The Emerging Maritime Arctic

NOAA Hydrographic Services Review Panel Arctic Webinar

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Under 2. Line of Effort: *Pursue Responsible Arctic Region Stewardship*

---Chart the Arctic region:

(A) Make progress in charting and mapping the Arctic region’s ocean & waterways; mapping coastal & interior lands with reliable/modern standards.

(B) Prioritize & synchronize charting efforts (more effective resource use & attain faster progress);

(C) Make navigation safer & ID ecologically sensitive areas & reserves of natural resources.
Implementation Plan for the National Strategy for the Arctic Region ~ January 2014

**Chart the Arctic Region:** Lead: DOC/NOAA; Supporting: DOD, DHS/USCG, DOI, DOS and DOT.

- **Objective:** Coordinate surveying, mapping & charting U.S. Arctic waters, hydrography, shorelines & topography
- **Next Steps:**
  -- Complete acquisition of U.S. Arctic elevation data & geoid model development
  -- Transition to Arctic water level gauge operations
  -- Increase public access to existing Arctic mapping data sets
  -- Increase % of Bering Strait surveyed & charted (for future IMO routing /rules)
  -- Increase % of potential U.S. Arctic deep draft ports & harbors of refuge surveyed & charted
  -- Increase % of U.S. Arctic with comprehensive topographic mapping products.
Today’s Arctic Commercial Marine Use

- Hard Minerals
- Marine Tourism
- Key Fisheries
- Oil & Gas
- Summer Sealift
- Exploration & Summer NSR

Future High Grade Iron Ore Mine?

Zinc & Coal

Nickel & Copper

Arctic Ocean Marine Routes
Arctic Marine Shipping Assessment of the Arctic Council (2005-2008)
- Northern Sea Route
- Northwest Passage
- Key Marine Routes

Notable Icebreaker Voyages:
- Arktika, August 1977
- Sovetskiy Soyuz, August 1991
- Polar Sea and Louis S. St-Laurent, July and August 1994

Sea ice, 16 September 2002

Map by Mapping Solutions, Anchorage 2005 for L. Brigham, USARC
Development of the IMO Polar Code

- 1993 ~ IMO Outside Working Group
- 1998 ~ Draft Polar Code to IMO
- 2002 ~ IMO Guidelines for Ships Operating in Arctic Ice-covered Waters
- 2004-09 ~ Arctic Council’s Arctic Marine Shipping Assessment (Arctic States Call for Mandatory Application of Guidelines & Augmentation of IMO Conventions)
- 2006-08 ~ Draft IACS Unified Requirements for Polar Class Ships Adopted
- 2009 ~ IMO Guidelines Updated to Polar Waters
- 2010 ~ IMO Working Group on Mandatory Requirements
- 2014 ~ IMO MSC Approves Draft SOLAS Amendments
- 2017 (1 January) ~ Polar Code in Force
Summary: Marine Safety ~ SOLAS & STCW
Amendments in the Polar Code

• Polar Ship’s Structural Standards

• Marine Safety and Lifesaving Equipment

• Training & Experience Aboard Polar Ships

• Polar Ship Certificate

• Polar Waters Operations Manual
Summary: Environmental Protection ~ MARPOL
Amendments in the Polar Code

• Annex I : Oil & Oily Mixtures (zero discharge)

• Annex II : Noxious Liquid Substances (zero discharge)
  
  • Annex IV : Sewage

• Annex V : Food waste/garbage

• Waiting for Ballast Water Management Convention
UAF Study ~ Alaska & the New Maritime Arctic

- Completed 31 January 2015
- Grant from the State of Alaska Department of Commerce, Community & Economic Development
- International Workshop held 6-7 November 2014
- Report Sections on the U.S. Maritime Arctic:
  - Sea Ice Changes; Marine Traffic; NSR & NWP Developments; Projected Impact of Arctic Offshore Hydrocarbon Development; Arctic Infrastructure Issues; Alaskan Arctic Maritime Workforce Potential
  - Major Findings of the Study & International Workshop; and, Project Recommendations
Major Findings of the Study

(1) Arctic Natural Resource Development ~ primary driver of Arctic marine transportation (consistent with AMSA).

(2) Arctic Shipping Routes ~ unlikely to revolutionize the global shipping routes; *seasonal supplements* to existing routes.

(3) AMSA 17 Recommendations compare favorably with U.S. *National Strategy for the Arctic Region* themes & key issues.


(5) Maximum winter Bering Sea ice edge has not changed much in 5 decades; earlier seasons of navigation in spring not anticipated.
High demand and unstable governance set the stage for an economic ‘rush’ for Arctic wealth and resources.

High demand and stable governance lead to a healthy rate of development, includes concern for preservation of Arctic ecosystems & cultures.

Low demand and unstable governance bring a murky and under-developed future for the Arctic.

Low demand & stable governance slow development in the region while introducing an extensive eco-preserve with stringent “no-shipping zones”. 
(6) Minimum Arctic sea ice extent has retreated dramatically in 5 decades; anticipated longer autumn operational seasons for offshore drilling & coastal resupply.

(7) Highly seasonal marine traffic in the Bering Strait Region: no traffic Dec to May; key commercial traffic June to Nov; direct correlation to regional sea ice cover.

(8) Offshore hydrocarbon activity ~ most significant factor in increases in marine operations in the U.S. maritime Arctic for the next several decades; by 2025 in Chukchi Sea could plausibly have 100 support vessels (assuming 8 platforms)

(9) Hydrography & charting in the U.S. maritime Arctic ~ critical to safe navigation & facilitating coastal development of ports.
Maritime Traffic -- Bering Strait Region & NW Alaska
1 January to 31 May 2013
Marine Exchange of Alaska
Maritime Traffic -- Bering Strait Region & NW Alaska 1 June to 30 November 2013
Marine Exchange of Alaska

Colour Explanation (SHIP_TYPE)
- Tanker
- Passenger
- Cargo
- Tug
- Towing
- Towing long/wide
- Fishing
- SAR
- Law enforcement
- Military
- Pleasure
- Sailing
- Sailing
Major Findings ~ Continued

(10) Arctic port in western Alaska ~ key to regional development; must be linked to natural resources exports & servicing the offshore hydrocarbon industry.

(11) Seasonal increase in marine traffic along the NSR; no indicators that large numbers of commercial ships will use the NWP.

(12) Key U.S. maritime Arctic infrastructure needs: hydrography & charting; Arctic observing networks; marine domain awareness; Alaska deepwater port; SAR & environmental response capacity; polar & coastal icebreaking capacity; defined Arctic transportation corridors.
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- History
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- Current Use/Database
- Scenarios to 2020 & 2050
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- Environmental Impacts
- Infrastructure

[www.pame.is](http://www.pame.is)
Enhancing Arctic Marine Safety

Protecting Arctic People and the Environment

Building the Arctic Marine Infrastructure

Arctic Marine Shipping Assessment Recommendations (17) ~ THEMES