Draft AMSA 2013 Progress Report – version Jan 18th 2013
Submitted by Canada, Finland and the United States

Executive Summary

The 2013 Status on Implementation of the AMSA 2009 Report Recommendations (the 2013 Status Report) represents the second biennial effort, undertaken by the Arctic Council's Protection of the Arctic Marine Environment (PAME) Working Group, to document progress on recommendations contained within the original Arctic Marine Shipping Assessment 2009 Report (AMSA) over the course of the 2011-2013 reporting period.

The AMSA - approved at the 2009 Ministerial Meeting in Tromsø and co-led by Canada, Finland, and the United States - is the culmination of a multi-year Arctic Council effort that assessed ships, their uses of the Arctic Ocean, their potential impacts on humans and the Arctic marine environment, and their marine infrastructure requirements. While circumpolar in scope, the AMSA also considers regional and local perspectives in its assessment of current and future Arctic marine operations and activities.

The outcomes of the AMSA are various key findings and associated recommendations that, when considered together, represent a strategic framework for future action on enhancing marine safety and protecting the marine environment. More specifically, all 17 recommendations fall under three broad interrelated themes: Enhancing Arctic Marine Safety, Protecting Arctic People and the Environment, and Building Arctic Marine Infrastructure. The first official Status Report, released in 2011 at the Arctic Council Ministerial Meeting in Nuuk, highlighted the significant progress made in advancing these recommendations yet also drew attention to areas where progress is limited or where more work may be needed.

The 2013 Status Report similarly aims to capture the work undertaken by Arctic States, Permanent Participants, Arctic Council Working Groups and others, that respond to the recommendations articulated in the AMSA. Picking up where the 2011 Status Report left off, this most recent iteration continues to focus on initiatives and activities with regional and circumpolar significance while also providing a benchmark against which to evaluate action and progress.

For example, as this document highlights, in the time since the release of the 2011 Status Report, the first legally binding agreement negotiated under the auspices of the Arctic Council came into force. *The Agreement on Cooperation in Aeronautical and Maritime Search and Rescue in the Arctic* (the Arctic SAR Agreement) was signed by all eight Arctic States at the Nuuk Ministerial Meeting and entered into force in January 2013. Similarly, negotiations towards a legally-binding *Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic* are also underway. Combined, these steps toward treaty making represent new and significant developments within the Arctic Council.

This report also documents progress being made within various relevant international fora, including at the International Maritime Organization (IMO), where negotiations continue towards the development of a mandatory code for ships operating in polar waters (Polar Code).

Given the rate of transformation currently being experienced in the Arctic (for example, since the release of the 2011 Progress Report, the Arctic sea ice extent reached a new record low), the need for routine updates and information exchange on the various efforts designed to address larger themes of ship safety and marine environmental protection is critical. Accordingly, monitoring and implementation of the AMSA recommendations will continue to be an ongoing part of the PAME agenda, including regular reports to the Arctic Council Ministers.

Status on Implementation of the
AMSA Report Recommendations
For the Period March 2011-March 2013

Status of Progress on Recommendations[1]

THEME I – Enhancing Arctic Marine Safety

I(A). Linking with International Organizations

"That the Arctic states decide to, on a case by case basis, identify areas of common interest and develop unified positions and approaches with respect to international organizations such as: the International Maritime Organization (IMO), the International Hydrographic Organization (IHO), the World Meteorological Organization (WMO) and the International Maritime Satellite Organization (IMSO) to advance the safety of Arctic marine shipping; and encourage meetings, as appropriate, of member state national maritime safety organizations to coordinate, harmonize and enhance the implementation of the Arctic maritime regulatory framework."

Lead State and Partners	Status of Recommendation I(A)
PAME	PAME member governments submitted and considered reports between 2011 and 2013 on the Arctic activities of IMO, IMSO, IHO, and the Arctic Regional Hydrographic Commission. PAME will continue to monitor the Arctic activities of these and other relevant international organizations and look for opportunities as appropriate to coordinate, harmonize and enhance implementation of the Arctic maritime regulatory framework. For example, the PAME I(B) project identifying options for mitigating the risks of vessel use and carriage of heavy fuel oil supports work on the Polar Code under development at IMO.
Canada, Norway, Russian Federation	In recognition of the potential for significant increases in Arctic shipping as ice margins recede, the IMO and the IHO jointly expanded the Global Maritime Distress and Safety System (GMDSS), Maritime Safety Information (MSI) service to entirely cover the Arctic Ocean with the implementation of five new Navigational Areas (NAVAREAs). Two of these areas have been assigned to Canada, two more assigned to

[1] Neither this Report nor the information it contains constitutes an assessment by any PAME member government of the consistency with international law, including the Law of the Sea Convention, of domestic laws, regulations, or other measures or resolutions identified or referenced herein.

	Russia and one to Norway.

I(B). IMO Measures for Arctic Shipping

"That the Arctic states, in recognition of the unique environmental and navigational conditions in the Arctic, decide to cooperatively support efforts at the International Maritime Organization to strengthen, harmonize and regularly update international standards for vessels operating in the Arctic. These efforts include:

- *Support the updating and the mandatory application of relevant parts of the Guidelines for Ships Operating in Arctic Ice-covered Waters (Arctic Guidelines); and,*

- *Drawing from IMO instruments, in particular the Arctic Guidelines, augment global IMO ship safety and pollution prevention conventions with specific mandatory requirements or other provisions for ship construction, design, equipment, crewing, training and operations, aimed at safety and protection."*

Lead State and Partners	Status of Recommendation I(B)
PAME	Through its member governments, PAME monitors and supports IMO's development of a legally binding international code for the safety of ships and the prevention of pollution from ships operating in polar waters (Polar Code). PAME member governments have also undertaken a variety of projects to support or complement development of the Polar Code including by gathering information on Arctic vessel traffic and identifying vessel incidents that have resulted in pollution of the marine environment.
Canada, Finland, Norway, Sweden, USA	Several Arctic States are participating in an IMO effort to assess the impacts of black carbon emissions from international shipping on the Arctic. Possible measurement and control methods are under consideration.
Norway, Russian Federation, USA	Under the leadership of Norway, Russia and the United States, PAME has undertaken a project to identify risks associated with vessel use and carriage of heavy fuel oil (HFO) in the Arctic, possible effects on the environment of an HFO spill, and options for minimizing those risks with the ultimate objective of developing recommendations for international regulations that PAME member governments could pursue at the IMO. Phase I of the project was completed in 2011. Phase II is expected to be

	completed in the second half of 2013.

I(C). Uniformity of Arctic Shipping Governance

"That the Arctic states should explore the possible harmonization of Arctic marine shipping regulatory regimes within their own jurisdiction and uniform Arctic safety and environmental protection regulatory regimes, consistent with UNCLOS, that could provide a basis for protection measures in regions of the central Arctic Ocean beyond coastal state jurisdiction for consideration by the IMO."

Lead State and Partners	Status of Recommendation I(C)
PAME	PAME completed Phase II of Arctic Ocean Review (AOR) project. The purpose of the project was to analyze potential gaps in global and regional measures for the conservation and sustainable use of the Arctic Marine Environment, identify opportunities, and make recommendations for the protection and sustainable use of the Arctic Marine Environment, including shipping activity.
USA, Russian Federation	In August 2012, both the U.S. and Russia deposited their instruments of accession to the International Convention on the Control of Harmful Anti-fouling Systems on Ships. Under the terms of the Convention, it entered into force for each country three months after the date of deposit.

I(D). Strengthening Passenger Ship Safety in Arctic Waters

"That the Arctic states should support the application of the IMO's Enhanced Contingency Planning Guidance for Passenger Ships Operating in Areas Remote from SAR Facilities, given the extreme challenges associated with rescue operations in the remote and cold Arctic region; and strongly encourage cruise ship operators to develop, implement and share their own best practices for operating in such conditions, including consideration of measures such as timing voyages so that other ships are within rescue distance in case of emergency."

Lead State and Partners	Status of Recommendation I(D)
Denmark, Norway, USA	Norway and Denmark submitted an information paper to IMO's Sub-committee on Ship Design and Equipment(DE 56/INF.2 - 14 June 2011)that identified many international, national, industry and NGOs standards and guidance that address safety and environmental protection best practices for cruise ship operations in polar

	waters. This was based on a paper submitted by the USA and Denmark to PAME I-2011. The PAME Chair also sent a letter to representatives of the cruise ship industry (Cruise Lines Industry Association, Association of Arctic Expedition Cruise Operators, and European Cruise Counsel) encouraging them to develop new or augment their own existing best practices for Arctic operations based on the paper submitted to IMO.

I(E). Arctic Search and Rescue (SAR) Instrument

"That the Arctic states decide to support developing and implementing a comprehensive, multi-national Arctic Search and Rescue (SAR) instrument, including aeronautical and maritime SAR, among the eight Arctic nations and, if appropriate, with other interested parties in recognition of the remoteness and limited resources in the region."

Lead State and Partners	Status of Recommendation I(E)
Arctic States	*The Agreement on Cooperation in Aeronautical and Maritime Search and Rescue in the Arctic* (Arctic SAR Agreement) was signed by all eight Arctic states at the Nuuk Ministerial Meeting on 12 May 2011. All parties to the Agreement have completed their internal procedures required for entry into force. The Arctic SAR Agreement will enter into force 30 days after the date of receipt by the Depository (the Government of Canada) of the last notification that the Parties have completed their internal procedures required for entry into force. Accordingly, the Arctic SAR Agreement entered into force on January 19, 2013.
Arctic States	The first Arctic Council Search and Rescue exercise took place October 4-6, 2011 in Whitehorse, Yukon, Canada. 80 delegates and observers from the eight Arctic Council member states took part in this tabletop exercise, which focused on strategic and operational aspects of aeronautical and maritime SAR in the Arctic.
Arctic States	Arctic States participated in the first full scale mass rescue operation, September 11-14, 2012, called "SAREX Greenland Sea 2012." The exercise included both an open sea search operation (simulating a mass rescue operation on a cruise ship) and in-fjord rescue and

	evacuation operation off the northeastern coast of Greenland.
Russian Federation	In 2011, the Marine Rescue Sub-Center was established in Port Tiksi and operates during the summer season. In 2012, the Marine Rescue Coordination Center Dixon was established and will operate year-round, as well as the Marine Rescue Sub-Center Pevek, functioning in the summer season.
Russian Federation	Rescue teams of the North Branch of FSUE "Baltic Salvage Company" with diving equipment and oil spill response equipment have been involved, on a regular basis, in carrying out emergency-rescue preparedness on the board the icebreakers FSUE "Atomflot" since 2010.
Russian Federation	Planning is underway for the construction and renovation of shore-based infrastructure, including administrative complexes, berthing facilities, warehouses for storage of rescue and Oil Spill Response (OSR) equipment in the Ports Dickson, Tiksi, Pevek and Providenie.

THEME II – Protecting Arctic People and the Environment

II(A). Survey of Arctic Indigenous Marine Use

"That the Arctic states should consider conducting surveys on Arctic marine use by indigenous communities where gaps are identified to collect information for establishing up-to-date baseline data to assess the impacts from Arctic shipping activities."

Lead State and Partners	Status of Recommendation II(A)
CAFF	The Arctic Biodiversity Assessment (ABA) includes a Traditional Ecological Knowledge (TEK) compendium of observations in its report. Similarly, the Circumpolar Biodiversity Monitoring Program (CBMP) is implementing the Arctic marine biodiversity monitoring plan and incorporates community-based inventories into its monitoring plans.
SDWG (Canada/ICC-Canada)	Phase II of the SDWGs "A Circumpolar-Wide Inuit Response to the AMSA" is broadening the consultative process with Inuit communities in carrying out an expanded survey to assess their current use of the sea and how it compares with

	records from early land and marine use studies. The expanded surveys cover Greenland, Russia (Chukotka), United States (Alaska), as well as broader surveys with Canadian Inuit.
Canada	In 2011, the Canadian Department of Fisheries and Oceans prepared a report entitled "Conversations with Nunavut Communities on Areas of Ecological Importance" that documented traditional Inuit knowledge of important environmental areas. This report was designed to complement an overall strategy to develop a network of MPAs.
USA	The U.S. Bureau of Ocean Energy Management has continued to build on 30 years of studies related to subsistence use since the AMSA Report was published in 2009 has conducted several studies on marine subsistence use in the Beaufort and Chukchi Seas and Bristol Bay area of the Bering Sea.
Canada (Government of Nunavut)	Since 2007, the Government of Nunavut has been conducting coastal resource inventories. Coastal inventories document and map Inuit knowledge of land and marine use and locations of many coastal and marine species. As of 2012, 10 of the 25 Nunavut communities have completed inventories.
AIA and Sammi Council	The Aleut International Association (AIA) and the Saami Council submitted to PAME meetings in 2011 and 2012 a paper entitled "Development of an Arctic Marine Use Survey Process, a Scoping Paper to Assess Possible Joint Efforts of PAME and other AC Working Groups" to establish baseline data to assess the impacts from Arctic shipping activities on indigenous communities.
USA Native Corporation Kawerak, Inc.	Kawerak, Inc. is conducting a major study to prepare maps showing seasonally defined habitat and subsistence use areas for seals and walrus on the U.S. side of the Bering Strait. The study involves collaboration with nine federally recognized tribes and, to date, has solicited information from 81 local experts.
Northwest Arctic Borough	In 2011, the Northwest Arctic Borough established a Subsistence Mapping Project to identify and map subsistence resources and inform decisions about energy and infrastructure

	development. The project seeks to foster cooperation with government agencies and provide a foundation for integrating scientific information with local and traditional knowledge.

II(B). Engagement with Arctic Communities

"That the Arctic states decide to determine if effective communication mechanisms exist to ensure engagement of their Arctic coastal communities and, where there are none, to develop their own mechanisms to engage and coordinate with the shipping industry, relevant economic activities and Arctic communities (in particular during the planning phase of a new marine activity) to increase benefits and help reduce the impacts from shipping."

Lead State and Partners	Status of Recommendation II(B)
Norway	In 2012, Norway launched BarentsWatch, a comprehensive monitoring and information system that will make relevant information and services related to sea and coastal areas more readily accessible to the authorities, decision-makers and the general public.
Russian Federation	In 2011 under two laws which give indigenous communities the right to compensation for losses suffered from economic activity damaging native habitats – Federal Law N40 ("On Amendments to the Federal law") and the Guarantees of the Rights of Indigenous Peoples of the Russian Federation - Gazprom provided the Yamal people with 765 million rubles (over US$2 million) in compensation. In 2011, Varteganneft provided 6 million rubles to the Khanty-Mansiysk peoples.

II(C). Areas of Heightened Ecological and Cultural Significance

"That the Arctic states should identify areas of heightened ecological and cultural significance in light of changing climate conditions and increasing multiple marine use and, where appropriate, should encourage implementation of measures to protect these areas from the impacts of Arctic marine shipping, in coordination with all stakeholders and consistent with international law."

Lead State and Partners	Status of Recommendation II(C)
CAFF, SDWG, AMAP	In December 2012, CAFF, SDWG and AMAP completed a report identifying areas of heightened ecological and cultural significance

	within the Arctic marine environment. The report identifies approximately 99 such areas.
CAFF	CAFF is working on a 2012 release of the Arctic's protected areas indicator which will have a specific focus on the marine environment. The ABA and Circumpolar Biodiversity Monitoring Program (CBMP) also provide the baseline information necessary to follow-up on this recommendation. The CBMP biodiversity monitoring plan is now being implemented and the first focused state of the Arctic's marine biodiversity report is scheduled for 2015.
Canada	In 2011, Canada completed a process to identify and prioritize 38 new ecologically or biologically significant areas (EBSAs) in the Canadian Arctic. Canada will review and update its existing Western Arctic EBSA's in 2013. These processes will serve as the foundation for the development of a network of MPAs.
Denmark/Greenland	Denmark/Greenland finalized a national process to identify and prioritize marine areas of heightened ecological significance around Greenland on [date]. Twelve areas were identified in April 2011. Building on that, Denmark/ Greenland has initiated a national process to identify measures relevant to Arctic marine shipping in six prioritized marine areas of heightened ecological significance (primarily within national jurisdiction). A pilot project on the three areas of highest priority has been initiated. Information and data generated from the national process has been submitted as a contribution to the AMSA II(C) report.
Russian Federation	Within the last few years, the Russian Federation has designated about 30 percent of its Arctic territory as special protected natural areas. Particularly for inclusion in oil spill contingency plans, the Russian Federation determined that there are eight natural reserves, two wildlife sanctuaries, and one biosphere natural reserve. All of these special protected natural areas include areas within the marine environment.
USA	The United States in collaboration with the State of Alaska through the Alaska Regional Response Team has developed maps of environmentally sensitive marine and coastal areas including the

USA	Bering, Chukchi and Beaufort Sea sand coasts, most recently updated in 2012. In an ongoing fashion, the U.S. Bureau of Ocean Energy Management studies areas in the U.S. Arctic for ecological and cultural significance and uses the information to identify possible impacts from offshore oil and gas activities as well as to mitigate or defer such activities. The U.S. Bureau of Ocean Energy Management has also sponsored new environmental, physical oceanographic, meteorological, ice, and socio-economic studies (including subsistence) studies that are used in environmental impact assessments.

II(D). Specially Designated Arctic Marine Areas

"That the Arctic states should, taking into account the special characteristics of the Arctic marine environment, explore the need for internationally designated areas for the purpose of environmental protection in regions of the Arctic Ocean."

Lead State and Partners	Status of Recommendation II(D)
PAME	PAME has initiated a project that will explore the need for, and as appropriate make recommendations regarding, internationally designated areas in the high seas area of the Arctic Ocean that warrant protection from the risks posed by international shipping activities. The project is expected to be completed in 2013.
PAME	PAME has examined the availability and adequacy of port waste reception facilities in Arctic ports and encouraged member governments to update information on such facilities in the IMO database established to track and publicize such information. Once IMO adopts a resolution designating a "Special Area" under MARPOL Annex I, III, IV or VI, the availability of adequate port reception facilities must be demonstrated before the "Special Area" restrictions on discharges from ships may become effective.
Canada, Denmark, Finland, Norway, Sweden, Russian Federation, USA	PAME member governments developed a comprehensive summary, submitted as a report to PAME II-2012, of measures and tools available through the IMO to protect the marine environment from international shipping

	activities. Such tools and measures include MARPOL special areas, routing measures and PSSAs.
Denmark/Greenland	Denmark/Greenland has initiated a process to evaluate associated protective measures that may be used in possible Particularly Sensitive Sea Areas (PSSA) designated through IMO.

II(E). Protection from Invasive Species

"That the Arctic states should consider ratification of the IMO International Convention for the Control and Management of Ships Ballast Water and Sediments, as soon as practical. Arctic states should also assess the risk of introducing invasive species through ballast water and other means so that adequate prevention measures can be implemented in waters under their jurisdiction."

Lead State and Partners	Status of Recommendation II(E)
CAFF	The upcoming Arctic Biodiversity Assessment contains a component focusing on invasive species which will provide a description of the current state of invasive species in the Arctic; create a baseline for use in global and regional assessments of biodiversity; provide a basis to inform and guide future Arctic Council work on invasive species; identify gaps in the data record; identify key mechanisms driving change; and produce scientific and policy recommendations.
Russian Federation	The Russian Federation ratified the Ballast Water Management Convention on May 24, 2012.
Denmark/Greenland	Denmark ratified the Ballast Water Management Convention in September 2012 and has enacted domestic implementing legislation. Furthermore, Denmark and Greenland are currently discussing a coordinated ratification and implementation of the Convention in Greenland, as this will require amendments to legislation in both countries. As of October 31, 2012, 36 States representing 29.07% of the global merchant fleet have ratified the Ballast Water Management Convention. Canada, Sweden and Norway became parties to the Convention prior to 2011.
USA	The U.S. issued regulations effective June 21, 2012, that establish a ballast water discharge standard based on the Ballast Water Management Convention. All ships discharging

Canada	ballast water in U.S. waters must comply with the discharge standard according to the Implementation Schedule for Approved Ballast Water Management Methods. Canada held a 2011 workshop and issued a report assessing the level of risk posed by ships transiting to and from Arctic ports for the introduction of aquatic invasive species.

II(F). Oil Spill Prevention

"That the Arctic states decide to enhance the mutual cooperation in the field of oil spill prevention and, in collaboration with industry, support research and technology transfer to prevent release of oil into Arctic waters, since prevention of oil spills is the highest priority in the Arctic for environmental protection."

Lead State and Partners	Status of Recommendation II(F)
EPPR	EPPR in cooperation with other Arctic Council Working Groups and in accordance with the task given by the Arctic Council Ministerial Meeting in Nuuk, 12 May 2011, have collected recommendations and best practices in the prevention of marine oil pollution as part of the Arctic Council Recommended Practices Prevention Project (RP3). A report from the RP3 project was submitted to the 2013 Arctic Council Ministerial Meeting.
EPPR	EPPR prepared the report Arctic Emergencies: Current and Future Risks, Mitigation, and Response Cooperation.
EPPR	EPPR has initiated a project called: Preventing Morbidity and Mortality Among Arctic Oil Spill Response Workers. The purpose of this project is to conduct research, develop guidelines and recommend effective measures to prevent morbidity and mortality among oil spill response workers in the Arctic environment.
Norway	As of July 1, 2012, the Norwegian Pilotage Act and regulations issued pursuant to the Act were made applicable to Svalbard, thus introducing the state pilotage service, compulsory pilotage and Pilot Exemption Certificate (PEC) for Svalbard. This is an important oil spill prevention measure.

EMSA	The same rules apply for waters around Svalbard as for mainland Norway, *i.e.,* vessels with at length of 70 meters or more and passenger vessels with a length of 24 meters or more are subject to compulsory pilotage when sailing in Svalbard internal waters. For vessels carrying dangerous and/or polluting goods the length limits are shorter. EMSA is now operating CleanSeaNet (CSN), the EU's near real-time satellite-based oil spill and vessel monitoring system which can be used in certain Arctic areas.

II(G). Addressing Impacts on Marine Mammals

"That the Arctic states decide to engage with relevant international organizations to further assess the effects on marine mammals due to ship noise, disturbance and strikes in Arctic waters; and consider, where needed, to work with the IMO in developing and implementing mitigation strategies."

Lead State and Partners	Status of Recommendation II(G)
CAFF	CAFF has finalized the Arctic Biodiversity Assessment (ABA) report for release at the 2013 Arctic Council Ministerial Meeting. The report describes the status and trends for Arctic biodiversity, the way it is used by humans and the various threats affecting it. The report provides a first ever and much needed description of the state of the Arctic's biodiversity. . The assessment consists of four components: (1) *Arctic Biodiversity Trends 2010 – Selected Indicators of Change*, which provided a preliminary snapshot of status and trends of Arctic biodiversity; (2) a full scientific assessment of Arctic biodiversity, (3) TEK Compendium; and (4) a Summary for Policy Makers.
CAFF	The Arctic's marine ecosystem and the assessment & monitoring of its biodiversity have been the subject of extensive work since the last ministerial meeting. CAFF s providing the baseline and the means to help understand and detect changes in marine biodiversity though the upcoming Arctic Biodiversity Assessment (ABA) and the Circumpolar Biodiversity Monitoring Program (CBMP). Relevant documents include the marine mammal monitoring strategy and the marine biodiversity monitoring plan approved at

Russian Federation	the 2011 ministerial meeting and now under implementation – with the state of the Arctic marine biodiversity report scheduled for 2015. Furthermore the ABA scheduled for release in 2013 will synthesize existing information on the marine ecosystem. Further information can be accessed at http://caff.is/marine, www.cbmp.is, and http://caff.is/assessments. In 2012, the Russian Federation identified the boundaries of an area in the Arctic (White Sea area) where harp seals congregate during certain times of the year and developed recommendations on how ship traffic can avoid harming the seals in this area. These recommendations were shared with the shipping industry.

II(H). Reducing Air Emissions

"That the Arctic states decide to support the development of improved practices and innovative technologies for ships in port and at sea to help reduce current and future emissions of greenhouse gases (GHGs), Nitrogen Oxides (NOx), Sulfur Oxides (SOx) and Particulate Matter (PM), taking into account the relevant IMO regulations."

Lead State and Partners	Status of Recommendation II(H)
Russian Federation	Based on IMO regulations and recommendations, the Russian Federation has determined operational energy efficiency indices, both for marine and river cargo ships, assessed an Energy Efficiency Design Index for some Russian ships constructed in the last ten years, and calculated the quantity of greenhouse gas emitted by marine and river transport vessels. Ice class ships were also considered in this study. The Russian Federation is also implementing a technical regulation that mandates all new Arctic ships be designed and constructed taking into account the requirements of MARPOL Annex VI's Chapter 4.
Member States through IMO (with USA Leadership)	In recognition of the increasing awareness of the impacts of black carbon (BC) emissions on climate change, a Correspondence Group of IMO's Subcommittee on Bulk Liquids and Gases (BLG) was given a mandate to focus on BC emissions from international shipping that impact the Arctic. In doing so, it will develop a

	definition for BC, consider and identify the most appropriate methods of measurement, and identify and collate control measures to reduce the impact of BC emissions from international shipping. IMO's Marine Environmental Protection Committee (MEPC) will consider the results of this work at its 65th Session (May 13-17, 2013).

THEME III – Building the Arctic Marine Infrastructure

III(A). Addressing the infrastructure deficit

"That the Arctic states should recognize that improvements in Arctic marine infrastructure are needed to enhance safety and environmental protection in support of sustainable development. Examples of infrastructure where critical improvements are needed include: ice navigation training; navigational charts; communications systems; port services, including reception facilities for ship-generated waste; accurate and timely ice information (ice centers); places of refuge; and icebreakers to assist in response."

Lead State and Partners	Status of Recommendation III(A)
PAME	At its September 2012 meeting, PAME reviewed information submitted by the USA regarding the World Meteorological Organization's Voluntary Ships Observing (VOS) Scheme and adopted a decision to educate Arctic Council member governments and the shipping industry on how increased participation in the program is an extremely cost-effective measure for supporting Arctic marine safety, efficiency, and weather and climate prediction and research.
CAFF	The Arctic Spatial Data Infrastructure (Arctic SDI) led by CAFF within the Arctic Council will create the framework and standards for spatial information exchange and integration.
SDWG (Iceland, United States, Institute of the North)	Building on past efforts ad projects from the PAME and SDWG working groups, the Arctic Marine and Aviation Transportation Infrastructure Initiative (AMATII**)** was formally approved in May 2012 with the goal of helping decision-makers evaluate northern infrastructure – ports, airports and response capability – by inventorying maritime and aviation assets in the Arctic. The AMATII contains three related deliverables with final approval anticipated for May 2013. These deliverables include an **Arctic Maritime and Aviation Infrastructure Database**, a web-based, searchable inventory of baseline public port and airport data; an **Arctic Maritime and Aviation Infrastructure Map** that hosts layers of port and airport infrastructure for a graphical representation of asset locations; and a **Guidance Document** that includes the proceedings of the Port and Airport Infrastructure Workshop, as well as case studies

	and illustrative stories of northern aviation and marine infrastructure.
Denmark/Greenland	Denmark/Greenland is currently elaborating new sea charts for the Greenlandic West Coast, from Kap Farvel in the South to Uummannaq in the North. Greenland is also evaluating possibilities to introduce a formalized requirement for ice guides. Both initiatives will generally contribute to increase navigational safety in Greenlandic territorial waters.
Finland	The Finnish Meteorological Institute (FMI) (including the Finnish Ice Service) is currently increasing its commitment to the Arctic and building its capability to offer weather and ice monitoring services to customers operating in the Arctic region.
Russian Federation	The major ports in the Russian Arctic – including Murmansk, Archanglesk, Kandalksha, and Dudinka – are now capable of receiving ship-generated waste and have all developed Port Waste Management Plans. Murmansk can receive MARPOL Annex I, IV, and V wastes. The other three ports can bilge water and Annex IV and V wastes.
Russian Federation	The Admiral Makarov State Maritime Academy's Maritime Training Center in St. Petersburg recently established courses for training navigators on sailing in icy conditions.
Russian Federation	747 open navigation charts have been issued for the Russian Arctic Seas as well as 19 guides and manuals for navigation.
Russian Federation	The Russian Federation established 1555 pieces of navigational equipment in the Russian Arctic Seas.
Canada	In 2012, a dedicated spill response barge became permanently stationed in Tuktoyaktuk Harbor. This additional equipment operates in the western Canadian Arctic. Additionally, a small craft harbor to service inshore commercial fishing and other marine operations is under construction in Pangnirtung, Nunavut. The harbor is expected to be operational in 2013.
Norway	Several potential places of refuge for the

Norway	Svalbard area have been surveyed. They are currently awaiting final approval before being released as official places of refuge. In 2010 the electronic navigation chart (ENC) coverage in the Svalbard area has been extended with 17 new General ENCs. Based on inputs from the main stakeholders a long term survey plan for the territorial waters of Svalbard has been developed. The guidance for the plan is that the whole Svalbard area shall be covered by adequate ENC/navigational charts, except for a few areas that are seldom visited The routes for the cruise traffic will be prioritized in the west and north. On the east side safe navigation is some main passages will govern the priority of surveying. In 2011, a total of about 1700 km2 was surveyed along the coast of Svalbard.

III(B). Arctic Marine Traffic System

"That the Arctic states should support continued development of a comprehensive Arctic marine traffic awareness system to improve monitoring and tracking of marine activity, to enhance data sharing in near real-time, and to augment vessel management service in order to reduce the risk of incidents, facilitate response and provide awareness of potential user conflict. The Arctic states should encourage shipping companies to cooperate in the improvement and development of national monitoring systems."

Lead State and Partners	Status of Recommendation III(B)
PAME	Since 2011, PAME member governments have been actively exploring how to increase Arctic vessel traffic awareness. Member governments have shared information about their national vessel traffic monitoring systems, how other governments can request access to such information, and modalities for sharing such information. PAME has also hosted presentation by the European Maritime Safety Agency (EMSA) and a commercial satellite AIS provider on current and evolving capabilities for increasing Arctic maritime domain awareness. PAME is exploring how it might work with and benefit from the services provided by EMSA.
Norway, Russian Federation	In July 2012, the IMO Sub-Committee on Safety of Navigation (NAV) approved a joint Russian/Norwegian proposal for a mandatory ship reporting system in the Barents Area (Barents SRS). Provided adoption by the

	Maritime Safety Committee (MSC) at its next session, the system will become effective in June 2013. The purpose of the system is to secure ships' safe navigation within the Barents area, and to be able to initiate search and rescue (SAR) and pollution prevention measures around a relevant position, not only by using the available SAR units but also the participating ships known to be in that particular area.
Norway	In July 2010, Norway launched its first AIS satellite, AISSat-1. The satellite operates in a polar orbit at an altitude of 600 km. It is used by The Norwegian Coastal Administration and the Norwegian Coast Guard to monitor vessel traffic in remote areas, where before the traditional land-based stations just reached 40 nautical miles from shore. This small and innovative satellite has given a new dimension to the monitoring of ship traffic in the Arctic, and the AIS information has also successfully been used by Kongsberg Satellite Services (KSAT) in the near real-time oil spill and vessel detection services provided worldwide. A second satellite, AISSat-2, is planned to be launched in 2013.
Denmark	Denmark has studied the possibility of utilizing AIS data received from polar orbiting satellites for improving the monitoring and tracking of marine activity in the waters around Greenland. The results so far are promising. It is possible to detect AIS signals from space, and the detection efficiency seems to be acceptable, particularly in remote areas with relatively low density of vessels. Satellite AIS services are now commercially available from at least two sources and the European Space Agency is in the process of establishing such capability for the EU in the longer term. As noted in the preceding entry, Norway has launched its own satellite and is sharing data with Denmark and others. A small experimental Danish satellite was launched in March 2013.
Russian Federation	The Russian Federation passed a federal law in July 2012 that establishes the institutional and technical requirements on safety of navigation in the Northern Sea Route in order to prevent pollution from ships.
USA	The U.S. submitted detailed information and

	several graphical maps to PAME in September 2012 on aggregate Arctic vessel traffic data for the period June 2011-June 2012.

III(C). Circumpolar Environmental Response Capacity

"That the Arctic states decide to continue to develop circumpolar environmental pollution response capabilities that are critical to protecting the unique Arctic ecosystem. This can be accomplished, for example, through circumpolar cooperation and agreement(s), as well as regional bilateral capacity agreements."

Lead State and Partners	Status of Recommendation III(C)
Arctic States	Pursuant to a decision taken at the 2011 Nuuk Ministerial Meeting, Arctic States negotiated a legally-binding *Agreement on Cooperation on Marine Oil Pollution Preparedness and Response* adoption at the 2013 Kiruna Ministerial Meeting.
EPPR	The Senior Arctic Officials tasked EPPR to develop operational guidelines for the *Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic*. The operational guidelines will be an appendix to the Agreement. The guidelines will cover all of the important key elements in the Agreement.
CAFF	CAFF's implementation of the Circumpolar Biodiversity Monitoring Program (CBMP) and the development of the Arctic Biodiversity Data Service (www.abd.is) will contribute to facilitating more rapid identification, communication, and subsequent response to effectively mitigate pollution threats affecting circumpolar biodiversity.
Greenland	On June 6, 2012, the Greenland Parliament adopted an Act establishing a government-owned company, Greenland Oil Spill Response A/S, with the primary goal to build a national oil spill response capability in connection with the increasing offshore hydrocarbon exploration activities.
Russian Federation, Norway	The Russian Federation and Norway cooperate on combating oil pollution in the Barents Sea. Three branches of the Federal State Unitary Enterprise's (FSUE) "Baltic Salvage Company" – the Northern Branch, the Arkhangelsk Branch in

USA/(EPPR)	the Western Arctic, and the Sakhalin Branch in the East Arctic -- form the basis of the oil spill readiness and response forces in the Russian Arctic sector. The above enterprises are marine permanent professional rescue organizations, established for oil spills localization and response. In August 2011, the Comprehensive Exercise "Arctic-2011" was held near the outer harbor of the port of Tiksi (Buor-Khaya Bay in the Laptev Sea). The main objectives of the exercise were response to emergencies, including search and rescue and oil spill response. Observers from Arctic Council member governments were invited to attend the exercise. In June 2011, EPPR accept the Arctic Environmental Response Management Application (ERMA) project developed by the USA. ERMA is a web-based GIS tool designed to assist both emergency responders and environmental resource managers who deal with incidents that may adversely impact the environment. The application can assist in response planning and is accessible to both the command post and to assets in the field during an actual response incident, such as an oil spill or hurricane. The data within ERMA also assist in resource management decisions regarding hazardous waste site evaluations and restoration planning. ERMA supports environmental preparedness, response, and recovery efforts by: 1) Providing integrated and timely information to improve decision-making; 2) Integrating and synthesizing various types of information on a single map interface; 3) Providing fast visualization of current information; and 4) Improving communication and coordination among responders and stakeholders.

III(D). Investing in Hydrographic, Meteorological and Oceanographic Data

"That the Arctic states should significantly improve, where appropriate, the level of and access to data and information in support of safe navigation and voyage planning in Arctic waters. This would entail increased efforts for: hydrographic surveys to bring Arctic navigation charts up to a level acceptable to support current and future safe navigation; and systems to support real-time acquisition, analysis and transfer

Lead State and Partners	Status of Recommendation III(D)

CAFF	The Arctic Spatial Data Infrastructure (Arctic SDI) led by CAFF is creating the framework and standards for spatial information exchange and integration.
Canada, Denmark, Norway, Russian Federation, USA	An Arctic Regional Hydrographic Commission was established in October 2010 by the five Arctic coastal States. The Commission has met annually since its formation to promote the exchange of hydrographic information, knowledge and data required to improve nautical charting to facilitate safe navigation and protection of the Arctic marine environment. A key interest of the Commission is to advance Arctic hydrographic data collection through use of new technologies and platforms of opportunity as an aid to improve modern chart coverage.
Russian Federation	Since 2011, the Russian Federation's Hydrographic Service has been investigating the Northern Sea Route's least-studied areas, with specialized vessels surveying a 31,000 square km area of the sea floor. Survey results have been digitized and developed in electronic navigation charts. Sixty-eight marine electronic navigation charts were issued based on the survey results. By the end of 2012, two hundred charts were developed.
Norway	The Norwegian Pilot Guide consists of eight volumes of sailing directions for the Norwegian coast, Svalbard and Jan Mayen. The Norwegian Pilot Guide Volume 7, which covers Svalbard and Jan Mayen, was made available in English in July 2012.
USA	In June 2011, the U.S. Office of Coast Survey published the "Arctic Nautical Charting Plan" which included descriptions of the foundational data needs for better charting in the U.S. Arctic and showed the outlines for 15 proposed new charts in the region. The first new chart, NOAA Chart 16161 - Approaches to Kotzebue, was published in May 2012. The next new chart, NOAA Chart 16190 - Bering Strait North, is planned for release in summer 2013. The U.S. also produces Sailing Directions (volumes 180-183) and the NOAA Coast Pilot (volume 9) to support navigation in U.S. and Arctic waters as well as 36 electronic navigational charts (ENCs)

	and 39 raster charts for U.S. waters included in the area covered by the Arctic Regional Hydrographic Commission.