



PAME-II 1999

**NOVEMBER 1ST-4TH
AKUREYRI - ICELAND**

WORKING GROUP MEETING REPORT

PAME
Protection of the Arctic Marine Environment

PAME Working Group Meeting Report November 1-4, 1999

I. Introduction

The PAME Working Group met in Akureyri, Iceland, November 1-4, 1999. Participants attending the meeting are shown in Appendix I.

The meeting was chaired by John Karau (Canada) and a list of documents submitted for consideration at the meeting is shown in Appendix II.

Regarding participants, the Chairman noted that the Russian delegate had written to express his regrets that he was unable to attend the meeting due to illness. The Chairman also welcomed Sweden's renewed participation in PAME. In addition, he introduced Ms. Soffia Gudmundsdottir (Executive Secretary for PAME) and the opening of the PAME Secretariat in Akureyri.

II. Agenda and Operating Guidelines

The meeting adopted the agenda as shown in Appendix III.

In reviewing the Operating Guidelines for PAME, the meeting noted the desire to ensure complimentary guidance and to avoid needless duplication with the Arctic Council Rules of Procedure. Different opinions were expressed on whether the Operating Guidelines should be formulated in such a way that they were comprehensive enough to be read as a free standing document, or whether they should be read together with the Arctic Council Rules of Procedure. In light of these discussions, verbatim quotations from the Arctic Council Rules of Procedure were put in square brackets along with the notation that there was no disagreement on the content but some questions regarding the appropriateness of the placement of these paragraphs within the guidelines.

PAME asked the chairman to discuss the format of the Operating Guidelines at the forthcoming meeting of working group chairs with a view to facilitating consistency concerning the various Operating Guidelines. The draft Operating Guidelines for PAME is shown in Appendix IV.

III. Offshore Oil and Gas Guidelines

Denmark/Greenland presented a summary of their comments on the draft IUCN/OGP¹ Guidelines for "Oil and Gas Exploration and Production in Arctic and Sub-Arctic Offshore Regions", which was submitted to OGP on May 10, 1999. Denmark/Greenland observed that the draft guidelines did not meet the stated objectives or intended users. It was suggested that the guidelines

¹ E&P is now OGP

should be more focused and would provide better value by incorporating Best Available Technology and Best Environmental Practice. A shorter version could also be developed, if needed, to address the general public.

Norway presented a summary of their comments on the draft IUCN/OGP guidelines, which was submitted to OGP on June 30, 1999. Norway appreciated the draft guidelines and provided the following comments:

- the content of the guidelines is too general;
- the guidelines should be shorter and more focused (the general descriptions of the various activities and environmental conditions should be taken out); and
- the focus should be on the main issues (i.e. objectives, principles, practices, environmental conditions etc.) that need to be included in planning and assessing a specific project. A document that is too comprehensive may give the impression of being all-inclusive, and become too large, resulting in people not reading it.

World Wide Fund for Nature (WWF) presented their Review and Evaluation of the Arctic Offshore Oil and Gas Guidelines (see Appendix V). They compared the IUCN/OGP Guidelines with the essential features contained in the PAME Guidelines and concluded that the draft IUCN/OGP Guidelines do not complement the PAME Guidelines or incorporate information, goals and principles developed through the CAFF or AMAP Programs.

WWF also presented their draft criteria for evaluating the PAME Offshore Guidelines, which will address key questions such as: are the PAME Guidelines being implemented? If so, to what extent are they followed and working to meet the original objectives? If aspects of the projects meet the guidelines, do they adequately protect the environment? Their basic evaluation definitions are based on U.S. National Research Council criteria (1994) for adequacy of environmental information and the goals and principles of the PAME Guidelines.

WWF requested comments on their draft evaluation criteria for the offshore guidelines (see Appendix V) by January 1, 2000. The meeting agreed to provide comments to WWF in early January 2000 and noted its interest in WWF progress reports on their project.

The meeting noted that the PAME guidelines address regulatory application. As such, complimentary guidance for public use and a technical version on Best Environmental Practice and Best Available Technology for operators would be beneficial and a separate document appeared to be advisable.

IUCN/OGP expressed in writing their appreciation for the comments received. They are currently using this advice in developing a revised document, which will be prepared over the next three months and submitted to PAME.

United States submitted a progress report on the current state of USA, Norway and Russian cooperation in the development of a national regulatory system for offshore oil and gas within the Russian Federation.

IV. Circumpolar Marine Workshop (CMW)

Members of the project group for the Marine Workshop (Iceland and CAFF Secretary) briefed the meeting on preparations for the marine workshop to be held in Montreal, Canada, November 28 – December 2, 1999.

The rationale for IUCN/CAFF/PAME co-sponsoring the meeting is as follows:

IUCN: 1993 policy on marine protection; 1996 Resolution calling for increased emphasis on an Arctic and Ant-Arctic strategy; establishment of an Arctic function within the WCPA (World Commission on Protected Areas); implementing the Global Representative System of Marine Protected Areas in the Arctic; applying a revised approach to protected areas stemming from the 1997 WCPA planning meeting in Albany, Australia; enhancing domestic efforts and linking them at the circumpolar level.

CAFF: implementing the marine component of the Circumpolar Protected Area Network (CPAN), Ministerial direction to focus additional effort on the marine environment; recommendations from CAFF's draft Status Report on Marine Protection; interest in harmonisation between conservation and development.

PAME: implementing the PAME Regional Program of Action (RPA), including the habitat component; clarifying the applicability of coastal zone management in the Arctic; promoting an integrated approach to marine and coastal management.

It was noted that the goals of the workshop are to develop and recommend practical measures to protect the Arctic marine environment, conserve its biological diversity, and facilitate improved collaboration among Arctic countries, indigenous inhabitants, and other stakeholders and organisations.

It was further noted that the workshop objectives include:

- develop common tools, mechanisms, processes and best management practices;
- identify barriers to and opportunities for enhanced conservation and protection of the marine environment and to help design an integrated approach to marine and coastal management;
- identify major gaps in the knowledge and determine ways to address these needs;
- integrate traditional and other ecological knowledge; and
- assist Arctic Council, IUCN and other organisations to further their marine conservation and protection agendas.

The draft workshop agenda is included in Appendix VI.

The meeting considered key questions and issues to be addressed at the workshop and offered comments to help strengthened the workshop programme.

Results of the Workshop will be forwarded to all the Arctic Council working groups. As co-sponsors of the workshop, both PAME and CAFF will review the workshop results and offer recommendations to SAOs.

The meeting also recognized that IUCN may wish to forward the workshop proceedings to the Arctic Council and other IUCN programmes.

V. Regional Programme of Action

a. Russian NPA Arctic and the Partnership Conference

ACOPS provided a progress report on the implementation of the GEF PDF-B Project "Support to the National Plan of Action for the Protection of the Arctic Marine Environment from Anthropogenic Pollution in the Russian Federation (NPA-Arctic)". Executing agency for the project is ACOPS, in collaboration with the Inter-Agency Working Group of the Russian Federation. The first meeting of the Steering Group for the project was held in London (18-19 Oct. 1999) and PAME was represented as an observer by its chairman.

The PDF-B project contains four substantial activities:

1. review and evaluation of relevant legislation, policy and administrative capacity at Federal and regional levels;
2. analysis of pollutant transport mechanisms and zones of impact;
3. analysis of existing practice in preparation of pre-investment studies in the Russian Federation and development of guidelines for their future preparation; and
4. identification, characterisation and prioritisation of hot-spots.

The following issues were highlighted:

1. overview of partners in the implementation of the GEF PDF-B Project and the NPA-Arctic;
2. terms of reference for workshops and working groups, and the work to be done in the inter-sessional period;
3. overview of meetings;
4. overview of consultants;
5. current policy in Russian Federation regarding the implementation of NPA-Arctic;
6. members of the Inter-Agency Working Group;
7. members of the International Task Team;

8. Russian officials associated with the implementation of the NPA-Arctic; and
9. detailed workplan and timetable for the implementation of the PDF-B Project activities.

The meeting agreed that PAME's role should include:

- participating in the working groups of the PDF-B Project dealing with review of legislation and policy; analysis of pre-investment studies; and identification, characterisation and prioritisation of hot-spots;
- providing relevant materials, particularly existing (or in preparation) reviews of legislation; information on relevant pre-investment studies; and provision of existing information on the methodology of identification, characterisation and prioritisation of hot-spots;
- encouraging Arctic countries to support the NPA-Arctic;
- encouraging IFIs to take part in the design and implementation of pre-investment studies and the identification, characterisation and prioritisation of hot-spots; and
- facilitating preparation of the Partnership Conference and implementation of the NPA-Arctic.

Secretariat will provide 1996 PAME Report to ACOPS and will solicit comments from PAME on criteria for selecting hot spots as well as guidelines for pre-investment studies. This information should be forwarded to the Secretariat and collated for ACOPS as soon as possible keeping in mind that the workshops are scheduled for early December 1999 and January 2000.

Regarding implementation of the NPA-Arctic, ACOPS reported that some actions have been implemented but others had to be postponed due to the slow process of fund-raising. Despite this drawback, the prognosis is good that the Partnership Conference will be organised in the first half of 2001 due to the fact that the activities, which are most important for the preparation of the Partnership Conference are already being implemented.

The meeting expressed its appreciation to ACOPS and noted that Steering Group participation in the workshops was advisable. The GEF project was noted as a priority for reporting to SAOs. In this regard the Chair requested ACOPS to prepare a Progress Report on Implementation of a Russian NPA-Arctic, which is shown in Appendix VII.

b. PCB Project

Vice-chairman of AMAP presented a progress report on the PCB project. The project was initiated in 1998 as a follow-up to the conclusions and recommendations of the AMAP Assessment Report, and has been supported by the First Ministerial Meeting of the Arctic Council (Iqaluit, Canada, September 17-18, 1998). The project consists of three phases:

1. evaluation of the current status of the problem with respect to environmental impact, and development of proposals for priority remedial actions;
2. feasibility study; and
3. implementation of demonstration projects.

The first phase of this project, which has been endorsed by the Arctic Council, is currently being implemented with the financial and technical support of all Arctic States and the Netherlands. The Nordic Environment Finance Corporation (NEFCO) has recently made a decision to finance implementation of a (given number of) project(s) within a limited geographical area in Northwest Russia. This would cover all three phases in a Multilateral project and can be considered as a NEFCO contribution to this project.

General management of the project organization and implementation is conducted by the steering group, which consists of one representative from each of the countries and NEFCO. According to the decision of the participating countries and supported by the Arctic Council, the first phase of the project is being conducted under the State Committee of the Russian Federation for Environmental Protection in coordination with the AMAP Secretariat.

The first phase started May 1, 1999. In August, the Steering Group adopted the Interim Report for Tasks 1 "PCB production term characterization" and 2 "PCB use term characterization", and noted the high quality and uniqueness. At present, the draft Interim Report for Task 3 "PCB-containing equipment use characterization" has been distributed among designated experts from the participating countries for comments, and it is planned that the Steering Group meeting will consider it in December 1999. The Steering Group Meeting will also consider detailed proposals and preliminary cost estimates for the phase 2 "Feasibility Study".

The meeting noted several important parallels between PAME involvement with the Russian NPA-Arctic and AMAP involvement with the PCB project. Both involve Steering Groups, donors, and secretariat support for managing large-scale projects. It was noted that the PCB project could also be considered a candidate project for the Partnership Conference. As such the need for effective communication between AMAP and PAME on these two projects and the importance of coordinated applications to GEF and relations with donors were emphasized as priorities for SAOs consideration.

c. ACAP

Norway provided a revised version of ACAP to PAME and explained that:

- the revised strategy has progressed to the point where it is proposed to serve as a basis for formal discussions;
- the operative part of ACAP (action proposals) needs further development. It will be important that countries devote time and effort to develop proposals;

- a new format for project descriptions and an analysis of implementing options are in preparation and will be available shortly; and
- the discussion on the implementation of ACAP is on-going.

The meeting agreed on two major recommendations for ACAP:

1. Inclusion of EPPRs and PAMEs role in risk analysis, and pollution prevention and control measures within Section 3 of ACAP on identifying Actions; and
2. to recognize the importance of the RPA as a building block, particularly in relation to individual treatment of regional and global approaches in Section 4 of ACAP.

d. Mining Guidelines

Canada presented their revised proposal on mining guidelines, which is shown in Appendix VIII. Canada noted the background and rationale for the proposed guidelines, emphasizing that mining is an important economic activity and a common environmental concern for several countries. The RPA further requires that guidelines be developed as a tier II activity. Canada explained how the proposal had been revised to respond to questions from the last PAME meeting including clarification that target users are both operators and regulators, the guidelines would be voluntary and would focus on best practices.

PAME members noted concerns about the timing, workload, status of the guidelines and implications for expanding the project coverage beyond PAME's Terms of Reference. RAIPON offered their support for developing such guidelines and noted RAIPON/ICC collaboration on mining initiatives.

Taking into consideration the concerns raised; Canada proposed that the Working Group approve the project in principle and agree to proceed with phase one which would determine what guidelines already exist and provide a comprehensive project description with appropriate linkages to RAIPON/ICC, CAFF, EPPR and ACAP. After further discussion on the need for better clarification between guidelines and codes of practice, as well as additional time needed to engage country experts, Canada withdrew their project proposal. The Chairman noted that mining guidelines proposal remains on the RPA and ACAP project lists and that PAME could in future reconsider the proposal.

Regarding the distribution between guidelines and codes of practice, Canada offered to provide further clarification on this topic for the next PAME meeting.

e. Hazardous Chemicals

Denmark/Greenland, presented a Nordic Proposal on phasing out of hazardous chemicals which is based on the OSPAR strategy. The proposal is presented in Appendix IX.

Both Canada and USA noted that the proposal would require amendment to make it consistent with other regional and global approaches. Although the overall goals could be supported in principle, the detailed aspects lacked consensus.

Finland noted that HELCOM has adopted a strategy on hazardous substances that is similar to the OSPAR strategy.

VI. Shipping

Both the Chairman and Norway, as lead country on shipping, noted the previous work undertaken on shipping and recommended completing an evaluation of the shipping problems related to current and potential shipping activities in the Arctic prior to the next Ministerial Meeting in October 2000. To achieve this Norway offered to establish a correspondence group as soon as possible and to distribute a draft snapshot analysis of shipping activities (current and potential) within the next few months. This would take into account the results of the Northern Sea Route User Conference that will be held in Oslo, Norway from 18-20 November 1999.

The meeting agreed that Arctic States would be asked to comment on the draft snapshot analysis and offer national perspectives on possible concrete problems that are considered worthy of further consideration. The meeting also agreed that shipping experts would be invited to the next PAME meeting and asked to consider the snapshot analysis and shipping activities that could be recommended for further action. It was noted that EPPR should be invited to collaborate in this exercise.

Canada gave an update on the progress of the Polar Code. It was noted that the IMO correspondence group (CG) continues its deliberations on the Polar Code. The CG was set up by the Design & Equipment Sub-committee (DE) at IMO in March '98 and will report to DE in April 2000, as scheduled. The Maritime Safety Committee (MSC) in May '99 issued new directions to DE and the most significant change is to remove application to Antarctic waters. Subsequently, the Antarctic Treaty nations have informed IMO of the development of new guidelines for shipping south of 60° which will be submitted to IMO for consideration. Another change is that the document (now Polar Guidelines) will now be part of an Assembly resolution, however the manner of publication is yet to be determined by DE. The new mandate confirms that other sub-committees are to continue their review and reporting, and that the document is non-mandatory as per the original direction by MSC in May 1997. Discussion and related material of the correspondence group can be accessed at <http://www.tc.gc.ca/polarcode>

The Icelandic Coast Guard introduced an automated computerized Vessel Monitoring System that is being adopted by NEAFC (North East Atlantic Fisheries Commission). The system is based on automatic tracking through satellites and electronic exchange of and increases the possibilities of

locating and tracking vessels, both for security reasons and to control vessel traffic within the jurisdictions of contracting parties.

VII. Analysis of International Agreement and Arrangements

CAFF provided a status report on their Reporting and Evaluation Guidelines (no change) and review of legislative mechanisms. CAFF will provide copies of these to PAME.

The Chairman presented the Final Report of the 2nd Global Meeting of Regional Seas Convention and Action Plans (The Hague, 5-8 July, 1999). Attention was drawn to the various recommendations in the report which are worthy of PAME's further consideration in relation to this agenda. The importance of co-operation between and among the regional seas conventions and action plans and the interested organizations was also highlighted. The meeting noted the important recognition given to PAME activities in the report and further noted the ongoing request for PAME to participate in this process. PAME is invited to comment on the report recommendations to the Secretariat who will then collect comments for consideration at the next PAME meeting.

The meeting agreed to invite Arctic States to provide factual updates on the 1996 PAME report to the Secretariat by mid-March 2000. Secretariat would then prepare a preliminary update for review at the next PAME Meeting. Secretariat was also requested to update the status of the 1996 PAME report recommendations and provide this information to the next PAME meeting. PAME members were further invited to provide the Secretariat with suggestions for improved reporting to SAOs and Ministers. These responses will also be considered at the next PAME meeting.

It was agreed that coordinated efforts between working groups on legal analysis would be beneficial and that PAME's update on international conventions and agreements could be seen as a helpful basis for coordinated efforts. It was further agreed that this issue should be raised during the working group chair discussions at the upcoming SAO meeting in Washington D.C.

Denmark/Greenland provided an information report on Arctic Marine Pollution, which contains a number of ideas for possible Nordic Initiatives (Appendix IX).

VIII. Relations with other Organisations and Working Groups

PAME recognizes the importance of effective communication between working groups and other organisations, the value of sharing work-plans and the benefit of identifying collaborative issues, which may result in joint work. The meeting agreed that the working group chairs should address the following coordination issues at the SAO meeting in Washington D.C.:

- Legal Analysis.
- Consideration of reporting.
- Operating Guidelines.
- Applications to GEF and Relations with Donors.

CAFF Executive Secretary informed the meeting about another GEF initiative. The CAFF Chair and Secretariat, the Russian Federation State Committee For Environmental Protection and UNEP-GRID-Arendal have submitted a project proposal to the Global Environment Facility (GEF) to enhance implementation of the Convention on Biological Diversity (CBD) in the Russian Arctic. A project concept paper has been submitted, and a request is being finalised for funds for project preparations (PDF-A) to UNEP/GEF. This will be a forerunner for a more comprehensive project preparation proposal (PDF-B) to be submitted in early 2000 and eventually a full GEF project. This initiative is in response to a window of opportunity, suggested by UNEP, in terms of gaps in GEF activities in relation to biodiversity conservation in the Russian Arctic. The goal of the main project, which will be running for 5 years, is to safeguard large tracts of undisturbed ecosystems and ensure conservation and sustainable use of globally significant biodiversity in the Russian Arctic.

In response to a letter from EPPR regarding pollution preventions, it was agreed that there was some overlap with respect to shipping and legal analysis but that possible duplication of effort could be avoided through collaborative arrangements. Chairs of PAME and EPPR will further discuss these issues including the particular need for collaboration on the shipping analysis.

The meeting welcomed the increased collaboration between AMAP and ACOPS. Regarding a possible ACOPS/AMAP MOU that will be considered at AMAP's next meeting, PAME agreed that should AMAP decide to pursue such an arrangement it would benefit from further WG Chair and SAO consideration. Several delegations expressed reservations about the appropriateness of using a MOU.

With respect to the GPA Clearing House and the linkages to the RPA, it was agreed that:

- Secretariat would invite the GPA office to present the global Clearing House at the next PAME meeting and would circulate background information on the GPA Clearing House in advance;
- Canada would provide its analysis of most frequently asked questions within a national Clearing House;
- PAME supported ACOPS proposal to consult with the GPA office in the development of a Russian NPA-Arctic Clearing House; and
- PAME would inform the Secretariat on potential user needs and information provided for consideration at the next PAME meeting.

Vice-chairman reported on a Seminar on the Environmental Aspects of the Northern Dimension that was in Brussels, 11 October 1999.

IX. PAME Workplans

The PAME Workplans are summarized in Appendix X. Denmark/Greenland has offered to host upcoming PAME meeting, which is tentatively scheduled for June 5-9, 2000.

X. Other Business

The Secretary provided background information on voluntary contribution in support of the PAME Secretariat. The meeting agreed to include budget reporting as a standing item on its agenda.

Recognizing the importance of effective communication, the Secretariat was requested to prepare an information piece on PAME (e.g. what it is, what it does and the future challenges) for consideration at the next PAME meeting.

LIST OF APPENDICES

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APPENDIX VI	Circumpolar Marine Workshop - Provisional Agenda
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APPENDIX VIII	Mining Guideline Proposal
APPENDIX IX	Report on Arctic Marine Pollution – Proposals for Nordic Initiatives
APPENDIX X	Overview of PAME Workplans

APPENDIX I

LIST OF PARTICIPANTS

PAME Experts Meeting

November 1-4, 1999 – Fíðlarinn, Akureyri, Iceland

PAME Secretariat

Mr. John H. Karau, PAME Chairman, Environment Canada

Ms. Soffia Gudmundsdottir, PAME Executive Secretary

Canada

Mr. Chris Cuddy, Indian Affairs & Northern Development (DIAND)

Mr. Victor Santos-Pedro, Transport Canada, Prairie and Northern Region

Denmark / Greenland

Ms. Birte Rindom, Danish Environmental Protection Agency – EPA

Mr. Joe Nazareth, Ministry of Environment and Energy

Finland

Ms. Vappu Tervo, Marine Protection, Ministry of the Environment

Iceland

Mr. David Egilsson, Icelandic Environmental & Food Agency, Office of Marine Environmental Protection

Mr. Kristjan Geirsson, Icelandic Environmental & Food Agency, Office of Marine Environmental Protection

Norway

Mr. Gunnar Futsaeter, Norwegian Pollution Control Authority

Mr. Svenung Oftedal, Ministry of Environment

Sweden

Mr. Stig Norström, Environmental Assessment Department, Swedish Environmental Protection Agency

USA

Mr. Thomas Laughlin, National Oceanic and Atmospheric Administration (NOAA)

CAFF

Mr. Snorri Baldursson, CAFF Secretariat

ACOPS

Dr. Ljubomir Jeftic, Advisory Committee on Protection of the Sea (ACOPS)

WWF

Ms. Pamela A. Miller, WWF International Arctic Programme

Indigenous Peoples Secretariat

Ms. Alona Yefimenko, IPS Technical Advisor

RAIPON

Mr. Pavel Suliandziga, Vice-president of RAIPON (Russian Association of Indigenous Peoples of the North)

Other Invited Participants

Mr. Helgi Jensson, AMAP Vice-Chair, Icelandic Environmental & Food Agency, Office of Marine Environmental Protection

Mr. Hjalti Saemundsson, The Icelandic Coast Guard

APPENDIX II

LIST OF DOCUMENTS DISTRIBUTED PAME EXPERTS MEETING NOVEMBER 1-4, 1999

Agenda and Operating Guidelines

- 1. Agenda and Annotated Agenda for PAME meeting**
- 2. DRAFT – Operating Guidelines for the Protection of the Arctic Marine Environment Working group**
Submitted by Denmark/Greenland
- 3. Arctic Council Rules of Procedure**

Offshore Oil and Gas Guidelines

- 4. Oil and Gas Exploration and Production in Arctic and Sub-arctic Offshore Regions – Guidelines for Environmental Protection**
Comments submitted by Denmark/Greenland
Comments submitted by Norway
Comments submitted by WWF
IUCN/OGP response to comments submitted
- 5. Review and Evaluation of the Arctic Offshore Oil and Gas Guidelines – Draft Criteria for Evaluating PAME Guidelines and State of Play of Proposed Circumpolar Activity**
Submitted by WWF
- 6. Continental Shelf Management Regime for Russian Offshore Oil and Gas Operations – Development of a Continental Shelf Management Regime**
Submitted by USA

Circumpolar Marine Workshop

- 7. Circumpolar Marine Workshop – Provisional Agenda**
Submitted by CAFF Secretariat and Iceland
- 8. Circumpolar Marine Workshop – Modules and Questions**
Submitted by CAFF Secretariat and Iceland

Regional Programme of Action

9. **PDF-B Russian Project (GF/1100-99-13): “Support to the National Plan of Action for the Protection of the Arctic Marine Environment from Anthropogenic Pollution in the Russian Federation” –First Meeting of the Steering Group, London, 18-19 October 1999**
Submitted by ACOPS
10. **Implementation of the Multilateral Cooperative Project on Phase-out of PCB Use, and Management of PCB-contaminated Wastes in the Russian Federation**
Submitted by AMAP Vice-Chairman
11. **Agenda Item 5 “Arctic Council Action Plan to Eliminate Pollution of the Arctic (ACAP) – Enclosures 1 (Overall Strategy) and 2 (A Summary of the Discussions on Possible Options for Implementation of ACAP)**
Submitted by Norway
12. **RPA Proposed Action Item: Mining Guidelines**
Submitted by Canada
13. **Nordic Proposal on the Phasing out of Hazardous Chemicals Within One Generation**
Submitted by Denmark/Greenland
14. **Initiatives for Reduction of Marine Pollution in the Arctic by Nordic Ministers for the Environment, 13 October 1999**
Submitted by Denmark/Greenland
15. **OSPAR Strategy with regard to Hazardous Substances**

Analysis of International Agreements and Arrangements

16. **Final Report of the Second Global Meeting of Regional Seas Conventions and Actions Plans, The Hague, 5-8 July 1999**
Submitted by Chairman
17. **Report on Arctic Marine Pollution, 14. October 14 1999**
Submitted by Denmark/Greenland
18. **Report on Arctic Marine Pollution – proposals for Nordic Initiatives, April 1999**
Submitted by Denmark/Greenland

- 19. Letter from EPPR Regarding Pollution Preventions, Helsinki 11 October 1999**
Submitted by EPPR Chairman
- 20. Report of the 1999 EPPR Working Group Meeting**
- 21. Draft Memorandum of Understanding between AMAP and ACOPS**
Submitted by Chairman
- 22. Seminar on the Environmental Aspects of the Northern Dimension, Brussels, 11 October 1999**
Submitted by Vice-chairman

APPENDIX III

PAME MEETING – DRAFT AGENDA November 1-4, 1999 FIDLARINN, AKUREYRI

Discussions involved simultaneous translation for the RIPON participant

MONDAY, NOVEMBER. 1

09:30-10:00 *Coffee and get-together*

10:00-12:00, Session I: Adoption of Agenda and Operating Guidelines

1. Welcome and introduction (Chair John Karau)
2. Adoption of agenda – establish working groups
3. Draft Operating Guidelines:
 - Review draft operating guidelines developed at previous PAME Meeting.

12:00-13:30 *Lunch*

13:30-15:00, Session II: Shipping

1. Norway to provide update on establishing a correspondence group on shipping.
2. Norway to provide update on Northern Sea Route and meeting planned for November 18-20, 1999 in Oslo.
3. Canada to provide update on Polar Code.
4. Consider having an Expert Working Group on Shipping for next PAME Meeting (May/June 2000).

15:15-17:00, Session III: Oil and Gas Guidelines

1. Review comments on PAME Offshore Oil and Gas Guidelines from Denmark/Greenland, Norway and WWF.
2. Consider how best to monitor and promote use of the PAME Offshore Oil and Gas Guidelines.
3. OGP/IUCN to provide update on “Oil and Gas Exploration and Production in Arctic and Subarctic Offshore Regions - Guidelines for Environmental Protection”.

TUESDAY, NOVEMBER 2

09:00-12:00, Session IV: Regional Programme of Action

1. Russia/ACOPS to provide detailed work-plan and progress report on implementing Russian NPA - Arctic and organization of the Partnership Conference.
2. AMAP to provide update on next steps for PCB project and possible links to RPA/ACAP deliverables.
3. Discussion and Questions

12:00-13:30 Lunch

13:30-16:00, Session IV Cont.

1. Norway to provide update on the development of ACAP and possible related projects.
2. Canada to present revised proposal on Mining Guidelines.
3. Consider other RPA project proposals.

16:00-17:00, Session V: Marine Workshop

1. Progress report and preparations for Marine Workshop scheduled for November 28 - December 2, 1999 - Montréal, Canada.

Evening: Official Dinner at Gamli Lundur

WEDNESDAY, NOVEMBER 3

09:00-12:00, Session VI: Analysis of International Agreements and Arrangements

2. Chairman's proposal on reporting.
3. CAFF Reporting and Evaluation Guide.
4. CAFF review of legislative mechanisms related to marine conservation.
5. Develop work-plans for updating 1996 PAME Report.

12:00-13:30 Lunch

13:30-15:30, Session VII: Relations with other Organizations and Working Groups

6. Consider draft AMAP / ACOPS MOU.
7. EPPR request for clarification on pollution prevention.
8. Reports on UNEP / GPA related activities.

9. Round table discussion.

15:45-17:00, Session VIII: Future Work Programme and Report to SAOs

10. Refine future work programme.

11. Input for report to SAOs Meeting November 17-19, 1999.

12. Prepare Draft Meeting Report

THURSDAY, NOVEMBER 4

09:00-13:00, Session IX: Draft Meeting Report

13. Review Draft Meeting Report

14. Any Other Business

APPENDIX IV

DRAFT OPERATING GUIDELINES for the Protection of the Arctic Marine Environment Working Group

The activities of the Protection of the Arctic Marine Environment Working Group (WG) are governed by the Rules of Procedure of the Arctic Council. References to the Rules of Procedure herein are the Rules of Procedure of the Arctic Council.

1. Representation

- 1.1 Each Arctic State and Permanent Participant assigns one lead national representative and one lead representative respectively and other representatives each Arctic State and Permanent Participant thinks appropriate.
- 1.2 The number and names of the delegation shall be given to the Secretariat at least 14 days prior to the meeting.
- 1.3 [As stated in Rules 39 and 40 of the Rules of Procedure, where the Arctic Council, or the Arctic States participating on a working group, task force or other subsidiary body agree, the chair of the body may invite any person or organisation that can contribute expertise and is able to contribute to the work of that body to participate in specific meetings. These persons or organisations do not have Observer status unless so decided in accordance with Rule 41 of the Rules of procedure. Costs associated with the attendance of the experts at meetings shall not be borne by the Arctic Council or its subsidiary bodies unless authorised in advance by a decision of the Arctic States.]

2. Chair, Vice-Chair, and Secretariat

- 2.1 In consultation with the SAOs, the WG shall select a Chair and Vice-Chair. The period for these positions will be 2 years.
- 2.2 The Chair shall act in a neutral capacity.
- 2.3 The duties of the Chair shall be to preside over PAME meetings and to direct and manage work programs approved by the WG, and to take initiatives and put forward proposals to the WG that could provide the efficient execution of its work.
- 2.4 The duties of the Vice-Chair are to substitute for the Chair when the Chair is not available and to also assist the Chair in his or her duties.
- 2.5 The duties of the Secretariat are to help co-ordinate the work program, facilitate information exchange, arrange meetings, support reporting on and implementation of the program, and undertake tasks assigned by the WG.

3. Meetings

- 3.1 The WG shall meet at least once a year. The date, location for the meeting and agenda shall be decided by a consensus of the WG.
- 3.2 The responsibility for organisation of these meetings shall be rotated among the Arctic States and co-ordinated by the Chair and Secretariat.
- 3.3 An invitation to the meeting with a draft agenda proposed by the Chair in consultation with the representative of the Host Country should be submitted by the Secretariat to those invited to the meetings at least 30 days in advance.

4. Reports

- 4.1 A draft final or final meeting report including the record of decisions shall be distributed to all Arctic States, Permanent representatives and other meeting participants by the Secretariat within 30 days of the conclusion of the meeting.
- 4.2 Comments on a draft final meeting report shall be submitted to the Chair and Secretariat within 30 days after issuance and the final meeting report shall be subject to the approval of participating Arctic States.

5. Decisions

- 5.1 [As stated in Rule 8 of the Rules of Procedure, decisions of working groups, task forces or other subsidiary bodies may be adopted by a consensus of all Arctic States present, subject to any objection in writing by an absent Arctic State within 30 days after receiving a report containing the decision.]
- 5.2 As stated in Rule 9 of the Rules of Procedure, at meetings, unless decided otherwise, discussions or decisions shall not occur on any matter which has not been included as an item in an agenda adopted in accordance with these Rules.]

6. Document Management

- 6.1 All documents shall list the title, author, and date, after which the Secretariat shall provide a relevant agenda number.
- 6.2 Every effort shall be made to submit papers to the Secretariat for circulation at least 30 days prior to the meeting at which they are to be considered.

7. Co-operative Activities

7.1 [As stated in Rules 26 and 27 of the Rules of Procedure, an Arctic State or Permanent Participant may make proposals for cooperative activities. All proposed programs and projects for which there is no existing Ministerial mandate shall be subject to a decision of the Council at an Arctic Council meeting. Proposals on programs and projects should address the elements outlined in ANNEX 1. Proposals for co-operative activities should be received 90 days prior to any SAO meeting or meeting of a subsidiary body at which they are to be considered.].

ANNEX 1 to Arctic Council Rules of Procedures

As a guide to preparation of such proposals for programs and proposals, the following elements should be included, as appropriate:

- a. the issues or matters to be addressed;
- b. the reasons that the Arctic states should consider and approve the proposal;
- c. any relevant recommendations in relation to the proposal, including recommendations as to an appropriate body or bodies for carrying out, coordinating, or facilitating an activity;
- d. information in relation to costs and methods of financing an activity;
- e. a work plan, including initiation and completion dates;
- f. relationships to other Arctic Council programs or activities and to activities in other relevant regional or international for a;
- g. an environmental impact assessment; and
- h. any other information relevant to the proposal.

APPENDIX V

REVIEW AND EVALUATION OF THE ARCTIC OFFSHORE OIL AND GAS GUIDELINES

DRAFT CRITERIA FOR EVALUATING PAME GUIDELINES and STATE OF PLAY OF PROPOSED CIRCUMPOLAR ACTIVITY

Summary for PAME Working Group Meeting
Akureyri, Iceland November 1, 1999

Prepared for World Wide Fund for Nature
Arctic Programme

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EXECUTIVE SUMMARY

WWF has launched this project as part of its continuing efforts to ensure that arctic marine and coastal ecosystems are better protected into the future. Now that the PAME Offshore Oil and Gas Guidelines are published, we plan to continue assessing their adequacy in fostering environmental protection and to conduct an evaluation of their effectiveness so that we can present suggested revisions to the Working Group. In June, WWF reviewed IUCN/ E&P Forum's Draft Arctic Offshore Oil and Gas Guidelines and compared it with critical features of the PAME Guidelines. A summary of that review is included. Here we present a preliminary overview of the 'State of Play' of offshore oil and gas activity in the Arctic noting sites within WWF's Global 200 Ecoregions. We also will present draft criteria for evaluating the PAME Offshore Guidelines and determining best practice for PAME's comment and advice. Once these are finalized, we will apply the criteria to case studies and present the results with recommendations to the PAME Working Group.

INTRODUCTION

The World Wide Fund for Nature's Arctic Programme is concerned about environmental protection throughout the Arctic Region, particularly in sensitive coastal and marine habitats of international significance. WWF's Global 200 ecoregion-based conservation programme highlights a number of ecoregions threatened by offshore oil and gas development. These include Arctic Tundra in the Neararctic and Palearctic; Polar and Subpolar Marine Ecosystems in the Arctic Ocean and seas and the Estuarine & Upwelling-Driven Marine Ecosystems of the North Atlantic Ocean.

WWF remains extremely concerned about the unprecedented risks of offshore oil and gas exploration and development to the Arctic marine and coastal environment. The Arctic Environmental Protection Strategy (AEPS) Arctic Offshore Oil and Gas Guidelines drafted by the Working Group on Protection of Arctic Marine Environment (hereafter, "PAME Guidelines") and adopted by the Arctic Council in 1997 were a first step towards one mechanism for addressing protection of the Arctic environment from the adverse consequences of oil development. WWF's Arctic Programme participated throughout development of the PAME Guidelines, yet noted that despite many improvements, they fell short of their potential in many key areas. We believe that further development of the Circumpolar Protected Area Network, including establishment of new protected areas in coastal and marine areas, is also critical prior to any consideration of opening new offshore areas to oil and gas activity.

WWF is undertaking this project as a contribution to the review of the Guidelines for the Arctic Council Ministerial in Autumn 2000 and to challenge the current standard of decision-making regarding this industry. It also recognized that currently proposed oil development projects would set a precedent launching great expansion of the industry into the Arctic seas and coasts.

OBJECTIVES

1. To review and evaluate Arctic Offshore Oil and Gas Guidelines.
2. To achieve best practice in decision-making, regulation, and operation for offshore oil and gas development in the Arctic. "Best practice" would start with the decision whether or not to develop at all, and if so, cover planning through to decommissioning.

RESULTS

- I. Review of Draft IUCN/ E&P Forum Guidelines.

World Wide Fund for Nature provided general comment on the IUCN/ E&P Forum's draft paper, Oil and Gas Exploration and Production in Arctic and Subarctic Offshore Regions – Guidelines for Environmental Protection (Report No.2.77/277, February, 1999; hereafter "IUCN/ E&P Forum Guidelines").

These comments build on WWF's work on the PAME Guidelines, which despite many improvements short of their potential in many key areas. We underscored continuing concerns that were identified in our comments to PAME in February, 1997:

- Although the non-binding nature of Guidelines provides the opportunity to establish Guidelines that reflect the highest standards currently achievable, this was not done.

- A strategic basis for pollution control is lacking. The management planning process should include environmental quality criteria, including emission controls, and the necessary norms and regulatory process to adequately assess and regulate offshore exploration and exploitation activities in the Arctic Region, including specific protective measures (e.g. emission standards).
- Management programs in which regulatory agencies recognize offshore operators as the responsible parties for overall performance are open to abuse and cannot be substitutes for traditional regulations, which are necessary to achieve consistency, and as a means of effective enforcement.
- Environmental quality criteria, based on the environmental characteristics that sustain the specified values and resources, and the extent to which these can be changed without causing harm, should be used to formulate standards. These environmental quality criteria can be achieved in conjunction with emissions controls.
- Special provisions should be made for sensitive areas requiring greater or specialized protection. Certain parts of the Arctic are so important for wildlife, nature conservation, subsistence use, or cultural needs that in those areas, oil leasing, exploration and development should be prohibited. Thus, a system of special protection measures is required, ranging from “sacrosanct” areas to safety or buffer zones around protected areas. In order to identify the sensitive areas, guidance should be given on the decision-making process for determining whether or not areas should be made available for oil and gas activities. This public process should be linked to CAFF’s Circumpolar Protected Area Network Plan. Information should be included regarding the Agreement on the Conservation of Polar Bears and other existing agreements for wildlife and habitat protection, so it is clear that the Guidelines supplement and do not replace such obligations.

Overall, we found that the draft IUCN/ E&P Forum Guidelines do not complement the PAME Guidelines or incorporate information, goals and principles developed through the CAFF or AMAP programs. Since these guidelines were largely based on the IUCN/ E&P Forum’s outdated Onshore Guidelines, we recommend setting aside the draft Offshore Guidelines until a comprehensive evaluation of the earlier guidelines is done. Due to the major deficiencies of the draft Offshore Guidelines, we believe that a substantially revised draft of the IUCN / E&P Forum Guidelines should be reviewed by the public again.

We believe IUCN/ E&P Forum Guidelines should not make policy, but should provide practical information for operators that complement the regulatory approaches of the PAME Guidelines and other programs of the Arctic Council/ AEPS. Any voluntary standards that are set by the Guidelines should be the maximum possible, such as “zero discharge” of wastes.

The Guidelines did not make clear the critical deficiencies of current environmental knowledge and technological practices, such as lack of procedures for oil spill cleanup in broken sea ice, and highly risky transportation methods such as sub-sea buried pipelines or tanker shipment that would make oil fields increasingly accessible. Yet this information is necessary to inform the basic decision whether it is acceptable to proceed with development at all, as well as in subsequent environmental impact assessment.

The threshold decision-making process of whether oil and gas operations are to be allowed at all, virtually ignored by the IUCN/ E&P Forum Guidelines, needs far more emphasis. This is especially critical now as major new developments planned for the Beaufort Sea off Alaska, Pechora Sea off Russia, and other areas auger a massive new reach of the industry into formerly inaccessible icy waters. If vast areas of the Arctic marine and coastal environments are offered to the oil and gas industry, this can be expected to become a permanent dedication to industrial “land” use despite conflicts or incompatibilities. It is extremely rare and difficult to buy back oil leases or concessions once they are sold. The U.S. government sold offshore leases in Bristol Bay, Alaska despite public outcry about the threats to one of the world’s greatest fisheries. Better attention to the concerns of fishermen and conservationists at an early stage could have averted the need to spend millions of dollars in public funds to buy back the public resources, as was eventually done to protect the Bering Sea ecosystem from this source of impact.

We urged IUCN/E&P Forum to place more emphasis on developing proactive measures for conservation of the Arctic marine and coastal environment and the communities that depend on this “Arctic ring of life.” More emphasis on developing better mechanisms for protection for critical habitats and existing protected areas, as well as expanding the Circumpolar Protected Area Network, is necessary. We noted the important commitment made by Arctic nations to protect the ecosystems of which polar bears are a part in the Agreement on the Conservation of Polar Bears for which IUCN was a catalyst.

Finally, the threats global climate change pose to Arctic marine ecosystems, and the greater intensity of impact already apparent in the Arctic region, should guide a precautionary approach to evaluating new petroleum hydrocarbon exploration and production in this vulnerable region. We recommended that IUCN/E&P Forum re-evaluate these factors prior to deciding to finalize the draft Guidelines.

II. Draft criteria for evaluating PAME Offshore Guidelines.

These criteria are intended to provide a practical way of measuring the adequacy of the PAME Offshore Guidelines and to elucidate deficiencies which merit changes with the goal of environment protection and establishing best practice for the oil industry. Instead of suggesting an exhaustive review of each aspect of a project and measuring it against the guidelines, we have selected examples of key issues to focus the analysis.

Our approach is to see if the PAME Guidelines are being implemented, and if so, look at the extent to which they are followed and working to meet the original objectives. What are the results in terms of the environment? If aspects of the projects meet the Guidelines, do they adequately protect the environment? This will be evaluated through the tests we have outlined

below and documented in a comprehensive matrix. As part of the evaluation of the effectiveness of the Guidelines and expected environmental impact we will also document how key issues of concern to scientists, natural resource agencies, conservation and Native NGO's, and the public were addressed by the standards set by the Guidelines.

We plan to apply these criteria to two case studies for projects in different stages of development or different regions as a practical test of the Guidelines. We are considering looking at a project in the exploration stage and a development proposal. Of high interest are Prirazlomnoye in the Pechora Sea as it may be the first offshore project in Russia's Arctic; Shtokmanovskoye gas field in the Russian Barent's Sea as there are pending plans; the Snowhit field in the Norwegian Barent's Sea; and projects in Alaska's Beaufort Sea. Since the impetus for the development of the Guidelines was the status of practices in Russia, we will focus on this area.

Background on standards and criteria.

The U.S. National Research Council (1994; p.15) used two criteria for adequacy of information necessary to illuminate the environmental risks of OCS oil and gas development:

- Completeness - appropriate breadth and depth of scientific information in all relevant disciplines;
- Scientific quality – repeatability, reliability, and validity of measurements and subject, including the appropriateness of methods and subject. Do the methods represent the current state of good practice in each scientific field?

We have added four other standards for rating projects, as further defined below under goals and principles. Public participation is especially critical for careful consideration of new applications of technology in extreme environmental conditions in areas with high ecological significance (and because there is a limited track record for oil development in Arctic marine areas, at all). The tests for these principles will be applied to all sections of the Guidelines:

- Precautionary principle.
- Polluter pays principle.
- Adequate and transparent Public Participation.
- Sufficient and transparent consultation with local people and incorporation of traditional knowledge.

Draft evaluation questions

We plan to apply 10 –20 basic tests to projects and consider them for the various sections of the Guidelines as applicable. Again, we emphasize these are not intended to be an exhaustive treatment, and we expect they will be further narrowed down. We will focus on these topics:

1. Principles
 - Precautionary approaches.
 - Polluter Pays Principle.
 - Public participation.
 - Consultation with local communities and incorporation of traditional knowledge.
2. Environmental Impact Analysis
 - Baseline information on physical features (currents, sea ice, permafrost, spill trajectories).
 - Baseline information on fish, wildlife, and habitats.
 - Cumulative impact analysis.
 - Site clearance and decommissioning
3. Species and habitats.
 - Marine mammal (polar bear and other) habitats.
 - Threatened and endangered species.
 - Subsistence needs.
4. Pollution prevention / discharges.
5. Oil spill risk and contingency planning.

Principles

Since currently proposed oil development projects in Arctic waters pose unprecedented risks, we will focus on how critical principles of the Guidelines are considered during the approval phase for leasing or development. These principles cut across all sections of the Guidelines, and a matrix will be developed for this evaluation.

1.1 Precautionary approach

- Has a comprehensive planning process been done to identify sensitive areas in the region where no oil offshore industry activity should occur and to evaluate the need for new, or additional protected areas, and zones of other protective measures in the region?
- Do the Guidelines identify the most controversial issues for the project, or the aspects that have generated the most controversy elsewhere (e.g. impacts to marine mammals and the subsistence harvest, endangered species, effects of blowouts or pipeline spills, lack of oil spill response capabilities, pollution from drilling discharges, cumulative impacts, etc.).

1.2 Polluter pays principle

- ❑ Does the project use best-available technology for reducing, eliminating, or preventing pollution and have independent experts not beholden to industry or government evaluated this capability?

1.3 Public participation.

- ❑ Is the public participation process transparent, and completely open to the public through the project, including early in the government decision-making process?

1.4 Community consultation and incorporation of Traditional Knowledge.

- ❑ Has traditional ecological knowledge been considered in decisions about the activity? Is collection and application of traditional knowledge non-biased by the industrial operator? (i.e. is it in control of those having the knowledge, a public panel, or an independent management panel comprised of western scientists and those with traditional knowledge?)

Environmental Impact Assessment.

2.1 Adequacy of physical environment information.

These tests of essential information were developed largely from U.S. National Research Council (1994) recommendations for studies still needing to be done prior to development in the Beaufort Sea.

- ❑ Is there adequate information on permafrost (based on recent soil/sediment borings) to assess the thaw settlement, thaw strain, differential strain, and other critical factors that affect pipeline and facility integrity, especially at the shoreline and other transition zones?
- ❑ Is there adequate information on sea ice, including ice gouging and movement and sea-floor currents? Are there yearly replicate measurements of gouging depths and patterns taken over a minimum period of 5 years at the oil field site? (NRC 1994, p. 178).
- ❑ Have site-specific circulation studies been conducted in areas identified for oil production and in “hot spots”—breeding, feeding, and aggregation areas for wildlife—identified by biologists and Native people with long experience in dealing with the physical environment? (NRC 1994, p. 84).
- ❑ Have adequate oil spill trajectories been done to predict oil movement and to estimate effects of spills (NRC 1994, p.86), including along the shoreline and over the long-term?

2.2 Adequacy of biological information.

The U.S. National Research Council (1992, 1994) has conducted numerous reviews of the adequacy of information for environmental impact reviews due

to public concern over offshore lease sales in the U.S. They identified major data gaps that precluded some lease sales from going forward. In a nationwide review of the adequacy of the OCS environmental studies program, the National Research Council (1992) said that the optimal design to discern impacts of OCS operational activities must:

- Define what impacts are likely to occur and the temporal and spatial scales of their occurrence.
- Differentiate between such impacts and natural variability.
- It should also require collection and archiving of environmental data as well as information on the nature, scope, and timing of industrial activities to permit retrospective analysis necessary to determine the likely causes of observed changes in the variables being monitored.

The identification of information gaps is an essential part of the pre-decisional environmental impact assessment, and a process that must be carried throughout EIA process including the monitoring program.

We have selected a few key issues upon which to evaluate the quality of baseline information and the effects considered in the EIA process from those listed by the Guidelines (p.15). I have modified the matrix used by the National Research Council (1994) to use as a checklist (see Table 1).

- Has a well-integrated contaminant, ecological and social monitoring program been established well before project development impacts occur?

Table 1. Status of knowledge important for Decision making – Biotic Resources (modified after NRC 1994)
(A similar chart could be used for subsistence/ cultural and oceanographic, ice information)

Habitat Ecol.	Mammals	Birds	Fish	Threatened/ Endangered	Protected areas/ Diversity	Wilderness	Traditional Knowledge
Open water							
Leads, polynyas							
Fast ice							
Near shore							
Estuaries, lagoons							
Shoreline (intertidal, deltas, wetlands)							

2.3 Cumulative effects analysis.

Justice Berger's 1977 report on a proposed natural gas pipeline in Northern Canada is as timely today as when issued. This inquiry was based on extensive hearings, including in all the potentially affected communities. He provided a visionary approach to cumulative impacts and also gives a context for the types of decisions the Guidelines would address:

"The decisions we have to make are not... simply about northern pipelines. They are about the protection of the northern environment and the future of northern peoples...(Berger 1988, p.14)

There is a myth that terms and conditions that will protect the environment can be imposed, no matter how large a project is proposed. There is a feeling that, with enough studies and reports, and once enough evidence is accumulated, show how all will be well. It is an assumption that implies the choice we intend to make. It is an assumption that does not hold in the North. It is often thought that, because of the immense geographic area of the North, construction of a gas pipeline or establishment of a corridor could not cause major damage to the land, the water or the wildlife. But within this vast areas are tracts of land and water of limited size that are vital to the survival of whole populations of certain species of mammals, birds and fish at certain times of the year. Disturbance of such areas by industrial activities can have adverse biological effects that go far beyond the areas of impact." (pp. 17-18)

- Did consideration of past oil and gas activity in the region (including offshore leasing or exploration or onshore leasing, exploration and development) involve a complete EIA/ EIS that included cumulative impact analysis? Have significant issues raised during the evaluation of past projects been resolved?
- Have the long-term impacts of onshore facilities, including ports, used to support offshore activity been addressed?
- The U.S. Council on Environmental Quality (CEQ 1997) suggests a number of methods for analyzing cumulative effects, including trend analysis and overlay mapping/ GIS. Does analysis of the project measure

trends in impact sources (extent and locations of infrastructure and activities that result in direct and indirect loss or degradation of habitat; inputs of air and water pollutants) and consequences? At the most basic level, are maps of past and projected future infrastructure overlain with maps of protected areas, habitat types, concentrated wildlife use areas, threatened and endangered species habitats, and important subsistence and cultural areas?

2.4 Site decommissioning.

- ❑ Do project proposals include plans for site clearance, decommissioning, and rehabilitation, including financial bonding and environmental restoration standards that will be met?

Species and habitats

3.1 Marine Mammals (whales, seals, polar bears)

- ❑ Is there adequate baseline ecological information, including mapping of “hot spots” where concentrated use or unique habitats exist, upon which to base a decision regarding risks to biodiversity and local subsistence uses and to measure future impacts?
- ❑ Is there adequate information on impacts of industrial noise, particularly seismic surveys, icebreaking and other vessel operations, drilling, helicopter flights, and operations?

3.2 Threatened and endangered species

- ❑ Does assessment include special review of impacts to rare, threatened, and endangered species and their habitats, including a comprehensive cumulative impact analysis, and are scientifically based conservation recommendations incorporated into decisions about project alternatives, mitigation, and design?

3.3 Subsistence needs.

- ❑ Is there analysis of subsistence resource and use impacts and data on loads of contaminants in marine mammals, particularly those used as food by local people? (NRC 1994, p.123)

Pollution Prevention / Discharges

- ❑ Are there regulatory standards requiring Best available technology?
- ❑ Has waste management been addressed from the beginning of planning and eliminated discharges and emissions that pose pollution threats to the environment?

- Are discharge standards specified in leases or licenses or by law and regulation in advance? If industry conducts voluntary audits of HSE, are these documents subject to full disclosure to regulatory agencies and the public?
- Is there a zero discharge standard for drilling waste (muds, cuttings, and produced water) and hazardous wastes?
- Are green house gas emissions reduced from present practice, regulated, and monitored, considering the full-cycle from hydrocarbon exploration and extraction to consumption by the public?

Oil spill preparedness and response in sea ice conditions.

Whereas the Guidelines stated that transportation would be dealt by PAME in its work on Arctic Shipping (p.2), we will evaluate the consideration given to the potential impacts from tankers or other support vessels if proposed as integral to offshore oil development projects, in addition to other sources of chronic and major spills.

- Are oil spill contingency plans available as part of the proposed project for public review as part of the EIA process?
- Does the public have adequate information to evaluate the weather, ice and technological operating limitations of spill response and equipment?
 - * Is adequate equipment available to respond immediately to the largest of each type of spill that could occur (blow-out, pipeline leaks-chronic and major break, and tanker or vessel spills)?
 - * Has the equipment been field tested for effectiveness in that location for the type of use proposed and compared with other techniques? (NRC 1994, p. 180).
 - * Have the environmental impacts of spill response measures been evaluated (air pollution, dispersant impacts, noise and disturbance to wildlife)?
 - * Is there a remote sensing technique that can detect oil within or under ice? (NRC 1994, p. 179).

III. Preliminary overview of the ‘State of Play’ of offshore oil and gas activity in the Arctic.

The following review focuses on current or proposed activities in WWF’s Global 200 ecoregions in the Arctic, many of which are threatened by existing or proposed offshore oil and gas exploration and development.

A. WWF's Global 200 ecoregions

Polar and Subpolar Marine Ecosystems: Arctic Ocean and seas

Barents Sea – Norway.

Past activity. Norway opened the Norwegian and Barents Seas north of 62° to oil exploration licensing in 1979 after much controversy following the 1977 Bravo well blowout in the North Sea. Oil production started in the Norwegian Sea in 1993 at the Draugen field, and subsequently at three other fields. By 1995, 107 wells were drilled (AMAP 1998, p. 666).

In the Barent's Sea, 35 licenses were since 1980 but most were relinquished by 1996. By 1995, oil companies drilled 53 wells in the Barents Sea; there were 16 discoveries. No exploratory wells have been drilled since 1994 (Fridtjof Nansen Institute (1999)). In 1997, a new framework for exploration was established that will allow extensive seismic testing in the southern part of the Barents Sea. To date, only the area south of 74° has been opened to licensing and commercial research. AMAP reported 17 onshore wells drilled around Svalbard (AMAP 1998, p. 666), but this information is contradicted by other sources reviewed. In 1997, Norsk Hydro re-interpreted seismic data from Svalbard exploration from 1986-87 (Offshore Magazine 9/1/97; Oil & Gas Journal, 5/6/91).

Present and proposed activity. A terminal to receive gas from the Norwegian Sea is under construction near Trondheim (AMAP 1998, p. 667). The Snowvit field off Western Finmark is the farthest along in the planning phase (Fridtjof Nansen Institute (FNI), 1999). In 1998, the government found a drill rig did not meet Norwegian standards, so plans were halted and abandoned in 1999. The latest plan by Statoil and Norsk Hydro called for oil to be carried in tankers and gas sent in a pipeline to Finnmark, then shipped out on LNG ships.

Barents Sea – Russia.

Past activity. A total of 11 oil or gas fields with exploitable reserves have been discovered in the Russian Barents, Pechora, and Kara Seas. Seismic exploration began in the Barents Sea in 1971. In the late 1980's an average of 5-6 wells were drilled each summer, but recently at most 2 have been drilled. In 1988, the Shtokmanovskoye gas and condensate field, one of the largest offshore fields in the world (3,200 BCM) was discovered in the northwestern part of the Russian Barents Sea. Two other large gas fields, Ledovoye and Ludlovskoye were discovered nearby.

Present and proposed activity. In 1993, Rosshelf sought US\$5 billion in credits for planned development of the Shtokmanovskoye gas project for production by 2000. Gazprom presently controls the project (with Norsk Hydro, Neste, Conoco and Total). The field is located in deep water (280-380 m) about 576 km (360 mi) from the mainland where there is drifting sea ice and high waves (Oil and Gas Journal 8/23/93). Recently, Gazprom states that it plans to start building platforms by 2001 and start producing in 2010-

2012 (FNI 1999). At least two pipeline routes are being considered, one to Teriberka, east of Murmansk. Another is via Belomorsk and Petrozavodsk and eventually to Europe via Finland and Sweden or through a pipeline under the Baltic Sea directly to Germany.

Pechora Sea – Russia.

Past activity. Exploratory wells were first drilled in 1981 in this region and some small oil and gas discoveries were made. The only field currently under production is a small one at the shoreline of Kolguev Island.

Present and proposed development. The most imminent offshore development in the Barents, Kara, and Pechora Seas is Prirazlomnoye which was discovered in 1989 (Oil and Gas Journal 8/23/93). This field is currently one of the major joint venture investments in Russia today (Oil and Gas Journal 1/25/99). It contains 75 million tons (548 million bbl) oil. Rosshelf received an exploration and development license in 1993, with the intention of developing this field first in order to have funds to develop the larger Shotokmanovskoye field further offshore. Prirazlomnoye is located in 20 m (66 ft) of water. By 1996, an ice study was done with funding from Amoco, Exxon, Neste, Norsk Hydro and Texaco (Offshore Magazine 4/1/96). An offshore platform is reported to be under construction, but financing of the project has been difficult. Some believe that tanker transport for oil produced from many of the Pechora Bay or Yamal Peninsula fields would be more economical than pipelines (Offshore Magazine 4/1/96). Plans for “double-acting” and other tankers to transport the oil to western Europe are being researched by the Kvaerner Masa-Yard’ Arctic Technology Centre in Finland which has a 10% stake in the Pechormorneft offshore license (Offshore Magazine 7/1/98, 8/1/97).

Kara Sea – Russia.

Past activity. Oil drilling began in 1981 in this region. Two super giants have been discovered in the Kara Sea. One of these is Leningradskoye. The second, Rusanovskoye is estimated to hold 282 tcf gas and 4 billion bbl oil and is in waters 50 m (Offshore Magazine, 2/1/97).

Proposed activity. A priority for Gazprom is exploitation of huge gas fields on the Yamal Peninsula. Early project estimates were for US\$15 billion investments (Oil & Gas Journal 9/7/92). Eight 48-inch pipelines have been proposed to cross Baidaratskaya Bay to the Mainland in waters 25 m (82 ft) deep, thence to southern markets (Oil and Gas Journal 5/3/93). At the pipeline transition zones at the shorelines before going into the bay, the pipelines would be enclosed in a tunnel about 3 m wide and surrounded by a layer of gravel as a plan to reduce the danger of breaks due to warming and shifting of the permafrost. Higher strength steel and double-wall construction was also discussed. Early plans called for 70 km of offshore pipelines to be laid in 30 days, with the first 2 pipelines to be in production by 1996 with a cost of US\$ 300 million each. An onshore pipeline alternative is also

considered (Offshore Magazine 4/1/96). A plan to build a railroad to transport oil more than 300 miles from the base of the Yamal Peninsula was abandoned in 1989 due to issues related to tundra permafrost, engineering problems and excessive costs (Oil & Gas Journal, 9/7/93).

A scheme by a Florida company, Werner Offshore, proposes a fleet of 22 submarine tankers to deliver oil to markets in Asia by 2004-2013. He also proposes pipelines to tankers for export to Europe, and pipelines to Novaya Zemlya Island where it would be processed into LNG and thence across to Asia. Maris International of Great Britain is looking into technology to install seabed production systems for 200 wells that would be operated by Werner Offshore (Professional Engineering 1997).

Bering Sea – U.S.

Past activity. After the first major federal lease sale in the Bering Sea, a frenzy of drilling took place in 1984 -1985 when seven companies drilled 24 wells in the Bering Sea. Ten wells were drilled in St. George Basin near the Pribilof Islands in 109-145m (358-476 ft) deep waters using drill ships. In the Navarin Basin near Russian waters, 8 wells were drilled from drill ships in waters 120-164 m (393-541 ft) deep. In the shallower shelf of Norton Sound near St. Lawrence Island and the Bering Strait, 6 wells were drilled from jackup rigs in waters 11-20 m (35-65') deep. No producible quantities of oil were found.

Present and proposed activity. None. The rich fishing grounds of Bristol Bay in the U.S. Bering Sea are one of only four areas where offshore oil and gas is prohibited by law off Alaska's coast. This followed major controversy and court challenges by the Alaska Native Village of Gambell and other organizations. Alaska established a Bristol Bay Fisheries Reserve in waters within 3 miles of shore where no leasing may occur unless the legislature passes a resolution finding that it will not endanger the fishery (Alaska Statute sec. 38.05.140(f)). Annual Congressional moratoria have prohibited the federal government from leasing OCS waters in Bristol Bay since 1989. As well, Bristol Bay (North Aleutian Basin) was included in a 10-year moratoria first declared by President George Bush and extended in 1998 by President Clinton to 2012. The leases were eventually bought back in 1996 after a court case filed by the oil companies. MMS did not include any Bering Sea areas in its current 5-year leasing plan (MMS 1996), but nothing prevents addition to future plans. There is no evidence of current exploratory activity in the U.S. Bering Sea.

Bering Sea – Russia.

Past activity. The Soviet Union drilled over 30 onshore exploratory and stratigraphic test wells in the Anadyr and Khatyr Basins from 1963 to 1978 (MMS 1990, p.III-4). Although those wells did not make commercial discoveries, oil was struck in 1981 near the southwestern coast of Anadyr Bay and gas has also been found. Onshore oil drilling in the Anadyr Basin

was underway in 1990 and at that time geological crews operated tracked tanks to travel across the tundra during the summer causing great tundra damage (Tichoksky 1991, p.89).

Present activity. There is no known present oil and gas activity offshore.

Beaufort Sea - U.S.

Past activity. Oil leasing in the Beaufort Sea began with a joint federal/state sale in 1979. Since then, there have been six more federal offshore sales covering the region from Canada to Barrow. Since opening the Prudhoe Bay area to the oil industry, the State has offered over 7 million acres (2.8 million ha) of Beaufort Sea waters from the Canadian border almost to Barrow in 11 state lease sales (Alaska Department of Natural Resources, 1997). The State plans to offer all its North Slope area and Beaufort Sea waters from the Canadian border nearly to Barrow in annual area-wide lease sales beginning in 2000 (Ibid, p. 18). At the present time, there are very few remaining state or federal leases off the coast of the Arctic National Wildlife Refuge. Virtually all of the State waters off the coast of the state lands between the Canning and Colville Rivers are currently under lease.

A total of 54 exploratory wells have been drilled in state waters and 30 in federal waters of the Beaufort Sea (Mapmakers 1998; MMS August 15, 1999). More than 305,580 km (165,000 mi) of seismic lines were shot in the Beaufort and Chukchi Seas between 1970 and 1996 (Dellagirario, et al. 1997). This drilling and seismic activity has caused significant effects on migrating bowhead whales, ringed seal distribution on ice, disturbance of polar bears and negatively affected subsistence activities central to the culture of the Inupiat people.

Two offshore oil fields located in the near shore state waters were developed using gravel roads (filled causeways) from land; these resulted in significant effects to fish habitat. A 8 km (5-mile) long causeway was built specially to bring the Endicott field into production. Production from the Pt. McIntyre field is from onshore production pads using directionally drilled wells and also from production wells added to the West Dock causeway originally built as a dock for development of the Prudhoe Bay field. Other offshore fields such as Niakuk, Lisburne, and Badami were developed using directional drilling from land, although these all included plans for offshore drilling islands when they were first proposed.

Present activity. BP Amoco's proposed Northstar Project is expected to become the first truly offshore oil development in the Arctic Ocean. The plan calls for a crude oil pipeline buried in the seabed to connect a gravel island to land. This new application of technology has circumpolar significance by dramatically changing the accessibility of offshore fields in regions with sea ice, as well as posing unprecedented environmental risks from oil spills. The U.S. Army Corps of Engineers estimates a one-in-five (11-24%) chance of a major spill from the Northstar project that could devastate polar bears,

endangered bowhead whales, threatened spectacled and Steller's eiders, and other migratory birds. The cumulative impacts from Northstar, combined with other oil fields in the future, include an 87-98% chance of a major spill from offshore development in the Beaufort Sea.

The Northstar Environmental Impact Assessment (EIA/EIS) process is nearly completed. The U.S. Army Corps of Engineers approved Northstar in the Beaufort Sea in May 1999, and the U.S. Minerals Management Service approved the Development and Production Plan in September, 1999, although consideration of project modifications continues. BP proposes to begin project construction this winter. Conservation organizations and Inupiat Eskimos have filed court challenges.

Liberty, a second offshore development requiring a subsea pipeline to transport oil to shore is in the earlier stages of the environmental impact review process. BP Amoco announced plans to develop this field east of the Endicott field in 1997. The oil field would be developed from a new gravel island built northwest of Tern Island, where Shell Oil drilled discovery well in 1982. This project has similar risks as Northstar, with the additional concern that sedimentation, chronic pollution and potential spills may affect a nearby unique benthic community known as the boulder patch where kelps, sponges and invertebrates thrive in uncommon productivity for the Arctic Ocean (Dunton 1984).

Proposed or potential activity. At least 8 additional offshore fields have been found to date in the Beaufort Sea off Alaska (Alaska Department of Natural Resources, 1998, p.55-56). BP Amoco is expected to next develop the Sandpiper field west of Northstar. Exxon and others have development plans for the huge Pt. Thomson and Flaxman Island natural gas and condensate fields (140 billion cubic meters, 5 trillion cu ft) located in shallow state lagoon waters and on tundra wetlands near the coast which are about 10 to 30 miles east of existing oil pipelines. These fields are adjacent to the Arctic National Wildlife Refuge. Recently, Chevron and other companies relinquished leases for the Kuvlum and Hammerhead fields located 16-32 km (10-20 miles) out into the pack ice and directly in the main bowhead fall migration path. The Kuvlum field, estimated at over 1 billion barrels of recoverable oil, is the largest field found to date in the U.S. Beaufort Sea, but its location makes development of this field daunting.

Beaufort Sea – Canada.

Past activity. In Canada's Beaufort Sea, most activity has centered in the Mackenzie Delta region. Of 53 discoveries in the Mackenzie Delta-Beaufort Sea basin made between 1970 and 1989, 26 are offshore (14 oil and gas fields, 4 oil fields, and 8 natural gas fields) (Northern Oil and Gas Directorate 1995). Imperial oil discovered the major Taglu onshore field in 1971 (Northern Oil and Gas Directorate 1995a). In 1973 the first exploration took place in the shallow Beaufort Sea waters, and exploratory drilling from drill ships started in the deeper waters started in 1976 (Berger 1988, p. 93). By

1977, over 100 wells were drilled onshore and offshore in the Mackenzie Delta region, including 15 from artificial gravel islands.

But this had been done without consultation of the Native people of the area. In 1972, the Canadian government established the Expanded Guidelines for Northern Pipelines and in 1974 the House of Commons set forth the requirements for considering the social and environmental impact of such projects. In 1974, Arctic Gas proposed a natural gas pipeline from Prudhoe Bay across the arctic coastal plain to the Yukon, and then to connect up in the Mackenzie Delta with a pipeline south down the Mackenzie Valley. A second project, the Foothills Pipeline, was simultaneously proposed from the Mackenzie Delta following the Mackenzie River to Alberta.

The Berger report of the Mackenzie Valley Pipeline Inquiry was published in 1977 following extensive hearings in 1974 to 1975 with testimony by 300 scientific experts and hearings in every potentially affected community. Justice Berger recommended that there should be no pipeline across the Northern Yukon and urged a 10-year moratorium for building a Mackenzie Valley pipeline. He also recommended that no pipeline be built until Native land claims were settled and new institutions and programs entailed by the settlements that form the basis for native self-determination were in place. He also recommended the establishment of Northern Yukon National Park to preserve the calving grounds of the Porcupine caribou herd as wilderness and to protect the subsistence way of life of the people (this was subsequently done). He concluded that the decision to build the pipeline would spur oil and gas exploration and development in the Mackenzie Delta and the Beaufort Sea likely to lead to production (Berger 1988, p. 19). Therefore, he recommended that no pipeline corridor should cross the outer Mackenzie Delta. He also recommended that a whale sanctuary be established in west Mackenzie Bay to protect the principal beluga whale calving area where oil and gas exploration and development is forbidden (there are special restrictions for leasing in this area but not a sanctuary now).

Offshore exploratory drilling had continued during the moratoria on pipeline development. As of 1995, oil companies drilled a total of 239 wells in the Mackenzie-Beaufort Basin of which 83 were offshore; Northern Oil and Gas Directorate (1995). In 1983, Gulf made the largest oil discovery-- the offshore Amauligak field (estimated recoverable resources of $37.3 \times 10^6 \text{m}^3$ (235 million bbl) oil and $38 \times 10^9 \text{m}^3$ natural gas. During the heyday of activity in the Delta, at least 66 vessels supported offshore activities (VanderZaag and Lamson 1990). In 1985 these made over 2,600 trips from shore bases through the Mackenzie estuary to offshore sites. There was extended test production of oil from the Moliqqak rig at this field (Anchorage Daily News, 1986) and Gulf Canada shipped 320,000 bbls via icebreaker tanker to Japan in 1986 (Anchorage Daily News 1987).

Back in 1987, Gulf Canada proposed starting seasonal oil production from Amauligak for about 120 days each year using tankers plying along the

Alaska coast to southern markets. However, Husky Oil and other partners favored full-time production via pipeline. In 1989, a hard look at new drilling plans was prompted by a natural gas blowout at the Kulluk drilling unit at a Canadian Beaufort Sea well (North Slope Borough 1989) and the Exxon Valdez spill. In 1990, the Canadian government rejected Gulf Canada's plan to drill 3 wells because the federal government is not prepared to deal with a major spill (Oil and Gas Journal July 16, 1990). It also recommended a ban on Beaufort Sea drilling until additional legal requirements regarding oil spill plans were established. The Environmental Impact Review Board required a worst case prediction and proof that oil companies can afford clean up costs (Oil and Gas Journal June 18, 1990). In this case, Gulf had estimated a worst case blowout of 2.4 million barrels of oil during the 66 days it would take to drill a relief well, but could not estimate how much oil would strike land or how much cleanup would cost. Later that year, three of the four companies most active in Canadian Beaufort Sea exploration cancelled their plans for drilling any wells the next year. No exploratory wells have been drilled in the Mackenzie Delta/ Beaufort Sea since 1992 (Northern Oil and Gas Directorate 1997). In 1997, Amoco sold its subsidiary, Canadian Marine Drilling (Canmar) which had drilled 75% of all offshore wells in the Canadian and U.S. Beaufort Sea and the Chukchi Sea (Press release at www.bpamoco.com).

Present activity. In 1999, competitive bids were put in for new leases in offshore areas the Mackenzie Delta for the first time in 8 years (Oil and Gas Journal, 4 October 1999, Canada's high Arctic to see renewed E&D). Petro-Canada and another company will spend \$105 million to explore leases covering 897,000 acres, starting with seismic exploration and beginning drilling in 2001 or 2002. Two other companies committed to spend \$78 on seismic surveys beginning this winter and on other exploration for an area covering 360,000 acres adjacent to two onshore gas discoveries.

The new round of offshore licensing began in 1989 in the Beaufort-Mackenzie Basin and in the mainland Northwest Territories in 1994 (Northern Oil and Gas Directorate 1995). By 1995, exploration licenses covered 133,659 ha and significant discovery licenses covered 111,543 ha by 1995. Most of the area now open to licensing nominations is subject to specific environmental considerations and a consultation process required in the land claims agreements. (Northern Oil and Gas Directorate 1998). These areas were identified by Inuvialuit and wildlife specialists as being of particular environmental importance and may be subject to additional regulatory terms and conditions. Some of these areas are migratory routes for whales that are considered sensitive. However, the western half of the Beaufort Sea shoreline in the Yukon Territories is now within the Ivvavik National Park and has wilderness status whereby no offshore oil support facilities would be permitted. The eastern part of the Yukon shoreline is a Special Conservation Area subject to special restrictions according to the Inuvialuit Final Agreement (International Porcupine Caribou Board 1993).

Potential Activity. Imperial oil currently holds a production license for the Amauligak offshore oil field, but there are no current development plans. In 1989, the government issued a license for export of gas to the U.S. through the Mackenzie Valley to Esso Resources Canada Ltd., Gulf Canada, and Shell Canada (National Energy Board 1998). However, the project still has not submitted an application for a gas pipeline to connect to southern markets (Northern Oil and Gas Directorate 1995a). Offshore development may increase if the oil pipeline from the Norman Wells field to the south in the Mackenzie valley is extended north, or with extensions of a local natural gas pipeline developed for local use in Inuvik in the Mackenzie Delta (see coastal tundra section).

Chukchi Sea – U.S. and Russia

Past activity. The first major U.S. lease sale in this area was held in 1988 and another in 1991, with a total of 18 million ha (44.6 million acres) offered. A flurry of controversial drillship activity followed the first sale, with 4 exploratory wells drilled in icy Chukchi Sea waters about 140' deep between 1989 and 1991 by Shell Western E&P Inc (MMS August 15, 1999). No discoveries were made and the companies relinquished their leases. Currently there are no active leases in the Chukchi Sea. In the last 5-year leasing plan by MMS, over 1 million ha (26 million acres) were again scheduled for consideration for a planned lease sale in 2002. In 1994, the MMS proposed a controversial joint lease sale with Russia for the Chukchi Sea. It would have encompassed waters used by endangered bowhead whales migrating from Canadian calving grounds across the Beaufort Sea to the Russian coast. It also would have been next to the concentrated polar bear denning habitat of Wrangel Island Nature Reserve. MMS dropped the proposal due to controversy raised by Alaska Native organizations including the Alaska Beluga Whale Committee, Alaska Eskimo Walrus Commission, and Bering Sea Fishermen' s Association and conservationists (Alaska Beluga Whale Committee 1994).

Present or proposed activity. None known. Although MMS cancelled its next Chukchi lease sale in 1999, it plans to include the Chukchi Sea area in its next 5-year plan.

Estuarine & Upwelling-Driven Marine Ecosystems - North Atlantic Ocean *Icelandic Marine ecosystems.*

Present or proposed activity. The oil industry is watching the status of the Law of the Sea Treaty, as it will set in motion a leasing agency to cover international waters. Denmark Strait, between Iceland and Greenland, is one area where international leasing could take place (Oil and Gas Journal, September 1, 1998).

Arctic Tundra: Neararctic
Alaskan North Slope and coastal tundra - U.S.

Past activity. Prudhoe Bay and 14 other producing oil fields have already dramatically transformed a vast Arctic area. The oil fields already sprawl over more than 400 square miles of State of Alaska lands. The North Slope infrastructure has been growing since discovery of oil in 1968, mostly sprawling in the coastal zone near to the Beaufort Sea. The industrialized area includes onshore activity related to offshore field development, and this is expected to continue in the future. Today, there are hundreds of miles of roads, over a thousand miles of pipelines, 2 refineries and 14 production plants, the largest gas handling plant in the world for re-injection of gas, and 12 gravel mines which have mined 400% more gravel than predicted (U.S. Fish & Wildlife Service 1987). There are over 160 exploratory and production gravel drilling pads where more than 1,500 wells have been drilled, twice as many as predicted. On Alaska's North Slope roughly 22,000 acres of habitat have been directly filled or excavated due to the oil fields and Trans-Alaska Pipeline.

At 23.5 million acres, the federal government established the NPR-A in 1923 to supply fuel for the Navy. The Navy, and later the U.S. Geological Survey and Bureau of Land Management carried out extensive exploration that included drilling about 40 wells (Miller and Gernat, 1996). This work caused substantial damage to the tundra and little rehabilitation of drilling waste pits has occurred. In fact, a drilling site along Teshekpuk Lake still leaks contaminants into its waters. The first leasing program took place in 1981. There were annual sales until 1984 when no companies bid. All of those early leases expired with only one well having been drilled. A new round of seismic exploration began in 1992 and has been done each winter since then. Oil leasing, exploration or development activities are prohibited by federal law in the Arctic National Wildlife Refuge.

Present activity. Currently two companies operate the oil fields, but after the proposed BP Amoco takeover of ARCO, there will be just one operator. BP Amoco will own over 70% of the North Slope leases, unless divestiture occurs, and 72% of the Trans-Alaska Pipeline System. To the west, Arco is currently completing construction of its Alpine oil field located in the floodplain of the Colville River delta. Conservationists sued over this development because it proceeded without adequate EIA (an environmental impact statement) despite the field's location in the largest river delta in the U.S. Arctic and unprecedented use of a buried pipeline for the river crossing. While they lost their first round in court, the case is on appeal. Alpine also is the gateway to oil development in the National Petroleum Reserve- Alaska (NPR-A) and was the catalyst for renewed leasing in these federal lands. Therefore, this oil field development had major cumulative impacts that should have been addressed by an EIS, the appropriate level of environmental impact analysis.

This year, the Interior Department launched a new leasing program in a 4.6 million-acre planning area of the Northeast corner of NPR-A. It predicts 494 million – 2.1 billion barrels of economically recoverable oil exists (at \$18/ bbl and \$30/ bbl price, respectively) in this section of NPR-A (Bureau of Land Management 1998, p. III-A-31). Unfortunately, the area most prospective for oil also has among the highest wildlife values, including an internationally significant brant molting area. In May, 1999, the Interior Department offered 3.9 million acres for lease (Babbitt 1998) and oil companies offered bids on 867,450 acres (Bureau of Land Management, 1999). Most of the NPR-A leases went to BP Amoco and ARCO. ARCO plans to drill exploratory wells this winter. Only 580,000 acres in the Teshekpuk Lake Special Area were made unavailable for leasing. This area contains fall molting habitat critical to the Pacific brant population. A “no surface occupancy” restriction was attached to some additional area along the south side of Teshekpuk Lake due to concerns about caribou calving. However, additional caribou calving habitat was open to leasing, as was important nesting habitat used by spectacled eiders, yellow-billed loons, tundra swans, and other ducks, geese and loons.

Proposed activity. Oil field development is greatly expanding to the east and west of the existing oil fields on Alaska’s North Slope. To date, development has only taken place on state lands and waters, but this is rapidly changing as pressure mounts on Federal lands. Rapid spread to the edge of the National Petroleum Reserve-Alaska has taken place, and development is steadily moving to the east towards the Arctic National Wildlife Refuge. This onshore expansion will ultimately allow development of distant offshore fields to become more economic.

More than 32 oil fields have been discovered on Alaska’s North Slope and adjacent offshore waters (Department of Energy 1991). On the periphery of the producing fields there may be 50 more satellite fields which may range from 1 to 100 million barrels each (Rosen 1996) which have yet to be developed. The 15 oil fields currently under production have reserves exceeding 17.7 billion barrels, of which oil companies have already extracted 11.6 billion barrels. The Alaska Department of Natural Resources (1997) estimates that 7 billion more barrels of oil will be pumped from the known North Slope fields by 2020. Three of these fields (Niakuk, Pt. McIntyre, and West Beach) have come on line since 1993. The giant West Sak and Ugnu heavy oil fields just starting to be tapped may eventually surpass all other potential. Current production estimates for this heavy oil are 0.5-6.25 billion barrels but the reservoirs contain an estimated 18-40 billion barrels oil in place (Werner 1987).

Plans for a natural gas pipeline to connect North Slope with a port at Valdez or Cook Inlet are currently under serious consideration. This could provide a market for 650 bcm (23 tcf) gas that is currently stranded in the Prudhoe Bay field. It is currently reinjected into the reservoir to provide adequate pressure for extraction of the oil. The Yukon Pacific Corporation already has permits for a pipeline from Prudhoe Bay to Anderson Bay in Valdez, but large buyer,

likely in Asia, for export of LNG has not been found. Simultaneously, the Department of Energy has sponsored research on gas-to-liquids technology on the North Slope (Petroleum News Alaska June 1999) and BP Amoco is currently planning a pilot project on the North Slope that would pump product down the existing TAPS pipeline.

Coastal Tundra – Canada.

Present activity. The National Energy Board approved a gas development plan by the Inuvialuit Petroleum Corporation for the Ikhil gas field in the Mackenzie Delta in 1997 (Northern Oil and Gas Directorate 1997). A 50 km (30 mi) pipeline connects to Inuvik for local use. There are three producing onshore fields in the Northwest Territories and Yukon located north of 60° (Northern Oil and Gas Directorate 1995a). Two natural gas fields are located just north of the British Columbia border and connect up with pipelines to that province. The largest is Norman Wells, an oil and gas field located along the Mackenzie River that contains an estimated 37.5 million cubic meters (236 million bbl). During World War II, a pipeline to Whitehorse was built as part of the CANOL project which was abandoned after the war although contamination persisted into the 1990's. A refinery continued for local use where in 1986, production expanded and a new pipeline was completed from the field to Zama, Alberta. This buried pipeline was built through discontinuous permafrost that raised many questions about pipeline integrity and stability in the environmental impact statement (Federal Environmental Assessment Review Office, 1981). Since then, considerable permafrost thaw settlement has occurred, the pipeline has come unburied in many places and recent studies by the Geological Survey of Canada showing extensive permafrost melting increases concerns about the stability of the pipeline (Petroleum News Alaska 1996).

Present and proposed activity. The Norman Wells area is currently the focus of intense exploration since new licensing started up again in 1994 following land claims settlement. Many new exploration licenses and wells are being drilled. As of 1995, a total of 76 exploratory wells and 345 development wells have been drilled at Norman Wells (Northern Oil and Gas Directorate 1995a). Other exploration is taking place at Eagle Plains in the Yukon. New exploration and development licensing in the Mackenzie Delta onshore is expected. Eventually, this Ikhil gas or other pipelines from onshore in the Delta, could be connected up with the Norman wells pipeline in a more economical approach than past development proposals. (Northern Oil and Gas Directorate 1995a).

Arctic Tundra: Palearctic
Scandinavian Alpine Tundra – Norway, Sweden, Finland
Taimyr coastal tundra – Russia
(to be completed)

B. Other Arctic areas, not highlighted in WWF's Global 200.

Polar and Subpolar Marine Ecosystems: Arctic Ocean and seas
Arctic Islands (Sverdrup Basin) – Canada

Past activity. Dome Petroleum drilled the first exploratory well on Melville Island in 1961 (Northern Oil and Gas Directorate 1995a). Since then, a total of 192 wells were drilled on a number of the islands, including 15 delineation or production wells. Peak drilling occurred in 1973 when 37 wells were drilled and the last well was drilled in 1986.

Exploratory drilling in the Arctic Island area and Hudson Bay and proposed drilling in Lancaster Sound completely violated the basic principles of environmental impact assessment (Pimlott et al. 1976, p.123). In fact, until 1974 the Canadian public was kept in the dark about drilling operations in the High Arctic by Panarctic (a 45% government-owned consortium that only worked in this region (p.55). Baseline research was superficial, environmental assessments were not only biased towards the applicant but held confidential under proprietary interest regulations, and no public hearings were held. A blowout took place when the Drake Point discovery gas well drilled in 1969, and it took two relief wells to bring it under control (Northern Oil and Gas Directorate 1995a p.79). Various gas pipeline routes to the south were considered and abandoned. In 1978, an experimental gas pipeline was built from the shoreline 3,050 feet to the offshore well, of which the nearest 820 ft was buried 5 feet below the surface (BP Exploration 1998). A limited gas production test was conducted, but the pipeline was never operational. No monitoring, research or maintenance of the pipeline was done and it was officially abandoned in 1996-97. The Bent Horn oil field was discovered on Cameron Island in 1975 (Northern Oil and Gas Directorate 1995a). Since 1985, it produced from a single well until 1996 when the field was abandoned (AMAP 1998). From 35-57,000 m³ crude oil was produced annually during summer and transported in 1-3 tanker loads. It was shipped in the M.V. Arctic, a double-hulled tanker originally built for the Great Lakes to a refinery in Montreal (Northern Oil and Gas Directorate 1995a). A major thrust of this oil production by Canada was establishing a basis for its territorial claims in the Arctic Islands region (Young 1992).

Present and potential activity. The Arctic Islands area (Queen Elizabeth Islands) is now almost entirely within Nunavut. The process of exploration rights issuance which had been halted in the late 1977 pending settlement of Native land claims was restarted in 1991 (Northern Oil and Gas Directorate 1995). We are not aware of any planned activities.

Davis Strait – Greenland

Past activity. Seismic surveys were done by Nunaoil, the Greenlandic-Danish state-owned oil company in 1994 (1,706 km of data) and in 1996 the license was granted to a consortium (Statoil (operator), Phillips Petroleum, Dansk Oilie og Naturgas and Nunoil (Oil and Gas Journal, January 1, 1999). 2) The Sisimiut-West license was granted to the same consortium in 1998 and seismic surveys have been done in this area. A third license was granted near the coast onshore on Nuussuaq and Disko to GronArctic Resources, Inc. of Canada in 1995, but after a shallow exploratory well was declared dry, this one expired. Six oil companies (BP, Exxon, Japan National Oil Co., Shell, Statoil, and Texaco) financed the Kanumas project off northern Greenland, and they retain licensing preference in this area. Nunaoil, their operator, conducted seismic surveys from 1991 to 1995 off Northwest Greenland in Baffin Bay (4,071 km), off Northeast Greenland (5,637 km) and off central East Greenland (1,323 km).

An earlier phase of exploration took place in the 1970's when 37,000 km of seismic surveys were done and five wells were drilled in 1976 and 1977 (all declared dry holes). At that time, Amoco, Chevron, ARCO, Mobil, Total and Ultramar were most active. One well (Kang?muit-1) had extremely high pressures and apparently had a "wet" gas blowout that took 9 days to control the well. Roughly 23,000 km of additional seismic lines has been shot since the 1970's, beginning with a new program by the Geological Survey in 1990-92 that was intended to attract industry back to the area.

Present and potential activity. New offshore licensing is suspended during a policy review by the Greenland Home Rule Government in Nuuk, which took over the management of petroleum resources from the Danish Minister of Environment, and Energy in July 1998 (Offshore, January 1, 1999). However, seismic exploration and plans for drilling exploration wells are continuing on licenses granted under an "open-door policy" established in 1994 wherein applications for exploration would be accepted at any time. This policy applied to onshore and offshore areas south of 70°30'N in West Greenland and for Jameson Land in East Greenland. Currently, there are two active license areas in Davis Strait. In the Fylla area, west of Nuuk, an exploratory well was originally planned for summer of 1999 but has been delayed until next year (Offshore, April 1, 1999).

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APPENDIX VI

CIRCUMPOLAR MARINE WORKSHOP – PROVISIONAL AGENDA
Co-sponsored by IUCN, CAFF and PAME
November 28 – December 2, 1999
MONTREAL, CANADA

Sunday, November 28

Registration - on check-in at hotel; kits also available at opening session in evening.

5:45 - 7:30 pm	Opening Session - Cabaret style
5:45 - 6:15	Opening remarks - Chair, Steering Committee - Master of Ceremonies: Mac Mercer, IUCN
6:30 - 6:55	Values and Uses of the Arctic Marine Environment (Jakobsen)
7:00 - 7:25	Prioritising Pressures on the Arctic Marine Environment (Foster)
7:30 - 8:30:	Reception

Day 1: Monday, November 29

8:30 - 9:15	Opening Presentation: "State of the Art" Overview – (Ken Sherman)
9:30 - 10:15	Panel - Regional and Local Authorities – (Northern Forum, Nordic Regional Authorities, Russian Regional/Local Authority) - Moderator: Kent Wohl
10:15 - 10:45	<i>Coffee</i>
10:45 - 12:00	Panel - Indigenous Peoples and the Marine Environment (ICC, Saami, RAIPON, Alaska Aleuts), Moderator: Tove Petersen
12:00 - 1:30	<i>Lunch</i>

Module I - Involving Local and Indigenous Peoples in Marine Management - Facing the Challenges

Module Planning Leader: Peter Nielsen

Moderator: (Session Chair)

1:30 - 2:00	Opening Presentation - Amirkhan Amirkhanov
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- 2:15 - 3:30 Guided Discussions and proposals
 a) indigenous peoples
 b) local populations
 c) regional authorities
- 3:30 - 4:00 *Coffee*
- 4:00 - 5:00 Plenary: Conclusions/Draft Recommendations

Day 2: Tuesday, November 30

Module 2 - Tools and Instruments for Circumpolar Marine Management - Building the Infrastructure

Module Planning Leader: Tiina Kurvits

Moderator: (Session Chair)

- 8:30 - 9:00 Opening Presentation - John Karau
- 9:15 - 10:30 Guided Discussions and proposals
 a) marine classification
 b) common terminology
 c) knowledge base
- 11:00 - 12:00 Plenary: Conclusions/Draft Recommendations
- 12:00 - 1:30 *Lunch*

Module 3 - Protection of the Arctic Marine Environment (Part I) Methods and Approaches

Module Planning Leader: Annie Hillary

Moderator: (Session Chair):

- 1:30 - 2:00: Opening Presentation – Jim Johnston
- 2:15 - 3:30: Guided Discussions and proposals
 (a) protected areas and networks
 (b) regulatory approach
 (c) voluntary approach
- 3:30 - 4:00: *Coffee*
- 4:00 - 5:00: Plenary: Conclusions/Draft Recommendations

Day 3 December 1

Module 3 - Protection of the Arctic Marine Environment (Part II) Resource Management

Group Leader: David Egilson

Moderator: (Session Chair):

8:30 - 9:00: Opening Presentation – Thorir Ibsen
9:15 - 10:30 Guided Discussion and proposals
(a) sustainable use
(b) coastal zone management/ marine ecosystems
(c) managing threats
10:30 - 11:00 Coffee
11:00 - 12:00: Plenary: Conclusions/Draft Recommendations
12:00 - 2:00 pm Lunch
2:00 pm Excursion

Meeting of Drafting Team/ Steering Committee

6:30 - 10:00 pm CMW dinner

Day 4: December 2 Plenary

Moderator: TBA

9:30 - 12:00 Review of Module Conclusions/Draft Recommendations;
Draft Co-operative Strategic Plan;
12:00 - 2:00 Lunch
1:30 - 3:00: Approval of CMW highlights report; Co-operative Strategic.

APPENDIX VII

National Plan of Action for the Protection of the Marine Environment from Anthropogenic Pollution in the Arctic Region of the Russian Federation (NPA-Arctic) and Partnership Conference

ACOPS Progress Report on the Implementation of the NPA-Arctic

Background

The First Ministerial Meeting of the Arctic Council (Sept. 1998) in its “Iqaluit Declaration” specifically stressed that the Ministers of the Arctic Countries: “Support the efforts of the Russian Federation to develop and implement a Russian Programme of Action for the Protection of the Arctic Marine Environment from Land-Based Activities (Russian NPA-Arctic); including seeking appropriate support to help Russia finalise the Russian NPA-Arctic and host a Partnership Conference to be organised with the assistance of the Advisory Committee on the Protection of the Sea (ACOPS) which would seek funds to remedial regional priority pollution sources and activities identified in the RPA and Russian NPA-Arctic”.

The design of the NPA-Arctic provides for the common need to protect and restore the quality of marine environment, including its biological resources and biodiversity. This is also the aim of Global and Regional Programmes of Action. On the other side NPA-Arctic takes into account national priorities and strategies. This requires long-term commitment by the country authorities at all level of power including federal and regional ones. NPA-Arctic supports development of adequate environmental policies and legislation, promotes the use of economic instruments to encourage environmentally sound actions, strengthens institutional capacity and human resources, and increases regional and local capacity to finance environmental measures.

The overall management objective of the NPA-Arctic is to reduce pollution and habitat damage to the Arctic environment in such a manner as to permit the conservation and sustainable development of its natural resources and the removal of threats to the health of its human population from anthropogenic sources of pollution.

The Conference of Official Representatives of the State Duma and the Government of the Russian Federation Dedicated to Adoption of the National Plan of Action for the Protection of the Marine Environment from Anthropogenic Pollution in the Arctic Region of the Russian Federation (Moscow, Oct. 1998) in its resolution stated, amongst others:

- Conference supports the efforts made by the Goskomsever, other ministries and government departments concerned, and the executive authorities of the Arctic regions to develop the NPA-Arctic;
- Conference endorses the work done by the Interagency Task Team under the auspices of the Goskomsever and with the assistance of the Advisory Committee on Protection of the Sea (ACOPS) with a view to developing the NPA-Arctic; and
- Conference notes that implementation of the NPA-Arctic would meet the national interests of Russia and the interests of the world community and help accomplish the tasks stipulated under the Federal Target-Oriented Programme (FTOP) 'World Ocean', as well as other relevant international programmes, and promote the objectives of protecting the natural environment and a stable Arctic environment as reflected in the Declaration of Section 1 of the Arctic Council (Sept. 1998).

Current Policy in Russia Regarding the Implementation of the NPA-Arctic

Recently many political developments have taken place in Russia. The Government of Mr. Primakov was replaced in May 1999 by the Government of Mr. Stepashin. This Government discontinued the activity of the Ministry of Regional Policy and re-established the State Committee on Affairs of the North (Goskomsever). Mr. V. Goman was again designated as the Chairman of Goskomsever. He re-instated his decree #39 of June 1998 concerning the establishment of the Inter-Agency Working Group on the development of the NPA-Arctic. New members were included into the Inter-Agency Working Group representing EMERCOM, Ministry of Finance and RAIPON. Mr. Goman is now the chairman of the Working Group.

In August 1999, the Government of Mr. Stepashin was replaced by the Government of Mr. V. Putin. He confirmed the continuation of Goskomsever activities and Mr. Goman's position as its Chairman.

Currently an attempt is being made to increase the administrative level of the body dealing with NPA-Arctic. Instead of the Inter-Agency Working Group, it is planned to establish an Inte-Agency Commission, which would have a higher administrative profile. An application to Mr. Putin for the establishment of an Inter-Agency Commission, signed by Mr. Goman and Admiral I. Kasatonov, was prepared and delivered.

In the Inter-Agency Commission, Ministries and Agencies will be represented by either Ministers (or Chairmen) or their Deputies. In addition to Federal Ministries, proposal envisages in its terms of reference that that Governors or Vice-Governors of the Northern Regions will be members of the Inter-Agency Commission. It is planned also to invite the State Duma Deputies to take part in the Commission activity (Committees for Ecology, Budget, Defense, Natural Resources and Northern Affairs).

Partnerships

Partnerships for the implementation of the NPA-Arctic, including the preparations for the Partnership Conference, are being established, although a bit slower than planned, due to the negotiations regarding the precise terms of contracts and level of financial contribution. An overview of the requested and committed financial support for the implementation of the NPA-Arctic is presented in the enclosed table. As of 3 Nov. 1999, partners contributing to the implementation of the NPA-Arctic were Canada, Denmark, GEF, GPA Coordinating Office, and USA. Negotiations with Finland, Norway and Sweden are underway for the financial support for the NPA-Arctic, with clear indication from Sweden and Norway that the positive answer to the request is to be sent soon. For the year 1999/2000, of the requested funds of 1,030,000 (excluding the host country) as of 3 Nov. 1999 were committed only 520,000.

Progress in the Implementation of the NPA-Arctic

The first phase of the concrete implementation of the NPA-Arctic was achieved with the signing (18 Aug. 1999) of the GEF PDF-B Project "Support to the National Plan of Action for the Protection of the Arctic Marine Environment from the Anthropogenic Pollution".

This project contains following four substantive activities:

1. Review and Evaluation of Relevant Legislation, Policy and Administrative Capacity at Federal and Regional Levels

Objective of this activity is to prepare a review of the system of environmental legislation in the Russian Federation relating to the implementation of the NPA-Arctic, with the aim of:

- assessing applicability to Arctic environmental protection;
- identifying needs for new legislation at federal and regional levels, and the necessity of new regulatory standards at these levels, taking into account specific applicability to the Arctic;
- assessing the capacity of federal, regional and local environmental protection and law enforcement bodies in the Arctic Region of the Russian Federation;
- identifying appropriate economic measures that will assist in environmental protection;
- assessing the feasibility and utility of non-binding agreements; and
- preparing proposals for new policy approaches.

Working Group consisting of Russian and international experts was established, under the coordination of Goskomsever and ACOPS, for the implementation of

this activity. It is planned that the meetings of the Working Group will be held on 15-19 Nov. 1999, and 13-17 March 2000.

2. Analysis of Pollutant Transport Mechanisms and Zones of Impact

Objective of this activity is to identify and assess the main sources of environmental pollution in the Russian Federation, the transport routes of pollutants to the Arctic Seas and beyond and the associated scales of impact. Specific sources of large-scale releases (into the atmosphere) and discharges (into water bodies) into the Arctic for heavy metals and POPs will be identified. Sources will be identified through: assessments of the data on pollutant discharges and releases from particular enterprises (source approach); and assessments of the data on the levels of environmental pollution and ecosystem degradation (target approach)

The relevant data will be carefully evaluated and where possible correlation made between contamination in zones of impact and particular sources. Information from the Working Group of the Arctic Council on the Arctic Monitoring and Assessment Programme (AMAP) and other sources, activities and scientific studies such as those relating to Convention on the Long Range Transport of Air Pollution (LRTAP), including the results of modelling, will be considered in this evaluation. The outputs of this activity will include: a list of the major sources of pollution relevant to the Russian Arctic; an assessment of primary air and water routes of pollutant transport from identified sources to the Arctic Ocean, and prognoses as to the scales of adverse effects (national, regional, global).

Working Group consisting of Russian and international experts was established, under the coordination of Goskomsever and ACOPS, for the implementation of this activity. It is planned that the meetings of the Working Group will be held on 9-12 Nov. 1999, and 17-21 April 2000.

3. Analysis of the Existing Practice in Preparation of Pre-investment Studies in the Russian Federation and Development of Guidelines for their Future Preparation

The objective of this activity is to analyse selected pre-investment studies which have been carried out in the Russian Federation over the last several years and which are relevant to the protection and development of the marine and coastal environment of the Arctic region. Such an analysis should indicate the weak points in the preparation of previous pre-investment studies and propose changes in the legal instruments and administrative procedures required to improve the utility and acceptability of future pre-investment studies. On the basis of this analysis guidelines for the preparation of future pre-investment studies will be developed. Such studies should include technical, economic,

financial, social and other aspects and should be presented in such a way that will encourage potential partners to invest in the protection of the marine and coastal environment of the Arctic region of the Russian Federation. It is expected that new pre-investment studies will enhance chances for timely and efficient investment in the elimination of the environmental "hot spots".

At present in the Russian Federation, there is no law laying out the requirements for pre-investment ecological studies. The practice for new projects and projects of significant expansion and reconstruction has been the ad-hoc preparation of, often insufficient, documentation on technical, financial and ecological aspects.

There are number of environmental hot-spots in Russian Arctic that require investment in order to eliminate their negative consequences on the environment. For such hot-spots it will be necessary to prepare pre-investment studies, which will identify the investments needed to mitigate the identified environmental problems.

It has to be stressed the importance of the involvement of International Financial Institutions (World Bank, EBRD, and NEFCO) in the preparation of the hot-spot analysis, in the analysis of existing practices in the preparation of pre-investment studies, and in the development of guidelines for their future preparation. This will ensure the participation of IFIs in the full GEF project, particularly in the preparation of pre-investment studies and subsequent concrete investments.

Working Group consisting of Russian and international experts was established, under the coordination of Goskomsever and ACOPS, for the implementation of this activity. It is planned that the meetings of the Working Group will be held on 6-8 Dec. 1999, and 24-28 April 2000.

4. Identification, Characterisation and Prioritisation of Hot-spots

Objective of this activity is identification, characterisation and prioritisation of environmental "hot-spots" in the Arctic region of the Russian Federation. For this purpose methodology will be developed for identification of sources and human activities in the Russian Arctic, including within major arctic drainage basins, in the context of the severity and distance of adverse effects. This methodology will be devised in a manner that enables the allocation of priorities to individual hot-spots in terms of the scales and severity of their effects. Guidelines for the application of the selected methodology would be prepared to allow assessments of individual hot-spots. This methodology will constitute a blueprint for the scope, content and *modus operandi* for the identification, characterisation and prioritisation of hot-spots in the Russian Arctic in a manner that fully fulfils the needs of not only the Russian Federation but those of the other Arctic States.

High priority "hot-spots" will be identified and for those "hot-spots" pre-investment studies should be organised in order to eliminate them. It is expected

that about 6 - 8 pre-investment studies could be prepared in the course of the full GEF project. This methodology of identification of hot-spots, preparation of pre-investment studies for high priority hot-spots and subsequent investment in order to eliminate high priority hot-spots was successfully implemented in the Baltic Sea.

Task Team consisting of Russian and international experts was established, under the coordination of Goskomsever and ACOPS, for the implementation of this activity. It is planned that the meetings of the Task Team will be held on 17-22 Jan. 2000, 14-18 Feb. 2000, and 18-22 Sept. 2000.

Partnership Conference

Taking into account that NPA-Arctic implementation will lead to improvement of the environmental situation not only on Russian territory but also on the territories of other circumpolar countries, the interest of these countries (governments and private sector) for elaboration and implementation of the NPA-Arctic is quite justified. NPA-Arctic must be closely connected with the sustainable economic development of the Arctic and development of an urgent investment portfolio based on pre-investment studies should be conducted in close cooperation with representatives of the International Financial Institutions. This portfolio should be presented to the Partnership Conference (planned for the first half of 2001). Projects may include modernising and reconstruction of industrial objects, technological changes (transition to best available technologies and best environmental practice), promotion of activities compatible with Arctic sustainable development, improvement of environmental policies and management, remedial actions at areas with significant environmental degradation, habitat protection, and enlargement of existing or construction of new projects.

The exact schedule for the implementation of the NPA-Arctic will strongly depend on the availability of financial support for these activities, but current situation indicates, that due to the fact that activities which are most important for the preparation of the Partnership Conference are already being implemented, that it is realistic to expect that the Partnership Conference will be held in the first half of 2001.

APPENDIX VIII

RPA PROPOSED ACTION ITEM: MINING GUIDELINES

Objective: To develop and adopt Arctic-wide environmental best practice guidelines on opening, operating and closing mines in the Arctic [coastal zone]. Mining is defined as the extraction, milling and concentration of ore. It is noted that this action is identified as a requirement of the RPA to address heavy metals but it is not identified as a priority for the first stage of implementation. Discussions towards an Arctic Council Action Program have indicated that, if developed, the guidelines should be applicable to the entire Arctic region.

Background: The 1996 PAME Working Group Report indicates that active mining in the Arctic occurs in Canada, Norway, the Russian Federation, Sweden and Norway. In addition, three closed mines in Greenland have the potential to release heavy metals into the marine environment. The present state of knowledge with respect to mining activities indicates that there are problem areas (see Attachment).

In most cases the heavy metal problems associated with mining are either operational or related to the abandonment and restoration of the property.

- i) **Operational Problems:** These can include effluent quality discharge problems, acid mine generation, hazardous waste discharges, poor handling practices and geo-technical problems. .
- ii) **Abandonment and Restoration Problems:** Until recently, when countries have been developing and enforcing proper A&R of mines, abandonment was generally the case where operators simply removed valuable assets and left the properties. This resulted in both short- and long- term discharges of contaminants into the aquatic environment. Typical problems include acid rock drainage, untreated and uncontrolled discharges from tailings areas, waste rock piles, ore storage areas and mine/mill sites.

The environmental problems associated with these mines are especially of concern because of their effects on the sensitive northern ecosystem, the long retention times due to the climate and other factors.

While it is an easy assumption to lay the problem at the operation or closure stage it is more prudent to look at the project planning and development stage. By the time the project has been constructed, commissioned or abandoned, in many cases, it will be realized that problems are the result of poor decisions made at the planning stage. Examples include acid rock generation due to poor management, failures due to inadequate geo-technical evaluation, drainage

problems, permafrost damage, water balance problems, etc.

Much experience has been gained in Arctic mining practices. Some work well while others do not. A compilation of the best of these practices would be a valuable tool both for Arctic regulators and operators. The proposed work is intended to be technical, as opposed to policy, in nature and will not produce standards but rather guidelines much like the recent EPPR guidelines on oil spill response. The aim is to support the AC/PAME objective of information exchange on matters of common concern. As such, approval of the output can be done by PAME as opposed to submitting it to an Arctic Council Ministerial Meeting. Should a future need for Arctic standards be identified, then the best practices guidelines would be a good starting point. The report could be widely distributed through a clearing house, the Arctic Council web site and national governments.

Type of Action:

1. Conduct a literature review on the current industry and government practices in the Arctic region.
2. Form a Working Group of Arctic country representatives to serve as points of contact and to guide the development of a best practices document.
3. Draft the document.
4. Finalize the document through the Working Group.
5. Put forward for approval by PAME.

Lead: Canada plus one other country and possibly an NGO.

Collaboration: CAFF, AMAP, Industry Associations, NGOs and Indigenous People.

Considerations for PAME: Should document cover full extent of objective, i.e. opening, operating and closing or should they focus on only one or two elements?

Should it cover air emissions?

Time Frame: Initiate project - Winter 2000
Draft document to PAME - Fall 2000
Final document for PAME - Spring 2001

Resources: Estimated \$75k for contracted activities (literature search, correspondence, drafting, translation and publication) provided by lead countries and possibly an NGO. Should PAME approve the proposal, Canada is prepared to seek internal approval for up to one half of the total cost. The remainder could come from a partner country.

ATTACHMENT

1. Significant anthropogenic inputs of metals are detectable against the highly variable natural background on local scales, commonly in the order of tens of kilometers or less.
2. The most important metals in the Arctic biosphere are Cd and Hg because they occur in some biota at concentrations that may have health implications for individual animals or may have implications for human consumers.
3. Near point sources such as mine sites and some Russian estuaries, heavy metals exceed background levels up to 30 kilometers from the source.
4. Riverine transport of heavy metals toward the Arctic Basin is approximately half the atmospheric contribution for metals like Cd and Pb, while for others such as Zn the rivers are more important, carrying five times the atmospheric load.
5. Cd levels in marine organisms from large parts of the Arctic exceed global background and the limits proposed by the Nordic Council of Ministers for concentrations in kidney, liver and muscle tissue. In almost all cases, Pb levels in marine organisms are well below food standard limits except for hot spot areas such as mining areas and some Russian estuaries.
6. An overview table can be found on page 442 of the 1998 AMAP Assessment Report.

(Source: AMAP Assessment Report: Arctic Pollution Issues 1998)

APPENDIX IX

Report on Arctic Marine Pollution - Proposals for Nordic Initiatives

Danish Environmental Protection Agency

April 1999

Contents

Preface

Executive summary

1 Background

2 Mandate, including delimitation

3 Brief overview of the state of the Arctic environment

4 Overview and description of existing international agreements and conventions

Please note this chapter has not been included

5 List of keywords for the proposed future Nordic initiatives

- 5.1 International marine pollution conventions
 - 5.1.1 The MARPOL Convention
 - 5.1.2 The London Convention

- 5.2 Regional marine environment conventions
 - 5.2.1 The Helsinki Convention
 - 5.2.2 The OSPAR Convention
 - 5.2.3 The Working Group on Sea and Air under the Nordic Council of Ministers
 - 5.2.4 The North Sea Conference
 - 5.2.5 The PAME RPA (Regional Programme of Action on Marine Pollution from Land-based Activities)

- 5.3 Conventions, agreements, etc. of importance to the protection of the marine environment
 - 5.3.1 The Geneva Convention (LRTAP) with Protocols
 - 5.3.2 The POP Convention (International Convention on Phasing Out and Regulation of Persistent Organic Pollutants)
 - 5.3.3 AMAP - Arctic Monitoring and Assessment Programme
 - 5.3.4 Baltic Agenda 21
 - 5.3.5 The Barents Euro-Arctic Council
 - 5.3.6 The EEA Convention (ESPOO)

Preface

At the Nordic Council's session in November 1998 the Prime Ministers of the Nordic countries and the leaders of the three autonomous areas agreed to request the Ministers for the Environment to increase their focus on the marine environment problems. The Danish Prime Minister offered to hold the first meeting on this issue. It was scheduled for May 12, 1999 in connection with the meeting of the Working Group on Sea and Air.

The Danish Environmental Protection Agency has prepared this report for the deliberations of the meeting of the Working Group on Sea and Air. The report is intended as background material for the group's discussions concerning the initiative of the Nordic Prime Ministers and the leaders of the three autonomous areas.

Furthermore, according to the programme of the Icelandic Presidency of the Nordic Council of Ministers in 1999, the Icelandic Presidency intends to focus on strengthening the Nordic pillar of environmental cooperation in the northern and western regions of the Nordic countries. Under the Nordic pillar the sea is a current topic. This marine focus clearly appears from the Nordic Council of Ministers' 1999 cross-disciplinary programme. All aspects of the relationship between Man and ocean and the exploitation of marine resources should be reviewed, especially **pollution**, protection of ecosystems, sustainable fisheries, etc.

It is proposed that the conclusions of the meeting, together with the report, be submitted via EK-M (the Committee of Senior Officials on Environmental Affairs) to the Icelandic Presidency, to be incorporated in the Presidency's considerations of the **aspect of marine pollution**.

This report contains a number of ideas for possible Nordic initiatives. In this connection it should be mentioned that the proposal or implementation of these ideas do not necessarily reflect Danish views. The report should be viewed as a catalogue of ideas as an attempt to identify gaps in the protection of the Arctic marine environment.

Executive summary

This report comprises five chapters.

The first is a brief description of the background to the report and to the meeting scheduled for May 12, 1999 in connection with the meeting of the Working Group on Sea and Air. It appears that the Nordic Prime Ministers and the leaders of the three autonomous areas took the initiative to hold this meeting during the session of the Nordic Council in Oslo on November 9, 1998.

Chapter 2 outlines the mandate as interpreted by the Danish Environmental Protection Agency. The mandate is limited to marine pollution only and excludes financial and resource-specific considerations, as well as biodiversity and fisheries concerns.

Chapter 3 describes the state of the Arctic environment based on AMAP' s evaluations and groups of pollutants: POPs, heavy metals and radioactive material, as well as oil and PAHs.

Chapter 4 describes the existing conventions, agreements, etc. related to marine pollution. **Please be advised that this chapter exists only in a Danish version.**

Chapter 5 summarizes the ideas, which might be promoted by the Nordic countries within the framework of the various conventions and agreements.

The report should be viewed as a catalogue of ideas, which does not necessarily reflect Danish views. The Environmental Protection Agency suggests that supplementary proposals for future Nordic initiatives be submitted at the meeting.

The focus of the report is on a description of various global and regional conventions and agreements, and possible Nordic initiatives in these environmental fora.

The proposals are primarily political, based on well-known principles such as the Precautionary Principle, the Polluter Pays Principle, BAT/BEP, sustainable development, etc.

Implementation of most of the proposed Nordic initiatives outlined in Chapter 5 will require substantial resources and a policy stance. If endorsed, a number of these proposals will require amendment of existing international conventions and agreements or preparation of new international instruments. However, the Danish Environmental Protection Agency has found that any implementation and prioritisation or rejection of the proposals should be undertaken by EK-M.

Against this background it is proposed that the Working Group on Sea and Air review the report and suggest any supplementary future Nordic initiatives. The report should then be submitted to EK-M for resolution.

1 Background

In connection with the Danish Prime Minister's visit to the Faroe Islands in mid-September 1998 the leader of the Faroese Home Rule (Løgmaður) informed the Danish Prime Minister that a report had shown that Faroese pilot whales had a high content of mercury and particularly PCB. The report showed that the level of heavy metals measured in Faroese children was above average, which was attributed to the relatively high proportion of whale meat in the diet of the Faroese people. In this connection the increasing marine pollution, documented by e.g. AMAP in its State of the Arctic Environment Report (SOAER), was also mentioned.

During the session of the Nordic Council in Oslo on November 9, 1998 of the five Prime Ministers and the leaders of the three autonomous areas, the Faroese Løgmaður followed up on the concerns regarding increasing marine pollution. It was widely agreed to recommend the Nordic Ministers of the Environment to review in detail the international regulation of chemical substances in the sea. The Danish Prime Minister offered to take the initiative for a first meeting on this issue, which was welcomed by the Nordic leaders.

Against this background the Danish Ministry of the Environment and Energy was commissioned to take the initiative to ensure that the issue of marine pollution was raised in the Nordic forum. At a meeting of the Working Group of EK-M (the Committee of Senior Officials on Environmental Affairs) under the Nordic Council of Ministers on January 11, 1999 it was agreed to hold a meeting in connection with the meeting of the Nordic Working Group on Sea and Air on May 10-11, 1999 in Denmark in order to discuss the concerns of increasing marine pollution.

The Icelandic Presidency of the Working Group on Sea and Air endorses the proposal to extend the meeting of the group by one day, i.e. May 12, 1999. The conclusions from the meeting are to be submitted to EK-M with a proposition to submit the working paper to the Presidency of the Nordic Council of Ministers (Iceland) for further action after discussion and adoption in EK-M.

2 The mandate, including delimitation

On the basis of an overview and a short description of the state of the Arctic environment the Danish Environmental Protection Agency has evaluated existing conventions, agreements, etc. concerning marine pollution. In the light of this evaluation, the Environmental Protection Agency has identified gaps and submitted proposals to the Nordic Working Group on Sea and Air concerning the implementation of Nordic measures to improve the state of the Arctic marine environment.

In this report the Arctic region is as defined by AMAP, cf. Annex A.

This report does not take into account financial or resource-specific considerations.

This report excludes protection and preservation of species and habitats (biodiversity), fisheries concerns and agreements concerning efforts to combat oil and chemical pollution of the sea.

Scientific surveys, the documentation of the various proposals or implementation of national measures to contain local pollution, are not included in the report.

The report furthermore excludes matters relating to reporting and implementation, nor does it include an evaluation of any overlapping in the work concerning the various conventions and agreements.

3 Brief overview of the state of the Arctic environment

There is general agreement that the Arctic marine area and its flora and fauna are relatively unpolluted compared to other marine areas. Most of the biological production takes place in the upper 200 metres. This layer is dominated by inflowing water from the Atlantic Ocean. This inflow and the inflow from the Pacific Ocean together constitute 98% of the input, while rivers account for the rest.

There are two important exceptions to the statement that the Arctic marine area is relatively unpolluted. The first is substances, which in seawater may accumulate from low concentrations to raised concentrations in plants and particularly in animals due to special pathways and subsequent bioaccumulation. These substances are primarily POPs and mercury, which are often transported at long range from the northern hemisphere.

The other exception is local sources or sources with emissions to the Arctic environment, particularly in the Russian part of the Arctic region. In many cases identification of sources is a prerequisite for combating such contamination.

The following groups of pollutants have been found in the Arctic marine environment in concentrations requiring action: POPs, heavy metals, radioactive material, oil and PAHs.

These substance types or groups require action because in certain cases they threaten the Arctic flora and fauna, and because of their adverse impact on the health of groups of people with a large proportion of marine foods in their diet. However, scientists agree that any negative effects of the traditional Arctic diet are offset by the positive elements of the diet.

POPs: present and historical use of POPs (persistent organic pollutants) in the northern hemisphere is the main source of these substances in the Arctic marine environment. Raised POP levels have been found at several locations north of Canada, at Svalbard, Eastern Greenland and in the Barents Sea. However, the POP levels in Arctic marine animals are generally lower than in comparable animal species from temperate regions. Nevertheless, the content of PCB and dioxins/furans in a number of Arctic marine mammals and birds is at or above known impact levels. The distribution of pollution in the

Arctic environment clearly illustrates the importance of components transported at long range. A general effort to combat long-range transmission of POPs, and a more targeted effort against local sources, are thus required.

Metals: heavy metals are a natural element of the marine ecosystem, but they are also added from human activities. The primary causes of concern in the Arctic environment are mercury (Hg), as well as cadmium (Cd) and lead (Pb). Mercury is carried in the air or in sea currents from the industrialized areas in temperate regions. In general the metal levels in Arctic marine areas are at the background level, except near local sources. However, in many parts of the Arctic region the cadmium levels in marine organisms exceed the global level, while the mercury levels are high, but not above the global level. This is a problem for the groups of people with a high intake of marine foods. In the Russian area in particular raised levels of heavy metals have been found locally.

Radioactive material: radioactive contamination of the Arctic area is low, but present and historical activities entail a risk of large-scale future contamination. The primary sources of the present pollution are fallout from past nuclear weapons tests and European reprocessing plants. The latter's emissions have decreased, although new releases of Technetium-99 from Sellafield in the UK are a cause of concern. Two potential future sources are nuclear reactor accidents - in connection with daily operation or handling of waste - or leakage from waste stored on dry land or from dumped reactors or waste. The latter applies particularly to the Kara Sea.

Oil and PAHs: with the exception of areas with local permanent impacts or areas affected by oil spills the input of oil in the Arctic marine environment is low, and no ecological damage has been established. The highest levels are found at estuaries. Furthermore, a certain amount of oil is transported at long range, particularly in the atmosphere. Raised PAH levels have been found at several locations in the Arctic marine environment.

Although the Arctic marine areas are generally less polluted than other marine areas the discoveries of raised concentrations of POPs as well as cadmium and mercury threaten the peoples with a large proportion of marine foods in their diet.

5 List of keywords for the proposed future Nordic initiatives

5.1 International marine pollution conventions

5.1.1 The MARPOL Convention

- Ratification of annex VI on air pollution from ships
- Designation of the Arctic as a special area under MARPOL in relation to annex I, annex II and annex V
- Preparation of a new annex on replacement of ballast water
- To move forward the deadline for phasing out of stanniferous antifouling paints
- Ratification of annex IV on sewage

5.1.2 The London Convention

- Ratification of the 1996 protocol to revise the London Convention
- Reduction of the categories of waste to be dumped
- Amendment of the Convention to include inland waters
- Global convention or agreement on emissions and other environmental impacts from offshore installations
- Global ban on dumping of oil rigs

5.2 Regional marine environment conventions

5.2.1 The Helsinki Convention

- HELCOM as a spearhead in other fora
- The Baltic region as a benchmark region in the protection of the marine environment

5.2.2 The OSPAR Convention

- Quick implementation of the resolutions of the Conference of Ministers in 1998
- Phasing out of emissions of environmentally hazardous substances and radioactive material
- Reduction of emissions of nutrient salts
- Intensified effort against emissions from offshore activities
- Expansion of the geographical area of the Convention to include the USA, Canada and Russia

5.2.3 The Working Group on Sea and Air under the Nordic Council of Ministers

- To expand the group' s role as an international coordinator

5.2.4 The North Sea Conference

- Follow-up on and implementation of the resolutions of the Fourth North Sea Conference
- A coordinated and targeted Nordic effort to promote priority areas at the Fifth North Sea Conference

5.2.5 The PAME RPA (Regional Programme of Action on Marine Pollution from Land-based Activities)

- Preparation of an Arctic marine environment convention
- Ban on emission of hazardous substances, including radionuclides, to the marine environment in the span of one generation (25 years)

- Designation of the Arctic marine environment area as a special area
- Ban on dumping, with the exception of dumping of dredged material, in the Arctic region
- Presentation of joint Nordic initiatives in international environmental fora to draw attention to the importance of protecting the vulnerable Arctic marine environment

5.3 Conventions, agreements, etc. of importance to the protection of the marine environment

5.3.1 The Geneva Convention (LRTAP) with Protocols

- Ratification of the protocols
- Implementation of the protocol provisions, even though the protocols have not entered into force
- Preparation of new protocols

5.3.2 The POP Convention (International Convention on Phasing Out and Regulation of Persistent Organic Pollutants)

- Active participation in the preparation of the convention
- Implementation of the provisions of the convention, even though the convention has not been completed or entered into force
- Proposal to include other POPs in the provisions of the convention

5.3.3 AMAP - Arctic Monitoring and Assessment Programme

- Preparation of the framework for an overall AMAP strategy
- Identification of specific pollution containment projects, particularly as regards Arctic Russia

5.3.4 Baltic Agenda 21

- Preparation of an Arctic Agenda 21 on the basis of Baltic Agenda 21

5.3.5 The Barents Euro-Arctic Council

- To promote environmental projects in Northwest Russia

5.3.6 The EEA Convention (ESPOO)

- Ratification of the ESPOO Convention

APPENDIX X

OVERVIEW OF PAME WORKPLANS

1999

Clearing House Development/User Needs(all)
Establish Correspondence Group on Shipping.....(Norway)
Finalize Russian NPA Arctic.....(Russia)
Support for Russian NPA-Arctic and
Partnership Conference(all)
Co-sponsor IUCN Marine Workshop in December.....(PAME/CAFF/IUCN)
RPA Implementation(all)

2000

Define Coastal Area
Respond to Marine Workshop Recommendations
Respond to ACAP Proposal
Support the RPA, Russian NPA-Arctic and Partnership Conference
Factual updates for Analysis of International Agreements and Arrangements
Advance Shipping Analysis
Consider Indicators for Oil and Gas Guideline Effectiveness
Develop Proposals for Clearing House
Communication Brochure
Consider improved reporting to SAOs and Ministers
Progress Reports to Ministers on:

- RPA, Russian NPA-Arctic, Partnership Conference
- Shipping Analysis
- Meeting goals and objectives of offshore guidelines
- Status of agreements and additional instruments

2001

Hold Partnership Conference
Collate Shipping Proposals
Collate proposed amendments to PAME Offshore Guidelines
Respond to additional RPA Proposals
Complete update on marine pollution sources

2002

Complete Analysis of International Agreements and Arrangements
Provide recommendations on:

- Adequacy of international agreements and arrangements
- Possible new shipping measures
- Possible amendments to offshore oil and gas guidelines
- Possible new measures for land-based activities

PAME

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