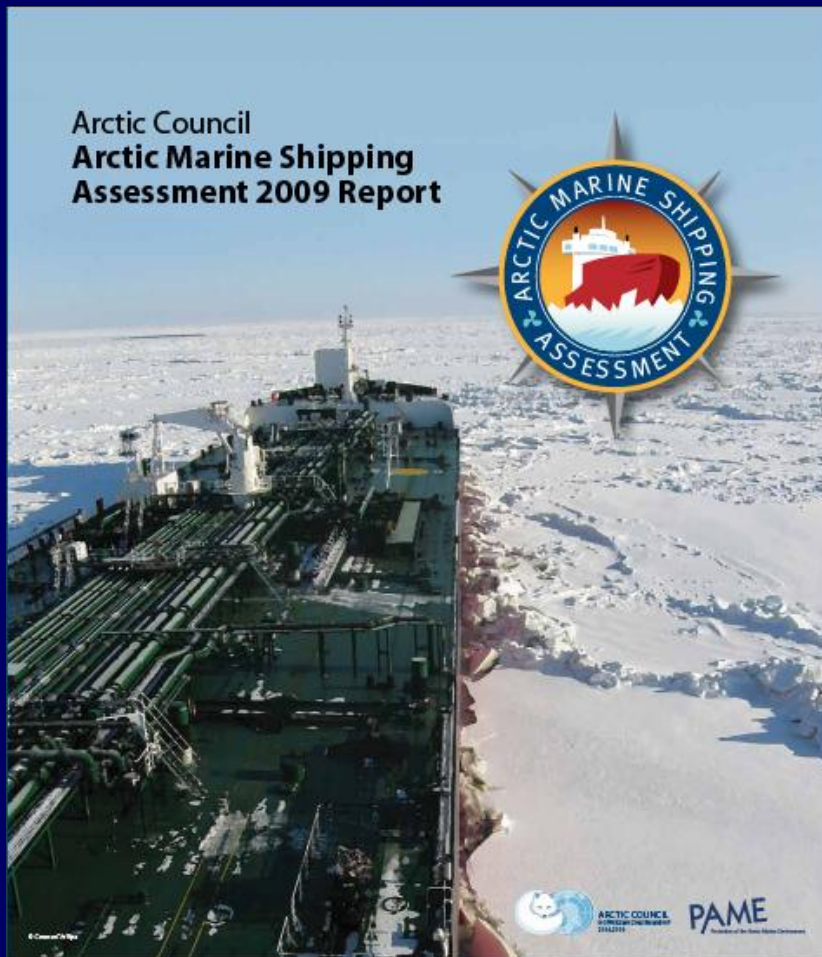


Arctic Marine Shipping Assessment The Way Forward

AOR Workshop ~ Washington, DC

13 September 2010



Topics:

AMSA Reflections

Recommendation I.C.: Uniformity
of Arctic Shipping Governance

Select Post-AMSA Changes &
Events

UAF AMSA Workshop Report

Lawson W. Brigham, PhD

Professor, University of Alaska Fairbanks

Chair, Arctic Marine Shipping Assessment (2005-09)



AMSA 2009 Report:

- **Baseline Assessment ~ Marine Activity**
- **Arctic Council Policy Document ~ Negotiated Report Approved 29 April 2009 ~**
 - **Strategic Guide**

www.pame.is

[Report & AMSA Background Papers]

AMSA Recommendation 1.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.**

**Mandatory Polar Code Implementation by the Arctic States
Harmonize Regulatory Regimes ~ Uniformity & Consistency**

Select Changes & Events

- Development of the Varandey Tanker Shuttle
- Full Fleet ~ Norilsk Nickel Operation
- Snovit ~ LNG Shipped to Spain & USA
- Continued Retreat of Arctic Sea Ice
- Offshore Drilling ~ West Greenland
- IMO Plan for Mandatory Polar Code
- Norway-Russia Barents Sea Agreement
- NSR/NEP Experimental Voyages
 - Summer 2009: *Beluga* Ships
 - Summer 2010: SCF *Baltica* & *Nordic Barents*
- 2010 Navigation Season: Tanker Collision Along the NSR, Groundings in the Canadian Arctic

~ Summary Observation: Natural Resource Development Driving Arctic Marine Operations



Select Changes & Events

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~ Summary Observation: Natural Resource Development Driving Arctic Marine Operations



**Summer Northeast Passage
2009 Voyages of *Beluga Fraternity* & *Beluga Foresight***

Select Changes & Events

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- Full Fleet ~ Noriksk Nickel Operation
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Groundings ~ Canadian Arctic Aug-Sept 2010

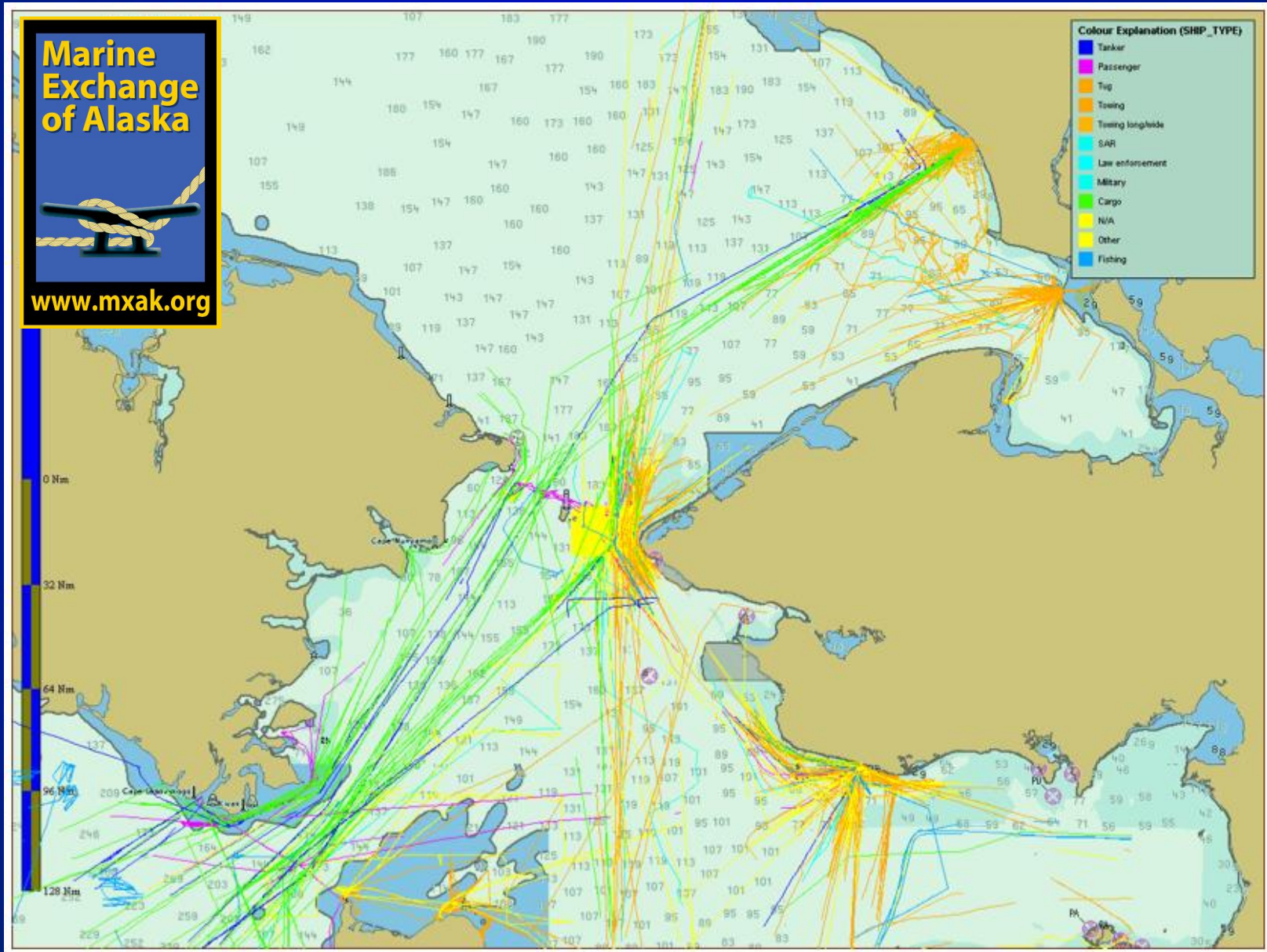


M/V Clipper Adventurer

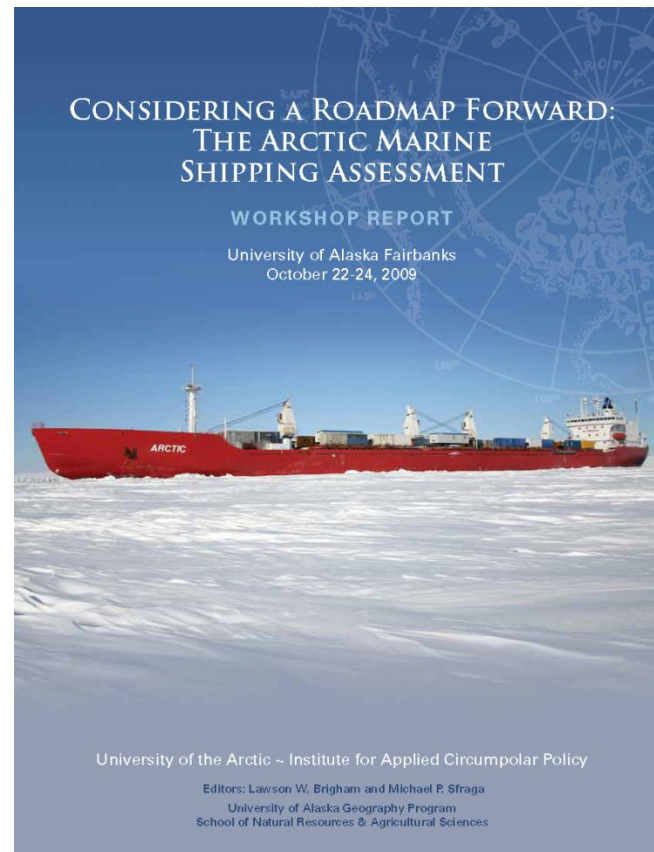


M/T Nanny

Bering Strait Region shipping by vessel type: 1 May – 6 September 2010



CONSIDERING A ROADMAP FORWARD: THE ARCTIC MARINE SHIPPING ASSESSMENT



Workshop
October 22-24, 2009

UNIVERSITY OF ALASKA FAIRBANKS



Introduction and Background

- **Second workshop for the UArctic Institute for Applied Circumpolar Policy**
- **Topic: Policy review of the recommendations from the Arctic Council's Arctic Marine Shipping Assessment**
- **60 experts from broad array of stakeholders and actors**
- **Sponsors: Holland America Lines, UAF Chancellor's Office, U.S. Arctic Research Commission, Institute of the North**
- **AMSA can be viewed as:**
 - **baseline assessment**
 - **strategic guide**
 - **policy document of the Arctic Council**

Identifying Stakeholders and Actors

CONSIDERING A ROADMAP FORWARD: THE ARCTIC MARINE SHIPPING ASSESSMENT 5

Identifying the Stakeholders and Actors

Experts in the three Workshop Working Groups (Enhancing Arctic Marine Safety, Protecting Arctic People and the Environment, and, Building the Arctic Marine Infrastructure) identified a host of stakeholders and actors who are believed to have some involvement and influence in AMSA and in the future of Arctic marine activity. As might be expected, there were significant overlap among the working group listings, and discussions on who might

be relevant stakeholders and actors. The primary decision-makers and 'players' in this review are considered to be the eight Arctic sovereign states, the flag states, and the indigenous groups who make up the six Permanent Participants of the Arctic Council. The below should be considered examples of the key stakeholders & actors, however, not an exhaustive list.

~ **Sovereign States** (Regulatory and response agencies; regional authorities; national hydrographic services; national ice services; national pollution funds); Flag States; ~ **Indigenous Groups** (including domestic tribal groups and Arctic Council Permanent Participants)

~ **International Governmental Organizations:** International Maritime Organization; International Hydrographic Organization; International Maritime Satellite Organization; World Meteorological Organization; International Whaling Commission; International Association of Marine Aids to Navigation and Lighthouse Authorities; International Oil Pollution Compensation Funds; International Telecommunication Union; International Oceanographic Commission; International Ice Charting Working Group; The World Bank

~ **Maritime Industry:** Shipping companies; Offshore drilling companies; Ship classification companies; International Association of Classification Societies (IACS); Intertanko, Bimco; Cruise Lines International Association; Oil Companies International Marine Forum; Offshore Marine Services Association; International Oil and Gas Products; SIGTTO; International Association of Drilling Contractors; International Association of Arctic Expedition Cruise Operators; Passenger Vessel Association; International Association of Antarctic Tour Operators; Fishing industry; marine pilots; Oil spill response organizations; International Tanker Owners Pollution Federation; Local marine suppliers and engineering/technical support firms

~ **Marine Insurers:** Marine insurance companies; International Union of Marine Insurance; American Institute of Marine Underwriters

~ **Private/Independent:** NGOs; Non-profit foundations; academic & training institutions; research organizations (public and private)



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- Sovereign States
- Indigenous Groups
- International Governmental Organizations
- Maritime Industry
- Marine Insurers
- Private/Independent

RESULTS OF THE WORKING GROUP DISCUSSIONS ON THE AMSA RECOMMENDATIONS:

Roadmap and Actions & Key Issues for

- I ~ Enhancing Arctic Marine Safety
- II ~ Protecting Arctic People and the Environment
- III ~ Building the Arctic Marine Infrastructure



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Enhancing Arctic Marine Safety

I. Enhancing Arctic Marine Safety

I.A. Linking with International Organizations

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> PAME to bring together experts on shipping from the Arctic states to identify common interests and develop unified positions and approaches. Identify an Arctic state lead country to facilitate an IMO meeting of experts on Arctic safety issues. For a consistent approach on Arctic shipping issues, the Arctic states should coordinate. <ul style="list-style-type: none"> Input from all actors and stakeholders in each state including regional interests. Input from different government agencies who attend various international organizations (for example IMO, ILO and WMO). Input from stakeholders and government departments who attend a particular organization (such as IMO). 	<ul style="list-style-type: none"> Taking into consideration the opinions and ideas of other interested stakeholders before approaching international organizations (such as IMO), the Arctic states may have a potential agreed position. Knowing who is and is not represented at the international organizations. Early, proactive actions will improve communications on all Arctic shipping issues.

I.B. IMO Measures for Arctic Shipping

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> Guidelines have been updated to become the IMO 'Guidelines for ships operating in polar waters.' Arctic Council to send a letter to Arctic marine interests as a whole to promote the December 2009 IMO Assembly resolution applying guidelines to polar waters. Arctic states to promote the application of the polar guidelines with industry and others as appropriate, to national and international interests. IMO Maritime Safety Committee (MSC) has tasked the Design and Equipment Subcommittee to develop a mandatory polar code in 3 sessions (Feb 2010, Autumn 2010, and Spring 2011). Adoption will be by tacit or implied amendment to SOLAS and MARPOL Conventions. Having agreed the polar code is to become mandatory, the Arctic states encourage other interested states/parties to participate, engage and support adoption and implementation of the polar code. Influential for communication and consensus building for the mandatory polar code are the Consultative Parties of the Antarctic Treaty. 	<ul style="list-style-type: none"> These Guidelines now apply to Arctic and Antarctic waters whether ice-covered or not. Polar code will have a mandatory Part A and recommendations in Part B. Construction requirements (hull and machinery) will be in both the polar code and International Association of Classification Societies (IACS) rules. Ice navigator competence requirements must be clearly defined in STCW Convention; requirements to have an ice navigator aboard will be in the polar code. Need for a model ice navigation course and to establish acceptance criteria for simulations as partial training fulfillment. Need for theoretical training, including the incorporation of contemporary local knowledge, together with practical experience in ice. Lack of Arctic marine infrastructure needs to be considered for independent operations. Endorsement of certificates to include bridge and engineering personnel, desirable for operators to be familiar with ship conditions when operating in remote and ice-covered waters.

I.C. Uniformity of Arctic Shipping Governance

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> PAME to conduct a survey/inventory of national or regional regulations, standards and guidelines with the aim of harmonizing safety and pollution prevention measures in keeping with UNCLOS. Required surveys and inventories from the AMSA research agenda include: <ol style="list-style-type: none"> Comparative study of how Arctic states address liability and compensation, especially for bunker fuel spills and hazardous/noxious substance incidents. Survey of existing and potential fee systems for icebreaking and other Arctic services, such as navigational aids, charting, SAR, and ice information services, provided by the Arctic states. Survey of ballast water practices and invasive species threats from Arctic shipping and a comparison of Arctic state approaches to ballast water exchanges and treatments. Review of how bilateral and regional cooperation in addressing Arctic marine operations might be enhanced using other international approaches and experiences. Draft language for a potential international agreement or designation (PSSA) in keeping with UNCLOS on safety and pollution prevention measures in regions of the central Arctic Ocean beyond coastal state jurisdiction for consideration by IMO. 	<ul style="list-style-type: none"> Key examples of Arctic state regulations for possible integration in the harmonization of measures: <ul style="list-style-type: none"> Canada: Reporting scheme, guidelines for cruise ship operation; ballast guidelines for tankers and barges; equivalent standards for construction of Arctic class ships; Arctic shipping/waters pollution prevention regulations; oil transfer guidelines. Russia: Guidelines for operation on the Northern Sea Route; Arctic port regulations. United States: Marine Mammal Protection Act; cruise ship discharge regulations in Alaska. Greenland: mandatory reporting scheme; regulations for the safety of navigation. Norway and Russia: Results of Barents 2020. WWF-Gap Analysis study. Industry and NGO surveys and standards.

I.D. Strengthening Passenger Ship Safety in Arctic Waters

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> Include in an Arctic Council letter (for distribution of polar guidelines to operators), the IMO enhanced contingency guidance for cruise ships in polar waters. Request cruise ship associations (CLIA and AECO) to develop harmonized best practices for operating in remote and ice-covered conditions (for example, mother ship and tenders). Invite cruise ship associations to make presentations to PAME and Arctic expert meetings at IMO. Organize an international workshop/conference on cruise ship safety in Arctic waters with cruise operators and regulators. 	<ul style="list-style-type: none"> Need to encourage the formation of cruise ship organizations that cover all Arctic waters, such as IAATO in Antarctic waters. Urgo passenger ship operations in polar waters to be carried out in tandem with sufficient capacity for mutual rescue. Passenger ship operators to document and mitigate risks and hazards associated with potential grounding in poorly charted waters.

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

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> U.S. currently chairing an Arctic Council task force to draft a multinational Arctic SAR agreement, to be completed by 2011 for signature by the Arctic Ministers; first meeting December 2009. Coordinate the use of existing resources and deploy them in the most effective manner that will cover any response gaps. Arctic Council to urge all Arctic states, and EPPR, to participate in the process for a SAR agreement. 	<ul style="list-style-type: none"> Requirement for a comprehensive review of current, national SAR (maritime and aviation) capabilities for the Arctic. Evaluation of the adequacy of cooperative SAR agreements and arrangements for addressing increasing commercial use of the Arctic Ocean and Arctic airspace.

Protecting Arctic People and the Environment

II. Protecting Arctic People and the Environment

II.A. Survey of Arctic Indigenous Marine Use

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> Feasibility and design of a survey should be regional and national, not one unified circumpolar effort. Development of a survey must have early communications and develop trust with indigenous communities. Surveys to be based on scientific methods with verifiable data; data needs to be accessible in a synthesized format for review. Survey characteristics: relate risk to communities, resource and traditional ways; build on existing information/past surveys; structured for acceptability, administered with trust and believability, sustainable for future use and comparison; cover general areas and patterns rather than specific tracks. Surveys must recognize changes: increased access for shipping; boundary changes with climate change; marine values associated with resource access; differences in stakeholder perspectives of the circumpolar region; importance of today's decisions and the future. 	<ul style="list-style-type: none"> Must identify who to communicate with including organizations, community leaders, and spokespersons. Must determine what information is important for operations, development, and regulatory regimes. Survey must insure: scientific methodology, verifiability, accuracy, and usability for the intended purpose. Survey data must be formatted and mapped for accessibility by many. More synthesized information will have greater value in decision-making; level of resolution of data also key for users.

II.B. Engagement with Arctic Communities

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> Community engagement long before regional/local development or ship arrivals. Communication of near-term Arctic marine operations, such as cruise ships, allows preparedness for community opportunities to show cultural pride and traditional lifestyle, to provide arts and crafts, and for local job development. Early communication of marine operations can enhance coordination of traditional uses of ice-covered waterways with ship uses/tracks. Future planning for Arctic ports and ship support requires community involvement with socio-economic aspects and an understanding of traditional uses of the waterways and local coastal areas. Recognition that future Arctic port site selection (and limited funds for infrastructure) will create competition between communities; evaluation of gains and losses within communities and needs for investment. Future development will require mandated environmental assessment processes involving: community engagement, national standards, international coordination, and transparency of findings. New Arctic marine developments will require risk as assessments involving community engagement and reporting of results. 	<ul style="list-style-type: none"> Need to keep Arctic communities engaged; Permanent participants at the Arctic Council can monitor progress and mechanisms for engagement. Determination of the level of public process mandated for each region. Stressing the importance of ongoing dialogue and government consultation with a goal of enhanced community engagement. Fostering conflict avoidance and communicating the importance of building trust among the actors.



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II.C. Areas of Heightened Ecological and Cultural Significance, and

II.D. Specially Designated Arctic Marine Areas

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> For Archaeological and Cultural Sites: <ul style="list-style-type: none"> Develop site management plans with: location identification; community engagement; identification of stresses on the site (tourism, offshore operations, and climate change); rules for numbers of visitors; type of access, and type of facilities allowed; guidelines for waste management offshore. Develop site response plans to: offshore anchoring, discharges from ships, cargo loss, oil spills and hazmat spills. Site response plans would be nested in larger, regional response plans. For Migratory Route Protection and Preservation: <ul style="list-style-type: none"> Measures include: regulating ship speeds; establishing areas to be avoided; ship routing; establishing financial responsibility for liability and compensation. Monitoring and designating reporting areas are key elements to evaluating mitigation effectiveness. 	<ul style="list-style-type: none"> Local site management should not conflict with MARPOL or UNCLOS navigation rights. Consideration of climate change impacts and the resulting movement of cultural and ecological sites. Should management regimes be mobile as well as protected sites with changing climate? How to pay for response activities; the need for an international regime (civil liability). Movement of marine species with changing Arctic climate. Sorting out the relationship between changing access for shipping and the impacts of climate change on migratory routes. Range of objectives, from allowing no shipping to creating a balance between shipping and environmental protection measures. Multiple strategies available to minimize marine use impacts; options available to communities to be proactive rather than reactive to future Arctic marine uses.

II.E. Protection from Invasive Species

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> Ratification of IMO Ballast Water Convention for the global oceans) not enough and there is a need for tighter, Arctic-specific measures/requirements. Beyond ballast water there are hull fouling and cargo risks as potential sources of invasive species. Requirement for an Arctic prevention plan, perhaps a Hazard Analysis and Critical Control Points (HACCP) evaluation program (Australia has developed invasive species transfer avoidance measures for a range of marine activities). Require further Arctic shipping scenarios and projections to frame the risks of invasive species. Need more baseline surveys, especially in the areas of concentrated marine activity. Require expanded monitoring, protocols for comparability, and the involvement of local residents with traditional knowledge who will be first to see changes. As part of a response capacity there is a need for agreed upon emergency treatment options. Shipwreck, response and rapid response (eradication) capacities in shallow waters and on land (rats). 	<ul style="list-style-type: none"> Rapid ratification of the IMO Ballast Water Convention required, especially by the 8 Arctic states. IMO movement on creating measures for the Arctic under the Ballast Water Convention and the other agreements. Potential incentives for shipbuilders and ship operators to improve prevention effectiveness. Application of same regulations for international shipping to Arctic coastwise trade. Require research/hauling and personnel expertise – capacity building in the Arctic.



II.F. Oil Spill Prevention

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> Most significant strategy remains keeping oil contained ashore and within ships - the prevention of Arctic oil spills. Initiate a comparative evaluation of Arctic state schemes including: strength of prevention regime; liability standards; damage compensation; preparedness laws; fuel transfer standards; compliance, enforcement of regulations. Enhanced cooperation and dialogue on unified standards of prevention and levels of tolerance/enforcement. Initiate an effectiveness evaluation of training, systems, technology and environmental knowledge. Conduct response gap analysis with a view to required research and capacity-building. Explore the possibility of marine areas or zones where there is restricted traffic for tankers & LNG ships. Development of a potential liability incentive fund for prevention. 	<ul style="list-style-type: none"> Development of trust among the many stakeholders on prevention issues. Establishing strategic communication among the states and conducting oil spill tests and experiments with international consensus. Required funding of basic research for systems improvements.

II.G. Addressing Impacts on Marine Mammals

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> Research on improving baseline information on migratory routes required; added challenges are route changes and distinguishing between climate change impacts and increased marine activities. Industry representatives must be involved in discussions for mitigation measures from the earliest development. Preferred strategy is to separate ship traffic and marine mammals in space and time, where separation is not feasible, restrictions on ship speeds can help reduce mammal strikes. Completion of an AIS receiver network in the Arctic is high priority; linkages between AIS and marine mammal awareness need to be developed. Spatial distance is key for other disturbances: mating, migration, resting, calving, feeding and haul out areas; seasonal deflection from normal migratory routes can impact food security, subsistence lifestyles and the social structure of communities. Develop lighting measures to reduce light disturbance to birds. Research on noise from marine operations: deflection courses; masking (mammal communications); potential physiological damage. Develop "sound budget" to review the cumulative effects of various marine operations. 	<ul style="list-style-type: none"> Cultural-subsistence awareness training should be developed for regional operators. Restrictions and measures impacting navigation should be linked to the evolution of special marine areas and mapping efforts to protect changing marine ecosystems. Vessel routing and speed restrictions are effective measures to mitigate impacts on marine mammals. Many Arctic regions are not currently regulated; potential mechanisms and use of possible technologies are pathways forward.


II.H. Reducing Air Emissions

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> Development at IMO of uniform standards. Recognition that the global marine industry and IMO are developing regulations and uncertainty surrounds future standards. Air quality agencies of the Arctic states should address this issue at a meeting with marine operators; potential for future negotiated acceptable levels of emissions for the Arctic. Assessment of black carbon impacts in the Arctic important. Arctic-specific standards may be requested in the future at IMO. 	<ul style="list-style-type: none"> New control technologies may be available to mitigate ship emissions in the Arctic. Different, more stringent emissions standards may be required for the Arctic Ocean and entire Arctic region. Monitoring and tracking of future emissions will be essential for enforcement.


Building the Arctic Marine Infrastructure

III. Building the Arctic Marine Infrastructure

III.A. Addressing the Infrastructure Deficit

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> • Institute an 'infrastructure deficit awareness program.' • Industry notification of communities at all stages. • Port and shore side development plans in all Arctic states. • Coordinate and identify public and private/industry funding. • Survey existing ports and port needs. • Develop national Arctic port strategies. • Explore 'tiered-port' (primary & secondary) approach. • Match government and industry priorities enhancing cooperation. • International conference of Arctic, Northern and Gateway ports and infrastructure. • Review linkages between large ports, small ports, and river infrastructure. • Launch an Arctic aids-to-navigation requirements review. • Prioritization of areas for hydrographic resurvey. • Review and assess Arctic long-range electronic navigation requirements. • Continue harmonization of national ice services and products. • Continued research on Arctic sea ice thickness and improved remote sensing tools for thickness. • Explore concept of 'virtual' ice center for the Arctic Ocean. • Improved sea ice type and iceberg detection (satellite and radar). 	<ul style="list-style-type: none"> • Prioritizing hydrographic surveys. • Industry funding identification for public-private partnerships. • Development of new schemes for cost recovery of all marine infrastructure. • Icebreaker fleet renewal (public and private/industry fleets). • Survey and enumeration of Arctic places of refuge. • Holistic Arctic port planning – closer Arctic state cooperation and coordination.  <p style="text-align: right; font-size: small;">© Arctic Shipping Oy</p>


III.B. Arctic Marine Traffic Systems

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> • Mandatory Automatic Identification System (AIS) carriage. • Mandatory commercial traffic reporting. • Assessment of potential vessel traffic separation schemes in selected Arctic waterways. • Assessment of Arctic state ability to enforce mandatory reporting. • Potential harmonization of mandatory reporting systems (for example, between the Northern Sea Route, Canadian Arctic and Bering Strait regions). • Comprehensive examination of crossing maritime borders: examining the practical issues (ease of crossing, logistical support, SAR, emergency response, communications). • Develop consolidated coast pilot & sailing directions for the Arctic Ocean (one-stop shopping and available electronically in multiple languages). 	<ul style="list-style-type: none"> • Identification of potential marine protected areas; timing key for infrastructure and navigation systems development. • Status of endangered species legislation that could impact traffic schemes. • Sharing traffic information with regional governments and local communities.  <p style="text-align: right; font-size: small;">© Fairbank, US</p>

III.C. Circumpolar Environmental Response Capacity

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> • Primary goal of all Arctic rules and regulations: spill prevention. • Enhanced R&D for: recovery of oil in ice; trajectory modeling; remote sensing detection. • Harmonization of minimum standards for oil spill legislation. • Extend best practices and R&D to all Arctic states. • Comprehensive analyses of projected marine areas of high risk. • Enhanced analyses and reviews of appropriate response strategies based on geography. • Continued close cooperation among the Arctic states in: R&D, spill response exercises, and exchange of information and best practices. • Encourage regional, bilateral response agreements (for example, Canada/Denmark, US/Russia). • Assessment and augmentation of emergency and rapid transportation capability for oil spill response equipment. • Initiate Arctic discussions regarding hazardous material and chemical spills in the Arctic. 	<ul style="list-style-type: none"> • Responses to incidents involving naval vessels in the Arctic Ocean. • Need for an Arctic oil spill liability trust fund; potential joint Arctic state-industry collaboration. • Role of Arctic communities in emergency response capability. • Increased frequency of Arctic emergency response joint exercises. • Potential for an Arctic state agreement on circumpolar, environmental response capabilities and capacities; could be an Arctic Council initiative following Arctic-SAR agreement.

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

ROADMAP AND ACTIONS	KEY ISSUES
<ul style="list-style-type: none"> • Improved quality of regional and circumpolar weather forecasting. • Improved and refined met-ocean-ice forecasts and modeling techniques. • Improved training for Arctic forecasters (link met training to sea ice training; increased field training). • Improved access throughout the Arctic Ocean (including EEZs) for real-time met-ocean-ice data. • PAME/Arctic Council to approach the World Meteorological Organization (WMO) to expand Arctic states' participation in WMO activities. • WMO conference for met-ocean-ice cooperation in the Arctic. • Arctic Council and Arctic states to coordinate increased cooperation for observations. • Increased reporting of local weather observations by all ships in the Arctic Ocean (a function of the ice navigator). • Enhanced iceberg monitoring in the Arctic Ocean. • New observing systems with free and open access to environmental satellite information. 	<ul style="list-style-type: none"> • Requirements for adequate polar communication to handle new, large information flow. • Cost recovery of data and information (user fees possible). • Status and future of observing networks resulting from IPY cooperation. • Cost and access to SAR data for ice information. • Improving transfer of met-ocean-ice information to indigenous populations and communities for hunting and fishing.  <p style="text-align: right; font-size: small;">© Canadian Coast Guard</p>

Funding Issues

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Funding Issues

Key issues not addressed in AMSA are the broad financial and funding concerns linked to each of the AMSA recommendations. The Fairbanks workshop experts identified several significant areas that require near-term funding and also reviewed issues related to the need for liability and compensation mechanisms in the Arctic.

Indigenous Marine Use Surveys – A key requirement in most regions of the Arctic, and one of the AMSA recommendations, is the need for surveys of indigenous marine use. Up-to-date baseline data on regional and local patterns of indigenous use of Arctic waters is necessary to assess the impacts from increasing Arctic marine operations. Significant discussions were held on this topic in Fairbanks due to the complexities and sensitivities of conducting such human use surveys. There was general agreement that the surveys could not be conducted in one unified circumpolar effort (although the baseline data could be merged later to construct a unified 'picture'). Public appropriations from national and regional governments are key since these surveys relate to subsistence living, marine safety, environmental protection and multiple use management of Arctic marine waterways. Broad scale surveys are nominally the responsibility of governments, national and regional. However, private sources of funding, such as from NGOs and nonprofit foundations, could also be important at the local, community level for detailed studies and surveys. Grants or surveys from industry sources (for example, natural resource developments related to mining) could be used to support surveys in preparation of new marine transportation systems and navigation in local waterways.

Marine Infrastructure Elements – The lack of adequate marine infrastructure in most of the Arctic (except for the Norwegian coast and northwest Russia) to support current and future levels of Arctic marine activity is a key finding of AMSA. Large public and private investments will be necessary to provide an adequate safety net for marine operations and environmental protection. Public and private funding for satellite communications and environmental monitoring are urgently required to fill existing Arctic gaps in coverage. Enhancing environmental response capacity may require public-industry funding of equipment to be cached in remote Arctic locations. A mandatory ship tracking and monitoring system will require public appropriations and the potential for pooling funding among the Arctic states. Public funding of enhanced Arctic weather and sea ice information may also mandate cost recovery schemes. Hydrographic surveys and charting are urgent requirements and these activities need significant national investments; cost recovery through industry user fees may be necessary, for example, in remote Arctic regions of seasonal marine traffic. The World Bank and other international financial institutions should be considered for Arctic port facilities and overall marine infrastructure. Coordinated investments for such elements as ports and aids to navigation should be discussed by the Arctic states.

Liability and Compensation Challenges – Robust, effective oil spill liability trust funds are required in the Arctic; funds can come from public-private partnerships and they could be based on regional or bi-lateral agreements. Two national models are Canada's Ship-source Oil Pollution Fund and the U.S. Oil Pollution Act of 1990. A conference on liability-compensation issues for Arctic marine incidents should be organized by the Arctic states and industry interests.

• Indigenous Marine Use Surveys

• Marine Infrastructure Elements

• Liability and Compensation Challenges



Summary ~ Key Policy Issues Ahead

CONSIDERING A ROADMAP FORWARD: THE ARCTIC MARINE SHIPPING ASSESSMENT 15

Summary ~ Key Policy Issues Ahead

During the course of the workshop discussions revealed a number of high priority issues as critical outcomes of AMSA. The Co-editors of this report have developed a list of key policy issues from the discussions in Fairbanks that require attention in the near-term to enhance Arctic marine safety and marine environmental protection. Throughout the workshop the highest priority issue consistently noted was the urgent need for a mandatory Polar Code developed by the International Maritime Organization. Implementation of mandatory rules for polar ship construction, design, equipment, operations and ice navigator competency was considered by the workshop participants as the crucial first step for protecting Arctic people and the environment in an era of increased marine operations in the Arctic Ocean.

The following lists are provided as summaries of Arctic policy issues derived from the expert discussions of the AMSA Workshop:



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I. Highest Priority Arctic Policy Issues Related to AMSA:

- A mandatory Polar Code developed by the IMO.
- Full tracking and monitoring of Arctic commercial ships (mandatory AIS).
- An Arctic SAR agreement – an ongoing Arctic Council SAR Task Force is to produce a binding agreement by spring 2011.
- Surveys of indigenous marine use so that multiple use strategies in Arctic waterways can be developed.
- A circumpolar response capacity agreement – an agreement among the Arctic states (and possibly non-Arctic states) for pooling resources and enhancing regional capacity.
- Implementation of an Arctic Observing Network among the 8 Arctic states and non-Arctic states – a network to support scientific research and marine operations.

II. High Priority Arctic Policy issues Related to AMSA:

- A critical Arctic marine infrastructure requirement – increased hydrography and surveying of Arctic waters for enhanced navigation charts.
- Oil spill research on prevention best practices and responses to oil released in Arctic ice-covered waters.
- Enhanced research, including mitigation measures, on the impacts on marine mammals, and other migratory fauna, of increased Arctic marine operations.
- Identification of specific ballast water/invasive species issues and prevention strategies related to Arctic marine operations.
- A comprehensive study to identify potential Arctic marine areas, including the central Arctic Ocean, for possible designation as IMO Particularly Sensitive Sea Areas (PSSAs).
- Marine industry development of harmonized best practices for all cruise ships operating in Arctic waters, including operational strategies for mutual rescue.
- Studies on the application of ecosystems-based management to Arctic coastal regions.
- A comparative study of Arctic state liability and compensation strategies for marine incidents with a view to developing future uniform measures.
- Fully developed IMO ice navigator competency requirements included in the STCW; mandatory requirement for onboard ice navigator as part of the Polar Code.
- Enhanced marine communications systems in the Arctic, including full coverage satellite communications in the central Arctic Ocean.

Highest Priority

- Mandatory Polar Code
- Full Tracking and Monitoring of Commercial Ships (Mandatory AIS)
- Arctic Search and Rescue (SAR) Agreement
- Indigenous Marine Use Surveys
- Circumpolar Response Capacity Agreement
- Arctic Observing Network Implementation

