Arctic Governance Inuksuit:

Guideposts for Canadian Arctic Shipping Rules

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Victor M. Santos-Pedro May 2009

Transport Canada Transports Canada

Canada

Overview

- Canadian policy on Arctic Shipping / Regulatory Framework

- Arctic Marine Shipping Assessment (AMSA)
    - Status / Future scenarios
    - Recommendations

- Canadian legislation and proposed principles for update
    - Operations / Ice Regime System
    - Construction requirements

- Conclusion

Canada's Arctic Shipping Safety Policy and Regulatory Framework

- The Government of Canada recognizes Arctic marine transportation as a key element in its Integrated Northern Strategy due to its role on:
  - economic and social development
  - environmental protection and sovereignty
- The Canadian Arctic is open for shipping under sustainable development laws.
- Existing regulatory framework for shipping in this area includes:
  - AWPPA: zero discharge and liability
  - ASPPR: ship construction, equipment, and crew requirements
  - Marine Security Act: mandatory reporting
  - CSA2001: basic safety requirements
- Updates to the framework are required to incorporate recent developments, including AMSA recommendations.

Where we are now

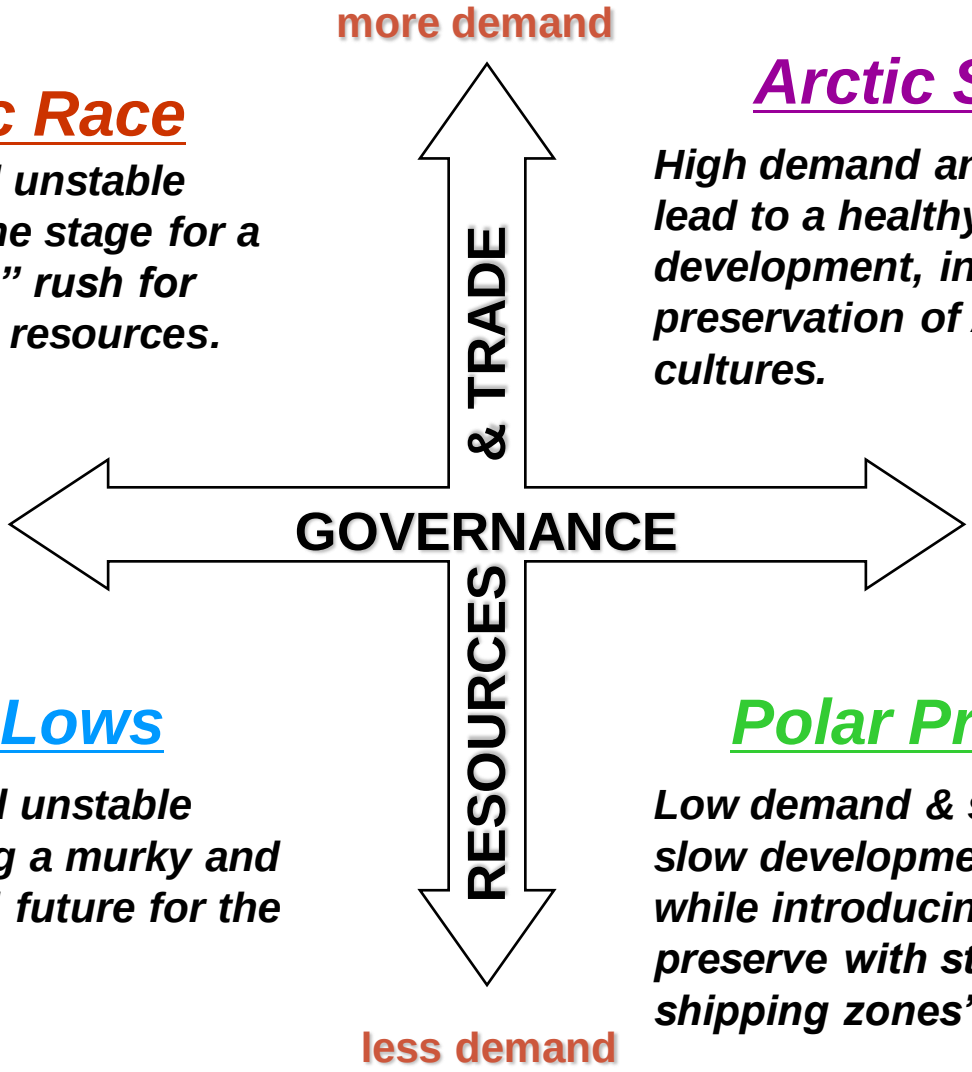
AMSA - Arctic Marine Shipping Assessment
Final Report and Research Document

Approved in Tromsø April 29, 2009

- **Executive Summary ~ 20 pages**
- **Final report ~ 200 pages + recommendations and findings**
- **Research doc ~ 2000 pages**
- **Contents**

1. ***Introduction & Arctic Marine Geography***
2. ***History of Arctic Marine Transport & Governance***
3. ***AMSA Database for 2004*** **~ Ship Data & Analyses**
4. ***Human Dimension (AMSA Town Hall Meetings)***
5. ***Scenarios & Futures*** **(2020 & 2050)**
6. ***Environmental Impacts***
7. ***Arctic Maritime Infrastructure***
8. ***Findings and Research Agenda***

Where will we be in the future?
AMSA Scenarios for Future of Arctic Marine Navigation



Arctic Race

High demand and unstable governance set the stage for a "no holds barred" rush for Arctic wealth and resources.

Arctic Saga

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

Polar Lows

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

Polar Preserve

Low demand & stable governance slow development in the region while introducing an extensive eco-preserve with stringent "no-shipping zones".

AMSA Recommendations

Use the existing international framework to promote a stable, rules-based environment in 3 major areas:

- Enhancing Arctic Marine Safety
- Protecting Arctic People and the Environment
- Building Arctic Marine Infrastructure

Enhancing Arctic Marine Safety

- Linking with International Organizations, e.g. IMO, IHO, WHO, IMSO
- Support IMO measures for Arctic shipping, including mandatory provisions
- Promote comprehensive and harmonized Arctic Shipping Governance
- Strengthening Passenger Ship Safety in Arctic Waters
- Support enhanced Arctic Search and Rescue

Protecting Arctic People and the Environment

- Survey of Arctic Indigenous Marine Use
- Engagement with Arctic communities
- Areas of heightened ecological and cultural significance
- Specially designated Arctic marine areas
- Protection from invasive species
- Oil spill protection / Reducing air emissions
- Addressing impacts on marine mammal

Building Arctic Marine Infrastructure

- Addressing the Infrastructure deficit
- Arctic Marine Traffic System
- Circumpolar Environmental Response Capacity
- Investing in hydrographic, meteorological and oceanographic data

Impact of AMSA Recommendations on Canada

- Implementation of certain recommendations requires research as well as investment and continued collaboration with Arctic states, e.g. Arctic SAR, circumpolar environmental response capacity
- Implementation of other recommendations, e.g Arctic Marine Traffic System (Reporting), Enhancing marine safety, are underway

- Issues to be considered :
  - **Updating shipping regulations and standards**
  - **Assessing equivalency of foreign ships**
  - **Ballast water from domestic vessels**
  - **Sulphur Emission Control Area in Arctic**
  - **Arctic waste reception facilities – MARPOL or alternative**
  - **Dealing with proposals for Marine Protected Areas**
  - **Monitoring and surveillance**

Canadian Legislation - overview

- Arctic Waters Pollution Prevention Act
  - UNCLOS – 100 nm to 200 nm
  - Regulations, Standards, and Guidelines
  - Shipping Safety Control Zones
  - Arctic Ice Regime Shipping System (AIRSS)
- Canada Shipping Act 2001- entered into force July 2007
  - NORDREG (Arctic Canada Traffic System) – to be mandatory for 2010 shipping season
- Marine Liability Act
  - Civil Liability Convention – strict vs. absolute
- Marine Security Act
  - 96 hours notice

Canadian Arctic Shipping Rules

Canada Shipping Act 2001

- Deals with safety aspects of shipping in Canada

Arctic Waters Pollution Prevention Act (1970)

Arctic Shipping Pollution Prevention Regulations (ASPPR) (1972)

- Operating restrictions for ship types - A,B,C,D (Baltic Classes) and E
- Canadian Arctic Classes 1 to 10, and
- Equivalent Classes CAC1, CAC2, CAC3, CAC4

Equivalent Standards for the Construction of Arctic Class Ships (1996)

- No potential pollutants allowed against ship side or bottom
- Prescriptive, however some applications based on first principles
- Basis in part for international standards (Polar Code)

Guidelines on a number of topics: passenger ships/ tug and barge

Proposed Principles for Regulatory Update

Operations:

- Adopt IMO Polar Guidelines with shipping control system
- Review sewage discharge provisions
- Consider requirement for ship emergency response service

Ice Regime System:

- Update Ice Regime System with revised Zones/Dates based on refined analysis of data and make it a mandatory combination of Zone/Date and Arctic Ice Regime Shipping Systems (Hybrid)

Construction requirements:

- Adopt IACS URs for Polar Class ships (new vessels)
- Update Type ships to be only Baltic equivalent
- Consider how to treat existing ships and cut-off (453cm/ 100 tons)

Crew Qualifications:

- Review ice navigator competence

Operations

- Adopt IMO Polar Guidelines (AMSA recommendation)
  - Guidelines assume SOLAS/MARPOL as minimum and build upon that to cater for operation in harsh, remote environment
  - Operating requirements are the tip of the iceberg - IACS Unified Requirements for Polar Class Ships are the remainder
  - Work is underway at IMO to define ice navigator competence / training / endorsement

- Consider requiring an emergency response capability as in OPA 90 (“prompt access to computerized shore-based damaged stability and residual structural strength calculation programs”)

- Review sewage discharge provisions

- Refine the Ice Regime System and the Zone/ Date system

Ice Regime System

Purpose: to minimize the likelihood that a ship will enter ice conditions that are beyond the ship's designed safe operating parameters

Flaws in current system: Zone-Date System allows vessels into ice with potential to damage the vessel and at times restricts vessels into areas where ice conditions are favourable for a safe passage

Principles for Proposed Update:

- Have a strong scientific basis (i.e. not be based on *ad hoc* approach)
- Allow operators sufficient opportunity to make safe decisions
- Facilitate a means for operators to manage risk in a systematic way
- Develop a quantifiable system that allows improvements and innovation in rule making
- Include the new IMO Polar Guidelines / IACS Polar Class

Proposed Ice Regime Hybrid System

The proposed Hybrid System:

- is based on refined analysis of ice conditions over multiple years
- redefines certain existing Zone boundaries (currently Zones 4 and 5)
- results in mostly expanded windows for shipping using a combination of Ice Regime System Mandatory dates and Open Zone dates

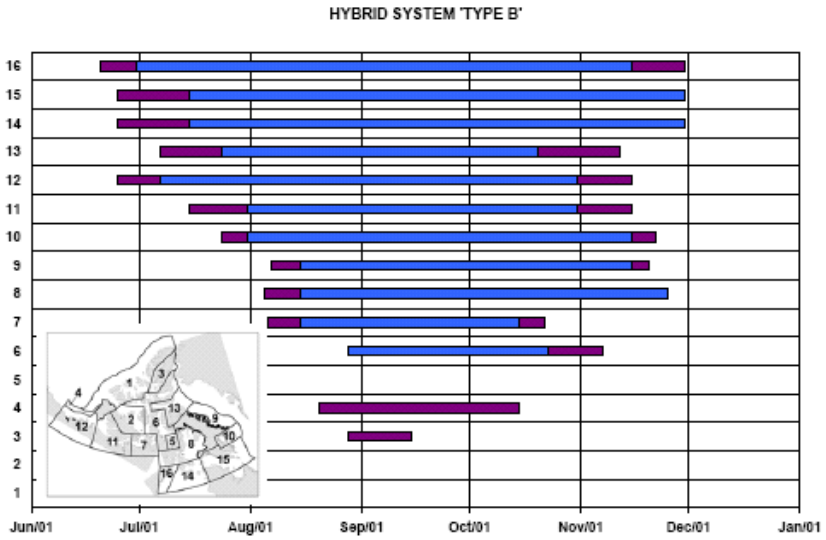
Modified Ice Regime System

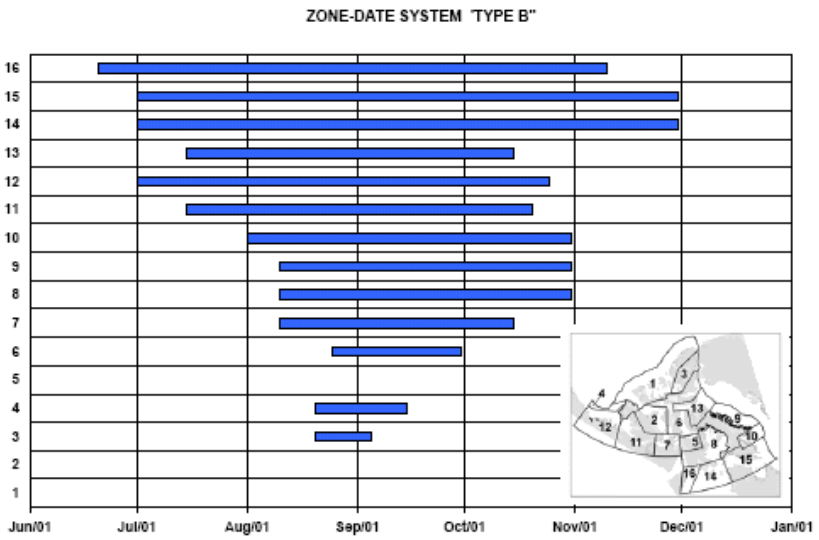
Significant changes are:

- Reduce number of ice categories to first-year and old
- Use actual ice thickness, not WMO definitions
- Summer bonus granted if ice is rotten and vessel has experienced master/ice navigator*and ice navigation equipment*
- No decay bonus for old ice
- Ice Navigator required
- Vessel maintained post trip records vs. reporting to NORDREG

- * criteria to be determined in consultation with key stakeholders

Hybrid vs. Current Zone/Date System - Class B Vessels





Blue – Open – no restriction
Purple – Modified Ice Regime System

Hybrid System results in increased opportunity for navigation in most cases.

Construction Requirements

- Adopt IMO Polar Guidelines together with IACS URs Polar Classes for new vessels
- No pollutants against shell except for Polar Classes 6 &7, somewhat equivalent to Types A & B (Baltic 1A Super and 1A)
- Intact stability in ice / damaged stability to include ice damage
- Steel quality / Equipment / Scantlings by Classification Society
- Update Type ships to be only Baltic equivalent
- Power requirements for discussion
- Materials, systems and construction to take into account “normal” operating conditions, e.g slush ice, ice accumulation, cold, vibration and ramming as appropriate

IMO Polar Classes

Polar Class	*Ice Description*
PC 1	Year round operation in all Arctic ice-covered waters
PC 2	Year round operation in moderate multi-year ice conditions
PC 3	Year round operation in second-year ice which may include multi-year ice conclusions
PC 4	Year round operation in thick first-year ice which may include old ice inclusions
PC 5	Year round operation in medium first-year ice which may include old ice inclusions
PC 6	Summer / autumn operation in medium first-year ice which may include old ice inclusions
PC 7	Summer / autumn operation in thin first-year ice which may include old ice inclusions

Crew Qualifications

- Include training manuals for all shipboard activities
- Introduce Safety Management System
- Review lifesaving equipment, including covered lifeboats and survival kits
- Give advantage to Polar Class vessels using updated Ice Regime System
- Review competence and requirements for Ice Navigator on all vessels
- Consider endorsement for Ice navigators based on formal training
- Drills to take into account “normal” operating conditions, e.g. lifeboat launching in ice, thermal protection

Conclusion

- Canadian policy supports Arctic marine transportation with safe, environmentally sound regulatory goal based requirements
- The Arctic Marine Shipping Assessment recommends adoption of international harmonized standards among Arctic states
- Canada's regulatory framework requires updating – timing is good
- Proposals include adoption of IMO Polar Guidelines, including IACS URs for Polar Class Ships, and use of a Hybrid Ice Regime System
- Stakeholders involvement in regulatory update is essential for regulations that are appropriate and work for everyone
- **Please get involved, contribute and help spread the word**