



**PROGRAM FOR THE
PROTECTION OF THE ARCTIC MARINE ENVIRONMENT**

PAME

**Working Group Meeting Report
No: I-2006**

**MARCH 1-3, 2006
Oslo, Norway**

TABLE OF CONTENT

WELCOME, INTRODUCTION AND ADOPTION OF AGENDA.....	1
SESSION I: ARCTIC MARINE SHIPPING ASSESSMENT (AMSA)	1
SESSION I (1): TIMELINE AND STAKEHOLDER ENGAGEMENT	1
SESSION I (2): AMSA ROUNDTABLE	2
SESSION I (3): AMSA WORK PLAN	4
SESSION I (4): AMSA SURVEY INSTRUMENT/QUESTIONNAIRE.....	6
SESSION I (5): TOUR DE TABLE AND NEXT STEPS	7
SESSION II: ECOSYSTEM APPROACH	10
SESSION II (1): INTRODUCTION BY THE LEAD COUNTRY (USA)	10
SESSION II (2): SUMMARY OF STATUS AND ADOPTION ON THE FINAL REVISED LME MAP	12
SESSION II (3): TERMS OF REFERENCE AND TIMETABLE FOR THE LME STEERING GROUP	12
SESSION II (4): UPDATES ON IMPACT ASSESSMENTS AND LINKAGES WITH LMES	12
SESSION II (5): COOPERATION WITH OTHER WORKING GROUPS	13
SESSION II (5): AGREEMENT ON NEXT STEPS	13
SESSION III: PORT RECEPTION FACILITIES	14
SESSION IV: UPDATES FROM LEADS ON PAME-RELATED ACTIVITIES.....	15
SESSION IV (1): PROGRESS AND STATUS OF THE RPA PROJECT	15
SESSION IV (2): UPDATE STATUS OF THE GEF/RUSSIAN NPA-ARCTIC	16
SESSION IV (3): AMSP COMMUNICATION PLAN	18
SESSION V: OTHER PAME RELATED ACTIVITIES	18
SESSION V (1): ACIA FOLLOW-UP AND FOCAL POINT MEETINGS	18
SESSION V (3): GENERAL COOPERATION WITH ARCTIC COUNCIL WGS AND ACTIVITIES	18
SESSION V (4) UPDATE/STATUS ON THE AMAP OIL AND GAS ASSESSMENT	18
SESSION V (5): UPDATE/STATUS ON ARCTIC PORTAL FEASIBILITY STUDY	19
SESSION V (6): INTRODUCTION OF AMAP/EPPR GIS PROJECT	19
SESSION V (7): REPORT FROM THE PAME SECRETARIAT	20
SESSION V (8): THE NEXT PAME WORKING GROUP MEETING	20
SESSION V (9): REPORTING TO THE NEXT SAO MEETING	20
SESSION V1 (2): FIRST STEPS IN DEVELOPING THE 2006-2008 PAME WORK PLAN	20

LIST OF APPENDICIES

APPENDIX I

List of Participants

APPENDIX II

List of Documents

APPENDIX III

Agenda

APPENDIX IV

PAME Finance Report

APPENDIX V

AMSA Work Packages covering Russian and Norwegian Arctic

APPENDIX VI

AMSA Roundtable Members

APPENDIX VII

AMSA Designated Points of Contact for Survey Questionnaire

APPENDIX VIII

Update on ACOPS' involvement in the GEF/Russian NPA-Arctic

APPENDIX IX

Assessment of Oil and Gas Activities in the Arctic - Process and Outline Content

Welcome, Introduction and Adoption of Agenda

The Protection of the Arctic Marine Environment (PAME) Working Group met 1-3 March 2006 in Oslo, Norway. The list of participants attending the Meeting is in Appendix I.

The meeting was opened by Mrs. Marit Kjeldby, Director for the Department of Control and Internatioanl Affairs. Mr. Frank Sonne chaired the Meeting and expressed gratitude to the Norwegian Pollution Control Agency (SFT) in arranging and hosting the Meeting.

A list of documents submitted for consideration at the Meeting is in Appendix II. All power-point presentations will be sent out separately and are available within the password protected area of the PAME homepage.

The Meeting adopted the agenda as presented in Appendix III.

Session I: Arctic Marine Shipping Assessment (AMSA)

The leads for the AMSA, Canada, Finland and the United States provided updates on the AMSA process followed by the convening of the first AMSA Roundtable. The AMSA leads also briefed separately the Arctic Council working group representatives and Permanent Participants present at this Meeting. In addition an AMSA stakeholders briefing and discussion for the purpose of informing Norwegian stakeholders was convened on March 2 from 15.00-17.00.

The leads informed the Meeting of the structure of the AMSA Leadership/Management Team with Dr. Lawson Brigham/United States serving as the Chair of AMSA, Victor Santos-Pedro of Transport Canada as the Chair of the AMSA Roundtable and Kimmo Juurmaa from Finland as the AMSA Project Manager and the main point of contact between AMSA leads and the expert groups and facilitates the progress of the Work Plan. The PAME Secretariat serves as communication route of communication, organizational support, website and 'post box' for the coordination and distribution of documents, data etc.

The leads gave an update on general progress and communication efforts, proposed selection and duties of the AMSA Roundtable members, update on the draft AMSA work plan (version December 2005) and status of the survey questionnaire (sent out to Arctic Council member states and PAME country representatives on February 6, 2006).

Session I (1): Timeline and Stakeholder Engagement

Dr. Lawson Brigham/United States provided an overview of the progress and status up to date of the assessment (presentation as a separate file and on the PAME homepage). He reiterated that AMSA was a natural follow-on to the Arctic Marine Strategic Plan (AMSP) and the Arctic climate Impact Assessment (ACIA) and noted that the assessment is circumpolar, yet Regional (LME) with a host of stakeholders, both local and outside the Arctic Council, and that the leads would ensure a transparent and inclusive process.

AMSA will be undertaken during 2005-2008 and a final report will be presented to the Arctic Council in 2008. Dr. Brigham emphasized the importance of Member State commitment and

timely support with the data collection effort to ensure sufficient time to complete the first phase of AMSA (of a survey of current shipping levels) for submission to the Arctic Council Ministers in October. He reiterated the importance of an active participation by Sweden in this assessment due to their experience and expertise in polar research and expeditions to the Arctic.

AMSA deliverables to the Arctic Council Ministerial meeting in October 2006 include a 'Historic' Report of 2004 Arctic Marine Activity and AMSA Progress Report.

AMSA activities up to and beyond the 2006 Ministerial meeting include but are not limited to the following:

- Arctic Town Hall Meetings
- AMSA Roundtable Discussions
- Expert Groups ~ AMSA Phases
- Survey Data Due: 15 June 2006
- Develop Data Report for 2004
- Progress ~ Scenarios for 2020 & 2050
- Progress ~ Impacts of 2004 Marine Activity
- Initiate Survey: Regions of Indigenous Hunting & Waterway Uses
- Venues & Stakeholder Meetings:
 - IASC - ASSW, Potsdam (Mar 06)
 - Lloyds Arctic Shipping, St. Petersburg (Apr 06)
 - ICETECH, Calgary (Jul 06)
 - Coastal Zone Canada, Tuktoyaktuk (Aug 06)
 - Arctic Shipping Workshop, Iceland (Sept/Oct 06)

Session I (2): AMSA Roundtable

Mr. Victor Santos-Pedro/Canada provided an overview of selection and duties of the AMSA Roundtable members. He emphasised that the purpose of AMSA is to better understand how the marine activities will develop in future and assess the impact of increased activity in the circumpolar Arctic. AMSA will develop recommendations for in support of sustainable development of the marine activities. This assessment does not include the impact of the industrial activities like mining or fishing as such, only the impacts of the increased shipping.

He informed the Meeting that the purpose of the Roundtable is to provide strategic direction, advise and input to lead countries on all matters related to the design, development and implementation of the shipping assessment. The proposed composition and role of the AMSA Roundtable is as follows:

- The Roundtable is composed of 12-15 persons nominated by the AMSA leads as experts rather than representatives from different countries and organizations.
- The AMSA Roundtable should have experts covering relevant subject areas/disciplines but not a mirror image the PAME Working Group or the Arctic Council.
- Participants are to make significant contribution to the assessment.
- AMSA Roundtable to provide expertise to conduct the project, author and review reports, comments on workplans, schedules, events calendar and to identify opportunities and resources.
- The composition of the AMSA Roundtable may change as the assessment progresses and the needs for expertise changes.

Proposed meetings of the Roundtable are as follows:

- The chair input from lead countries responsible for the approval of the agenda
- Agenda items submitted 30 days working before the date of the meeting.
- Meetings will be coordinated with the assistance of the PAME Secretariat
- The Roundtable meetings will coincide with the PAME working group meetings (biannually)
- The length of the meetings not to exceed two- full days unless special work sessions required.
- Teleconferencing may be substituted for a face-to face meeting.

It was emphasized that the AMSA administrative procedures where such that the PAME Working Group is responsible for the assessment as organized under a 'Lead County' system. Other countries may take on a supportive role. Canada, Finland and the United States are joint-lead countries for the AMSA project.

The PAME Working Group does normally not raise funding for the conduct of the actual assessment work, however, it may raise funds for core activities associated with the assessment process such as participation of indigenous peoples' representatives, report production

The PAME Working Group is responsible for communicating progress and final results of the assessment back to the SAOs and Ministers

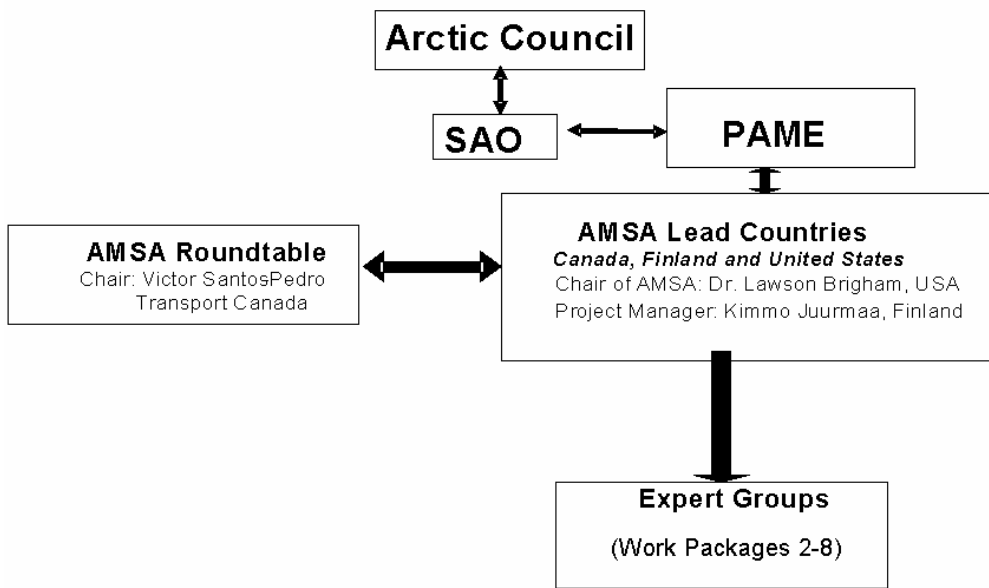
All Arctic Countries have the responsibility for organization and implementation of activities to deliver the data, input and information required for the production of the assessment lies with the Arctic circumpolar countries.

All Arctic countries are also responsible for ensuring (and funding) the participation of their nationally nominated key contact person-(s) in the assessment work. Like the lead country experts, the key national person(s) are responsible for ensuring that relevant data and information from their country is incorporated into the assessments, and often share the responsibility for the main drafting activity.

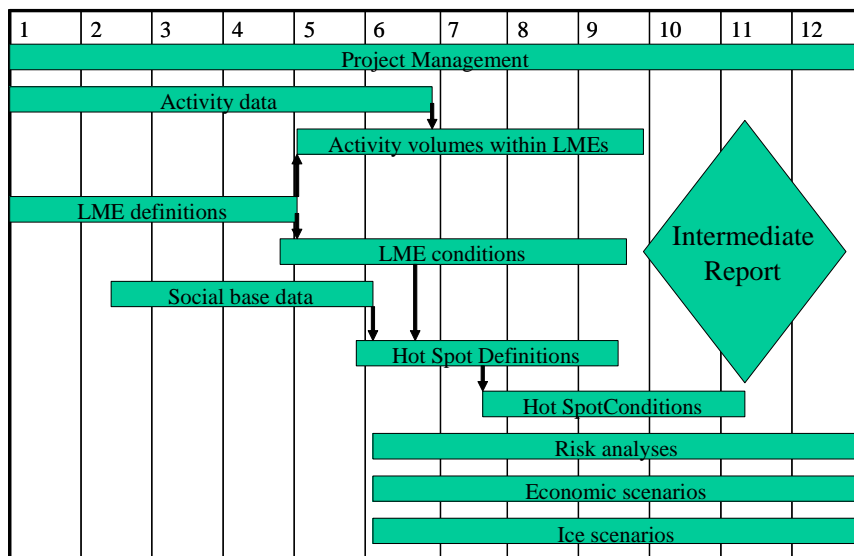
Session I (3): AMSA Work Plan

Mr. Kimmo Juurmaa/Finland gave an update on the AMSA Work Plan, management structure and the current proposed timeline as follows (presentation as a separate file and on the PAME homepage):

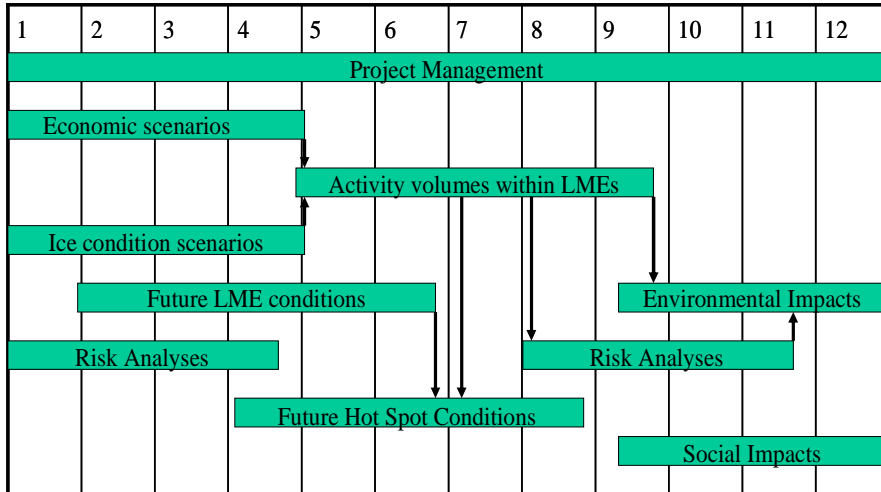
AMSA Management Structure



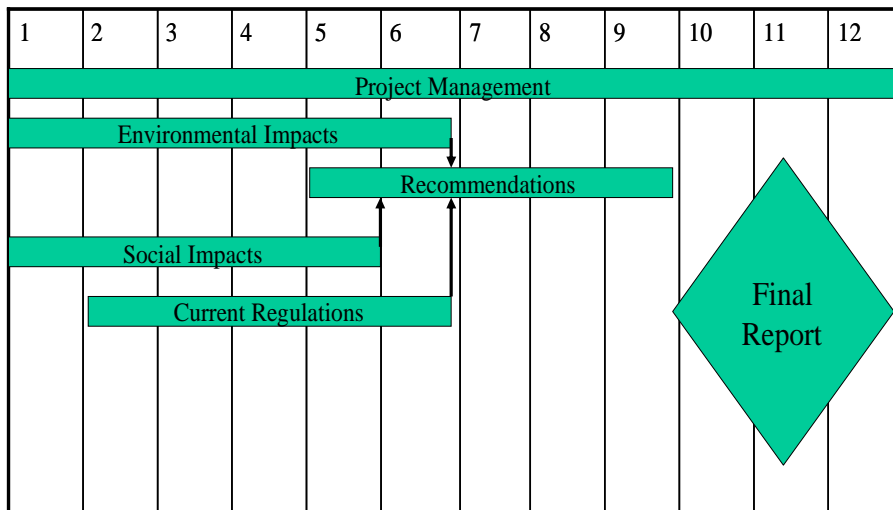
2006



2007



2008



The AMSA project is divided into 8 work packages (WPs) with each of these work packages requiring specific types of expertise. He noted synergies with the AMAP Oil and Gas Assessment on a number of AMSA tasks such as experts and available LME information. He informed the Meeting that some progress on regional scale had been made within WPs 2, 3, 4, 5 and 6 covering Russian and Norwegian Arctic. Ice scenarios will be developed using the ACIA ice scenarios adjusted to local level conditions. Decision on the use of one or more scenarios needs to be made. Participants were urged to provide any suggestions or comments on the Work Plan, experts to cover all the geographic areas and sources of funding from the different countries.

The proposed next steps on the Work Plan are as follow:

- Arrange first meetings of the expert groups
- Agree upon methodology to get circumpolar approach
- Finalize the detailed workplans:
 - Different disciplines
 - Circumpolar
 - Regional

AMAP noted that it appeared that some of the AMSA Work Plan WPs overlapped with the AMAP Oil and Gas Assessment (OGA) and urged the AMSA leads to avoid overlap with the Oil and Gas Assessment recommendations. He noted the importance of sharing data and experts between these two assessments and will take this up at the next AMAP Head of Delegation meeting in April 2006.

The United States noted the importance of the socio-economic impacts as a part of the environmental impact assessment. Also, they do not see the need to identify sensitive areas as included in WPs 4 and 5 and that synergies be ensured through cooperation with the LME activities and progress.

Norway expressed surprise to the Norwegian institutions already selected in the AMSA Work Plan WPs 2, 3, 4, 5 and 6 covering Russian and Norwegian Arctic and asked that the Norwegian Polar Institute and the Norwegian Directorate for Nature Management be added to this list. Norway will forward additional contacts as other institutions have indicated interest in participating in the assessment.

Canada noted the importance that the assessment be circumpolar and that the AMSA project team have in mind the nature of the final AMSA product.

ICC Canada noted the importance of information sharing and transparency in the assessment process.

Session I (4): AMSA Survey Instrument/Questionnaire

Mr. Ross McDonald/Canada summarized the Marine Activity Database questionnaire and the data management framework (presentation as a separate file and on the PAME homepage) which was developed by a marine contractor funded by Canada. The questionnaire was sent out to all Arctic Council member states on February 6, 2006 with the request to respond by June 15 at the latest which will allow a short period of time to conduct preliminary analyses of the shipping data prior to the October 2006 Ministerial meeting.

He reiterated the importance that the AMSA be based on data that is consistent, accurate, and sufficiently comprehensive in order to address the environmental, social, and economic issues that are of current and potential future significance. The AMSA Data collection will provide the basis for defining baseline activity (extrapolations to 2020 and 2050); risk assessments (pollution and safety); environmental impact assessments such as waste streams (air

emissions, liquids, solids), broken ice tracks (indigenous people impacts) and other (underwater noise, etc.); and social and economic impact assessments such as .infrastructure requirements, trade patterns and icebreaker activity.

The AMSA dataset will include 4 distinct databases

➤ Marine Activity Database

- The types and particulars of ships operating in the Arctic
- The dates and routes taken through or in the Arctic
- The volume and type of cargo carried by ships in the Arctic

➤ Traditional (indigenous) Marine / Ice Activity Database

- Location, dates, type of activity

➤ Accident Database

- Type (fire, grounding, collision, mech. failure)
- Location
- Severity

➤ Ice Conditions Database

- A consolidated Arctic Ice Severity Index for the assessment year, for voyage risk evaluation

The Marine Activity Database is the main component of the AMSA Dataset. A dedicated team will administer the database and provide Quality Control. The central location for the database and main point of contact is: mthomas@fleetch.com

The Accident Data will need to be collected for a 5-10 year period as infrequency of accidents in Arctic requires a longer period of time to provide a sufficient level of information. One of the years should include the year of the Marine Activity Database. The Ice and Accident Database will be integrated with (or at least kept in the same location as) the Marine Activity Database

The Meeting discussed the ways in which to define the Arctic waters for the purpose of this assessment and agreed that countries use the definitions as provided in the PAME Offshore Oil and Gas Guidelines. But it was stressed that maps developed for this assessment be compatible with other similar work within the Arctic Council working groups such as the AMAP Oil and Gas Assessment maps and the ongoing LME work within PAME.

Session I (5): Tour De Table and Next Steps

The PAME Secretariat provided an update on the AMSA communication efforts. AMSA brochure is now available in English, Russian, French and Inuktitut. The AMSA brochures and two types of AMSA posters can be downloaded from the PAME homepage which currently serves as the outreach and communication tool with background information and resources related to AMSA.

The leads noted that of key importance to the outcome of this assessment is the involvement and participation of all stakeholders - including Member States, Permanent Participants, the scientific community, the maritime community, and the Arctic Council's working groups. The comments below represent a range of comments by different participants at the meeting.

- Canada emphasized the need to clarify the expected deliverables early on in the assessment process.
- USA noted that the assessment would be peer reviewed and the final documentation would among others identify gaps and hence teases out possible research agenda for the future.
- Denmark/Faroe Island/Greenland stressed that this assessment represents a great challenge as the timeline is rather tight for such a huge amount of work required to finish this in time.
- Finland noted that this work will produce a number of data which may be used for various purposes and emphasized that one of the outcomes of this assessment should be in the form of recommendations. The timeframe needs to be further refined to allow for the possibility of developing recommendations following the 2008 Ministerial meeting.
- ICC asked for further guidance in gathering Indigenous Peoples traditional usage data.
- ACOPS noted that risk assessments depend on the technology available and informed the Meeting of their project on Marine Electronic Highway (MEH) which has a relevance to this assessment.
- OGP is keen to follow this assessment and WWF expressed interest in the recommendations and scenario work.
- SDWG noted the need to focus on shipping aspects of sustainable development. EPPR has data on risk and response areas in the Arctic and pointed out that their Circumpolar Map of Resources at Risk be brought into this work. AMAP stressed that this assessment avoid overlap with the Oil and Gas Assessment.
- IPS has been involved in NSR assessments and offered to assist Permanent Participants in the AMSA activities.
- RAIPON reiterated the need for information sharing between ongoing assessments within the Arctic Council family and noted the importance of inclusion of cultural and economic impacts.
- Norway informed the Meeting of a paper [NORWAY NEED NAME] to be submitted to the parliament in March/April 2006 which has background information and willing to share these data for the purpose of AMSA.
- Iceland has already submitted their Marine Activity data on fishing vessels and informed the Meeting of a proposed international conference (Fall 2006) as it relates to the

Icelandic study on opportunities connected to trans-shipment. Contact will be made with the AMSA leads and details will be forwarded in due time.

Several countries emphasized that the approval process prior to the 2006 Ministerial meeting was first to go through PAME approval which leaves the leads with a very tight schedule. Questions were raised as to the final documentation of the assessment (i.e. general vs. specific recommendations and/or options Recommendations for the Member States and the International Maritime Community) and stressed that endorsement of the PAME working group was required prior to submissions to SAO and Ministerial meetings.

The need to carry out the study using the Large Marine Ecosystem (LME) framework was stressed.

The leads emphasized that the Arctic Council working groups would not be tasked with WP's of the AMSA Work Plan but rather by nominating experts to specific activities. The outreach capabilities within the IPS structure will be used for the purpose of involving the Permanent Participants in the assessment.

The Meeting welcomed the progress of the shipping assessment and the constructive dialogue between the AMSA leads and the representatives present from Arctic Councils Permanent Participants and working groups and the stakeholder meeting with participants from Norwegian institutions.

The Meeting took a note of the structure of the AMSA Leadership/Management Team: Dr. Lawson Brigham/United States serves as the Chair of AMSA, Victor Santos-Pedro of Transport Canada is the Chair of the AMSA Roundtable and Kimmo Juurmaa from Finland as the AMSA Project Manager facilitating the progress of the work plan. The PAME Secretariat serves as communication route of communication, organizational support, website and 'post box' for the coordination and distribution of documents, data etc.

The Meeting took a note of the AMSA progress as follows:

- *The leads have started the process of establishing expert groups for the various work packages of the AMSA Work Plan and some work has been initiated on a regional scale within WPs 2, 3, 4, 5 and 6 covering Russian and Norwegian Arctic (refer to Appendix V).*
- *An AMSA Roundtable (advisory group) has been established and the leads have nominated experts as provided in Appendix VI.*
- *An electronic Survey Questionnaire designed to capture all Arctic shipping data for the calendar year 2004 has been developed by a marine contractor funded by Canada. The questionnaire was sent out to all Arctic Council member states on February 6, 2006 with the request to respond by June 15 at the latest. The Meeting agreed to the set deadline and agreed to provide the names of their respective designated point of contact to work with the AMSA lead country representatives and the data collection contractor from Canada. The list of designated points of contact per country is provided in Appendix VII.*

- *PAME country representatives and other participants are urged to forward any comments, proposed amendments and/or adjustments to the current AMSA work plan and to forward possible candidates to serve as experts as identified within the work packages of the AMSA work plan to the project manager or the PAME Secretariat as soon as possible.*

The Meeting requested the AMSA leads to:

- *Forward the Terms of Reference (ToR) for the selection process and duties of the AMSA Roundtables and the names selected experts by 24th of March.*
- *Update the AMSA Work Plan, timeline and major milestones. Major milestones will identify where consultations, endorsement and deliverables to PAME Working Group are planned and will be forwarded to the participants via the PAME Secretariat by April 5th with the aim of having it formally endorsed/accepted by PAME before the next SAO meeting on April 26-27. The AMSA Work Plan is however expected to undergo significant revisions and as such is considered a “living” document.*
- *Develop a concept paper/ToR for the assessment to clarify and expand on the aim of the assessment and nature of the work plan and envisaged actions, including the expert requirements and resource needs. The purpose is to establish an “institutional” memory for the assessment. The 1st draft will be forwarded to the PAME Secretariat by April 5th for inclusion in to the report to the SAO meeting.*
- *Report separately on progress on AMSA.*

Session II: Ecosystem Approach

Session II (1): Introduction by the lead country (USA)

Dr. Kenneth Sherman of the National Oceanic and Atmospheric Administration (NOAA) gave a general overview and update of the Large Marine Ecosystem Approach (LME) since last PAME meeting (September 2005) on behalf of the lead country (presentation as a separate file and on the PAME homepage). He referred to a one-pager on proposed LME consideration of next steps as sent prior to this Meeting for the purpose of further developing the ecosystem approach in the Arctic:

- **Adopt the final revised map as a working map of 17 Arctic LMEs, wherein place-based assessments of the changing states of Arctic LMEs will serve as the framework for ecosystem-based management practices in the Arctic.**
- **Establish a Steering Group for promoting the further integration and harmonization of monitoring activities to meet assessment and management needs.**

He reminded the Meeting of previous commitments made by countries such as the World Summit on Sustainable Development which called for the application of the ecosystem approach by 2010. The LME approach is applied within geographical management areas which are based on distinctive ecosystems rather than political boundaries. LMEs are

relatively large regions based on four ecological criteria: (1) bathymetry, (2) hydrography, (3) productivity, and (4) trophic relationships.

A five-module indicator approach to the assessment and management of LMEs consist of 3 science-based indicators focused on: (1) productivity, (2) fish and fisheries, (3) pollution/ecosystem health. The other two are (4) socio-economic conditions, and (5) governance.

He gave a brief overview of an ecosystem-based approach to management of Arctic LMEs and noted that of the 17 Arctic LMEs 8 of them involve Russian Federation as GEF-eligible country (E/W Bering Sea LMEs (GEF-4: UNDP), Chukchi Sea, Barents Sea, Oyashio Current, Sea of Okhotsk, E. Siberian Sea, Laptev Sea, Kara Sea). This represents an opportunity for further exploring GEF-funded LME projects in the Arctic. In particular as the GEF Council has included the concept of LMEs in its GEF Operational Strategy as a vehicle for promoting ecosystem-based management of coastal and marine resources in the international waters focal area within the framework of sustainable development.

He urged PAME to move ahead with the LME work due to the hot-spot characteristic of the Arctic. It was noted that opportunity to extending the GEF-LME project network to the Arctic and the possibility of developing and implementing a GEF supported LME assessment and management projects for the West Bering Sea and the Barents Sea in addition to possible synergies that could be explored within the framework of the GEF/Russian NPA-Arctic.

He noted that the Arctic LMEs are all dynamic systems under great stress due to the melting of the sea ice and referred to recent media on the melting of the Greenland ice sheet. He informed the Meeting that LME boundaries do go through regular revisions at annual consultative meetings convened by the Intergovernmental Oceanographic Commission (IOC).

He emphasized that PAME in its LME work follow the strategic approach of applying the five-module indicator approach. In closing he summaries Arctic LMEs as follows and noted that this general LME summary could be done for each of the 17 Arctic LMEs prior to the Ministerial meeting in October:

1. Indigenous people with reduced access to traditional hunting grounds for walrus, seals, and whales
2. Polar bear feeding areas diminished by ice-melt
3. Ice loss enhances use of trans-Arctic Atlantic Ocean to Pacific Ocean shipping lanes
4. Increased shipping heightens risk of unintended environmentally harmful toxic releases
5. Zooplankton , fisheries and fish stocks expand northward

Session II (2): Summary of status and adoption on the final revised LME map

The United States referred to an updated map of LMEs (sent in hard copy to country representatives prior to the Meeting) which had been revised based on consultations following last PAME meeting. This map will be further adjusted to only show the 17 Arctic LMEs.

Dr. Hein Rune Skjoldal from the Institute of Marine Research in Norway gave an overview of the ecological conditions of each of the 17 Arctic LMEs and referred to a book on "The Norwegian Sea Ecosystem". He informed the Meeting that the AMAP Oil and Gas Assessment is using this LME map in their work for descriptive purposes to assess impacts of oil and gas activities in the Arctic (documentation (Chapter & of the Oil and Gas Assessment) is available on the AMAP homepage: www.amap.no)

Questions were raised as to possible overlap between the LME approach and the ecosystem approach promoted within the EU Marine Strategy and OSPAR context. Hein-Rune informed the Meeting that very little or no overlap was with the ecosystem approach proposed within the EU Marine Strategy and that OSPAR does correspond with the Arctic LMEs.

The importance of scaling and cross-cutting aspects within the LME context was emphasized as e.g. climate variability and change.

Iceland noted that a change had been made in the LME boundaries around Iceland and will need to have experts at home view the map prior to adopting the revised map. Iceland asked if any documentation was available that described the rationale behind the LME boundaries.

WWF uses a similar approach to the LME approach in their conservation work.

Session II (3): Terms of Reference and timetable for the LME Steering Group

The lead introduced the draft ToR for a proposed LME Steering Group as set forth in the one-pager on proposed LME consideration of next steps as sent prior to this Meeting and based on the LME decisions at PAME II-2005.

This ToR was modified as reflected in Session II (6) below.

Session II (4): Updates on impact assessments and linkages with LMEs

Professor Gennady G. Matishov, Director of the Murmansk Marine Biological Institute of the Russian Academy of Sciences (MMBI RAS) and Chairperson of the Southern Scientific Centre of the Russian Academy of Sciences (SSC RAS) gave an update on the MMBI-SSC RAS research on impact assessments and linkages with LMEs (presentation as a separate file and available on the PAME homepage).

He gave a summary of MMBI expeditions in 2000-2005 and detailed information on year-round research activities on ecosystem monitoring, and measurements of ice thickness in western Russian Arctic waters. He noted that these findings indicate that climate is the number one factor influencing the marine ecosystems. He informed the Meeting of a 10-year

work in the field of applied marine informatics as the basis for further development of integrated hydrobiological researches in the oceans and seas called: “Climate Atlas of the Arctic Seas 2004: Part 1. Database on the Barents, Kara, Laptev and White Seas – Oceanology and Marine Biology”. In closing he informed the meeting of an upcoming meeting in Russia on Environmental Impact Assessment in the Barents Sea.

Session II (5): Cooperation with other working groups

Based on the nature of the 5-module indicator approach and their cross-cutting aspects, the Meeting stressed the importance of cooperation and collaboration with other working groups of the Arctic Council, particularly AMAP and CAFF.

CAFF informed the Meeting of its interest in this work and has a direct link with their work plan and mandate.

AMAP noted that as the monitoring and assessment group the applied the ecosystem approach where feasible and that the LME approach was used in the Oil and Gas Assessment as previously noted.

The United States emphasized that the direction to move on ecosystem approach was clearly stated in the AMSP Strategic Action 7.4 “Apply an Ecosystem Approach to Management” and emphasised that such efforts would need to be progressed in cooperation and collaboration with in particular AMAP and CAFF working groups.

Session II (5): Agreement on next steps

The September meeting of PAME in Aalborg agreed to move forward in operationalizing the ecosystem approach within the Arctic for the purpose of providing a more additive and integrated approach in assessing and managing the Arctic marine environment than has been the general practice.

The Meeting decided to:

- *Adopt the final revised map (Annex X) as a working map of 17 Arctic LMEs [Iceland and Sweden took a “study reservation” and will provide an answer the soonest, acknowledging related work in other fora, in which place-based assessments of the changing states of Arctic LMEs will serve as the framework for ecosystem-based management practices in the Arctic.*
- *Establish a PAME Experts Group to consider information requirements including suites of indicators of the changing states of Arctic LMEs as measured against baselines of the five-module indicator approach (productivity/climate; fish and fisheries/marine birds and mammals; pollution and ecosystem health; socioeconomics and governance) to guide effective decision making [refer AMSP Strategic Action 7.4.2].*
- *The Expert Group shall work in close cooperation with other experts associated with the activities of AMAP, CAFF and SDWG.*

Session III: Port Reception Facilities

Norway as the lead country on the assessment of existing measures for port reception facilities for ship-generated waste and cargo residues (PRF-Norway) gave an update on this project which is developed in cooperation with the “Det Norske Veritas”.

This project is divided into the following three phases as discussed and agreed at PAME I-2005:

Phase 1 – Assess availability of and measures for port reception facilities for ship-generated and cargo residues in the PAME region and which regulations and incentives for delivery each country has implemented.

Phase 2 – Identify gaps in existing coverage and possible improvements in availability and incentives for delivery

Phase 3 – Develop recommendations for harmonized guidelines, for consideration by States, based on the gap analysis.

This project is progressing towards finalizing Phase 1. The modalities of Phase 2 will depend on the outcome of Phase 1 and Phase 3 on harmonized guidelines will be further explored within Phase 2.

To be able to proceed properly with Phase 1 of this project information is needed from the Arctic States. So far information has been received from Canada, Denmark (including Greenland and the Faroe Islands) Iceland and Norway. Information is still missing from USA and Russia and without them this project can not be finalized.

Norway suggested an alternative to collecting the missing data by using the online IMO database.

United States informed the Meeting that they will provide the data within the next 3 months. Collecting this information may take some time as the ports are privately owned and information on port reception facilities will require a contact with every port. As to the suggested use of the IMO database United States noted that it mainly served the needs of bigger ships and suggested that PAME should rather collect a fresh set of data on Port Reception Facilities in the Arctic.

Russia did not know the reasons why data on Port Reception Facilities in Russia had not been forwarded to the lead and confirmed a response within the next 3 weeks.

- *The Meeting noted progress report on the Port Reception Facility Project.*
- *The Meeting emphasised the importance of receiving data from all member states to ensure that the Phase 1 of this work can be finalized in due time for submission for the next Ministerial meeting. This project can not proceed without adequate information from the parties. The Meeting urged those countries from which information is still missing to come forward with such information at the earliest possible date. Russia and United*

States confirmed that information on their Port Reception Facilities will be forthcoming, from Russia within the next 3 weeks and from the United States within the next 3 months.

- *The lead will report on further progress in advance of the next PAME meeting*

Session IV: Updates from leads on PAME-related activities

Session IV (1): Progress and status of the RPA Project

Canada as the lead-country in advancing the implementation of the Regional Programme of Action for the Protection of the Arctic Marine Environment from Land-based Activities (RPA) provided a draft report, “Review to Examine the Need for amendments to the Arctic Council Regional Programme of Action for the Protection of the Arctic Marine Environment from Land Based Activities (RPA)”.

The objective of the review is look at the existing text with regard to addressing possible additional priority source categories, examining its overall scope and improving its compatibility with the stated needs of the UNEP *Global Programme of Action for the Protection of the Arctic Marine Environment from Land-based Activities (GPA)*.

1) The PAME meeting decided that the RPA should be updated and broadened because:

- The RPA has been used to assist in addressing pollution form land-based activities.
- Arctic Council has used the RPA in reporting to UNEP as an element of GPA.
- Canada, Finland, Iceland and Russia have found the RPA approach helpful in developing their National Programme of Action (NPAs).
- Russia used the RPA to support an application for the GEF/UNEP Russian NPA-Arctic Project funding.

2) The RPA is out of date:

- RPA was developed more than 10 years ago. Updating the RPA would provide a more current account of circumpolar activities and priority RPA contaminant and habitat issues.
- It will also provide the opportunity to incorporate AC assessments (such as ACIA, AHDR, ACAP activities etc.) and recommendations with implications to protecting the marine environment.

3) Other considerations:

1. The RPA (6.7) indicates that it is focused on urgent pollution problems such as identified in AMAPs 1997 Assessment and it would be expanded in later stages.
2. PAME has a mandate to periodically review and update the RPA (see AC /SAO Structures Decision Paper 2002).
3. The 2004 AMSP contains a strategic measure to consider broadening the RPA (see Strategic Action 7.3.3)

4. WSSD 2002 target: to achieve substantial progress to protect the marine environment from land-based activities by 2006.
5. As we proceed with the LME approach, there is a requirement to address pressure on the coastal zone and arctic watersheds.

The Meeting thanked Canada for the draft report, "Review to Examine the Need for amendments to the Arctic Council Regional Programme of Action for the Protection of the Arctic Marine Environment from Land Based Activities (RPA)." The meeting agreed that country representatives would send Canada their comments on the draft report along the following timelines:

1. *Any comments on the current report within 7 days.*
2. *Canada will revise to incorporate the meeting decisions by March 25th, and send to PAME Secretariat for distribution to PAME members.*
3. *Final comments from Members requested by May 1.*
4. *Canada to finalize the report based on latest comments.*
5. *Decision on whether and how PAME will use and/or refer to the draft report submitted by Canada will be decided at the next PAME meeting*

Session IV (2): Update status of the GEF/Russian NPA-Arctic

Dr. Ivan N. Senchenya, Project Manager of the UNEP/GEF project - Russian Federation: Support to the National Programme of Action for the Protection of the Arctic Marine Environment gave an update on its status (presentation as a separate file and available on the PAME homepage).

He informed the Meeting that the Project was signed on July 18, 2005 and it has been divided into two phases with the duration of Phase I ending on July 2007. Funding for the Project comes from 3 different sources i.e. GEF, donor countries and Russia. The 1st Project Steering Committee meeting was held in mid-October 2005. The main components of the Project are divided into the following tasks:

- Preparation and adoption of a Strategic Action Programme (SAP).
- Completion of a set of Pre-Investment Studies (PINS).
- Development and implementation of Environmental Protection System (EPS), embodying legislative, administrative, institutional and technical capacity improvements consistent with the SAP

The SAP is a major output of the Project and the subsequent implementation of the SAP will allow for a significant improvement of the environment in the Russian Arctic, the circumpolar region and on the global scale.

Benchmarks for Phase I:

1. Successful establishment of Project implementation structure, including Project Office, Project Steering Committee, and Project Supervisory Council;
2. Strategic Action Programme fully developed and endorsed by relevant stakeholders;
3. Working document revised at the first meeting of each of sub-group for each pre-investment study;
4. Selected lead implementing organization and members of each of the three working groups for the development of the Environmental Protection System;
5. Fully designed demonstration activities; and
6. Mid-term review of the project indicating satisfactory implementation of the project in the phase I.

Mr. Vitaly Lystsov of the Advisory Committee on Protection of the Sea (ACOPS) provided an updated of ACOPS progress under the GEF/UNEP Russian NPA-Arctic Project from July 2005 – February 2006. The progress report is presented in full in Appendix VIII.

ACOPS role in the Project is now defined as one of two “Partner Agencies” with NEFCO as the other. ACOPS fulfilled the identification and prioritization of the “hot spots” in Russian Arctic during the period 1999 - 2001. The apparent concentration of these hot spots in three Arctic regions was noted. These regions belonged to the catchments basins of Barents and White seas (I), Kara sea (II) and Chukchi – West Bering sea (III). It has been decided on the basis of previous as well as more recent NEFCO/AMAP “hot spots” analyses to accept these three geographical regions as priority areas for analysis of environmental issues. It doesn't exclude from consideration some environmentally significant projects outside above mentioned three regions. In closing he noted that the most concrete output of this Project would be pre-investment projects.

RAIPON informed the Meeting of their long-standing partnership with this Project and are looking forward to a continued cooperation in particular on the demonstration project on Indigenous Environmental Co-management. RAIPON noted possible opportunities within this Project in filling in the information gaps between the Barents and Bering seas.

Russia informed the Meeting of intentions of reporting on progress of this Project at the next Ministerial meeting even though small delays in its progress have occurred.

Some countries raised the issue of what and if PAME should continue reporting on this Project to SAOs and Ministers as it has now official started and it is Russia's responsibility to report on progress. In light of recent progress it was also questioned if this Project should be in the 2006-2006 PAME Work Plan.

The Meeting noted the update on progress and will decide at next PAME meeting weather or not this Project will continue to be identified within the 2006-2008 PAME Work Plan.

Session IV (3): AMSP Communication Plan

Canada and Iceland as the co-leads on the Arctic Marine Strategic Plan (AMSP), presented a revised version of the draft AMSP Communication Plan. The leads asked participants to provide comments to this revised draft as soon as possible as the intention was to finalize this plan within the next 2 months.

Canada will provide an updated version of the AMSP Communication Plan prior to the next PAME meeting.

USA suggested that the 1st draft AMSP Communication Plan be sent out for comments to the other working groups of the Arctic Council.

The Meeting took a note of the revised draft AMSP Communication Plan and comments will be provided to the leads and the PAME Secretariat by end of March 2005. The leads will also seek inputs from other working groups of the Arctic Council.

Based on comments received the leads will revise and finalize the Plan for endorsement by PAME followed by submission to the SAOs.

Session V: Other PAME related activities

Session V (1): ACIA follow-up and Focal Point meetings

The Chair gave a brief overview of the outcome of the last ACIA FP meeting that was held on 24 February in Copenhagen. The minutes from this meeting have been distributed to Arctic Council countries and Permanent Participants. He informed the Meeting that at the SAO meeting in April, the FP report would include a statement of each Working Group's plans for ACIA follow-up as well as more general topics.

The Chair will provide an update at the next PAME meeting.

Session V (3): General cooperation with Arctic Council WGs and activities

Collaboration and apparent synergies with AMAP and CAFF on the ecosystem approach and, in particular, EPPR and SDWG working groups on the shipping assessment are fully recognized and representatives from AMAP, CAFF, EPPR and SDWG participated at this Meeting for this purpose.

EPPR gave an overview of their activities and emphasized their full support to AMSA activities of relevance to their respective mandate and requested a formal invitation to participate as a Working Group (presentation as a separate file and available on the PAME homepage).

Session V (4) Update/status on the AMAP Oil and Gas Assessment

AMAP gave an overview of a report on progress and outline content of the Oil and Gas Assessment (OGA) (Report in Appendix IX) and referred to Annex 1 in this report which

shows the current timetable for of both the Oil and Gas Assessment report and the overview report for the 2006 Ministerial meeting.

LMEs are being applied in this assessment (Chapter 6 – Status and Vulnerability of Arctic Ecosystems) which has a direct relevance to the shipping assessment and the LME work. AMAP pointed out that PAME might want to look into and/or review an overview of the regulatory framework written by Mr. Dennis Thurston/USA for the purpose of this assessment. The 3rd draft of this overview paper is out and available from the AMAP Secretariat.

OGP asked how and/or if AMAP would involve the industry in the peer review process of the OGA.

The Meeting noted that there are clear linkages between the AMAP Oil and Gas Assessment and the PAME shipping assessment and the LME work and urged the leads on respective activities to avoid overlap and explore the possibility of sharing data and experts with the Oil and Gas Assessment.

Session V (5): Update/status on Arctic Portal Feasibility Study

Mr Halldor Johansson, Director of Teikn Design and the Project Manager of the Arctic Portal Feasibility Study on behalf of the ICEPORT team (presentation as a separate file and available on the PAME homepage) gave a progress on the Feasibility Study. He informed the Meeting that the Study was being done in close cooperation with the working groups of the Arctic Council and other linked organizations.

He informed the Meeting that an Arctic Portal Proposal and a Pilot Portal will be presented to the next SAO's meeting in Russia in April on the basis of the Arctic Portal Feasibility Study. It will be proposed that work continues leading to a formal agreement on the structure and operation of the Portal and the opening of the first part at the ministerial meeting in October. In closing he noted that the Arctic Portal had been proposed as an IPY project.

Session V (6): Introduction of AMAP/EPPR GIS Project

AMAP introduced a pilot project in collaboration with EPPR to develop an online GIS system for presenting information (and potentially exchanging GIS related datasets) that have been compiled as part of ongoing work. This project currently involves some 4-5 partners, including GRID-Arendal, who have adapted an existing application for viewing data in an on-line GIS to meet specifications of the project group. AMAP offered PAME to join this activity through countries designating experts in this activity responsible for producing and maintaining datasets that could be incorporated in the system, and introducing them to the existing network.

AMAP noted that if PAME were interested in joining the activity contribution of (minor) funding to support the work would be appreciated.

Session V (7): Report from the PAME Secretariat

A summary of the activities and a budget statement for the period of January 1, 2005 – December 31, 2005 as well as the total voluntary contributions and expenditures for the period of 1999-2005 are presented in Appendix VII.

This agenda item only discussed at a lunch meeting with the country representatives.

Session V (8): The next PAME Working Group meeting

Professor Gennady G. Matishov, Director of the Murmansk Marine Biological Institute of the Russian Academy of Sciences (MMBI RAS) offered to host the next PAME meeting next August/September.

The Meeting thanked Professor Matishov for his kind offer. Further details will be sent out in due time.

Session V (9): Reporting to the next SAO Meeting

The Chair will report on the outcome of the PAME meeting at the next SAO meeting that will be held in Syktyvkar, Russia, 26-27 April 2006.

Session V1 (2): First steps in developing the 2006-2008 PAME Work Plan

The 1st draft of the 2006-2008 PAME Work Plan was developed and will be sent out to participants for comments by 20th of March. Comments should be sent to the Secretariat by 20th of April and included in a 2nd draft of the work plan.

APPENDIX I – LIST OF PARTICIPANTS

<i>PAME Secretariat</i>	
<p><u>Frank Sonne</u> Ministry of Environment and Energy Danish Environmental Protection Agency Strandgade 29 DK-1401 Copenhagen K</p> <p>Tel: + 45 3266 0330 Fax: + 45 3266 0201 Email: fms@mst.dk</p>	<p><u>Soffia Gudmundsdottir</u> Executive Secretary PAME International Secretariat Borgir Nordurslod 600 Akureyri Iceland</p> <p>Tel: +354 461 1355 Fax: +354 462 3390 Email: pame@pame.is</p>
	<p><u>Olga Pálsdóttir</u> PAME International Secretariat Borgir Nordurslod 600 Akureyri Iceland</p> <p>Tel: +354 461 1355 Fax: +354 462 3390 Email: olga@caff.is</p>
<i>CANADA</i>	
<p><u>Chris Cuddy</u> Director Land and Water Management Division Indian and Northern Affairs Canada 10 Wellington St., Room 648 Gatineau, Quebec, K1A 0H4</p> <p>Tel: +1 819 994-7483 Fax: +1 819 997-9623 Email: cuddyc@ainc-inac.gc.ca</p>	<p><u>Ross MacDonald</u> Manager, Special Projects and Arctic Shipping Transport Canada Tower C, Place de Ville, 330 Sparks St. Ottawa, Ontario K1A 0N5</p> <p>Tel: +1 613 991 3145 Fax: +1 613 991-4818 Email: MACDORA@tc.gc.ca</p>
<p><u>Maureen Copley</u> Head, Land-based Activities Section Compliance Promotion Operations Division Environmental Protection Operations Directorate Environment Canada 351 St. Joseph Blvd., 12th floor Gatineau, Quebec Canada K1A 0H3</p> <p>Tel. (819) 953-6949 Fax. (819) 953-0913 Email: maureen.copley@ec.gc.ca</p>	<p><u>Dr. Robert Siron</u> Ecosystem - Based Management Unit Coordinator Oceans Directorate Fisheries and Oceans, Canada 200 Kent , 12E-229 Ottawa (ON) K1A 0E6</p> <p>Tel: +1 (613) 993-9801 Fax: +1 (613) 993-6414 Email: sironr@dfo-mpo.gc.ca</p>
<p><u>Renee Sauve</u> A/Director International Coordination and Policy Analysis Branch Department of Fisheries and Oceans 200 Kent Street Ottawa ON K1A 0E6</p> <p>Tel: +1 613 9916740 Email: sauver@dfo-mpo.gc.ca</p>	<p><u>Victor Santos-Pedro</u> Director Design, Equipment & Boating Safety Transport Canada Tower C, Place de Ville, 330 Sparks Street Ottawa, Ontario K1A 0N5</p> <p>Tel: +1 613 991-6003 Email: santosv@tc.gc.ca</p>

<p><u>John Hawkins</u> Director Transportation Policy and Planning Department of Economic Development and Transportation Government of Nunavut P.O. Box 1000, Station 1500 X0A 0H0 Iqaluit, Nunavut X0A 0H0</p> <p>Tel: +1 867 915 7826 Fax: +1 867 915 7870 Email: jhawkins@gov.nv.ca www.gov.nv.ca</p>	<p><u>John Falkingham</u> A/Director, Marine and Ice Services Division Meteorological Service of Canada, Environment Canada 373 Sussex Drive, E-3 Ottawa Canada 1A 0H3 John.Falkingham@ec.gc.ca</p> <p>Tel: +1 613 996 4552 Fax: +1 613 996 4218</p>
<p><u>Methusalah Kunuk</u> Assistant Deputy Minister, Transportation Department of Economic Development and Transportation Government of Nunavut 1000, 1500 P.O. Box 1000, Station 1500 X0A 0H0 Iqaluit, Nunavut X0A 0H0</p> <p>Tel: (867) 975-7832 Fax: (867) 975 7832 Email: mkunuk@gov.nu.ca Homepage: www.gov.nu.ca</p>	
<i>DENMARK/GREENLAND/FAROE ISLANDS</i>	
<p><u>Kjeld F. Jørgensen</u> Water Unit National Agency of Environmental Protection Ministry of the Environment Strandgade 29 DK-1401 Copenhagen K</p> <p>Tel: +45 32 66 04 42 Fax: +45 32 66 05 00 Email: kfj@mst.dk / http://www.mst.dk</p>	<p><u>Heidi Nexø</u> Bureau of Minerals and Petroleum Government of Greenland P.O. Box 930 DK-3900 Nuuk</p> <p>Tel. +299 34 68 00 Fax: +299 32 43 02 Email: HENE@gh.gl www.bmp.gl</p>
<p><u>Eskild Lund Sørensen</u> Ministry of Environment and Nature Government of Greenland P.O. Box 1614 DK-3900 NUUK</p> <p>Tel: +299 34 67 01; 34 67 12 Fax: +299 32 52 86 Email: ESLS@gh.gl</p>	<p><u>Suni Petersen</u> Food-, Veterinary- and Environmental Agency Falkavegur 6 FO-100 Tórshavn Faroe Islands</p> <p>Tel. +298 356400 Fax: +298 356401 Email: sunip@hfs.fo</p>

FINLAND	
<p><u>Maija Pietarinen</u> Ministry of the Environment P.O. Box 33 Kasarmikatu 25 FIN-00023, Helsinki</p> <p>Tel: +358 9 1603 9736 Fax +358 9 1603 9717 Email: Maija.Pietarinen@ymparisto.fi</p>	<p><u>Kimmo Juurmaa</u> Manager Arctic Business Development Deltamarin Inc. Helsinki</p> <p>Tel: +358-9-47884-443 Mobile: +358-40-501-2412 Email: kimmo.juurmaa@deltamarin.com</p>
ICELAND	
<p><u>Óttar Freyr Gíslason</u> Ministry for the Environment Skuggasund 1 150 Reykjavik</p> <p>Tel: +354 545 8600 Fax: + 354 562 4566 Email: ottar.gislason@umhverfissraduneyti.is</p>	<p><u>Dr. Björn Gunnarsson</u> Dean Faculty of Natural Resource Sciences University of Akureyri Borgir at Nordurslod 600 Akureyri</p> <p>Tel: + 354-460-8501 Fax: +354-460-8998 Gsm: +354-847-0682 Email: bjorn@unak.is</p>
	<p><u>Halldor Johannsson</u> Director Teikn Design Skipagata 12 Box 170 602 Akureyri</p> <p>Tel: + 354 461 2800 Fax: + 354 462 7789 Email: halldor@teikn.is</p>
NORWAY	
<p><u>Morten Taraldsvik</u> Norwegian Pollution Control Authority (SFT) P.O. Box 8100 Dep. 0032 Oslo</p> <p>Tel: +47 22 57 36 62 Email: morten.taraldsvik@sft.no</p>	<p><u>Jens Koefoed</u> Adviser Cargo Ship Department The Norwegian Maritime Directorate P.O. Box 8123 Dep., 0032 Oslo</p> <p>Tel: + 47 22 45 44 46 Fax: + 47 22 45 47 80 Mob: + 47 95 18 36 26 Email: jens.koefoed@sjofartsdir.no</p>
<p><u>Dr. Hein Rune Skjoldal</u> Institute of Marine Research PO Box 1870, Nordnes Nordnesparkon 2 N-5017 Bergen Norway</p> <p>Tel: +47-55-23-8500 Email: hein.rune.skjoldal@imr.no</p>	<p><u>Einar Arnesen</u> The Norwegian Maritime Directorate P.O. Box 8123 Dep., N-0032 Oslo</p> <p>Tel: +47 22 45 44 42 Fax: +47 45 47 80 Email: einar.arnesen@sjofartsdir.no</p>

<p><u>Veslemøy Eriksen</u> The Norwegian Maritime Directorate P.O. Box 8123 Dep., N-0032 Oslo</p> <p>Tel: +47 22 59 18 19 Fax: +47 52 86 51 81 Email: veslemoy.eriksen@sjofartsdir.no</p>	
RUSSIA	
<p><u>Yuri Yu. Alexandrovskiy</u> Ministry of Natural Resources 4/6 Bolshaya Gruzinskaya str. 123995 Moscow, D-242, GSP-5 Russia</p> <p>Tel: +7 (095) 254 46 55 Fax: +7 (095) 943 0013 Email: yuaalex@mnr.gov.ru</p>	<p><u>Professor Gennady G. Matishov</u> Director Murmansk Marine Biological Institute of the Russian Academy of Sciences (MMBI RAS) 17 Vladimirskaia Street 183010 Murmansk, Russia</p> <p>Tel.: (+7)(8152)253963 Fax: (+7)(8152)253994 E-mail: icd@mmbi.info</p>
<p><u>Dr. Ivan N. Senchenya</u> Project Manager UNEP/GEF project - Russian Federation: Support to the National Programme of Action for the Protection of the Arctic Marine Environment. National Pollution Abatement Facility 19 Leninsky prospect, Moscow 119991 Russia</p> <p>Tel.: +7 495 7304097, 9553114 mobile +7 495 7234680 Fax: +7 495 9553114 e-mail: senchenya@npaf.ru, I.Senchenya@mail.ru</p>	<p><u>Roman G. Mikhalyuk</u> International Communications Department Southern Scientific Centre of the Russian Academy of Sciences 41 Chekhov Street 344006 Rostov-on-Don, Russia</p> <p>Tel.: +7 (863) 266-64-26 Fax: +7 (863) 266-56-77 Email: icd@mmbi.krinc.ru</p>
SWEDEN	
<p><u>Ann-Sofi Israelson</u> Swedish Environmental Protection Agency International secretariat</p> <p>Tel:+46 8 698 1270 E-mail: ann-sofi.israelson@naturvardsverket.se</p>	
UNITED STATES	
<p><u>Tom Laughlin</u> Deputy Director Office of International Affairs/NOAA U.S. Department of Commerce 14th and Constitution, N.W., Room 5230 Washington, DC 20230</p> <p>Tel: +1 202 482 5118 Fax: +1 202 482 4307 Email: tom.laughlin@noaa.gov</p>	<p><u>Dr. Lawson W. Brigham</u> Deputy Director U.S. Arctic Research Commission 420 L Street, Suite 315 Anchorage, Alaska 99501 USA</p> <p>Ph: 1-907-271-4577 Fax: 1-907-271-4578 E-mail: usarc@acsalaska.net</p>

<p><u>Elizabeth S. McLanahan</u> International Affairs Specialist Office of International Affairs/NOAA U.S. Department of Commerce 14th & Constitution, NW, Room 6224 Washington, DC 20230</p> <p>Tel: +1 202 482 5140 Fax: +1 202 482 4307 Email: Elizabeth.McLanahan@noaa.gov</p>	<p><u>Mark Meza</u> Deputy, Office of Incident Management and Preparedness Assistant Commandant for Response US Coast Guard 2100 Second Street, S.W. Washington, D.C. 20593-0001</p> <p>Tel: +1-202-267-2466 Fax: +1-202-267-4085 Email: MMeza@comdt.uscg.mil</p>
<p><u>Kenneth Sherman</u> Director USDOC/NOAA/NMFS Narragansett Laboratory 28 Tarzwell Drive Narragansett, RI 02882 United States</p> <p>Tel: +1 401 782 3211 Email: ksherman@mola.na.nmfs.gov</p>	
<i>AMAP</i>	
<p><u>Per Dovle</u> Deputy Director – Vice Chair of AMAP Norwegian Pollution. Control Authority (SFT) PO Box 8100 Dep N-0032 Oslo Norway</p> <p>Tel: +47 22 57 34 37 Fax: +47 997 14 498 Email: per.dovle@sft.no</p>	<p><u>Simon Wilson</u> AMAP Deputy Executive Secretary AMAP Secretariat P.O. Box 8100 Dep N-0032 Oslo, Norway or Statensingel 187a 3039 LM Rotterdam Netherlands</p> <p>Tel: +31 10 466 2989 Fax: +31 10 466 2989 Email: s.wilson@inter.nl.net</p>
<i>CAFF</i>	<i>EPPR</i>
<p><u>Jan-Petter Huberth-Hansen</u> International Division Norwegian Directorate for Nature Management Tungasletta 2 N-7485 Trondheim NORWAY Phone: +47 73 580 500/829 Cell: +47 91372303 Fax: +47 73 580 501 E-mail: jan-p.huberth-hansen@dirnat.no</p>	<p><u>Mark Meza</u> (See United States)</p>

SDWG	
<p><u>Ben Ellis</u> Managing Director, Institute of the North Circumpolar Infrastructure Task Force Secretariat 935 W. 3rd Ave. Anchorage, Alaska 99501 USA</p> <p>Tel: +1 907 343-2445 Fax: +1 907 343-2466 Email 1: benellis@aol.com Email 2: bellis@institutenorth.org</p>	<p><u>Walter Parker</u> Chair Circumpolar Infrastructure Task Force 3724 Campbell Airstrip Rd Anchorage, AK 99504 USA</p> <p>Tel: +1 907 33 5189 Fax: +1 907 343 2466 Email: wbparker@gci.net</p>
Circumpolar Conservation Union	
<p><u>Evelyn M. Hurwich, Esq</u> President Circumpolar Conservation Union 1612 K Street NW #401 Washington, DC 20006</p> <p>Tel: +1-202-675-8370 Fax: +1-202-675-8373 Email: circumpolar@igc.org</p>	<p><u>Jennifer Castner</u> Russia Program Director Pacific Environment 311 California St, Suite 650 San Francisco, CA 94104</p> <p>Tel: +1 415.399.8850 x 307 Fax: +1 415.399.8860 Email: jcastner@pacificenvironment.org</p>
<p><u>Whit Sheard</u> Esq. Alaska Program Director Pacific Environment 308 G St, Suite 202 Anchorage, AK 99501</p> <p>Tel: +1 907.277.1029 Fax: +1 907.929.1562 Email: wsheard@pacificenvironment.org</p>	
RAIPON	IPS
<p><u>Rodion Sulyandziga</u> Director, Ph.D Center for Support of indigenous peoples of the North/ Russian Indigenous Training Center CSIPN/RITC</p> <p>Fax: +7 (095) 780 87 27 Email: raipon@online.ru Webpage: www.raipon.org</p>	<p><u>Alona Yefimenko</u> Technical Advisor Arctic Council - Indigenous Peoples' Secretariat P.O. Box 2151, Strandgade 91, 4. Sal DK-1016 Copenhagen K, Denmark</p> <p>Tel: +45 32 83 37 96 Fax: +45 32 83 37 91 Email: ay@ghsdk.dk</p>

WWF	
<p><u>Samantha Smith</u> Director WWF International Arctic Programme Kristian Augusts gate 7a P.O. Box 6784 St. Olavs plass N-0130 Oslo</p> <p>Tel: + 47 22 03 65 17 Fax: +47 22 20 06 66 Email: ssmith@wwf.no</p>	<p><u>Anne-Beth Skrede</u> Marine Conservation Officer WWF-Norway Kristian Augusts gt. 7A P.O. Box 6784 St. Olavs plass NO-0130 Oslo Norway</p> <p>Tel: +47 22 03 6500 (office) Tel: +47 90 74 76 98 Fax: +47 22 20 06 66 Email: abskrede@wwf.no</p>
<i>Inuit Circumpolar Conference (ICC)</i>	
<p><u>Terry Fenge</u> Director of Research ICC Canada 170 Laurier Avenue West, Suite 504 Ottawa, Ontario, K1P 5V5</p> <p>Tel: + 1 613 722 7006 Fax: + 1 613 565 3089 Email: tfenge7006@rogers.com</p>	<p><u>Duane Smith</u> President, ICC (Canada) Vice Chair, ICC 170 Laurier Avenue West Suite 504 Ottawa, ON K1P 5V5 Canada</p> <p>Tel: +1 613-563-2642 Fax: +1 613 565-3089 Email: inuvialuk@northwestel.net</p>
<i>ACOPS</i>	<i>OGP</i>
<p><u>Vitaly Lystsov</u> Onsultant of the Advisory Committee on Protection of the Sea (ACOPS) RRC “Kurchatov Institute” Kurchatov Sq.1 123182 Moscow, Russia</p> <p>Tel: +7 095 196 6328 Fax: +7 095 196 8679 Email: vitalil@pike.pike.ru</p>	<p><u>John Campbell</u> Technical Director OGP (International Association of Oil and Gas Producers) 209-215 Blackfriars Road London SE1 8NL UK</p> <p>Tel: +44 (0)20 7633 2352 (Direct) Tel: +44 (0)20 7633 0272 (Reception) Fax: +44 (0)20 7633 2350 Email: john.campbell@ogp.org.uk Web: www.ogp.org.uk</p>

APPENDIX II – LIST OF DOCUMENTS

AGENDA ITEMS	DOCUMENTS
Agenda Item I: Overall progress and status of AMSA	(3) AMSA Work Plan Dec 2005 version (3) AMSA cover letter with work plan Dec 2005 (4) AMSA Questionnaire and data collection <ul style="list-style-type: none"> ➤ User Manual ➤ Electronic Questionnaire ➤ Cover letter on the Arctic marine data collection process
Agenda Item II: Ecosystem Approach	(3) and (6) Consideration of next steps toward the Ecosystem Approach (LME map decisions and ToR) Background Papers: <i>Following papers on are only for information purposes</i> <ul style="list-style-type: none"> ➤ EU Marine Strategic Directive (Oct 2005) ➤ EU Thematic Strategy on the Protection and Conservation of the Marine Environment (Oct 2005) ➤ EEA Strategy 2004-2008 Further information and additional papers at: http://europa.eu.int/comm/environment/water/marine.htm
Agenda Item III: Port Reception Facilities	(1) Norwegian PRF – progress report (1) PRF in the PAME region – status report by the Norwegian Maritime Directorate (1)/background: Summary paper on PRF as presented to PAME I-2005
Agenda Item IV: Updates from leads on PAME-related activities	(1) RPA Review DRAFT from Canada (1) Cover note for RPA - decisions (2) Status of the UNEP/GEF Russian NPA -Arctic project (3) 2 nd draft AMSP communication Plan
Agenda Item V: Other PAME Related Activities	(3) AMSP Strategic Actions (4) Assessment of Oil and Gas Activities in the Arctic, Process and Outline Content (January 2006) (6) AMAP Secretariat note to PAME concerning possible on-line GIS cooperation (7) Finances of the Secretariat (Dec 2005)
Agenda Item VI: Ministerial Deliverables	<ul style="list-style-type: none"> ➤ PAME Work Plan 2004-2006 ➤ Final PAME Ministerial Report 2004 ➤ SAO Report to Ministers Nov 2004 ➤ 2004 Reykjavik Declaration ➤ AMSP Strategic Actions (refer to Session V(3))
General documents	<ul style="list-style-type: none"> ➤ PAME Report II-2005
Logistical information	<ul style="list-style-type: none"> ➤ Draft Agenda with timeline ➤ List of Participants ➤ Logistical information

APPENDIX III – AGENDA

Coffee breaks: 10:30-11:00 and 15:00-15:30

Lunch breaks: 13:00-14:00

WEDNESDAY, March 1

09:00-09:15 Registration

09:15-09:45. Welcome and Introduction

1. Opening of the Meeting (Mrs. Marit Kjeldby, Director for the Department of Control and International Affairs)
2. Introduction and Adoption of the Agenda (PAME Chair)

09:45-15:00, Session I: Overall progress and status of AMSA.

1. timeline and stakeholder engagement (PPs, Observers, experts and others) - (Dr. Lawson W. Brigham/USA)
2. AMSA Roundtable - (Mr. Victor Santos-Pedro/Canada)
3. AMSA Work Plan (version December 2005) - (Mr. Kimmo Juurmaa/Finland)
4. AMSA Survey Instrument/Questionnaire - (Mr. Ross MacDonald/Canada)
5. Tour de table and next steps - (Dr. Lawson W. Brigham/USA)

[15:30-17:00, AMSA Roundtable Members only]

15:30-17:00, Session II: Ecosystem Approach

1. Introduction by the lead country (USA)
2. Summary of status and adoption on the final revised LME map (USA)
3. Terms of Reference and timetable for the LME Steering Group.
4. Updates on impact assessments and linkages with LMEs (Dr. Matishov/Russia)
5. Cooperation with other working groups (AMAP and CAFF)
6. Tour de table and agreement on next steps

Reception hosted by SFT

THURSDAY, March 2

09:00-10:30, Session III: Port Reception Facilities

1. Update by the lead country (Norway)
2. Discussion and an agreement on next steps

11:00-13:00, Session IV: Updates from leads on PAME-related activities

1. Progress and status of the RPA Project (Canada)
2. Update status of the GEF/Russian NPA-Arctic (Dr. Senchenya/Russia)
3. AMSP Communication Plan (Canada/Iceland)

[09:00-13:00, Breakout/working session for the Ecosystem Approach parallel to the plenary, if needed]

14:00-17:00, Session V: Other PAME Related Activities

1. ACIA follow-up and Focal Point meetings (Chair)
2. The SAO meeting in October 2005 (Chair)
3. General cooperation with Arctic Council WGs and activities (e.g. AMSP follow-up activities and participation in AMSA) (Chair)
4. Update/status on the AMAP Oil and Gas Assessment (AMAP representative)
5. Update/status on Arctic Portal Feasibility Study (Teikn design)
6. Introduction of AMAP/EPPR GIS Project (AMAP representative)
7. PAME Secretariat finances (PAME Executive Secretary)
8. The next PAME Working Group meeting (timing and place)
9. Reporting to the next SAO meeting in April 2006

FRIDAY, March 3

09:00-12:00, Session VI: Ministerial Deliverables

1. Ministerial Report: Progress and final reports for submission
2. First steps in developing the 2006-2008 PAME Work Plan

12:00-13:00: Any other business and closing of the Meeting

APPENDIX IV - PAME FINANCE REPORT

Following financial information is attached:

- Summary of country contributions and expenditures 1999-2006
- Contributions and Expenditures for 2005
- Proposed Contributions and Expenditures for 2006

Country Contributions for the years 1999 - 2006								
								SUGGESTED
Country	1999	2000	2001	2002	2003	2004	2005	2006
Canada		\$20.000	\$12.800	\$13.600	\$13.523	\$16.550	2.134.000 kr. ³⁾	1.550.000 kr.
Denmark		\$11.000	\$11.000	\$11.000	\$11.000	\$15.200	1.460.000 kr.	1.550.000 kr.
Finland		\$9.700	\$12.600	\$6.900	\$7.299	\$8.000	1.063.212 kr.	1.550.000 kr.
Iceland	\$142.248 ¹⁾	\$68.194	\$59.866	\$55.341	\$81.926	\$108.000	8.300.000 kr.	8.500.000 kr.
Norway		in-kind	in-kind	in-kind	in-kind	in-kind	in-kind	--
Russia		in-kind	in-kind	in-kind	in-kind	in-kind	in-kind	--
Sweden		\$17.600	\$17.600	\$17.600	\$17.600	\$17.600	1.460.000 kr.	1.550.000 kr.
United States		\$30.000	\$30.000	in-kind	\$20.000	\$20.000	1.280.458 kr.	1.550.000 kr.
Total Contributions/year:	\$142.248	\$156.494	\$143.866	\$104.441	\$151.348	\$185.350	15.697.670 kr.	16.250.000 kr.
Financial Statment for the years 1999-2006 (in ISK)								
	1999	2000	2001	2002	2003	2004	2005	2006
REVENUE								
Contributions ²⁾	10.000.000 kr.	12.892.497 kr.	11.605.750 kr.	10.771.473 kr.	12.669.258 kr.	13.666.111 kr.	15.697.670 kr.	16.250.000 kr.
Misc revenue	6.000 kr.	250.635 kr.	85.135 kr.	146.952 kr.	200.000 kr.	50.000 kr.	--	50.000 kr.
Sub-total Revenue/year:	10.006.000 kr.	13.143.132 kr.	11.690.885 kr.	10.918.425 kr.	12.869.258 kr.	13.716.111 kr.	15.697.670 kr.	16.300.000 kr.
Carryforward from previous year:		6.382.201 kr.	6.377.357 kr.	2.080.905 kr.	-1.285.768 kr.	-1.023.903 kr.	-782.251 kr.	-106.682 kr.
TOTAL	10.006.000 kr.	19.525.333 kr.	18.068.242 kr.	12.999.330 kr.	11.583.490 kr.	12.692.208 kr.	14.915.419 kr.	16.193.318 kr.
Staff	1.103.880 kr.	6.772.930 kr.	7.724.721 kr.	7.696.689 kr.	7.379.010 kr.	6.918.345 kr.	7.533.026 kr.	8.000.000 kr.
Office	1.859.991 kr.	3.023.210 kr.	3.773.092 kr.	3.150.843 kr.	3.498.688 kr.	5.010.086 kr. ⁴⁾	4.403.666 kr.	5.425.000 kr.
Travel/Meetings	659.928 kr.	3.351.836 kr.	4.489.524 kr.	3.437.566 kr.	1.729.695 kr.	1.546.028 kr.	3.085.409 kr.	2.550.000 kr.
Total Expenditure/year:	3.623.799 kr.	13.147.976 kr.	15.987.337 kr.	14.285.098 kr.	12.607.393 kr.	13.474.459 kr.	15.022.101 kr.	15.975.000 kr.
Balance per year:	6.382.201 kr.	-4.844 kr.	-4.296.452 kr.	-3.366.673 kr.	261.865 kr.	241.652 kr.	675.569 kr.	325.000 kr.
Closing balance/year:	6.382.201 kr.	6.377.357 kr.	2.080.905 kr.	-1.285.768 kr.	-1.023.903 kr.	-782.251 kr.	-106.682 kr.	218.318 kr.
Exchange Rate ISK/USD:								
Daily min.		72 kr.	84 kr.	81 kr.	70 kr.	61 kr.		
Daily max.		90 kr.	110 kr.	103 kr.	82 kr.	75 kr.		
Annual Avg.		79 kr.	98 kr.	92 kr.	77 kr.	70 kr.	63 kr.	
Notes:	<p>1) Icelandic contribution towards the start-up and operation of the PAME Secretariat in 1999</p> <p>2) Contributions based on the ISK/USD exchange rate at time of deposit</p> <p>3) Canada has confirmed an increase in their annual contribution from 20,000 CDN to 30,000 CDN and an addition one time funding of CDN \$10,000 (2005 only) for Secretariat activities associated with the follow up of the implementation of the AMSP - not yet deposited</p> <p>4) Includes 800.000 kr for printing of documents for the Ministerial (e.g. AMSP, AMSP and PAME 2004-2006 brochures)</p>							

PAME INTERNATIONAL SECRETARIAT

Contributions for 2005:		
	ACTUAL	SUGGESTED
Suggested revenue from fixed contributions:	IKR	IKR
Canada	1.600.500 ¹⁾	1.460.000
Canada	533.500 ²⁾	
Denmark	1.460.000	1.460.000
Finland	1.063.212	1.460.000
Iceland	8.300.000	8.300.000
Norway	--	--
Russia	--	--
Sweden	1.460.000	1.460.000
United States	1.280.458	1.460.000
Subtotal	15.697.670	15.600.000

OVERVIEW:				
	TYPE OF EXPENDITURE	IKR	IKR	Actual in %
	Staff	7.533.026	7.500.000	100%
	Operating costs - office	4.403.666	5.200.000	85%
	Operating costs - travel	3.085.409	2.350.000	131%
	TOTAL	15.022.101	15.050.000	100%
BREAKDOWN:				
TYPE OF EXPENDITURE:		IKR	IKR	
STAFF	Salary, benefits,taxes,insurance,pension (1 person full time and 1 person 40%)	7.533.026	7.500.000	100%
	SUBTOTAL	7.533.026	IKR	
OFFICE	Service (telephone, fax, e-mail, internet, homepage)	1.495.531	1.400.000	107%
	Office supplies	206.559	500.000	41%
	Housing (rent, heat, electricity, cleaning)	1.862.769	1.800.000	103%
	Shipping/Postage/Bank Services	185.843	300.000	62%
	Equipments	0	200.000	0%
	Hospitality	32.062	100.000	32%
	Update the homepage	0	250.000	0%
	Bank Service	45.602	50.000	91%
	Printing	575.300	600.000	96%
	SUBTOTAL	4.403.666	5.200.000	85%
TRAVEL	Domestic	563.861	600.000	94%
	International (10 meetings each at the average of 250.000 kr.)	2.521.548 ⁵⁾	1.750.000 ⁴⁾	144%
	SUBTOTAL	3.085.409	2.350.000	131%
<i>Notes:</i>				
1) Canada confirmed an increase in the contribution to CDN \$30,000 - not yet deposited				
2) Canada confirmed an addition one time funding of CDN \$10,000 for Secretariat activities associated with implementation of the AMSP - not yet deposited				
3) Printing of documents for the 2004 Ministerial meeting				
4) PAME meeting x 2, SAO meeting x 2, other meetings x 3 (total of 7 meeting each at 250.000 IKR)				
5) PAME I and II 2005 (Feb & Sep); GEF-Russian NPA/London (Mar); COMAAR/Sweden (May); Arctic Portal/England (June) AMSA/Canada (Jun); LME meeting/Paris (Jul); AMAP oil and gas/Russia (Sep); SAO (Oct); ARCOP Worksh (Nov)				

PAME INTERNATIONAL SECRETARIAT

Suggested contributions for 2006:			
	Suggested revenue from fixed contributions:	IKR	
	Canada <i>(increased contributions to 30.000CAD)</i>	1.550.000	
	Denmark <i>(1.460.000 ISK received in '05 for '06)</i>	1.550.000	
	Finland	1.550.000	
	Iceland	8.500.000	
	Norway	--	
	Russia	--	
	Sweden	1.550.000	
	United States <i>(1.280.460 ISK received in '05 for '06)</i>	1.550.000	
	Subtotal	16.250.000	
Total Expected Revenue for 2005:			
	Suggested Contributions 2006:	16.250.000	
2)	Misc Revenue (estimated):	50.000	1)
	Subtotal	16.300.000	
	Carryforward from 2005:	-106.682	
	TOTAL	16.193.318	
Projected closing balance for 2006 (carryforward 2007):		218.318	
Projected Operational Expenditures for 2006			
January - December 2006			
OVERVIEW:			
	TYPE OF EXPENDITURE	IKR	
	Staff	8.000.000	
	Operating costs - office	5.425.000	
	Operating costs - travel	2.550.000	
	TOTAL	15.975.000	
BREAKDOWN:			
	TYPE OF EXPENDITURE:	IKR	
STAFF	Salary, benefits,taxes,insurance,pension (1 person full time and 1 person 40%)	8.000.000	
	SUBTOTAL	8.000.000	
OFFICE	Service (telephone, fax, e-mail, internet, homepage)	1.400.000	
	Office supplies	250.000	
	Housing (rent, heat, electricity, cleaning)	1.900.000	
	Shipping/Postage	300.000	
	Equipments	100.000	
	Hospitality	30.000	
	Update the homepage	700.000	2)
	Bank Service	45.000	
	Printing	700.000	
	SUBTOTAL	5.425.000	
TRAVEL	Domestic - airline tickets	650.000	
	International - airline tickets, hotel, per diem	1.900.000	3)
	SUBTOTAL	2.550.000	
<i>Notes:</i> 1) Interest rates, expected exchange rates etc.			
2) Refer to a separate sheet (Annex I) with information provided at PAME II-2005			
3) PAME meeting x 2, SAO meeting x 2, other meetings x 3 (each at 270.000 IKR)			

APPENDIX V

AMSA WORK PACKAGES COVERING RUSSIAN AND NORWEGIAN ARCTIC

**Planned expert teams for WP 2, 3 and 6
(cargo flows and risk analyses in the Russian and Norwegian Arctic)**

<u>Finland</u>	<u>Russia</u>	<u>Norway</u>
Deltamarin	Gecon Ltd	Det Norske Veritas
Helsinki University of Technology	Central Marine Research and Design Institute	

**Planned Expert Teams for WP 4 and 5
(Environmental impacts in the Russian and Norwegian Arctic)**

<u>Finland</u>	<u>Russia</u>	<u>Norway</u>
Deltamarin	Murmansk Marine Biological Institute	Det Norske Veritas
Helsinki University		Norwegian Institute for Marine Research
Finnish Institute for Marine Research		

APPENDIX VI - AMSA ROUNDTABLE MEMBERS

Mr. John Falkingham, Chief of Forecast Operations at the Canadian Ice Service, a division of Environment Canada. - john.falkingham@ec.gc.ca

Mr. Terry Fenge, Director of Research ICC Canada - Tfenge7006@rogers.com

Mr. Jens H. Koefoed, Adviser Cargo Ship Department, The Norwegian Maritime Directorate (NMA) - jens.koefoed@sjofartsdir.no

Methusalah Kunuk, Assismand Deputy Minister, Transportation Department of Economic Development and Transportation, Government of Nunavut - mkunuk@gov.nu.ca

Mr. Gennady Matishov, Director of Murmansk Marine Biological Institute of the Russian Academy of Sciences (MMBI RAS) - icd@mmbi.krinc.ru

Dr. Sue E. Moore (NOAA) principal oceanographer for the U.S. NOAA Alaska Fisheries Science Center in Seattle – sue.moore@noaa.gov

Mr. Niels Mortensen (BIMCO) – nbm@bimco.dk

Captain Andrey A. Smirnov (MSC) Deputy General Director and Director of the Icebreaking Fleet Department of Murmansk Shipping Company

Ms. Samantha Smith, Director WWF International Arctic Programme - ssmith@wwf.no

Ex-officio Members

Dr. Lawson W. Brigham (USARC) – USARC@accalaska.net

Mr. Victor M Santos-Pedro (TC) Chair - santosv@tc.gc.ca

Mr. Kimmo Juurmaa (Deltamarin) - kimmo.juurmaa@deltamarin.com

Mr. Ross MacDonald (TC) - macdora@tc.gc.ca

Ms. Soffia Gudmundsdottir (PAME Secretariat) - soffia@pame.is

APPENDIX VII

AMSA DESIGNATED POINTS OF CONTACT FOR SURVEY QUESTIONNAIRE

Canada: Mr. Ross MacDonald, Transport Canada - macdora@tc.gc.ca

Denmark/Faroe Islands/Greenland: Mr. Ivan Andersen, Danish EPA - IA@mst.dk

Iceland: Jón Bernóðusson, Icelandic Maritime Administration - jonb@sigling.is

Norway: Mr. Jens Koefoed, The Norwegian Maritime Directorate -
jens.koefoed@sjofartsdir.no

Russia: Yuri Yu. Aleksandrovskiy, Ministry of Natural Resources - yualex@mnr.gov.ru
(interim)

United States: Elizabeth McLanahan/Jennifer Mondragon, Office of International
Affairs/NOAA - Elizabeth.McLanahan@noaa.gov (interim)

APPENDIX VIII

ACOPS work progress under the GEF/UNEP Russian NPA-Arctic project

(July 2005 – February 2006)

During preceding PDF-B stage of the Project in 1999 - 2001 ACOPS fulfilled the identification and prioritization of the “hot spots” in Russian Arctic. It was done by a group of experts with the help of specially designed methodology. The results were summarized in the document “Environmental hot spots and impact zones of the Russian Arctic”, which can be found at ACOPS web site: www.acops.org. The apparent concentration of these hot spots in three Arctic regions was noted. These regions belonged to the catchment basins of Barents and White seas (I), Kara sea (II) and Chukchi – West Bering sea (III). For current stage of the full Project started July 2005 the expert group with changed composition was summoned again. It was decided on the basis of previous as well as more recent NEFCO/AMAP “hot spots” analyses to accept these three geographical regions as priority areas for analysis of environmental issues. It doesn't exclude from consideration some environmentally significant projects outside above mentioned three regions.

The preparation and adoption of a comprehensive Strategic Action Programme (SAP) should be a major output of the GEF Project. It will include costed and targeted measures to attain improved environmental protection in the Arctic region of the Russian Federation and will take full account of the existing and projected state of the environment of the Russian Arctic, as well as interests of the inhabitants including indigenous peoples, and the necessity to meet international obligations of the Russian Federation. The subsequent implementation of the SAP will allow for a significant improvement of the environment in the Russian Arctic, the circumpolar region and on the global scale. The SAP will be prepared in accordance with the GEF International Waters best practice guidelines and the process will include all the major stakeholders and will begin with the review and experts assessment of the major environmental issues. The Russian Ministry of Economic Development and Trade as the executing agency for the GEF project take the lead in development of the SAP. ACOPS role in the Project is defined now as “Partner Agency” and its meaning is clarified in Annex X to the Project Document. ACOPS will provide international technical assistance to the SAP development and will be ready to present latest GEF recommended methodologies for the task. The review and expert assessment of the major Environmental Issues in Russian Arctic (EIRA) including the climate change as a cross cutting issue is also considered by ACOPS as one of important work directions. Between EIRA the primary attention will be paid for:

- Pollution and deterioration of water quality
- Unsustainable use of natural resources
- Threats to biodiversity
- Threats to indigenous people's health and well being
- Climate change

- Transport of pollutants
 - Impacts on migratory species
 - Biological transition
 - Social transformation
 - Threats to sustainability
 - Shift in hydrological regime and fresh water inputs to marine environment
- Oil and gas development
 - Increased shipping impacts
 - Invasive species

The general consideration of EIRA for Russian Arctic has been organized by ACOPS through the series of meetings with invited experts. Currently four following reviews on EIRA are in the well developed stages of preparation:

1. Environmental effects of oil/gas development in Barents/Kara Sea region
2. Radioactive pollution of Russian Arctic
3. Unsustainable use of bioresources in Russian Arctic
4. Threats to biodiversity in Russian Arctic

It was agreed that climate change issue will penetrate all problem analyses. EIRA analyses should help to educated choice of alternatives for SAP and identification of viable pre-investment projects.

As soon as the most acute environmental issues will be identified in correspondence with GEF recommendations causal chain analysis will be done for these issues. In parallel the necessary work on “stakeholder” analysis has started.

APPENDIX IX

Assessment of Oil and Gas Activities in the Arctic - Process and Outline Content

Scope:

This assessment report is being prepared in response to a request from the Ministers and Senior Arctic Officials of the Arctic Council. They have requested a report at the Ministerial meeting in 2006 that builds on and expands the AMAP assessment completed in 1997, and that evaluates four types of impacts or effects associated with oil and gas activities in the Arctic:

- social and economic consequences
- environmental impacts from pollution
- environmental effects from physical impacts and disturbances
- effects on human health

These four components of the assessment form four strands of information flow in the assessment report. Note that this assessment specifically does not include the relation between Arctic oil and gas development and the global CO₂ emissions and greenhouse warming. This topic is covered in other assessments, e.g. ACIA, IPCC, national assessments.

The assessment will begin an introductory chapter (Chapter 1) that sets the stage for the assessment, describes its scope and the processes used to accomplish it. The second chapter will include an overview of oil and gas activities in the Arctic. In this assessment, the use of the word "activities" is taken to mean leasing/licensing, seismic and drilling exploration, production drilling and development construction, continuing production operations, all facets of transportation, and eventual decommissioning of facilities. Chapter 2 will look back on the last several decades of activity, describe current activity, and look forward as far as current plans allow.

The socio-economic strand discussed in Chapter 3 includes the social and economic consequences of the oil and gas activities in the Arctic described in Chapter 2 and will evaluate historical data and also project forward as far as possible. It also includes a consideration of the social and economic consequences of environmental effects of pollution and physical impacts and disturbances as examined in Chapters 5 and 6. The intent is to provide a comprehensive and balanced view of the positive and negative socio-economic consequences associated with oil and gas development in the Arctic.

The pollution strand identifies sources of contaminant input, environmental concentrations, pathways and fates of the contaminants in Chapter 4 based on information in Chapter 2 on the petroleum industry and available information on other sources. This strand goes on to consider and their biological effects at the organism level in Chapter 5. The environmental impacts at the levels of populations, habitats and ecosystems are considered in Chapter 6.

The strand on physical impacts and disturbances starts with information on the physical activities (construction work, land use, pipelines, roads, noise etc.) presented in Chapter 2 and goes on to consider their biological effects on organisms in Chapter 5. The consequences at the levels of populations, habitats and ecosystem are then examined in Chapter 6.

The strand on human health will be considered in Chapter 5. This assessment will update and expand the AMAP Assessments on Human Health completed in 1997 and 2003.

In Chapter 7, the various strands will be brought together to provide an overall assessment and set of conclusions. The chapter will include also recommendations to the Ministers for their consideration in developing responses to the assessment.

Before being released, the assessment will be subjected to both peer and national review to ensure the highest quality and to avoid statements that may have unintended consequences at national or local levels.

It is intended to undertake two or more outreach tasks as part of this assessment to convey the key findings from the assessment to the general public. One of these will be a symposium, scheduled for summer of 2005. The

purpose of the symposium will be: a) to hear from experts in all relevant fields on the current state of the science and technology relating to oil and gas activities in the Arctic; b) to promote dialogue among scientists of different types, industry and government officials, Arctic residents, and other stakeholders; and c) to identify critical information or expertise not already included in the assessment itself. Another key outreach effort will be production of an overview report that covers all of the chapters and summarizes and integrates their findings in an easy to understand format. Other outreach efforts may be defined during the preparation of the assessment.

Process:

Experts in the various disciplines relevant to each chapter will produce the assessment. . These experts will be nominated as authors by the eight Arctic countries, with the assumption that nomination carries with it a promise of support adequate to permit the work to be done according the time schedule. For each chapter there will be a lead author (or co-lead authors if more than one country desires a leadership position) and an appropriate number of contributing authors.

Identification Of Lead Authors (Countries):

For each of the key science chapters (Chapters 2-6), one or more lead authors will be nominated by interested (lead) countries. The following countries have indicated that they will undertake (or share) the lead role in the respective chapters:

Chapter 2 – US and Russia

Chapter 3 – US

Chapter 4 – Norway and Russia

Chapter 5 – Canada

Chapter 6 – Norway and ?

Assessment Steering Group:

Completion of the assessment will be under the direction of the Assessment Steering Group that will report directly to the AMAP Working Group and indirectly to all of the participating Arctic Council working groups. Membership will include one or more representatives from each participating Arctic Council Working Group, the Lead Authors of the assessment, and others to be determined.

Assessment Content and Detailed Outline

As described above, the scientific assessment report will consist of seven Chapters. Five of these chapters contain the core information used for the assessment. These are wrapped by an introductory chapter (Chapter 1) and a final summary and concluding chapter (Chapter 7). The five main chapters of the assessment (Chapters 2-6) are prepared by (lead and key national) experts nominated by the countries. The work on each chapter is coordinated by lead experts appointed by the countries that have accepted to undertake a 'lead' role in preparing the respective chapters. The lead experts and key national experts are responsible for ensuring that data from their countries are made available to and correctly reflected in the assessment report. The assessment is based on data and information provided by a large number of contributing experts – these are experts working in a range of institutes and organizations that may not be directly involved in the drafting of the report; all contributions will be however be fully acknowledged. The report will be subject to peer review.

Chapter 1 - Introduction

The introductory chapter is to be written by the Assessment Steering Group (ASG) and AMAP. It will contain an introduction to the assessment work and background information on demography and Arctic environmental conditions.

Chapter 2 - Oil and gas activities in the Arctic

Lead countries: USA (Robert P. Crandall) and Russia.

The intention is to present overview statistical information (at a non-sensitive level of detail) that provides a picture of past, present and future (to 2015) oil/gas development activities.

Structure and content of the chapter

(1) The first section is the presentation of a number of oil and gas activity indicies, such as drilling, leasing and seismic acquisition measures plotted on a series of maps as a function of time. These maps illustrate the spread of oil and gas activities through the arctic, providing a framework for the interpretation of current and historical environmental monitoring data and sociological studies. An important aspect of oil and gas development in the Arctic has been the adaptation of the industry to operating in this easily damaged environment. The process of operating efficiently from both an environmental and economic perspective in the Arctic is an on-going process with a long history. The impacts associated with an activity are therefore to a not inconsequential degree, a function of when the activity occurred. Also included in this section are some important production statistics compiled as a function of time for each operating area. This information presented in graphical form illustrates the scale of development activities, the frequency and size distribution of discoveries, reservoir depletion, and waste management techniques for each Arctic region.

(2) Regulatory and economic factors unique to each sovereign country have had significant influences on the range of techniques employed in oil and gas activities and the subsequent impacts associated with these activities. The second part of the Chapter is a historical narrative that describes in detail the chronology of key events within each country. This section treats each country's unique experience with Arctic oil and gas activities in detail including their legal/regulatory frameworks.

(3) The final section of the report describes activities likely to occur in the next ten years. The ten-year projection will be based on current activity levels and public statements from oil and gas operators and affected governments. The ten-year time frame is relatively short term for oil and gas developments and this section will consist of an inventory of projects that have firm financial commitments. Anticipated impacts associated with the list of projects in this section will form the basis for recommendations for policy considerations. Finally a section will be devoted to promising new technologies that appear to have the potential to strongly influence Arctic oil and gas operations in the greater than ten year time frame.

Notes:

- Maps will be Pan Arctic then broken down thereafter into Regional maps (probably two or three)
- Activity intervals for reporting purpose will be in five year increments starting on the null year and ending on the fourth, then starting on the fifth year and ending on the ninth. i.e. 1970-1974, 1975-1979, 1980-1984; and 1985-1989; etc.

Oil and Gas Activity Metrics - Key oil and gas activities (drilling, production, seismic acquisition and leasing) will be presented chronologically on two base maps. Alaska, Canada, Greenland may be shown on one base and Faroe Islands, Norway, Russia on the other. A total of 6 time intervals (pre-1960, 1960-69; 1970-79; 1980-89; 1990-99; and 2000-present) will be shown for each base for a total of 12 maps. Important information from other chapters such as case study locations, or environmental monitoring dataset locations will be shown on the appropriate time interval map.

- 1) Exploratory wells - two classes, exploratory and discovery; colour-coded by class and drilling period.
- 2) Field map - accurate polygons of field areas, plotted by date of first production-including transportation infrastructure - pipelines, tanker routes, railroads, storage facilities, and refining facilities.
- 3) Seismic maps - 2-D line miles and 3-D areas by operational area (ex. Basin) if possible in ten year increments with one for pre 1960. Statistical data shown as a function of acquisition date.
- 4) Land disposition - areas open to bid with leases taken shown.

These maps should be in GIS format with supporting data or metadata tables included. If just the GIS compatible data tables are submitted, AMAP has the capability to produce the appropriate maps that will be compatible in format throughout the assessment. (For information regarding data format requirements contact Simon Wilson at the AMAP Secretariat.)

Graphs and charts - report in English and Metric units

- 1) Meters drilled by field, and seismic acquisition (line-km or km²) in five year increments
- 2) Produced volumes of hydrocarbon (oil+condensate, gas+npls) by field composited by operational area (ex North Slope Ak.)
- 3) Annual volumes of refined product from each refinery
- 4) Histogram of original hydrocarbon (oil, gas, condensate) in place per field by date of first production
- 5) Reservoir injection projects (ex. EOR) annual volumes of fluid injected by type (ex. water, gas mi).
- 6) Annual volumes of disposal injection
- 7) Annual volumes and types of production waste (ex water) that are disposed at the surface

Historical and Current Activities - Country by country chronologically organized description of arctic oil and gas activities. This section is to include a description of the evolution and current configuration of the regulatory framework for oil and gas operations including separate heading for spills. The bulk of the legal/regulatory regime section of the chapter with detailed descriptions by countries will be put as an appendix. This part of the chapter also includes EPPR issues and Occupational Health rules.

Additional elements that should be included in the descriptions oil and gas activities in the chapter are:

- Description of how the trend of the legislative/regulatory framework has responded to oil and gas activity – is it evolving to deal with issues identified within the region, nationally or to meet international standards? This was thought to be more important than a record of the actual regulatory framework.
- The inclusion of occupational health and safety regulatory trends. This will compliment Chapter Three's attempt to report occupational health and safety data.
- A summary of the degree of national and regional ownership in the oil and gas sector in Chapter Two. Chapter Three would then provide a summary of local and indigenous ownership (or involvement) in the oil and gas sector as a basis for possible conclusions concerning trends in local governance or influence.

Technological Changes - The objective of this section is to demonstrate the fact that there is a long history of oil and gas operations in the arctic and assess the extent to which evolution in this has been successful in limiting environmental impacts including physical disturbances and pathways to the environment for toxic substances.

The most appropriate technology to minimize environmental impacts must be determined on a case-by-case basis and no single set of operational techniques is appropriate for all arctic situations.

Seismic acquisition technique evolution; a description of 1960's methods and impacts on tundra, current methods of seismic acquisition on tundra; description of marine seismic acquisition techniques in the 1960's and the change in technology (from single channel large sound source to multi-channel and ultimately 3-D).

Exploration and Production technique evolution; illustrated with specific cases:

- 1940's - Fish Creek NPRA- large impacts due to poor understanding of arctic sensitivities. Impacts naturally healed in 50 years.
- 1960's - Prudhoe Bay-large pads, reserve pits-long history of monitoring data-very large scale disposal and remediation projects.
- Current - Norwegian Snøhvit Field; Spark NPRA onshore, (each country can suggest additional projects for this section).

10 Year Projection - Describe projects with current commitments from operators (press releases, currently being permitted, projects under active considerations). Arctic oil and gas activity is a function of world hydrocarbon demand and contingent on that demand, actual levels of activity may be higher or lower than described.

- Resource economics - price supply influence on exploration and development projects i.e. Competition in the global market for financing arctic projects
- Policy considerations
- Environmental sensitivity as a limiting factor in deciding when and where to develop and produce (one to two pages only).

On the Horizon

Global Warming, ice free Arctic in the summer, permafrost melt

Gas Hydrates

Coalbed Methane

Recommendation section

Oil spills, projection anticipates increased arctic tanker traffic.

New technologies development.

General Needs for information from all countries

- Info on CO₂ sequestration
- Gas Hydrates
- Refineries
- Storage facilities
- Infrastructure (towns, camps, roads, airstrips, ports etc.)
- Technology evolution and application.

Chapter 3 - Social and economic effects (of oil and gas activities in the Arctic)

Lead country: USA (Michael Baffrey)

Structure and content of the chapter

The purpose of this chapter is to examine the social and economic effects of oil and gas activities in the Arctic. The chapter is organized as follows:

- The *Introduction* provides the rationale for the chapter and outlines the main concepts related to oil and gas effects and the approaches used herein to describe them.
- The *Case Studies* present examples of the ways in which oil and gas activities affect social and economic systems in the Arctic. The case studies are diverse in approach, reflecting differences in the circumstances of each region as well as the nature of the research that has been conducted. This diversity affords an opportunity for comparison across stages of the life cycle of oil and gas activities, across political and economic systems, across types and locations of development.
- The *Discussion and Conclusions* draw comparative lessons from the case studies and other related material, again emphasizing the distinctive features of the ways in which oil and gas activities create social and economic effects in the Arctic. The conclusions offer general observations about the nature of effects in the Arctic. The comparison of experiences to date offers a great deal to those engaged in planning for further oil and gas activities at any stage in their life cycle.

The conceptual framework adopted for this analysis has five key concepts defined as follows: (1) *Geographic Scale*--the pattern of costs and benefits differs at the local, regional, and national scales; (2) *Governance* -- ability to mitigate effects through planning, regulatory, and allocation functions of governments; (3) *Effects on Social and Economic Systems*--for our comparative analysis, and building on the topics and goals addressed in the Arctic Human Development Report, we use nine categories of effects, (microeconomic, macroeconomic, demographics, health, education and training, governance, cultural integrity, contact with nature, social health); (4) *Lifecycle Stage of Oil and Gas Projects* (evaluation, development, construction, production, enhanced development, decommissioning)--the exact effects will differ by life cycle stage and also in relation to the specific environmental, economic, political, sociocultural, and geographic circumstances of a given time and place; and (5) *Sustainable Development*—we use the Brundtland Commission definition which defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The intergenerational transfer of assets such that future generations have the means to achieve similar or greater levels of well-being compared to current generations. Human well-being is not determined by economic resources alone, but by the complex interaction of human, social, environmental and economic resources.

Gaps:

- Russian review of the Yamal-Nenets Autonomous Okrug and the Nenets Autonomous Okrug case studies.
- Russian GDP of oil and gas industry in the Russian Arctic.
- Russian safety data of the oil and gas industry including lost time, accidents, and injury.
- Case study descriptions for the Komi Region, Barrow, Bent Horn, and Norman Wells.
- Indigenous Peoples involvement – we have documented our efforts throughout this process and will continue through the final document.
- Oil and Gas GDP for the Arctic.
- Employment-related data from the authors.
- Canada will add text on land claims.
- Prepare case-study specifics maps.

Chapter 4 – Inputs and concentrations of petroleum hydrocarbons, PAHs and other oil/gas related chemicals in the Arctic environment

Lead countries: Norway (Jarle Klungsøyr and Salve Dahle) and Russia

Structure and content of the chapter

The chapter contains four main sections. The first section describes the chemical and physical properties of oil, petroleum hydrocarbons, polyaromatic hydrocarbons (PAHs) and other chemical compounds associated with the production of oil and gas. The text for this section is partly finished except for the description of chemicals.

The second section describes the sources, emissions and discharges from petroleum activities in the Arctic countries. Canada and Norway have provided some but not all needed information to this section. Information from the other Arctic countries is still missing.

Section 3, which describes the transport and fate on hydrocarbons in the Arctic, is partly finished. The section will be expanded and text related to oil in ice included.

Section 4 describes the concentrations of hydrocarbons, PAHs and other oil-related substances in the Arctic. An attempt will be made based on modelling to give a first rough oil hydrocarbon budget and mass balance for the different compartments of the Arctic.

Notes:

Move Chapter 2 Canadian spill data into Chapter 4.

Generally: Link discussions of elevated levels to levels of activities.

- operational discharges;
- accidental discharges

In 5-year or yearly intervals, parallel to drilled wells, seismic shot.

Substances and disturbances associated with Industrial activities: Exploration, Production, Transportation of Hydrocarbons.

The need to critically consider methodological aspects was raised. It was agreed that, in accordance with recommendations from AMAP phase 1, data and effects thresholds, etc., based on IR-methodology were not appropriate for inclusion/referencing in the 2002 OGA.

Need for data and new information:

We should deal with CO₂ sequestration in the ten year projection.

Data needs from the USA is detailed in a note from Dennis Thurston and acted upon by him and colleagues in the USA.

With regard to Russian data, summarised data have recently been received from Roshydromet concerning levels of petroleum hydrocarbons and PAHs in different areas of the Arctic. For detailed comparison with data from other countries, it is important that the un-aggregated data are also made available. We therefore request that the relevant permissions and work to allow this level of data delivery are facilitated.

In addition to Roshydromet, relevant data from other sources (industry, other scientific institutes) is also desirable.

In addition to data on petroleum hydrocarbons and PAHs, data is required on:

- inputs (discharges and emissions) of other chemical used in the oil and gas industry (e.g. chemicals used in drilling operations, etc.)
- estimates of amounts/volumes of spills and leaks of oil and gas (including leaks from pipelines, etc.) as total amounts and more detailed information for major leaks/spill incidents.

Chapter 5 - Effects of Oil and Gas Activities on Biota and Human Health

Lead countries: Canada (Colin Macdonald (Terrestrial), Lyle Lockhart (Aquatic) and Andy Gilman (Human Health))

Structure and content of the chapter

This chapter evaluates the effects of all facets of oil and gas activity on biota in the arctic environment. Sections in the report summarise the chemistry of petroleum related compounds in biological systems (uptake, metabolism, toxicology) and the effects of physical disturbance, such as those created by seismic activity and the construction of roads, pipelines and other structures, on bird and mammal populations. Studies describing the lethal and sub-lethal toxicity of petroleum compounds to fish have been summarized.

Main items of the chapter contents are:

- General Introduction to the Toxicology
- Biological Processes for Petroleum Related Compounds
- Lethal/Sub-lethal Toxicity (follow on from Chapter 4)
- Physical Oiling
- Physical Disturbances
- Cumulative Effects

It has been agreed that this chapter should address the effects on the population level, both in relation to contamination and pollution and in relation to physical disturbances. In the latter category would be effects on whales, caribou or reindeer, birds, etc.

Notes:

The need to critically consider methodological aspects was raised. It was agreed that, in accordance with recommendations from AMAP phase 1, data and effects thresholds, etc., based on IR-methodology were not appropriate for inclusion/referencing in the 2002 OGA.

The OGA is not intended to include extensive reviews of information that can be found elsewhere, but rather these other sources should be referenced. In particular, the AMAP (2002) reports on POPs and human health were noted as reports that might contain relevant reviews of effects information that could be referred to in the OGA assessment.

Needs for additional data and information – There is a need for updated information from all countries where such information exist, on:

- disturbance effects on mammals and birds,
- cumulative effects on individuals and populations related to oil and gas activities,
- a list of environmental standards and guidelines regarding environmental concentration levels.

Involvement of Russian experts in the fields related to effects of oil and PAHs is required, in particular to provide:

- Information from Russian studies concerning toxicology (lethal and sub-lethal effects) of petroleum hydrocarbons and PAHs to fish and other aquatic organisms.
- Oil spill (and gas leak) case studies, including location, dates, amounts, and observations of biological effects (including human health effects). In particular, the results of studies linked to the Komi oil spill.
- Information on known impacts of oil and gas activities on wildlife species (e.g. reindeer, moose/elk).
- Information on Russian environmental standards, criteria and objectives that apply to oil and individual PAHs in drinking water, freshwater/seawater, freshwater and marine sediments, soils, air, organisms, humans.

Chapter 6 – Status and Vulnerability of Arctic Ecosystems

(chapter name revised, was previously: Effects on populations and ecosystems)

Lead countries: Norway (Hein Rune Skjoldal)

Structure and content of the chapter

The chapter is planned with 4 main parts. The first is an introductory part describing the scope of the chapter and the approach and methodology taken in the assessment.

The second part gives a description of Arctic ecosystems with emphasis on ecologically important populations, species and habitats of conservation concern, and sensitive and vulnerable components in relation to oil and gas activities. The marine part uses delineated Large Marine Ecosystems (LMEs) as the basis for the descriptions, while major biomes and watersheds form the basis for delineating units of the terrestrial and freshwater environment.

The third part summarises environmental impact assessments (or statements) that have been carried out in relation to oil and gas activities in the Arctic. The fourth part evaluates the information on status of populations and ecosystems (from part two) and the information on issues of concern identified in EIS/EIA (from part three) to provide an overview and conclusions on the status and vulnerability of Arctic ecosystems with respect to oil and gas activities.

Notes from discussion

- **Environmental impact statements.** EIA or EIS have been carried out in many regions both at the strategic level for a larger area or at the project level for a specific development at a site. For the latter there exist a vast amount of detailed information compiled in voluminous reports for some geographical areas. It was agreed to limit the scope of this part to summarise EISs or EIAs at the strategic level. PAME Guidelines 2002 (on Arctic oil and gas activities) contains information on EIA requirements in different countries.
- **Oil spill scenarios.** The chapter will address status and vulnerability with regard to both regular activities (chronic levels) and accidents (acute levels). Oil spills are an important component in this respect. Information on spills (frequency, amounts) should be summarised in Chapter 4 and the potential for transport and spread of spilled oil should also be illustrated there. It was agreed that no separate risk assessment or specific oil spill scenarios would be carried out in chapter 6. Rather, general information on the fate and the temporal and spatial scales of oil spills (from chapter 4) would form the basis for evaluation of the vulnerability of site-specific populations or critical habitats in their life cycles (e.g. overwintering areas for seabirds). Oil spill situations that should be considered include: open water, ice-covered water, seafloor blow-out, terrestrial spill during spring breakup, and in proximity to large rivers.
- **Terrestrial environment.** It was agreed to approach CAFF for their assistance to this part of the chapter. In particular the experts in CAFF on terrestrial vegetation will be consulted. The US is considering whether they could provide a co-lead author for this part of the chapter.
- **Protected areas.** Such areas are often established because they contain special biodiversity features (landscapes, habitats, species). Information will be collected and shown on maps. Again CAFF is a source that will be used for this purpose.
- **Permafrost coverage map.** The map from the 1997 report (or an update, check ACIA) should be included.

Chapter 7 – Conclusions and Recommendations

A summary of the information in the core chapters (Chapters 2-6) of the assessment, leading up to overall conclusions and recommendations. Each of the core chapters should have a final section on conclusions and recommendations. These conclusions and recommendations would be of scientific and technical nature related to the topics of the chapters. They would again form the basis for the drafting of the overall conclusions and recommendations in Chapter 7.

Appendix

Because of the resulting size and scope of the review of 'Legal and Regulatory Framework' which it was decided in Helsinki was needed in Chapter 2, it was decided to take the detailed discussion of the Legal/Regulatory Framework out of Chapter 2 and place it in an Appendix. Additionally, this solution removes the confusion over whether the review was supposed to be an assessment of the framework (which this is not). We envision a fairly comprehensive referenced review of the main laws and legislation and the implementing regulations, agreements, and procedures for governing oil and gas activities. This will include for each country and internationally, preparedness, prevention and response issues and Occupational Health/Safety Regulations.

Revised time table for the assessment

The overview of progress in the previous section shows that most chapters are behind schedule and some significantly so. Delayed or no submission of data and information, and lack of national experts in some cases, are main reasons for this situations.

Based on assessments of the remaining work by the lead authors for the various chapters, a revised time table was proposed following the AMAP WG meeting in September 2005; the main components are as follows:

Complete drafts of all chapters of the science report would now not be available until 1 February 2006. These would be subject to a second round of national review and peer review and a final (pre-edited) version of the scientific report would be available by 30 June – when authors would provisionally sign-off on the report. A technically edited version of the report would be available in electronic format by 30 September (when authors would confirm their final sign-off). In order to meet these deadlines, all the remaining missing information,

including Russian information, would need to be received by latest 15 January 2006 (and most before this date). Under this option, Ministers could expect to receive a technically edited science report, in electronic pre-print form, ready to go to print and with author sign-off, together with printed copies of the overview report.

Annex 1 presents a more detailed version of the currently applicable time schedule, but this may be further adjusted depending on future developments.

Issues related to the scope and format of the assessment report

Size and scope of the assessment

The scope of the current assessment is broadened considerably over that of the 1998 AMAP assessment of petroleum hydrocarbons. The broadening includes consideration of socio-economic effects of oil and gas activities, biological and ecological effects of structures and activities, biological effects of a broader suite of chemical compounds related to oil, and more focus on the spatial aspects of populations and ecosystems.

The broadening in scope is one reason why the current assessment is much more comprehensive in size. Chapter 10 - Petroleum hydrocarbons – of the 1998 AMAP Assessment was 56 pages including references and annexes. The current draft versions of chapters range in size from less than 100 to more than 200 pages of draft text (including illustrations, tables, etc.). Most chapters will increase in size as additional material is added, although editing may also contribute to consolidation and shortening. We have not yet made a firm estimate of the size of the final version of chapters. However, it is likely that the finalised Scientific Assessment report will exceed 300 printed pages.

There was agreement that wherever possible, shortening should be made by referring to readily available sources of information. Compilation of information on the oil and gas activities and on biological, ecological and socio-economic effects in the Arctic, increases on the other hand the value of the assessment report as a scientific document and as a benchmark reference for the future. The general guidance for lead authors is to include information that are considered relevant for the assessment, but to be as short and concise as possible and use references to important sources of information where that is appropriate.

Graphics and format issues

Graphics: Much of the information will be presented on maps. A standard set of maps will be used, with a Pan-Arctic perspective, and broken down into two or three regional maps as necessary. Some information may also be presented on zoomed-in, finer scale maps. Information should be provided in a GIS compatible format if possible (shape files, or lat/long coordinates for point source data). Shape Files should be unprojected (geographical). If maps are provided in Vector Graphics formats (.eps, .ai, .pdf, etc.), information on the projection of the maps should be supplied to allow the capture of data layers for import into the GIS. Simon Wilson at the AMAP Secretariat can provide more guidance and assistance on the graphics if needed (s.wilson@inter.nl.net).

Format: Decided to put detailed discussion of the Legal/Regulatory Framework in Chapter 2 in an Appendix—this will include preparedness, prevention and response issues for each country and internationally. Also will include Occupational Health/Safety Regs for each country. Also for other chapters, there may be material that should go as an annex or appendix (e.g. tables of environmental concentrations of contaminants in Chapter 4). Part of the information in chapters could also be presented as *boxes*, supplementing the main text with figures and tables.

Corruption or illegal activities

We decided NOT to cover Corruption or the broader Illegal Activities in this assessment and save that for a separate treatment. Actions and Penalties will be covered in the Legal/Regulatory Framework Appendix.

Russian data needs (see Annex)

Data are still missing from several countries. This is being worked at fixing through effort by national contact points and experts. For the success of the assessment, the provision of missing data in a short time frame is essential.

The lack of Russian data and expertise is considered as a particular issue due to the fact that the Russian Arctic is a large and important part of the Arctic and with significant oil and gas activities. There has been limited participation of Russian experts in the process (few participants in Helsinki and none in Washington) and difficult communication.

Each lead author, based on the status and group discussions, identified specific needs for Russian data or Russian experts to contribute to the work on their chapters. The two co-leads (Dennis and Hein Rune) wrote a letter to the AMAP Executive Secretary Lars-Otto Reiersen drawing attention to the problem that the lack of Russian data and participation represented. This situation needs to be resolved as a matter of urgency, well in advance of the next meeting in St. Petersburg in September.

We feel that without significant and immediate (i.e. before the September St. Petersburg meeting) Russian input and contribution, we will be faced with three alternatives: 1) we will produce an assessment that does not include Russia for delivery at the 2006 Ministerial Meeting, 2) we will produce a complete assessment later, in 2007 or 2008, or 3) we may not complete an assessment at all. The meeting agreed that the first option would be very unfortunate. A delay is also unfortunate due to the time and resources now committed to complete the assessment by 2006.

Annex 1: Current timetable

OGA Science Report		OGA Overview Report	
Activity	Timing	Activity	Timing
Distribution of Russian data and translations thereof	20 January – (as soon as possible – authors to indicate priorities where possible)		
Third draft (in most cases lacking Russian information) >> National review* and HH	Ch.2&3 – 1 February Ch, 6 – 10 February Ch.4&5 – 15 February	Outline draft of overview report (based on 5-page summaries) available and sent to lead authors	19 February
Preparation of Fourth draft incorporating final (Russian) data	1 February – 1 March	Lead author comments back	As soon as available, latest 3 March
National review comments back	20 March	Preparation of second draft incorporating Russian information, etc.	3 March – 31 March**
OGA authors meeting to consider national comments, chapter coordination, role of AMAP and other AC WGs in review/approval process, and conclusions and recommendations for chapter 7	Provisionally 5-7 April	Second drafts available at this time sent to OGA authors and out for National review	31 March
Final draft out for peer review	25 April (sooner if possible)		
		Deadline for return of national review	30 April
		Preparation of: priority (1) Executive Summary, incl. Conclusions and Recommendations, and priority (2) final drafts of chapters, including figures	30 April – 20 May
		Executive Summary and available final drafts to AC WGs	22 May
Peer review comments back	31 May	Additional final drafts to AC WGs	As soon as possible after 20 May
		AC comments back to author	12 June

		AC WG sign-off	22 June
Final draft available, hand over of draft to editors (initial sign-off)	30 June	Copy editing	31 May – 30 June
Editing	1 July – 30 September	Layout	30 June – 1 September
Layout	15 July – 1 October (start work on chapters as soon as first have been edited)	Proofing completed	1 September
		Printing	15 September
Final sign-off of science report	30 September	Electronic report available	15 September
Electronic report available	1 October	Printed report available	1 October
Ministerial meeting (provisionally last week in October)			
Printed report available	30 November		

* purpose of this review will be to allow countries to check that their own data are fully incorporated and accurately reflected, and to highlight gaps in national information that should be filled as a matter of highest priority

** If due to late delivery of materials from lead authors it is not possible to prepare an initial draft before 19 February, this period will have to be used for preparation of first drafts

Annex 2 - Russian Data Needs

Chapter 2

Data needed are as follows:

- For all oil/gas wells that have been drilled: location of well (lat/long), year of completion of drilling, type of well (exploration/discovery/production), meters drilled at each well, identification of whether well is onshore or offshore.

(well locations will be plotted on maps according to defined periods of time; well metres will be summed in 5-year intervals (pre-1960, 1960-64, 1965-69, 1970-74, etc.) and graphed for different development regions).

- Lines/areas for oil/gas related seismic acquisition within main development regions: definition of lines/areas in which 2d/3d seismic surveys have been conducted (for presenting on maps); tables of summed 2d-seismic line-kilometers or 3d-seismic km² in the different main development areas in 5-yearly intervals (pre-1960, 1960-64, 1965-69, 1970-74, etc.).

(lines/areas of seismic data acquisition will be plotted on circumpolar map and should preferably be supplied as GIS shapefiles, or otherwise as maps in vector graphic format; line km or 3d km² in 5-yearly intervals will be presented on graphs for different major development regions).

- Areas open for licensing for oil/gas development activities in the past/present/near-future, and areas currently under license; tabulations of total area (km²) under license in different time periods.

(areas of existing/potential licensing will be plotted on maps and should preferably be supplied as GIS shapefiles, or otherwise as maps in vector graphic format; it is also intended to produce graphs of total areas under license (km²) in different time periods)

- Locations of producing fields with information on original and in-place reserves.

(locations of oil/gas fields indicating producing fields will be plotted on maps and should preferably be supplied as GIS shapefiles, or otherwise as maps in vector graphic format; data on original and in-place reserves will be presented in tables and graphs so should be provided for main development areas and by time periods)

- Total production from various oil and gas fields to date.

(data will be presented in tables and graphs so should be provided for main development areas and by time periods)

- Depleted fields.
- Estimated oil and gas reserves by region or prospect.
- Main oil/gas related infrastructure.

(locations of main infrastructure (pipelines/proposed pipelines, shipping routes, railways used for transport, refineries, main terminals/storage depots, roads, ice roads, etc.). These data will be plotted on maps and should preferably be supplied as GIS shapefiles, or otherwise as maps in vector graphic format; maps produced will be of sufficiently low resolution that this information will be presented at a non-sensitive level of detail)

It is also desirable that maps showing main boundaries of jurisdictional areas, boundaries of main development regions used in reporting of previous statistical data, etc. can be produced.

- A narrative history of oil and gas exploration and development (in different main development areas) including legal developments.
- A narrative describing predicted oil and gas activities in the next 10-years.
- A complete summary of pertinent Russian legislation and normative regulations for inclusion in an appendix describing the legal/regulatory regimes that exist in the different countries.

Chapter 3 currently includes two Russian case studies (drafted by non-Russian experts), concerning the Yamal-Nenets Autonomous Okrug, and the Nenets Autonomous Okrug.

It is important that Russian experts review the Yamal-Nenets Autonomous Okrug and the Nenets Autonomous Okrug case studies.

In addition we are requesting:

- A case study description for the Komi Region
- Russian GDP of oil and gas industry in the Russian Arctic area(s)
- Safety data of the oil and gas industry, including statistics describing lost time, accidents, and injury
- An overall review of chapter 3 by Russian experts.

Chapter 4

Data Quality and Modeling Documentation

Summarised data have recently been received from Roshydromet concerning levels of petroleum hydrocarbons and PAHs in different areas of the Arctic. For detailed comparison with data from other countries, it is important that the un-aggregated data are also made available. We therefore request that the relevant permissions and work to allow this level of data delivery are facilitated.

In addition to Roshydromet, relevant data from other sources (industry, other scientific institutes) is also desirable.

In addition to data on petroleum hydrocarbons and PAHs, data is required on:

- inputs (discharges and emissions) of other chemical used in the oil and gas industry (e.g. chemicals used in drilling operations, etc.)
- estimates of amounts/volumes of spills and leaks of oil and gas (including leaks from pipelines, etc.) as total amounts and more detailed information for major leaks/spill incidents.

Chapter 5

Involvement of Russian experts in the fields related to effects of oil and PAHs is required, in particular to provide:

- Information from Russian studies concerning toxicology (lethal and sub-lethal effects) of petroleum hydrocarbons and PAHs to fish and other aquatic organisms.
- Oil spill (and gas leak) case studies, including location, dates, amounts, observations of biological effects (including human health effects). In particular, the results of studies linked to the Komi oil spill.
- Information on known impacts of oil and gas activities on wildlife species (e.g. reindeer, moose/elk).
- Information on Russian environmental standards, criteria and objectives that apply to oil and individual PAHs in drinking water, freshwater/seawater, freshwater and marine sediments, soils, air, organisms, humans.

Chapter 6

Involvement of Russian experts, in particular in the fields related to effects on terrestrial and freshwater ecosystems.

- Data and expertise on terrestrial ecosystems in the Russian Arctic.
- Data and expertise on freshwater systems in the Russian Arctic.
- Information and expertise on coastal features.
- Information and expertise on environmental impact assessments in relation to Russian oil and gas activities in the Arctic.