and not be ignored, or swept aside, or trapped in the bureaucratic maze or the industrial pressure tactics?

Most examples of guidelines that I can think of try to serve a mixture of several of these purposes. But some of the purposes are contradictory, or confusing if grouped together.. We should try to be as clear as possible what the guidelines are for, and how they are going to be used, when we draw them up.

(ii) To what time and space will the guidelines apply?

Will the guidelines enable the decisions to move in scale, from the local to the world issues and perspectives and back again?

Will they cope with the need to make decisions on behalf of future generations, as well as meet the needs of companies who applied for a permit two weeks ago and are waiting for a response?

If guidelines are to be useful, they must be practical, and to a large extent pragmatic. They should be directly applicable to specific decision or approval processes, which by and large deal with local and item-by-item issues and not the big picture. At the same time, if the information organized under the guidelines or the decisions facilitated by them are to have maximum effect,

the guidelines themselves should be compatible with processes at a range of scales, and be a means to relate local decisions to regional, national or global issues. If we limit our thinking about guidelines to the immediate operational purpose that each of us has for them, we run a real risk of getting trapped in our own system, and of reinforcing its imperfections instead of finding a way to overcome them.

In my submission to the Beaufort Sea Enviornment Assessment Panel I found it convenient to separate the identified needs for more knowledge into six categories, each of which had a somewhat different relation to the decision-making process. Each category included a range of disciplines or subject matter, but was distinctive from the others in the need it filled or the way it was used. The six categories were:

(i) data and information
(ii) natural processes and interactions
(iii) concepts of environmenetal response, values and social actions
(iv) integrated knowledge and its application
(v) techniques and systems for obtaining environmental information, for monitoring of environmental conditions, or for incorporating environmental information into design and management
(vi) the development, use and evaluation of technologies and equipment for exploration and exploitation of northern hydrocarbon resources with minimum environmental disturbance.

We must be careful, in the development of guidelines for northern decision-making, that the way that the information requirements are called for, or classified, does not in itself limit the source of information or eliminate information that might be useful. At the same time, the presence of appropriate guidelines can be a strong factor in helping the establishment of well-organized and comprehensive information systems.

The Whistler workshop brought forth some excellent ideas in this regard, and its report merits careful study.

(iv) Proponents' Perspective, Presented by Richard Spencer, Spencer Environmental Management Services Ltd.

The following submission is focussed on those "questions" outlined on the annotated agenda distributed to workshop participants (see section 2, Context for Use of Environmental Guidelines).

Although the author is not currently employed by a project developer, he has been an environmental coordinator for a major northern highway building agency, has acted as environmental consultant to northern developers in the fields of highway construction, mining and hydrocarbon development. This experience has given the author a special insight from the developers perspective.

Comments are forwarded in regard to each "question" and some general comments are also advanced.

Question 1

What are the decisions? (i.e., industry's development planning activities which require consideration of environmental information; e.g., facility siting by industry?)

Industry needs to know ahead of time what the environmenetal sensitivities are associated with specific sites under consideration in order that:

- they avoid highly sensitive sites with no hope for development;
- they identify early in the game environmental considerations for sites under serious consideration; and
- they develop pertinent information in support of permits such as land use and water use permits.

Question 2

Who are the individuals involved in the analysis, decision making?

Depending on the size of the developer/proponent, these can include:

- the project manager;
- environmental coordinator; and
- consultants to the company.

The final decisions usually rest with the project manager but he or she receives advice from the environmental coordinator and the consultants.

The project manager is normally from an engineering descipline while the environmental coordinator and consultants are from environmental disciplines.

Question 3

What environmental considerations are typically raised in the process of making these decisions?

From the point of view of industry, the potentially contentious issues receive considerable attention. All environmental subject areas are at least considered with emphasis placed on fish, wildlife, fish and wildlife habitat, renewable resource utilization especially by natives. Others include terrain sensitivity, archaeology, etc.

Those issues with potential for interfering with the project's proceeding are a high priority.

Question 4

What data/information sources do the "decision makers" use to answer the questions, and which of these are relied on most?

The following information sources are utilized:

- Land Use Information Series Maps (as an initial indicator of issues);
- Industry developed environmental reports (a favoured source that industry refers to);
- results of fish and wildlife population surveys conducted by government;
- ecological land classifications;
- publised government reports;
- aerial photography; and
- interviews with knowledgeable persons.

Questions 5

What are the associated strengths and weaknesses of these information sources and what opportunities do you see to improve the integration of existing environmental information into your development planning activities?

The L.U.I.S. of maps are a good source but boundaries are poorly defined and they do not demonstrate the type of site specific information that is really available and could be portrayed on these maps.

Some recent experiernce will demonstrate the usefulness of the ecological land classifications that have been conducted in the provinces and Yukon Territory. We recently had three environmental assessment-type projects (two in Alberta and another in Yukon). We also recently prepared a restoration plan for a well-site and 100-mile access road to it in the southwestern portion of the N.W.T. in the Mackenzie Mountains.

Our one Alberta project fell within an area of the foothills where an ecological land classification had been conducted and in that case we were able to identify key issues and write the impact assessment largely on the basis of the E.L.C. Another project fell just outside of the E.L.C.-mapped area and it was a much more difficult task - especially as it was winter and not all pertinent field information could be collected. The conclusion here is that in areas where E.L.C.'s have been conducted, conclusions can be drawn at all times of the year.

Another project (a proposed mine) fell within an E.L.C.- mapped area in southwest Yukon. Although we did not prepare an impact assessment, it was easy to see that many of the tools were there to describe existing environmental conditions and to identify key issues.

In regard to the preparation of the restoration plan for the well-site in N.W.T., we were brought into the project in mid-winter but needed information about local soil types over a 100-mile strip and at the well-site, seed mixes that had been previously used, etc. It was a difficult task to pull all this information together. A system such as is being proposed by Lands Directorate would have been extremely useful in this case and saved money and effort at the information collection stage.

Question 6

What regulations, guidelines, handbooks do the decision makers use and how can these best be complemented/supplemented by the Guidelines Project?

The oil and gas industry refers to:

- oil and gas regulations;
- lands and land use regulations;
- water use regulations; and
- terms and conditions of their permits, etc.

Industry will refer to guidelines published by government that provide information about how to meet specific clauses of regulations or standard terms and conditions of permits.

I view the "guidelines" proposed by Lands Directorate as being something different from the guidelines referred to above but complementary. They are more geographically-related and more an organization of existing information with interpretations made of the information. Such a tool would be well used by industry at all stages of decision-making.

To conclude, these regional interpretations could be viewed as dangerous by industry. Industry has the ability to interpret a data base also and to develop its own plans/remedial measures to deal with key issues or constraints. Industry can be creative and original in its approach to apparent constraints.

2.0 CONTEXT FOR USE OF ENVIRONMENTAL GUIDELINES

The following questions were the agenda for the discussions on the first day of the workshop.

1. What is the nature and type of decisions which have to be made for which guidelines would be useful?

2. Who are the personnel involved in making these decisions to whom the guidelines would be most useful?

3. What environmental considerations are typically raised when decisions are being made?

4. Which data sources are commonly used in addressing environmental considerations?

5. What are the strengths and weaknesses of these data?

6. How are interpretations made of these data and who is responsible for making the interpretations?

The answers reported in the following pages are derived from discussions with the workshop participants.

Context for Use of Environmental Guidelines

1. WHAT ARE THE DECISIONS?

(i) permit approvals and conditions

Land Use (DIAND)
Water Use (DIAND)
Blasting Permits (DFO)
Authority to Drill Wells (COGLA)
NEB

(ii) lease agreements

COGLA
DIAND

(iii) recommendations

EARP (at several points in project development)
LUAC
RODAC
AWAC

(iv) project feasibility and location

industry
government

(v) project planning

industry
government

Comment: The emphasis is on the project planning and approval process rather than comprehensive planning. Improvement of, access to, and interpretation of, environmental information for projects may also benefit the northern land use planning process. The information developed should be as useful to industry in making its plans and selecting from alternatives as it is to government regulators in reviewing proposals.

2. WHO ARE THE CLIENTS?

- technical/operational personnel in government agencies and industry

- the requirements of the client will vary with the "decision" (1, above) being considered

- the "clients" will also vary according to the "decision" being considered. For different decisions the "clients" could include the public, organised or individually.

Comment: Environmental information should be aimed at technical staff, of both industry and government. It is not intended for direct use by senior policy and decision-makers. Use by the

general public is incidental. To the knowledgeable public and special interest groups the information developed could be very useful. The objective is not public education but a technical document.

3. WHAT ARE TYPICAL ENVIRONMENTAL ISSUES?

Terrain Sensitivity - ice-rich environments
erosion susceptibility

Hydrology - in-stream flow requirements (for uses including fisheries and wildlife listed below)
- pollution risk
- human consumption

Wildlife Habitat

Renewable Resource Harvest Areas

Fisheries Habitat - spawning areas
- overwintering areas

Parks - includes potential parks

Environmental Safety - oil spills
- toxic wastes
- down-hole integrity

Comment: This list of issues is not exhaustive, but is to be considered indicative of the subject matter to be included. A number of components will probably be included in each topic.

4. WHAT DATA SOURCES ARE USED?

- NLUIS - starting point
- Industry developed information
- Interviews - expert advice

- Government - water resources, fisheries and wildlife surveys
- Ecological Land Classification
- Air photo interpretation
- Field (site) checks
- Advice of community groups
- Individual sector survey reports (geology, soils, climate, vegetation, etc.)

Comment: The diversity of sources illustrates the nature of the problem facing government and industry in assessing environmental implications of northern project proposals. The Northern Land Use Information Series is widely used, the later maps are considered far superior to the early maps; but it is only a starting point.

5. STRENGTHS AND WEAKNESSES OF DATA SOURCES?

Weaknesses
- Generality of resource inventory*
- Poor boundary delineation
- Costly to find data
- Time consuming to find data
- Incomplete northern coverage in majority of data bases
- Too little emphasis on 'functional' data (e.g. processes and relationships), as distinct from 'structural' data
- Lack of integration of data bases
- Data collected for different purposes* than uses currently being considered
- Data is not wisdom nor understanding*
  Resource scientists not in touch with data needs of decision makers*
- Minimum data requirements often not met.

Strengths
- Data retained by resource agencies responsible for its collection
- Integrated ELC is an advantage
- Annual resource (wildlife) surveys
- Industry documentation of impact areas

* Most important strengths and weaknesses

Comment: That the list of weaknesses is longer than the list of strengths is further indication of the nature of the problem being addressed. In particular the question of "integration" is troublesome. While everyone agreed with the desirability of integrated environmental information, concern was expressed that integration may result in the loss of specific information.

It is somewhat surprising that while some people regard the North as data "rich" others take an opposite viewpoint. Several observations were made on this apparent dichotomy:

(i) Not all data is available or known; for instance project-specific data is often contained in reports which are not generally available.

(ii) Of more fundamental significance is the fact that data collected for one project may not be of a type useful for another project; and,

(iii) Data collected by resource scientists is sometimes not useful for problem solving; sometimes because the objectives of the scientist on the one hand and the project environmental assessor on the other are inherently incompatible but often because there has been no discussion of possibly similar objectives.

A major concern is a consistent definition of the minimum data requirements in support of an application for project approval. The division of responsibility between government and the industrial proponent for collection of new data, should this be necessary, also needs to be clarified.

6. ISSUES RAISED?

The following list of issues was raised but not fully discussed:

(i) Need for information systems that bridge across aquatic (i.e. freshwater and marine) and terrestrial environments;

(ii) Impracticality of standardizing data bases;

(iii) Environmental guidelines as a decision-support tool, not a substitute for decision making;

(iv) Need for regionalisation due to cultural differences;

(v) Avoidance (or identification of) "values" assumed in data interpretation;*

(vi) Reflect notion of environmental cost;

(vii) Need for hierarchical structure for organization of environmental guidelines to cope with scale differences;

(viii) Need for automated retrieval system; and

(ix) Desirability of interaction between users and suppliers of guidelines.

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* If environmental information could be considered "value free" there would be no need for regionalisation to take into account cultural differences. Some argue that values are always assumed in providing information (someone had to make the decision on what data to collect). Others presume that it is possible to avoid introducing "values" and to produce environmental guidelines that are objective.

3. POTENTIAL USE OF ENVIRONMENTAL GUIDELINES IN REGULATORY PROCESSES

The principal regulatory and environmental review agencies with jurisdiction in the North presented their understanding of the need for, and potenetial for use of, environmental guidelines. A number of other regulatory agencies with Northern environmental jurisdiction are listed in the section "Context for Use of Environmental Guidelines" (2.1). In addition, potential for use by industry in both project planning and applying for project approval is most important and is discussed in the "Proponents Perspective" (1.(iv)).

The three regulatory and environmental review agency perspectives presented are:

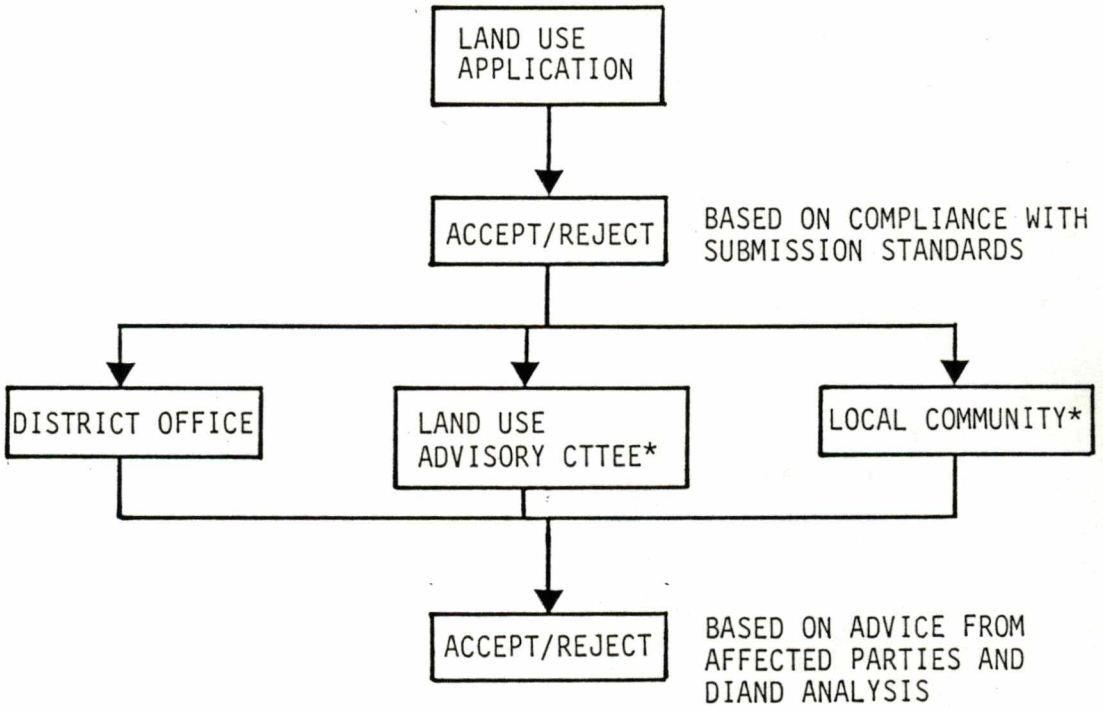
1. Land Use Permits - DIAND
2. Lease Negotiations - COGLA
3. Environmental Assessment - FEARO

(i) Land Use Permits - DIAND (J.P.W. Dunlop)

The guidelines as proposed at the workshop will have merit as an overview of the 'environmental worth' of an area. I would welcome such a record as a first glance at potential issues to be faced in assessing a northern hydrocarbon proposal. Guidelines addressing terrain sensitivity, fish and wildlife habitat, renewable resource harvesting, water use and cultural resources at any map scale could be utilized to establish the backdrop against which to begin gathering necessary environmental data. The notion of using such guidelines as an entry level to more detailed data is a good one.

The hydrocarbon industry, in my view, would utilize such guidelines to steer and focus their attention at environmental issues (and potential impacts) that deserve particular consideration.

EXHIBIT 3.1: TERRITORIAL LAND USE REGULATIONS - INAC



*REVIEW STAGES AT WHICH GUIDELINES COULD BE USEFUL

I am confident that my Department would use such guidelines. The Regional Environmental Review Committee (RERC), while not a regulatory forum, is a screening group which could benefit from such an environmental record. This group normally would review proposals to construct more permanent type hydrocarbon facilities. I can speak with more certainty about the Land Use Advisory Committee (LUAC) which I chair. This committee deals regularly with land use applications which usually reflect hydrocarbon exploration activities (i.e., seismic surveys, winter roads and access, exploration wells, camps).

Environmental guidelines as proposed would benefit LUAC as a regional record of environmental concerns. Exhibit 3.1 shows the steps taken in reviewing a land use application and those in which "guidelines" could be most useful. I would use such guidelines as an introductory review or statement of existing environmental worth. I would then seek to move to the more local issues that need more precise review and discussion. As an example I would use the proposed guideline for fisheries habitat. The large scale map would alert the use to an areas' worth as beluga over-wintering habitat. This could provide the pivotal litmus test by which a proponents' activity could be assessed (i.e., disturbance, loss or damage to habitat, impacts on behavior).

The guidelines have the opportunity of providing proponents with alert signals and resource managers with a tool that could prompt some discipline and precision to reducing and minimizing the potential environmental costs of northern hydrocarbon development.

(ii) Oil and Gas Disposition - COGLA (M. Ault)

Decision Points for Environmental Input:

1. Renegotiations (completed)
2. Crown selection during relinquishment (on going)
3. Second Round Exploration Agreements (in future)
4. New Calls for Proposals

Environmental Options for Negotiations:

In 1982, the proclamation of the Canada Oil and Gas Act meant that all of industry's oil and gas holdings had to be renegotiated from their leases or permits into new exploration agreements (EA). In defining the acreage, term, work program and environmental conditions of the EA, a number of factors were considered. Of prime importance were the geological prospectivity and the locations, however, environmental sensitivity was also evaluated and considered when developing negotiating strategies.

Exhibit 3.2 illustrates the process followed by COGLA in identifying environmentally sensitive areas and developing recommended environmental negotiating strategies. In response to COGLA's request for input to this process one of the line agencies, Fisheries and Oceans, had provided COGLA with a "classification of Marine Habitat" (see 4 (ii) c). This particular classification and presentation proved to be very useful and COGLA encourages other departments to organize and present information about resources in similar ways.

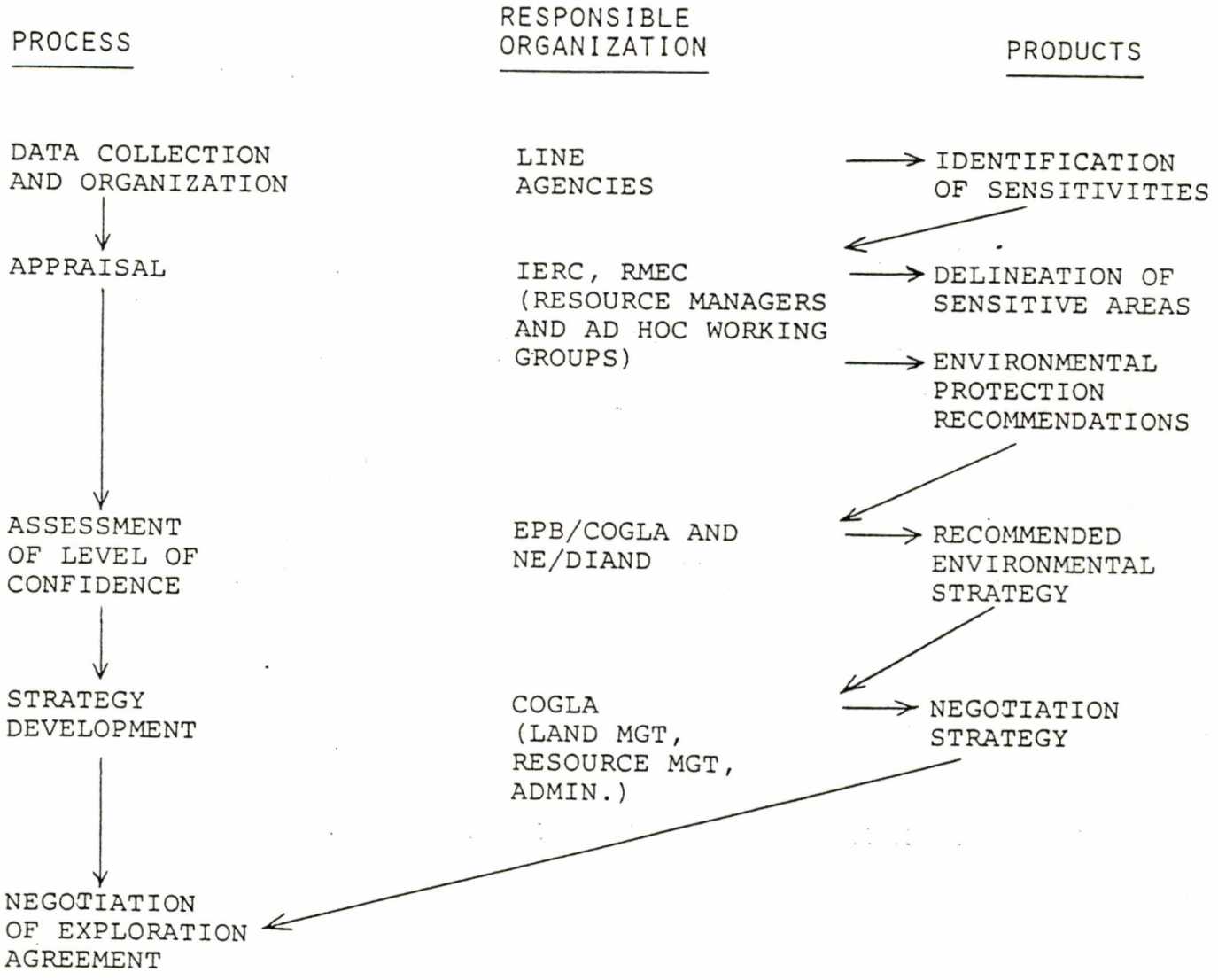
By following the process in Exhibit 3.2 COGLA developed its recommended environmental strategies from the following four options:

1. Total exclusion
2. Area - limited exclusion
3. Proceed with special terms and conditions; special environmental protection measures
4. Proceed under normal regulatory process.

This environmental input would be considered together with all the other relevant factors at the time of negotiations with industry. In COGLA's experience the response of the oil and gas industry to these environmental concerns has been very positive and is respectful of the environment. It is essential for both government and industry to utilize good environmental information to ensure that environmental concerns are continued to be

EXHIBIT 3.2

SENSITIVE AREAS ASSESSMENT PROTOCOL



respected through future on-going disposition decision points, e.g. Crown selections, Second Round EA's and New Calls for Proposals. If the guidelines can facilitate this consideration of environmental information they will be very useful to COGLA at each of these decision points.

(iii) The Federal Environmental Assessment and Review Process - FEARO (P. Duffy)

The Federal Environmental Assessment and Review Process, established by Cabinet decision on December 20, 1973, and amended by Cabinet in 1977, embodies Canada's policy on environmental assessment as it relates to the activities of the federal government.

The purpose of the Process is to ensure that the environmental effects of federal projects, programs and activities are assessed early in their planning, before any commitments or irrevocable decisions are made. Activities with potentially significant environmental effects are submitted to the Minister of the Environment for formal review by an Environmental Assessment Panel.

Federal departments and agencies initiating projects are responsible for both the initial assessment and for establishing the significance of environmental impacts. They are also responsible for the implementation of any mitigating measures identififed.

While the determination of the environmental effects of any given proposal can be mainly a matter of the application of scientific expertise, the determination of the significance of these effects is more subjective. In the self-assessment phase of the Process, technical and scientific experts within the department initiating the project have this responsibility and must take into account, not only technical information and data, but also the project's potential for causing public concern. In other words, what may not be significant in a purely scientific or technical way, may be significant to those living in the area of the project for other reasons.

Public reaction to a proposal is a major factor in determining significance. Initiating departments and agencies, during their own assessment of the project, are expected to provide information on the project to the public, and to obtain public comment. Exhibit 3.3 indicates the very small proportion of projects which are referred to panels and the relatively few which are considered to have impacts deserving an "initial assessment".

A considerable body of advice is available to departments and agencies in applying the Process. Environmental advice is available from the Department of Environment throughout the screening procedure and in the development and review of the Initial Enviromental Evaluation. The Department has established special committees, the Regional Screening and Coordinating Committees, in each of its five regions to facilitate this advisory service. Technical information is also available from other deparatments.

Exhibit 3.4 indicates the roles of the proponent, government agencies, experts and the public in a project which is subjected to detailed assessment, by a panel appointed by the Minister.

The Environmental Screening

As early in the planning stages as possible, departments and agencies screen their proposed projects to identify adverse environmental effects. The Federal Environmental Assessment Review Office (FEARO) and the Environmental Protection Service of Environment Canada jointly have developed a "Guide for Environmental Screening" to assist departments and agencies in this task.

The guidelines are designed in matrix form to provide a quick method of identifying the relationships between a broad range of project activities and environmental factors.

It is considered that "environmental guidelines" as proposed would be more useful to the "screening" and "initial assessment" stages than to panels and projects with significant effects.

Screening can result in one of three decisions by the initiating department:

1. The department may conclude that the proposal has no potentially adverse environmental effects or that such effects are known and are not considered significant.

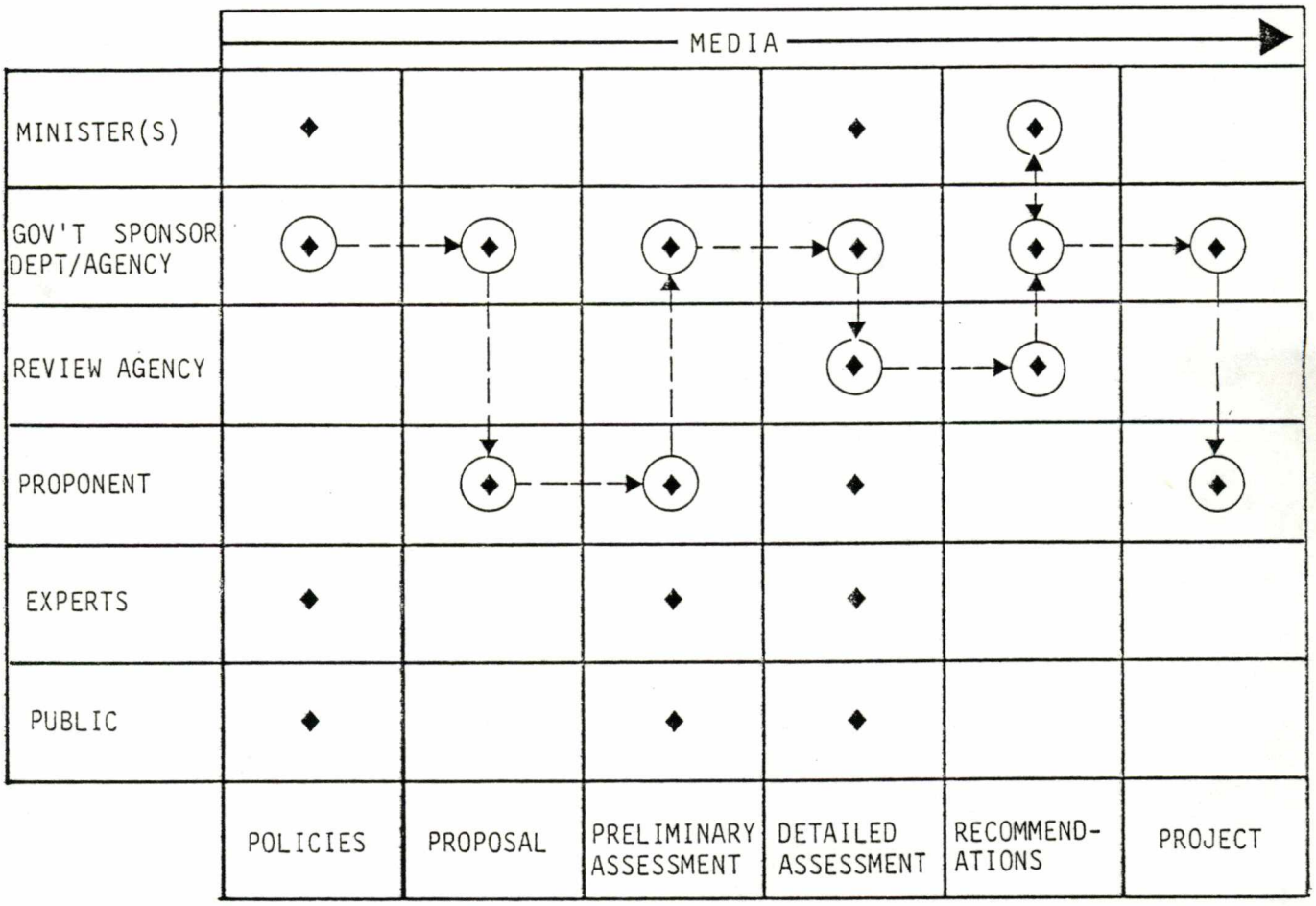
2. The department may conclude that the project's potential environmental effects appear to be significant. In this case the project is referred to the Minister of the Environment for a formal review under the Process.

3. The department may conclude that the nature and scope of potential environmental effects cannot be determined readily by this procedure. If this is the decision, the proposal is subjected to a more detailed examination, sometimes referred to as an Initial Environmenetal Evaluation (IEE).

It should be noted that an IEE is not required in cases where a direct referral of a project for formal review is made during the screening stage.

According to the 1984 amendments to the Process, screening decisions will be published in a periodic bulletin published by the Federal Environmental Assessment Review Office (FEARO) based on information provided by initiating departments. This increased public exposure and scrutiny of the early stages of EARP will make the suggested use of "environmental guidelines" in the early stages, for the majority of projects, extremely useful.

EXHIBIT 3.4: ROLES IN PROJECT ENVIRONMENTAL ASSESSMENT



Dashed line and arrows indicates review steps for a major project refered to panel. Circled entries are decision points, other entries indicate an advisory role.

4. ALTERNATIVE APPROACHES

Six alternative approaches were presented to the Workshop. The first three are examples of environmental planning and assessment procedures which require environmental information. The examples are from:

British Columbia: Environmental Assessment Process
Alberta: Eastern Slopes Management Policy
Arctic Coast: Proposed Siting Process

The second set of examples concern the organization and use of environmental information for a variety of purposes. These examples are from:

Nova Scotia: Resource Book and Information Index
Northern Canada: Area Specific Data Base Proposal
Arctic Canada: Marine Habitat Classification

These examples were provided to stimulate the Workshop by providing a wide variety of practical alternatives.

(i) Planning and Assessment Processes Which Require Environmental Information

British Columbia's Preliminary Environmental Assessment Process

Jon Secter
Planning and Assessment Branch
BC Ministry of the Environment

Preliminary Environmental Assessment (PEA) was developed by the Planning and Assessment Branch of the British Columbia Ministry of the Environment. PEA is conducted for the early and expeditious identification of the broad environmental consequences of development proposals, and the requirements for the evaluation of their impacts on environmental and social resources. PEA is designed to:

a) Identify the potential environmental impacts of the development and evaluate their significance;
b) Evaluate the adequacy of existing information and data, and to identify information requirements, for comprehensive environmental assessment, planning and management;
c) Identify at an early stage, requirements for environmental assessment, planning and management;
d) Provide the Ministry of Environment with a technical basis for evaluation of subsequent development proposals.

PEA is based on a comprehensive review of literature and files and on consultation with key technical experts. Conclusions and judgments rely on the professional experience of the analysis.

1. What type of development planning decisions were the 'guidelines' designed to assist?

Preliminary Environmental Assessment produces a form of "guidelines" in the generic sense of the word, but does not establish 'project-type' guidelines in the sense that the term is traditionally used within the environmental assessment and planning field.

Preliminary Environment Assessment as a formal tool, in fact was established in recognition of the inadequacy and ineffectiveness of rote list guidelines for project evaluation. In the case of the Offshore Hydrocarbon PEA, the planning decisions to be influenced were in the realm of environmental program planning and management. The basic questions before the Ministry of Environment executive were:

a) How will the proposed project/program impact on provincial environmental resources, resource use and provincial objectives for the management of these resources?

b) Can the project be managed (environmentally) to offset and mitigate any adverse impacts? If so, how?

c) What does this Ministry (and others) need to know before this can be achieved?

d) What type, degree and extent of environmental impact assessment therefore is warrented for this project?

2. What environmental considerations or "issues" were the guidelines designed to address?

Preliminary Environmental Assessment has been termed a "focussing" tool. As such, its specialized team approach is designed to focus the assessment on the issues which emerge from the preliminary investigative efforts applied.

3. Why was this particular approach/format chosen and how do the products improve on what previously existed for land use decision making purposes?

PEA evolved in response to the specific questions from the ADM, "Tell me what we (the Ministry executive) should have them (the Cabinet sub-committee) do with this one."

Improvements to the system are multifold and include:

a) The abandonment or streamlining of rote list EIA guidelines which call for encyclopedic examinataions of factors not germaine to the project at hand;

b) the opportunity for informed Ministry analysis to shape the front end of project decision making;

c) focussing of the EIA requests on "the issues";

d) screening out of projects that do not warrant major e.i.a.s;

e) assuring that agency efforts in data gathering are geared in type and depth to the actual questions to be addressed for decision making;

f) assuring that EIA terms of reference are derived from the real questions to be addressed at each subsequent stage of decision making;

g) PEA commences the organized setting of the stage for activities that must take place within project planning and evaluation, and impact and program management.

It is the view of this writer that PEA is an appropriate tool for employment at the early stages of northern hydrocarbon development and northern regional development planning in general.

References

British Columbia Ministry of the Environment. 1984. A Preliminary Environmental Assessment of Offshore Hydrocarbon Exploration and Development. Prepared by the Planning and Assessment Branch. Edited by Dr. R.W. Langford. Victoria, British Columbia.

A Policy for Resource Management of the Eastern Slopes

Ed Wyldman
Resource Planning Branch
Alberta Energy and Natural Resources

The Eastern Slopes of Alberta's Rocky Mountains covers an area of approximately 90,000 square kilometres of mainly forest-covered mountains and foothills. Growing pressures for resources and land in the area have led to conflicts in land allocation and to a rising concern for the protection of environmental quality and the management of this extremely important watershed region. "A Policy for Resource Management of the Eastern Slopes" was developed to ensure that all public lands and resources in the Eastern Slopes are protected, managed or developed according to a philosophy of integrated resource management.

The policy contains three major elements:

1. **Provincial goals** for the various resource sectors provide the framework for developing more detailed regional resource objectives. (e.g. "To ensure a continuous, reliable supply of clean water to meet the needs of Albertans and interprovincial users now and in the future"; "To provide a variety of outdoor recreational and commercial opportunities based on wildlife resources for the benefit and enjoyment of Albertans".)
2. **Policy statements**, which describe:
   i) **management intentions** for the region and the direction which is required to assure that the character of the slopes will continue to provide the special benefits the region has to offer (e.g. "To provide the highest level of protection for those areas which are known to form the unique character of the Eastern Slopes"; "To recognize existing and provide for future site-specific development");
   ii) **policy guidelines** which identify the most important resource opportunities of the region and the major priorities to be considered in the management of the Eastern Slopes (e.g. "The highest priority in the overall management of the Eastern Slopes is placed on watershed management. Recreation and tourism benefits from the private and public sectors are also extremely important"; "All levels of integrated resource planning will include a public involvement program");
   iii) **general procedure** to assure that the desired direction and the policy guidelines are recognized in the on-going management of the public lands and resources in the Eastern Slopes (e.g. "Integrated resource plans completed for the Eastern Slopes will be approved by a provincial Cabinet committee").
3. The **regional plan** provides more specific resource management direction. Resource objectives that can be achieved in the region are stated (e.g. "To manage the South Saskatchewan River Basin for water supply stability"; "To identify very rare, scarce or special forms of outdoor recreation opportunities from wildlife and to ensure that access to these opportunities continues to be available"). Zoning maps and descriptions indicate where the objectives or

groups of objectives can be met (e.g. zones for "prime protection", "critical wildlife", "general recreation", "industrial", "multiple use"). Within the zone descriptions, the compatibility of a number of land use activities and the objectives generally to be achieved from the zone are identified (see Table 1).

References

Alberta Energy and Natural Resources. 1984. A Policy for Resource Management of the Eastern Slopes. Revised Edition. ENR Number T/38. Edmonton, Alberta.

TABLE OF COMPATIBLE ACTIVITIES BY LAND USE ZONE

ACTIVITY / ZONE	1 PRIME PROTECTION	2 CRITICAL WILDLIFE	3 SPECIAL USE	4 GENERAL RECREATION	5 MULTIPLE USE	6 AGRICULTURE	7 INDUSTRIAL	8 FACILITY
Non-motorized recreation	■	■		■	■	■		■
Fishing	■	■		■	■	■		■
Hunting	■	■			■	■		
Scientific study	■				■	■	■	■
Trapping	■				■	■		
Trails, non-motorized				■	■	■		■
Transportation & utility corridors					■	■	■	■
Primitive camping				■	■	■		
Intensive recreation				■				■
Off-highway vehicle activity					■	■	■	
Logging					■	■	■	
Domestic grazing					■	■		
Petroleum and natural gas exploration & development					■	■	■	
Coal exploration & development					■	■	■	
Mineral exploration & development					■	■	■	
Serviced camping				■	■			■
Commercial development							■	
Industrial development					■		■	
Residential subdivisions						■		■
Cultivation						■		

■ Compatible Use — Uses that are considered to be compatible with the intent of a land use zone under normal guidelines and land use regulations.

□ Permitted Use — Uses that may be compatible with the intent of a land use zone under certain circumstances and under special conditions and controls where necessary.

□ Not Permitted Use — Uses that are not compatible with the intent or capabilities of a land use zone.

These activities are only representative of the range of activities that occur in the Eastern Slopes. For these and any other activities, the possibility of whether they should or should not take place in a particular area must always be measured against the fundamental management intentions for that zone. Since economic opportunities are not all known in advance, site-specific developments may be considered in any zone.

As integrated resource plans are completed and approved, this table and the regional zoning maps will no longer apply.

For information concerning the guidelines, regulations, conditions and procedures, contact the Current Planning Section, Resource Planning Branch, Alberta Energy and Natural Resources, Edmonton, Alberta. (Telephone: (403) 427-3608)

A Process for Siting Hydrocarbon Facilities on The Canadian Arctic Coast

This process, and facility site selection processes in general, begin with a definition of the region of interest; one where fundamental facility needs can be met. Once the region of interest has been defined, maps are developed that exclude areas that are particularly sensitive to development. These maps cover facility needs, environmental and social constraints and when combined with maps of lands which are legally or otherwise committed the cumulative result is a pattern of areas where the probability of finding an environmentally, socially and technical acceptable site is relatively low. The purpose is not to irrevocably exclude all such areas but to focus the attention of the siting team on other areas where the likelihood of finding an acceptable site is reasonably good. Overlay mapping techniques can be used for this purpose.

Work by Runka and Spencer in the Viscount Melville Sound area suggests that existing biophysical information in the Arctic can be used at this level of inquiry but that aircraft overflights, reconnaissance surveys, etc. would be required within candidate areas in order to select specific sites.

Some have suggested that Government could take the lead in identifying candidate areas within a region prior to large scale hydrocarbon development. The purpose would be to provide a focus for the collection of data needed to make site selection/permitting decisions and to give industry advance notice of areas where permit applications would be favorably received.

Another feature of the Rogers, Golden and Halpern (RG&H) approach to facility site selection and one that is common to most other approaches is the use of a facility profile and a description of potential impacts as a guide in identifying candidate areas and selecting specific sites.

The RG&H approach to facility site selection differs from most others in that all important stakeholders in the region of interest sit as equal members on the site selection team; representatives from relevant government agencies, for example, would be on the team as would industry and special interest groups. Each representative would be expected to first identify the key issues he/she wants to see addressed, utilizing facility profile and related impact information, Departmental policy positions, etc.

These issues would then be translated into spatial preferences and compared with one another via an overlay mapping scheme as described earlier. Techniques for making trade-offs and incorporating the preferences of the various members of the siting team would then be used and are described in detail in the RG&H report.

Reference: Rogers, Golden and Halpern, 1983. A Process for Siting Hydrocarbon Facilities on the Canadian Arctic Coast. EPS3-ES-83-1

EISD/ESB/R. Baker/2/4/85

GUIDELINES FOR USE OF ENVIRONMENTAL INFORMATION

4 (ii) Examples of Guidelines for Use of Environmental Information

Nova Scotia: Resource Book and Land Information Index

Production of both these documents was at the suggestion of, and under the direction of, the Land Use Policy Committee. This committee is an interdepartmental (12 departments) provincial civil service organization which operates at deputy minister, director and technical levels. The immediate stimulation for production of the Resource Book, subtitled, "a guide to land use considerations for proponents of major projects", was the prospect of construction of a natural gas export pipeline through the province. The Land Information Index had been produced earlier in response to a general and increasing need to know about the nature and location of land use information and supporting data.

The overall objectives of the resource book are to make known to the proponents of major projects what resources are considered important, where to find more information on these resources and an initial interpretation of their significance. The land information index complements the second of these objectives.

Taken together these two documents could be regarded as guidelines for the interpretation of environmental (land use) data. There is no map content. This component had been considered initally but the compilation task is enormous, at the provincial working scales of 1:50,000, 1:15,840 and 1:10,000. The province considers this the task of project proponents given access to the data sources provided by the Index and Resource Book, together.

(i) Resource Book - no more than two pages are normally allowed for each of the current 35 entries. Each was developed by the agency exercising jurisdictions according to a common

format, under the headings: identificaiton (of the resource, land use or site); resource characteristics (includes most likely sources of impairment); suggested modifications (avoidance, timing, construction methods compensation; other mitigating measures); contacts. References to data sources are included throughout; all are included in the Land Information Index.

(ii) Land Information Index - The standard entry in the index is a single page with entries under each of the following headings: title; sponsoring agency; coverage; location; access restrictions; description of major content, use and purpose; file organization; status; file size; frequency of update; source and reliability of data; storage medium; computerized; linkages to other data; location identifiers; notes and contact person.

Area-Specific Environmental Data Base
- An Approach -

Michael Landreville
Lands Directorate
Environmental Conservation Service
Environment Canada

This approach is intended to support federal regulatory and advisory responsibilities. It addresses problems relating to the availability and use of existing environmental information for development planning in the north. The objective of this approach is to develop an information tool which will "plug into" various stages in the EIA process and in so doing, facilitate the incorporation of environmental considerations into hydrocarbon decision-making. This tool will identify, map, and describe, environmental resources and areas which should be protected during development.

In this approach, valued ecosystem components ("VEC's") are used as indicators of resources and areas of environmental value in a region. Some VEC's will be easily recognized, others will require consultation with resource experts and interest groups. Within a given group of VEC's some, due to their nature, will be more important than the rest. VEC's are used in the first step of this approach to provide the focus for a co-operative and coordinated effort on the part of resource experts to:

1. identify the environmental values within a region;
2. map their location;
3. rank these areas as key or important;
4. describe the attributes which make up the area's value;
5. provide documentation and references for steps 1-5.

This baseline information, supplied by resource experts, forms the base for development of an integrated data base with three components.

1. AEV Maps

   Maps showing the location of VEC's within the region are overlayed to identify areas of "overlapping importance". These areas of environmental value ("AEV's") are shown on a composite AEV map and coded as:
   1. Key areas;
   2. Important areas;
   3. Areas of no/unknown environmental value.

2. AEV Characterizations

A textual portrayal of the baseline information completes the geographic picture by describing in detail the environmental value of the AEV's identified. AEV characterizations will synthesize what is known about the VEC's occuring within it. An emphasis is placed on providing information relevant to hydrocarbon decision-making.

3. Information References

The proposed data base includes documentation by resource experts of baseline information used to select and describe the environmental values of the region.

DFO'S APPROACH TO THE CLASSIFICATION OF MARINE HABITAT - USED IN THE RENEGOTIATION OF EXPLORATION AGREEMENTS BY COGLA

Dennis G. Wright Arctic and Environmental Secretariat
Department of Fisheries and Oceans

In the spring of 1982, the Canada Oil and Gas Lands Administration (COGLA) commenced the process of renegotiation of all hydrocarbon exploration agreements and leases to ensure that they were in compliance with the recently promulgated Canada Oil and Gas Act and the amended Oil and Gas Production and Conservation Act. As part of this process, COGLA asked the Department of Fisheries and Oceans (DFO) and other federal departments to review the areas to be renegotiated and to identify environmentally sensitive areas within the Northwest Territories and contiguous offshore waters that should be closed to exploration activities or which would require special consideration.

Since the exercise had but a six week time-frame for completion, the Department was not able to undertake an extensive review of the data base.

The DFO approach to the exercise was to develop a colour coded classification scheme based upon the importance of an area to the maintenance and survival of fish and marine mammal stocks, on the harvest of these resources, on threats from the environment and on the adequacy of the biological and oceanographic data base. Based upon these criteria, the area of concern was partitioned into the following four categories (see also Table 1).

RED - These areas require the ultimate degree of protection as they are essential for the long-term survival of important fish and marine mammal stocks. No exploration should be permitted in these areas. Examples of these areas include areas of year-round or very high seasonal concentrations of marine mammals, such as recurring polynyas, certain estuaries or embayments and terrestrial haul-outs for walrus or overwintering, spawning or nursery areas for major concentrations of harvested or ecologically important fish species.

ORANGE - These areas are important to the survival of fish and marine mammals or where major resource harvesting activities occur or are areas that pose serious hazards to exploration activities. Exploration in these areas would be subject to stringent operating conditions following review by an EAR Panel. Areas would include areas of high seasonal use by marine mammals such as for wintering, feeding, calving, pupping or migration, areas of seasonal use by concentrations of ecologically important or harvested fish species, major areas of fish and marine mammal harvest, and areas of high iceberg concentrations, multi-year ice, strong or variable currents, or where navigational hazards may exist.

YELLOW - These areas are of general use by fish and marine mammals, are areas where some resource harvesting activities occur; or where the data base is inadequate for determining the appropriate classification. Except where the data base is deficient, exploration could proceed following a site-specific assessment and under site-specific operating conditions.

GREEN - These are areas of limited use for fish and marine mammals and their harvest by native peoples. Exploration may proceed under standard operating conditions.

These areas were mapped on a single map sheet at a scale of 1:6.7 million. Each area was numerically coded and the ecological significance and rationale to support the classification given each area described in a brief overview summary. Bibliographic citations were provided to support the classification given each area.

While the exercise was conducted under tight time constraints it did serve to highlight important marine and some freshwater habitats. At the map scale used it was not possible to define clear boundaries for each area. Even if a more comprehensive data base was available, further clarification of the boundaries may still not have been possible.

Since completion of this classification exercise, the Department of Fisheries and Oceans has embarked upon two additional mapping and data appraisal projects. An atlas of important fish and marine mammal habitat information has been prepared for the Beaufort Sea and Northwest Passage. Data has been mapped on 1:1,000,000 scale base maps and the resulting maps photographically reduced to half the original size. An overview report synthesizing the data and providing a complete bibliogrpahy for each map sheet accompanies the atlas. Copies of the atlas are available from the author upon request.

The other initiative, undertaken jointly by the Freshwater Institute and the Institute of Ocean Sciences has resulted in a series of reports in which all the data sets for various aspects of physical, chemical and biological oceanography through the Beaufort Sea, Northwest Passage and Queen Elizabeth Islands have been or are being compiled and appraised for their utility for further analysis. The files have been computerized and the location of each data set mapped.

Habitat classification and mapping and data appraisal is an ongoing project within DFO and with time we will be gradually able to characterize habitat with greater and greater accuracy.

TABLE I

SUMMARY OF AREA CLASSIFICATION CRITERIA AND RATIONALE

	RED	ORANGE	YELLOW	GREEN
CONDITIONS	No exploration permitted.	Exploration may proceed following review by EAR Panel. Stringent operating conditions.	Exploration may proceed following site specific assessment and site specific operating conditions.	Exploration may proceed under standard operating conditions.
RATIONALE	Areas require year-round protection. Essential to the survival of important fish and marine mammal stocks.	Areas are important to the survival of fish and marine mammal stocks or are areas where major harvesting activities occur or are areas that pose serious hazards to exploration activities.	Areas of general use by fish and marine mammals, or are areas where some harvesting activities occur, or where data base is inadequate to determine proper classification.	Areas are of limited use for fish and marine mammals and their harvesting.
ENVIRONMENTAL IMPORTANCE				
Marine Mammals	Areas of year-round or very high seasonal concentrations of marine mammals, e.g. recurrent polynias, certain estuaries and terrestrial haul-out areas for walrus.	Areas of seasonal use by concentrations of marine mammals, e.g. for wintering, feeding, calving, pupping or migration.	Areas of general use by marine mammals.	Areas of limited use by marine mammals.
Fish	Overwintering, spawning or nursery areas for major concentrations of harvested or ecologically important fish species.	Areas of seasonal use by concentrations of harvested or ecologically important fish species.	Areas of general use by harvested or ecologically important fish species.	Areas of limited use by important fish species.
Harvesting		Major areas for the harvesting of fish and marine mammals.	Areas in which some harvesting of fish and marine mammals occurs.	Areas with little or no harvesting of fish and marine mammals.

5.0 PROPOSED FORMAT FOR NORTHERN ENVIRONMENTAL INFORMATION MANUAL

The proposed format for the manual is designed to fulfill two major purposes:

1) An "alert" system for proponents and regulators in specific regions; and
2) A "gateway" to the information base (maps, reports, specialists, etc.)

In fullfilling these two purposes, a map (item 1 below) provides the focus of the manual. The map displays the "degree of concern" classification (item 2) which is derived from the classification criteria (item 3), constituting the "alert" system.

A narrative fact sheet (item 4) is geographically referenced to the map sheet and provides further information for the delineated area. The fact sheet also indicates additional data sources available, and is cross-referenced to the reference manual (item 5). These items together are the "gateway" to the known information base.

The format reported below represents the results of a plenary discussion following working group meetings. Areas of agreement are listed to the left; areas that were either not fully discussed or subject to disagreement are listed to the right as "options"

Agreement	Option
1. Geographic Referencing System (Maps)	
Specialists in discipline will decide scale	Need to obscure some data (eg. rare species)
Map will show four categories derived from "degree of concern" classification	Referencing on map to data sources through a numbering system

Agreement	Options
Concentrate on NOGAP study areas, rather than entire North.	Maps at smallest scale feasible for the discipline; prefer one sheet for the North. Use larger scales for NOGAP study areas Depiction of boundaries should indicate lack of precision

2. "Degree of Concern" Classification

- Uniform language to be used by all disciplines - Four categories to be used	- rename "Concern for Impact" - include an "unknown" category - use "traffic light system"

3. Classification Criteria

- To be established by each discipline
- Must be explicit
- Should be quantified if possible, not subjective

4. Narrative Fact Sheet

Should include information on:

(i) rationalisation of importance class

(ii) seasonality

(iii) use, if applicable (existing impact)
(iv) dynamic factors (processes)
(v) environmental factors
(vi) vulnerability to disturbance (by generic factors not specific uses)
(vii) identification of data deficiencies and data sources used* to derive information in items (i) - (vi)
(viii) existing legal status

- should be short and concise

5. Information Sources

Examine existing reference manuals from Alberta, British Columbia, Nova Scotia and, if available, elsewhere in Canada; determine which, or which approach with modifications, would best assist everyone in finding environmental data.

Compile a separate northern information index

Include as part of section 4 above

Refer to all data sources (published, field notes, experts) or only published data

Geo-referencing system by map coordinates

6. Data Quality Assessment

Must remain in hands of discipline specialists.	Ignore, because it is implicit in specialist's criteria and categorization and use of data
Little chance for standardisation	Use one word description of nature of data in item 4 (annual survey anecdotal, etc)

7. Identification of Information Needs

Include in item 4
Do not include mention of monitoring

8. Management Recommendations

- should not be included
- types of activity permitted/not permitted should not be identified
- seasonality is implicit in items 4 (ii) and 2
- should not include suggestions for mitigation of disturbance, is included in item 4(vi)
- legal status (current, not recommended) is included in item 4(ii) (viii)
- research should not be recommended but information deficiencies are included in item 4(vii)

6.0 IMPLEMENTATION

1. Lead Department:

   (i) Production of the Information Manual should be coordinated by Lands Directorate of Environment Canada

   (ii) Coordination of use of the finished product should be responsibility of DIAND

2. Support from Contributing Agencies

   (i) Lands should establish a point of contact in each contributing agency and potential user groups.

   (ii) These agencies will probably include those identified in Exhibit 6.1, as potential contributors to the six major subject areas, and the regulatory agencies; DIAND, COGLA and NEB. FEARO should also be included.

   (iii) Lands should establish a small Steering Committee from among these contacts to assist in continuation of the project, especially at major decision points.

   (iv) The Steering Committee, which should be informal in nature, will serve to clarify the proposed format, promote participation and use and will be chaired by Lands.

   (v) Agencies and groups, identified above and not represented at this workshop, should be approached as soon as possible, in order to secure their participation.

Exhibit 6.1: Preliminary Identification of Agencies Contributing to Major Topics

	1. Terrain Sensitivity	2. Wildlife Habitat	3. Renewable Resource Harvest	4. Fisheries Habitat	5. Water Use	6. Cultural Resources
Environment Canada - Lands - EPS - CWS - IWD - Parks Canada	X	X			X X	X
Fisheries and Oceans				X	X	
Energy, Mines and Resources	X					
Indian and Northern Affairs	X		X		X	X
Government of Northwest Territories		X	X		X	X
Yukon Territorial Government		X	X		X	X
Native Organizations			X	X		X

3. Staging

(i) A NOGAP study region should be selected for the first stage of guideline production, in cooperation with key agencies.

(ii) The amount of effort required should be limited. The intention is to rely on existing information rather than to gather new data; a two month period is suggested for actual data compilation.

(iii) Data compilation and interpretation is the responsibility of the contributing agency; the role of the lead department will be to ensure compatability of the finished product, common definitions and timeliness of delivery.

(iv) The production of a demonstrable product for the first region should be completed within 6 months. Following a review of this initial test of the concept the remaining regions should be completed as quickly as possible, preferably by March 1986.

(v) Eventually the entire area of Canada north of 60°N should be included.

4. Documentation

The following contents for the finished product were suggested by a participant in the workshop. Modifications will probably be made as the project proceeds:

1. Authority - responsible department(s)

2. Purpose - intended uses

3. Context and Policy

4. Data Interpretation Guidelines (see Format) including maps and source references

5. Related Guidelines Documents (eg. Access Road Guidelines)

6. Intended Use, by regulatory regimes

7. Contacts in government, university, etc

8. References

APPENDIX 1

WORKSHOP AGENDA

WORKSHOP ON ENVIRONMENTAL GUIDELINES

FOR NORTHERN HYDROCARBON DEVELOPMENT DECISIONS

Sponsored by the Lands Directorate, Environment Canada
through the Northern Oil and Gas Action Program (NOGAP)

13-15 March 1985
Edmonton Convention Centre
Edmonton, Alberta

AGENDA

Wednesday, 13 March

8:30 a.m.	Coffee
9:00	Introductory Remarks (Michael Simmons)
9:30	Presentations on Environmental Information Requirements of Hydrocarbon Development Decision-Makers
	The Development Proponent Perspective (unconfirmed)
	The Federal Government Perspective (Fred Roots)
10:30	Coffee
10:45	Response and Discussion Regarding Presentations
12:00 p.m.	Lunch
1:15	Summary and Discussion of Requirements for Environmental Guidelines (Michael Simmons)
2:00	Presentations of Alternative Approaches to Environmental Guidelines
	A Policy for the Resource Management of the Eastern Slopes, Alberta (Ed Wyldman)
	A Land Information and Resource Book for Nova Scotia (Michael Simmons)
	Area-Specific Environmental Guidelines for Hydrocarbon Development in Northern Canada (Mike Landreville)
	A Process for Siting Hydrocarbon Facilities on the Canadian Arctic Coast (Bob Baker)

3:20 Coffee

A Preliminary Environmental Assessment Process for British Columbia (Jon Secter)

A Classification of Areas in the Canadian Arctic for use in the Renegotiation of Oil and Gas Exploration Agreements (Dennis Wright)

4:20 Discussion Regarding Potential Application of Approaches to:
1) the Canadian North;
2) the NOGAP priority regions (Beaufort Sea, Mackenzie Valley, Northwest Passage).

Thursday, 14 March

8:30 a.m. Coffee

9:00 Review of Potential Application of Alternative Approaches (Michael Simmons)

9:20 Working Group Sessions for Defining Guideline Format (Michael Simmons, Gary Runka, Richard Spencer)

12:00 p.m. Lunch

1:15 Presentation of Results from Working Group Sessions (Gary Runka, Richard Spencer, Pauline Lynch-Stewart)

2:15 Discussion Regarding Presentations; Finalization of Guideline Format

Friday, 15 March

8:30 a.m. Coffee

9:00 Review of Guideline Format

9:20 Discussion Regarding Preparation of Guidelines

9:45 Coffee

10:00 Discussion Regarding Implementation of Guidelines

11:30 Concluding Remarks (Michael Simmons)

APPENDIX 2

PARTICIPANTS

APPENDIX 2

WORKSHOP ON ENVIRONMENTAL GUIDELINES

FOR NORTHERN HYDROCARBON DEVELOPMENT DECISIONS

* Could not attend
** Presentation only

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APPENDIX 3

OIL AND GAS DEVELOPMENT ACTIVITIES

Appendix 3

Oil and Gas Developments

The scope of the proposed environmental guidelines is intended to encompass all aspects of oil and gas exploration and development. The following list of activities, produced by one of the workshop working groups, is intended to help define this wide scope:

Seismic exploration
Well-drilling
Offshore islands
Drill ship operation
Gathering systems
Topping plants
Pipelines
Marine transportation
Harbours
Airstrips
Roads
River transportation
Re-supply; bulk movements
Large construction/operation camps
Populations (pressure on natural resources)

APPENDIX 4

INFORMATION, GUIDELINES, DECISION, COMMENTS ON
ENVIRONMENTAL CONSIDERATIONS IN NORTHERN RESOURCE DEVELOPMENT

Dr. E.F. Roots, Science Advisor, Dept. of Environment

INFORMATION, GUIDELINES, DECISIONS:- COMMENTS ON ENVIRONMENTAL CONSIDERATIONS IN NORTHERN RESOURCE DEVELOPMENT

E.F. Roots, Science Advisor, Dept. of Environment

1. Introduction

1.1 The Workshop

The stated purpose of the Environmental Guidelines Project of the Lands Directorate under the NOGAP programme is to

> "produce an interpretation of existing terrestrial baseline data to facilitate incorporation of environmental considerations into northern hydrocarbon development decisions";

and further, to develop an

> "integrated resource perspective (by government agencies) to assist in planning and assessment of hydrocarbon development decisions" (1).

These are a lot of very bureaucratic words. What do they mean, when one comes down to the problem of identifying information requirements and the form and structure of operational guidelines? Before we become too involved in discussions of detail or comparisons of different systems, it will be useful to think quite carefully what we wish to achieve.

We should not be ashamed to ask: What are we here for? What can we do here in the next two and a half days that builds upon, or differs from, the very fruitful International Workshop on Environmental Planning for Large-Scale Development Projects, held at Whistler, B.C. in October 1983 (2), or from the several conferences held in the past ten years at Fairmont, Montebello, Calgary, Yellowknife, Kananaskis, etc. on environmental decision-making, streamlining the processes for approvals, etc.? (3).

We have been told that this workshop is not one in which we should try to re-design or change the northern decision-making structure, but, as practitioners and not theoretical planners, we should find ways for making the system that we now have, work better. If that is so, what do we want the product of this workshop to be? Should we end up with:-

- a model set of guidelines?
- an open review of the strong and weak points of the present system?
- an appraisal of the current status and adequacy of information, with recommendations for further priority action?
- a common philosophy and approach between different approval and review agencies, so that day-to-day co-operation and information flow will improve?

1.2 The Problem

As most of you know, the Guidelines Project has developed over several months. But, perhaps because I was busy with other things, I learned of this workshop only last week, when I was asked to speak here. So naturally, I asked "What is the problem?"

The answer to that question is apparent, perhaps in different ways, to each of us here. But it is rather hard to state it clearly, and perhaps that itself is part of our problem.

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*Introductory Paper presented at the Workshop on Environmental Guidelines for Northern Hydrocarbon Development Decisions, Edmonton Alberta, 13-15 March 1985.

Collectively, we who are concerned with the responsible management and administration of northern resource development do have a common problem, which is part of but also much larger than our day-to-day bureaucratic and decision-making problems. The issues we are dealing with here have been developing for some time, but they have been highlighted or focussed on by the report of the Beaufort Sea Environmental Assessment Panel report (4) and the report of the Task Force on Northern Conservation (5).

The problem may be stated in caricature, something like this:-

- After the biggest and costliest environmental assessment exercise in Canada's history, which entailed the assembly of the largest amount of focussed environmental data ever brought together, on northern environmental problems,

- a cautiously optimistic approval was given, which is hedged with many reservations and which calls for still more information or more research.

At the same time, there exists a great deal of background environmental information, of varying quality and at varying scales, that is clearly relevant to northern resource development; - but there appears to be a disturbing gap between this information and the Panel recommendations. There is uncertainty about how to use this information in day-to-day operations, and, also, perhaps because of this perceived gap, uncertainty about how to implement the Panel recommendations to design or set in place the next major steps for northern resource development in an environmentally and socially acceptable manner.

Is this gap one of information, of understanding, or of process and procedure?

Is it a gap that is mainly technical, or is it one of conflicting or confused interests, unclear responsibilities, or political or management muddle?

Until - or unless - we can sort out this confusion and link what information presently exists with the needs for action and knowledge called for in the so-called "decision process", it is hard to see how further action and investment in northern resource development could proceed in an orderly and environmentally responsible manner. In the present economic climate where the freedom of action of both industry and regulatory agencies, and even more of research bodies, is more restricted than it was when the present approval and regulatory system was established, it is of even more importance that available information is systematically linked to the "decisionmaking process".

In fact, what was felt to be needed are "Environmental Guidelines for Northern Hydrocarbon Development Decisions". We need guidelines which are post-Tener, post-Whistler, and future-oriented.

1.3 The Approach to take

Having said all that, I'm still not very clear what it is most useful to attempt at this workshop. On how large a scale or small a scale should we tackle our problem? Should we be pragmatic or logically consistent? Should we be bureaucrats or results-oriented? Should we try to focus on what can be done, in a procedural way, to make the best decisions we can within the present institutional set-up - the NOGAP approach? Or should we look at the problem in a larger view, ask where is all this taking us, are the individual decisions adding up to what we want to achieve, or is there a better way of managing the North and its resources, - and if so, for whom and for what?

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Part of the muddle that it is hoped this workshop will help to sort out, is that most agencies have not yet taken a clear approach to the development and subsequent evolution of their decision-making structures in the north. But I do not want to sound too critical. The muddle does work, after a fashion, mainly because those agencies and people represented here make it work. But most of us agree that it would be easier if we could evolve some common approaches. That, perhaps, is another reason why we are here.

1.4 Déjà vu?

Ed Wiken asked me to say something about the federal government viewpoint.

I told him that I didn't think that the federal government had a viewpoint, or if so, I had not been able to find it, in something more than 40 years of involvement in northern and science issues.

So then he softened and said, and I quote "how about a federal government perspective on information requirements for hydrocarbon development decisions in the North"? That rang a bell. I remember that this statement was very nearly word for word the title of a report I had written for ACND and Treasury Board in 1961 or 1962 -- a report that among others led to the lease permit system for exploration and development in the Canadian arctic which was promulgated, I believe, first in 1964. As you know, that permit system is different from the system used in the provinces (and from the one originally also used decades earlier at Norman Wells) and it was different from what the U.S. was then developing in Cook Inlet for their offshore-onshore areas of hydrocarbon exploration in northern areas. It is the terms and conditions of those permits, based in part on my old paper and taken up by companies in the late 60's and 70's, which are now being re- negotiated by COGLA under the new Oil and Gas Act.

Maybe we were coming full circle.

But what new can be said on this subject that is useful and pertinent 24 years later?

Ed said - "make a few remarks from your background and perspective".

2. A Personal Perspective

2.1 Reminiscences

At first I recoiled from this - nothing is worse than having some old codger tell you what it was like in the good old days, especially first thing in the morning - but then I thought, maybe a different time and space scale could be useful to our discussions, since most of the other people in the room have experience and interests that relate to more recent developments and they have obligations which focus to some degree on northern resource management as an end in itself. So I will ask your indulgence if I make a few remarks from a personal perspective on past developments, to show that our present problems are part of a dynamic story that has a history, and a future.

As some of you here may know, I first went to the Canadian North toward the end of the Second World War, and spent much of the next 30 years wandering around in it, looking at the geology and wildlife, and getting a feel for the environment and geography. Mostly we travelled on foot, or with pack dogs or sleds. We hardly used any aircraft - only occasional float planes - until 1955, when we made a quantum jump and brought in the first helicopters.

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But, it is useful I think, to point out that one's perspective of the North and its environment is quite different if one is not tied to aircraft. One certainly gets to know the land better, and - express it how you will - the land gets to know you. One does not remain an alien in the land very long if there are no scheduled aircraft. Even a simple journey like that from Coppermine to Cambridge Bay reveals a different environment from the surface than from the air; and in many ways it is still these two viewpoints, which will henceforth both be present in the North for a long time to come, that we try to accommodate as fairly as we can in our policies and decision-making systems.

On Operation Franklin we confirmed the geological indications that there really was potential for major hydrocarbon resources in the arctic islands and Beaufort Sea; but it would be 9 years before the oil companies took an interest in prospecting the region.

When we started the Polar Continental Shelf Project in the late '50's, we were already aware of the need for integrated and timely scientific data and maps, as a basis for proper development and management of northern resources, in the interests of local people as well as southern interests. In support of this conviction, we were able to get established, with Treasury Board approval, the principle of inter-departmental scientific co-operation which is unique in Canada and still characterizes the "Polar Shelf" activities today.

When I decided in 1962 to move our headquarters from Mould Bay to Tuktoyaktuk, it was because anyone who was involved in northern science and resource developments could see that the Arctic North Slope, Beaufort Sea, and lower Mackenzie was going soon to be the scene of heavy action for exploration and development of hydrocarbons. This was two years before the Prudhoe Bay deposit in Alaska was found, but there were many signs that the chances for "a big one" were good. That year, some of you may recall, I started the controversial BeauMac (Beaufort-Mackenzie) project, a proposed program of integrated mapping of all renewable and non-renewable resources in the Mackenzie delta and Beaufort Sea area - geology, geophysics, wildlife, fisheries, hydrography, botany and soils, meso-scale meteorology. The project was stopped for what seemed petty jurisdictional, not financial or practical reasons; but wouldn't it have been nice if we'd been able to keep it going, and by now have 20 years of systematic up-dated integrated resource information from that important area on all those subjects?

2.2 The Wider View

So much for the past. My other perspective is the now. I've recently come back from Europe where we have drafted the final report on the environment to go to the Heads of State or Government of the seven Economic Summit countries - i.e. Messrs. Reagan, Thatcher, Kohl, Mulroney, etc. for their Summit meeting in Bonn in May. For the first time, leaders of the world's richest countries - not their Ministers of Environment or Resources - have requested a report on the environmental problems of the world, and the relation of environmental management to economic and resource development. The adequacy of resources as a base for stable economy, the blunt fact that long-term economic prosperity can only be achieved if environmental quality is maintained; the need to protect fragile environments, to safeguard the cultures and life-styles of indigenous people, the special problem of progressive pollution of the Arctic Ocean and the need to take precautions in particular with regard to risks to the arctic environment posed by hydrocarbon exploration and resource developments around the margins of the Arctic Ocean -- all these are highlighted in the report produced jointly by the Summit countries.

I cannot help but have this kind of world perspective in mind when I listen to your discussions about environmental guidelines for hydrocarbon development in Northern Canada. No matter how narrowly defined the responsibilities of individual agencies, or specifically focussed our individual decisions, the game of northern resource development is being played on a world stage. Whether we wish it to be so or not, our actions are having an influence on the global environment and on international relations.

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3. Some Pervasive Problems

3.1 Responsibilities -

(i) What are the government responsibilities with regard to obtaining information relevant to the environment and northern resource or socio-economic development, and with regard to the use of that information in decision-making?

(ii) What are the company's responsibilities?

(iii) What are the responsibilities of the local residents?

(iv) - of the scientists?

(v) - of the general non-resident public?

A whole workshop could profitably be devoted to these questions. This is not the place to pursue them in depth. But it may be useful to comment about the frequently expressed notion about what "government" ought to do.

"Government" is a plural and collective noun; there is no simple "government" responsibility in our pluralistic society, even at the municipal or territorial, and much less at the federal level, unless it is "to be all things to all people and at the same time not interfere" - clearly an impossibility. The fact that there are about nineteen different government agencies, from five different governments in Canada, represented at the table here today, and that one of our reasons for being here is to try to achieve better co-ordination, itself shows the fallacy of thinking of "government" as a single entity.

Thus the responsibility of any authorized agency of the government - COGLA, DINA, Dept of Econ. Dev. of GNWT, whatever - is not the same as the responsibility of the government as a whole, although we would hope that it is compatible with it. The higher one goes in government, the more multi-purpose must be the decisions and the more conflicting the responsibilities that must be somehow accommodated. For these reasons, while streamlining of bureaucratic processes and avoidance of directly conflicting responsibilities at the same level are always to be desired, any bureaucrat or company official that expects that a single line of authority and a one-window approach can be developed for something as complex as authorizing and regulating resource development in a frontier area is being simplistic. Calls for a one-window permitting system, except for limited activities such as water use, are whistling in the wind. In fact, few of us, in industry or government, really want one window for everything; for that almost always means that questions of technical importance or needing experienced judgement come to be decided by people who do not know the subject. Most of us prefer that land permits should be issued by people experienced in problems of land use, that sanitation rules are enforced by health people, etc. What we object to is the seeming endless proliferation of apparently un-coordinated regulations and petty authorities.

3.2 The Sophisticated Questions

Our approach up until now with respect to obtaining environmental information for land use decisions has been to consider the environment in terms of its components:- air (weather), water, land, wildlife, etc. The information gathered has been largely descriptive, and classified by geographical location or the environmental medium. We are all aware that the environmental condition is the result of the inter-relation or interaction of these various components; but only tentatively has information been assembled in terms of environmental processes, or presented in terms of the inter-relations between, say, climate and wildlife. We have even less information on fundamental characteristics of the environment such as regional variations in soil water chemistry or the dynamics of natural energy flows.

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Increasingly, this traditional approach is proving to be unsatisfactory or inadequate as a basis for obtaining the information needed for decisions about the effect on the environment of new human or industrial activities. It does not provide information that helps us to ask, or answer, important questions such as:-

(i) What are the "valued ecosystem components" (as defined by Beanlands and Duinker (6)) whose identification is central to good assessment decisions?

- to whom are the environmental values important?

- what are the values of other resources? How do environmental values relate or compare to cultural values, the values of archaeological sites, etc.?

- how much will the values change with a given amount of resource or socio-economic development?

- will the environmental values remain the same if "left to Nature" even if there are no human-imposed changes?

(ii) What scale of effect on the environment should the decision-maker consider to be important? Should the local, regional, national, or global importance be identified, merely bourne in mind, or be compared and assessed at all levels of decision and permitting? One cannot assume that the effect of a local decision is less important on a global scale than on a local scale. Sometimes the reverse is true; for example, NO_x from a car exhaust is trivial as a local nuisance, but a potential threat to all animal life and mankind.

(iii) Should the cumulative effect of many decisions or actions be considered in hindsight, taken into account as a forecast, or ignored in the decision process and left to future changes in regulations (after the damage is done)?

(iv) How does one account for the ripple effect of a single permit or decision, or the distant "downstream" effects? Should the decision-maker take into account the subsequent effects on the environment, on social values and human responses, on economic and political issues? There are many examples of important ripple or downstream effects:- the presence of a pipeline haul road will entice non-resident hunters into an area and upset the wildlife values, the approval or refusal of a port development on the coast of Beaufort Sea could have socio-economic and environmental effects in Labrador Sea and the Gulf of St. Lawrence, etc. One of the most difficult aspects of northern administration today is how to make responsible decisions when the most important repercussions will be felt in areas or jurisdictions outside one's own administrative responsibility.

For these, and many other complex and sophisticated questions, which are now an inescapable and common part of the day-to-day decision-making on northern resource development, even at the most restricted level, the adequacy and organization of environmental information is a vital input. Those involved in northern decisions are dependent on the information available, but must not be captives of it.

3.3 What are the Sources and Supplies of Data and Information?

In many ways, consideration of information sources for environmental or land use decision-making should be straightforward. Questions of identification of data sources, completeness, scale and detail, reliability, currency, ownership and accessibility are part of every

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thorough review of the adequacy of northern information. But the subject is full of pitfalls. Particularly in northern environmental decisions, data attitudes seem to be equally important as data facts to determine data adequacy.

Without in any way denying the essential importance of reliable data and the need to handle it in a rigorous and systematic way, I think that it is fair to state that people who work in environmental data tend to become bemused by it. They come to feel, and may even insist, that factual data and maps can have all the answers needed, if only one can get sufficient data of the right kind. That is rather like insisting that you can tell a good wine by its chemical analysis.

It is important to remember that data, or even facts, are only proxies for the values that we are dealing with when we make an environmental assessment or a development decision.

One can show a town on a map, or make a table of the year-by-year population statistics of a herd of caribou. But it is hard to map the happiness of the town (though some might say that it could be indicated in part by successive maps of the incidence of crime; others might say it would be a map of the districts which voted for the incumbent mayor. These data are quasi-objective proxies for a subjective value). Similarly, the health of the caribou herd may not be indicated nearly as well by the population statistics as by the status of wolves in the area, or the proportions of food plants in its grazing area which survive uneaten to the end of the season to produce seed for the following year.

There is a lot of talk about the need for more complete baseline data; about the idea that much of the existing information is out-dated, or inappropriate for modern needs or of unknown reliability; about there being "mountains of information that has been gathered but never used", or un-indexed, lost, or inaccessible.

These are very real concerns, and each is probably true to some degree in certain areas. Each of these concerns should, properly, be dealt with in its own right as a specific case, not in generalities. But a few general comments may be useful for this workshop:-

(i) There is a serious general sparseness or inadequacy of environmental, geophysical and biological baseline data for much of northern Canada. Knowledge of the basic environmental processes and dynamics that link environmental characteristics is reasonably well known in a scientific sense, but has been very inadequately translated into practical knowledge useful to the decision-maker or northern developer or resident, and little tested to determine how representative observations or processes in one area are of the environment of surrounding areas. Much of the information and activities needed to fill gaps in baseline data or to make environmental inter-relationships more accessible and representative is comparatively easy to obtain or undertake, and in the context of total northern activities, not very expensive. But experience has shown that such work is not likely to be carried out until there is a re-awakening of a widespread feeling that scientific information about the northern land and environment is of value for its own sake, and not only for its utility to a particular economic policy or decision. You will reflect that our most useful and complete baseline information services, for example the 1:250,000 topographic map series, or the weather station network, were undertaken for general purposes, not tied to a specific development policy or single need. In most cases, as soon as we began to tie our information-gathering priorities and budgets to particular user needs, our data gathering systems and process studies lost their comprehensiveness and representativeness.

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(ii) It is rare that generalized data, which were obtained before the specific questions that we have to answer today were even formulated, are directly useful to give answers to current concerns about enviornmental sensitivity or the adequacy of resources. But this does not mean that old data are of little value. I am surprised, sometimes, to hear how anxious some researchers or decision-makers are to discard or ignore information that does not meet current standards of precision or verification. Data handlers have a bad habit, it seems to me, of assuming that the current system is the only useful one, and rejecting all information that does not fit it. But particularly in environmental subjects, the longest-possible time-series, even if the observations are not quite comparable, may be much more significant than a shorter but statistically more rigorous data set; and scattered observations over a considerable area may sometimes be more useful than a controlled series of readings from a single site which may or may not be representative.

Old and uncontrolled observations may of course, turn out to be quite wrong. But unless the data were falsely manufactured, careful observations are never obsolete. As our understanding of environmental processes grows, and our ability to make simulation models improves, we are finding that out-dated or errant observations take on more value, not less.

(iii) It is important, especially for the "decision-makers" who must use data on a routine basis, to be aware that data needs change as the questions evolve, and not to try to get more information out of the data than they contain, or to attempt to use them to cover subjects for which they do not apply. A change in the type of question being asked may lead to requirements for quite different kinds of data in the same field. For example, for many years we have been focussing attention on mapping the extent of permafrost, its continuity, temperature profile, thickness, depth of active layer, etc., to answer questions of ground stability, vegetation response, and so on. Now there are a totally new set of answers needed about the absorptive capacity of frozen ground for pollutants. The current information about distribution, thickness, temperature, is not very relevant to environmental assessment or approval specifications in this regard. Instead, we want information on silt-sand textures at the base of the active layer, hydraulic gradients and intra-ice pore pressures, etc. These data are not hard to get, but are almost non-existent because relevant questions were not asked until recently.

Sometimes a change in technology has led to an important change in the kind of environmental data required. For more than sixty years our observations of sea ice noted the size, thickness and distribution of the heaviest floes, identified polynyas leads and pressure ridges, because these were the main features of importance to navigation of medium-sized ships and the icebreakers that have been used in the north until now. But the advent of icebreaking super-tankers, which in general are not hampered in their passage by individual ice floes or pressure ridges, makes these data largely irrelevant. Instead, the information most needed relates to zones of converging or diverging ice movement, or data on snow cover or slush on the ice, for a supertanker may use more power overcoming friction from pinching or slushy ice along its sides than breaking it at the bow. But information on these characteristics had not previously been important to navigation, and so has not been gathered in a systematic way.

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(iv) One must bear in mind that data, no matter how precise, reliable, or representative, is not knowledge. It is useful for everyone concerned with the use of information about the north to keep in mind the philosopher's hierarchy of "knowing":-

data ---> information ---> knowledge ---> understanding ---> wisdom.

Between each of these stages, there is an important jump of comprehension and perspective. Each of us should stop for a moment and reflect on where on this scale do we fit, and where do we operate when we contribute to decision-making for northern development?

I suggest that it is also useful for each of us to think of some northern resident, preferably from an Indian or Inuit background, who we respect or acknowledge to be particularly capable of contributing to the issues we are dealing with here. Where on this scale does he or she operate?

3.4 Mechanisms for integration of information, and for incorporating it into the decision-making process

The usefulness of environmental information to northern development is dependent directly on the means and effectiveness with which its various components are related to one another, and translated into a form that has meaning to those who must make decisions or control operations. This is often more difficult than it seems, and one reflection of the difficulty is the proliferation of committees, review bodies, forms and procedures that are half technical, half administrative, that have come into being to facilitate northern operations or decisions but which often act as a hindrance rather than facilitator.

The organizers of this workshop distributed copies of some paragraphs on the need for research or special studies in this field, which were part of a report on outstanding research needs that I had submitted to the Chairman of the Beaufort Sea Hydrocarbon Development Environmental Assessment Panel (7). In these it was pointed out that the development of adequate linkage between environmental research results and management decisions was a research problem in itself, and that such research would have to take into account the environmental, resource, and social setting of each distinctive region.

There is no short-cut to learning how to integrate environmental information or incorporating it into decision-making processes. In the short term, we obviously have to use the present system of relating such information as is available to present procedures, and yet be aware of its inadequacies and inefficiencies. In the medium term, each of us has an obligation to work, openly and responsibly, to improve the information system so that it is more effective, but not necessarily larger or more comprehensive. If we can do that, in the long term the whole decision-making system may then be much less cumbersome.

4. Decisions

In thinking about "guidelines for decision-making", it is useful to reflect for a moment about the decisions to be made. Are we clear what we mean by "decisions"? The dictionary will tell us that a decision is the definite settlement of a question or issue by the making of a deliberate judgement or choice on one side or the other. The word means "to cut through". It is interesting to compare how we use the concepts of "incision" and "decision" when we deal with management of the course of affairs in northern development.

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There is much talk about "decision-making" and "decision-makers":- this is the stock-in-trade of management training schools and in some unfathomable way the basis for performance evaluations and promotions for many of us. But in real life, there are very few critical or important decisions made with respect to major issues like northern resource development.

Think of your own personal life for a moment. What about the job you are now in; - did you make a conscious decision to accept it? Or were you simply glad to get it, happy that someone in the employment office or personnel branch "decided" that your application was filled out correctly or that after you won a competition you would be OK for the position? What were the critical decisions? When you applied for the position? When the previous incumbent "decided" to take another job and leave your post open? When, years ago, you decided to study to be an engineer, or your high school teacher decided to give you a good mark in mathematics so that your life interest and abilities were shaped in that direction? Or was it when you decided to marry (if that <u>was</u> a free choice) so that when your husband got transferred to Edmonton it was a logical consequence, without much decision, that you should try to find a suitable job in this city? The point of these ramblings is to illustrate that most of the things that happen to us and the course of our lives, even where we are in control, are not the result of major decisions, but, like steering a car to stay on the road, are the net result of a series of minor decisions, mostly responsive to the immediate situation, each of which is very important (which way I turn the wheel certainly determines where I end up), but very few of which are major judgements about the end result.

Our problem in northern development "decisions" is often a matter of developing a useful perspective between the decision-of-the-moment, which is embedded in the established procedure (like staying on the right-hand side of the road except when passing another car going the same direction), and the effect on the end result (which is to do whatever you wanted to do when you reached wherever you were driving to). Unless we can develop such a perspective, our individual day-to-day decisions tend to become ends in themselves, and the result can be, as industry so rightly often complains, bureaucratic control without direction.

What would happen if you, or the team of which you are a part, had made the opposite decision in the last ten cases you had to deal with? It is often useful to reflect on this, to gauge how important our work is, and how it fits into the whole process of managing northern development. Our actions are part of a chain reaction of decisions, started by decisions as varied as a government political policy or the clerk who had to design a one-page permit application form, and continued by the subsequent decisions that are influenced or constrained by our own decision.

We should be aware of the different scales of decisions, and that there is often a difference between having the <u>responsibility to make a decision</u> and having <u>room to make decisions</u>. Experience in government often shows that, as responsibility increases, room to make choices or come up with innovative solutions decreases - the science manager, or junior administrator, often has more opportunity to be original than the deputy minister or the politician. In industry, as a rule, whether room for action increases with responsibility depends on the state of the economy and not so much on the organizational structure. Most of the time, in government and industry, a number of small decisions have more influence on the course of events than a single "big" one.

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When one thinks generally about resource development decisions, the tendency often is to visualize a major deliberation in a company boardroom or government Cabinet, reaching agreement on whether to pull out of the Beaufort Sea or sink another $220 million into two more years of exploration; or whether or not to go before the House with an Arctic Waters Pollution Prevention Act. Such situations make for imagined drama, as visualized by the people who were not there; but in real life these are rarely specific "decisions" at all. The information that is presented to the "decision-makers", after painstaking work by their staffs, usually make it inevitable what the senior level "decision" has to be. What the senior people do is agree to approve the analyses and conclusions reached by people who have less responsibility, but more room for decision.

There are, of course, exceptions. There are cases of real choice, when a new policy is adopted, or a single deliberate action can change the course of a whole chain of events -- such as whether or not to marry, or whether to cut your losses in the Beaufort Sea and direct shareholders' money into the Grand Banks or tar sands. These are real decisions, which require facing up to the fact that data and information do not lead automatically to an inevitable answer, so real value judgement and risk-taking are called for. And in all real decisions, such as deciding to marry or deciding to stay on looking for oil in the Beaufort Sea, emotion and not just factual analysis, plays an important part.

But how does a set of "guidelines" aid in making these kinds of real decisions? Is the main purpose of guidelines to reduce the need for important decisions so that the course of events becomes a consequence of the process of analysis, and real value judgements and risk-taking are kept at a minimum? Is that what we want?

It is useful to differentiate between <u>decisions in principle</u> and <u>operational decisions.</u> Here, the situation is often distinctly different between industry and government.

By and large, industry has few problems with making decisions in principle. If a given project has a chance of making money, and is legal, then industry management can without much trouble decide to go ahead with the project. From then on, their decisions are <u>operational</u> -- how much to invest, what freedom to give their engineering staff, how to butter up the government and meet the regulatory requirements, etc. Even how and when to pull out of it looks as if it is going to be a loser, is an operational decision. The main decision in principle has been made and is rarely questioned. All subsequent operational decisions are justified under the original decision in principle.

Government, on the other hand, very rarely finds it possible to make a clear decision in principle, or to stick with it once such a decision is made. Our democratic system and pluralistic society almost guarantee paralysis in this area. Government may have announced a policy of encouraging northern economic development. This is close to a decision in principle. But in the same announcement it will complicate its policy with caveats about the environment, the rights of northern people, devolution of control to northern authorities, Canadian content of equipment, etc., which makes it nearly impossible for any agency charged with putting that policy into effect to have a clean <u>decision-in-principle</u> that, says, for example, yes we will promote development on the Tuktoyaktuk Pesinsula but no, we will not allow it on the Yukon North Slope. So the government as a whole, and government agencies, turn to <u>operational decisions</u> within institutional frameworks that have evolved in part to avoid having to make major decisions in principle. All of us here carry out our operational decisions today within such a framework.

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Sometimes a fairly minor operational decision can avoid the need to make a major decision. Two examples come to mind:-

(i) the decision in 1972 to release a public statement about government priorities in the North, and to table it for discussion in Parliamentary Committee. You will recall the statement:- it stated explicitly that the priorities were northern people, environment, development of renewable resources, and development of non-renewable resources, in that order (8). This was a very bold move at the time. But there were no real decisions involved, except the decision to table the statement in the House, which, it was decided at the time, was a politically expedient thing to do. The content of the report had evolved from input from very many sources, and involved very few decisions, even though the net effect appeared to be a policy decision distinctly different from what would be inferred from the current trend of events. In fact, the basic paper was written two years earlier, as the title shows. But the tabling of the paper was not in itself a decision in principle that could be used to develop specific policies or obtain the resources to carry them out. So it was left to the operating departments, industry, native groups and the rest of us to make the operational decisions that would follow those priorities as best we could, or ignore them.

(ii) the decision to send the icebreaker John A. Macdonald to accompany the trial supertanker Manhattan when it attempted a transit of the Northwest Passage in 1969. I was part of the discussions leading to that operational decision. There were very delicate questions of sovereignty, international relations, control of economic investments and northern responsibility raised by the whole question of the Manhattan proposal. After serious considerations, the Government at senior level decided that it could not gain anything from, or perhaps even carry out, a major decision on either supporting or prohibiting the proposed passages. So the Task Force on Northern Oil Development recommended to Cabinet that it make the minor move of sending the Johnny Mac. It turned out to be a happy operational decision. Johnny Mac proved to be the hero of the exercise; our conspicuous but helpful presence defused the international issue and reinforced Canadian interests and authority in a way that might not have been achieved had we taken a major policy stance. Subsequent events have shown that perhaps inadvertently, we did the best thing at the time. Fifteen years later, we still have the Arctic Waters Pollution Prevention Act but we have avoided international confrontations while getting - perhaps too slowly - our legal house in order regarding northern sovereignty and resources.

5. Guidelines

I hope that this meeting can come to grips with some awkward questions about guidelines.

(i) What are the guidelines for?-

- are they to serve as a check-list for the process of operational decision-making? For would-be developers, are the guidelines to indicate what permits are needed? For the approval agencies, is their purpose to make their decisions as consistent and mechanical as possible?

- are they to be a guide for deciding whether an agency, industry, etc. should get involved in the first place?

- are they to provide a road map and directory so that everyone can find out who the actors are and where the information is, as in the examples of the information index and resource book developed in Nova Scotia?

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- are they to be a recipe to follow, to make sure that all the information is assembled, and all the ducks are in line before the shot is fired in asking for approval or giving it?

- are they intended to be an openly visible description of the mechanism for northern resources management, so that others - e.g. the northern residents - can enter the process at the right place and not be ignored, or swept aside, or trapped in the bureaucratic maze or the industrial pressure tactics?

Most examples of guidelines that I can think of try to serve a mixture of several of these purposes. But some of the purposes are contradictory, or confusing if grouped together. We should try to be as clear as possible what the guidelines are for, and how they are going to be used, when we draw them up.

(ii) To what time and space scale will the guidelines apply?

Will the guidelines enable the decisions to move in scale, from the local to the world issues and perspectives and back again?

Will they cope with the need to make decisions on behalf of future generations, as well as meet the needs of companies who applied for a permit two weeks ago and are waiting for a response?

If guidelines are to be useful, they must be practical, and to a large extent pragmatic. They should be directly applicable to specific decision or approval processes, which by and large deal with local and item-by-item issues and not the big picture. At the same time, if the information organized under the guidelines or the decisions facilitated by them are to have maximum effect, the guidelines themselves should be compatible with processes at a range of scales, and be a means to relate local decisions to regional, national or global issues. If we limit our thinking about guidelines to the immediate operational purpose that each of us has for them, we run a real risk of getting trapped in our own system, and of reinforcing its imperfections instead of finding a way to overcome them.

6. <u>The Development of Guidelines for Operational Decisions on Northern Resource Development and Land Use</u>

Three general questions come to mind:

6.1 How does one relate present data and understanding of the northern environment - including an understanding of where there are gaps in knowledge - to the ordered process of decision-making that the guidelines are designed to facilitate? Consideration of this problem leads to some related questions:-

- how does one get new research started, when an approval or permitting process is under way?

- how does one tell - and who makes that decision - when enough is known to make a decision? Who controls the quality of information, according to what criteria?

- who sets the priorities for knowledge needs before the decisions are made?

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In my submission to the Beaufort Sea Environment Assessment Panel referred to above (7), I found it convenient to separate the identified needs for more knowledge into six categories, each of which had a somewhat different relation to the decision-making process. Each category included a range of disciplines or subject matter, but was distinctive from the others in the need it filled or the way it was used. The six categories were:

(i) data and information

(ii) natural processes and interactions

(iii) concepts of environmental response, values and social actions

(iv) integrated knowledge and its application

(v) techniques and systems for obtaining environmental information, for monitoring of environmental conditions, or for incorporating environmental information into design and management

(vi) the development, use and evaluation of technologies and equipment for exploration and exploitation of northern hydrocarbon resources with minimum environmental disturbance.

These may not by any means be the most useful categories. But it is useful in the development of guidelines, to consider available information, or needs for research, not in terms of subject matter but according to how it relates to the resource development decision and management process.

6.2 How does one deal with the institutional process-oriented problems of handling and using environmental information? All the old questions of accessibility, completeness and currency, quality control, etc. arise immediately when one considers institutionalizing information, or alternatively going directly to myriad sources. There is no single best answer. Those concerned with permit application or resource decisions are usually in a hurry. Guidelines are usually, among other things, supposed to save time and speed the process of decision-making by helping to organize information in advance and by making more complete information quickly available. It is easy to point out the advantages of an integrated source or depository of information, and much can be done to make present information more systematic and accessible; but in practice it has been very hard to achieve or maintain an integrated up-to-date comprehensive system. The Canada Land Data System is a tremendous institution, but even within its relatively restricted subject scope it cannot hope to have all the information needed unless its budget is expanded ahead of the expanding needs placed upon it. And these days, that just does not happen.

A phenomenon which I am sure that you have all noticed is that the advent of new information-handling technologies tends to force classification of information and present knowledge into ever more simple and discrete unconnected units or facts, for easy handling and retrieval, while at the same time the increasing complexity of the issues we face demands that we seek ever more integrated, subtle, value-laden information. Computers work best at the data end of the philosopher's hierarchy (section 3.3, above), whereas our problems require judgement more and more toward the other end. One result of this is that while at the same time there is an acknowledged need for integrated information systems, such systems must be organized to answer pre-conceived questions, and so practitioners who find themselves having to deal with a new type of question every day insist on going directly to original information sources, to get more details, indications of reliability, etc. As the original sources of information proliferate, the problem gets worse and worse.

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We must be careful, in the development of guidelines for northern decision-making, that the way that the information requirements are called for, or classified, does not in itself limit the source of information or eliminate information that might be useful. At the same time, the presence of appropriate guidelines can be a strong factor in helping the establishment of well-organized and comprehensive information systems.

The Whistler workshop brought forth some excellent ideas in this regard, and its report (2) merits careful study.

6.3 How can guidelines help achieve a smooth interaction between managerial intention, policy, and procedures? Guidelines for decision-making are for the most part developed to assist in carrying out procedures which are themselves the result of policies, implicit or explicit, that stem from a management or political intention. But by organizing the data and systematizing the steps that are followed in permitting or managing the development operation, the guidelines are often an important visible expression of the original political or management intention. Where the whole process is explicitly and openly stated, as for example with the Alberta policy for development and protection of the Eastern Slopes of the Rocky Mountains, the guidelines can be an important public tool to help ensure that the process is actively supported at all levels. Where the linkage between the decision process and the policy on management intention is not as clear or explicit, or where several general policies must somehow be accommodated, as is the situation at present with respect to many aspects of northern resource development, the guidelines may well be seen as the demonstration in practice of government intentions, which otherwise may not be clearly stated. In either case, the guidelines may take on an importance additional to their main purpose of facilitating decision-making. This, also, should be bourne in mind in their design.

These are some of the many points which I hope we can explore further during the next two days.

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