Origins and Development of the IMO Polar Code

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Development of the IMO Polar Code

1993 ~ IMO Outside Working Group

1998 ~ Draft Polar Code to IMO

2002 ~ IMO (Voluntary) Guidelines for Ships Operating in Arctic Ice-covered Waters

2004-09 ~ Arctic Council's Arctic Marine Shipping Assessment (Call for Mandatory Application of Guidelines & Augmentation of IMO Conventions)

2006-08 ~ Draft IACS Unified Requirements for Polar Class Ships Adopted

2008 ~ IMO (Voluntary) Guidelines Updated to Ships Operating in Polar Waters

2010 ~ IMO Working Group on Mandatory Requirements

2014 ~ IMO MSC Approves Draft SOLAS Amendments

2015 ~ IMO MEPC Approves Draft MARPOL Amendments

2017 (1 January) ~ Polar Code Enters into Force

Early Polar Code Development

Outside Working Group to the IMO (1993-99)

Key Strategy:

- **Build upon existing IMO ship rules.**
- **Polar Code never intended to duplicate or replace existing standards for international safety, pollution prevention and training.**
- **Additional measures focus equally on the safety of human life and the protection of the marine environment.**
- **Reviewed National Approaches: UNCLOS & Article 234; Canadian Regulatory Regime; Russian Federation Rules & Maritime Register; Baltic (Finnish -Swedish) Shipping Rules (Seasonal Ice).**

Early Polar Code Harmonization Principles:

- ***Endorsed by the IMO:***

  - **Ships to have suitable ice strengthening for their intended voyages.**
  - **No oil shall be carried against the outer shell.**
  - **All crew members properly trained in the operation of polar vessels.**
  - **Appropriate navigational equipment shall be carried.**
  - **Suitable survival equipment shall be carried for each person.**
  - **Unified classes for polar ships operating in ice.**
  - **Consideration of vessel installed power and endurance must also be made.**

IMO Voluntary Guidelines ~ ‘Recommendary Provisions’

- *Guidelines for Ships Operating in Arctic Ice-Covered Waters (2002)*

Move to:

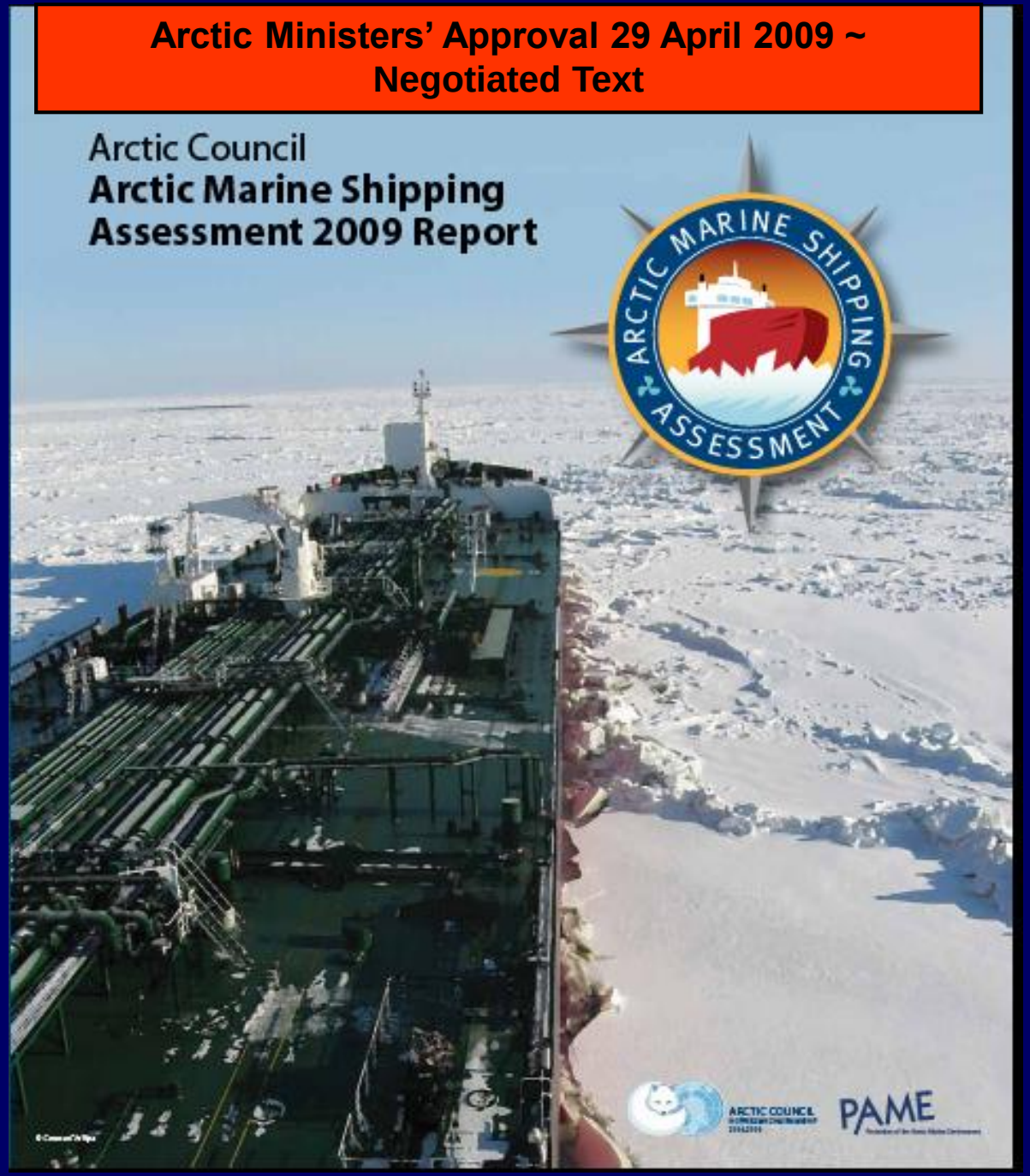
- *Guidelines for Ships Operating in Polar Waters (2009)*

IASC Polar Class Ship Descriptions

- **PC 1 ~ Year-round operation in all 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 inclusions**
- **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.**

**** Ice descriptions follow the World Meteorological Organization (WMO) sea-ice nomenclature**

Arctic Ministers' Approval 29 April 2009 ~ Negotiated Text



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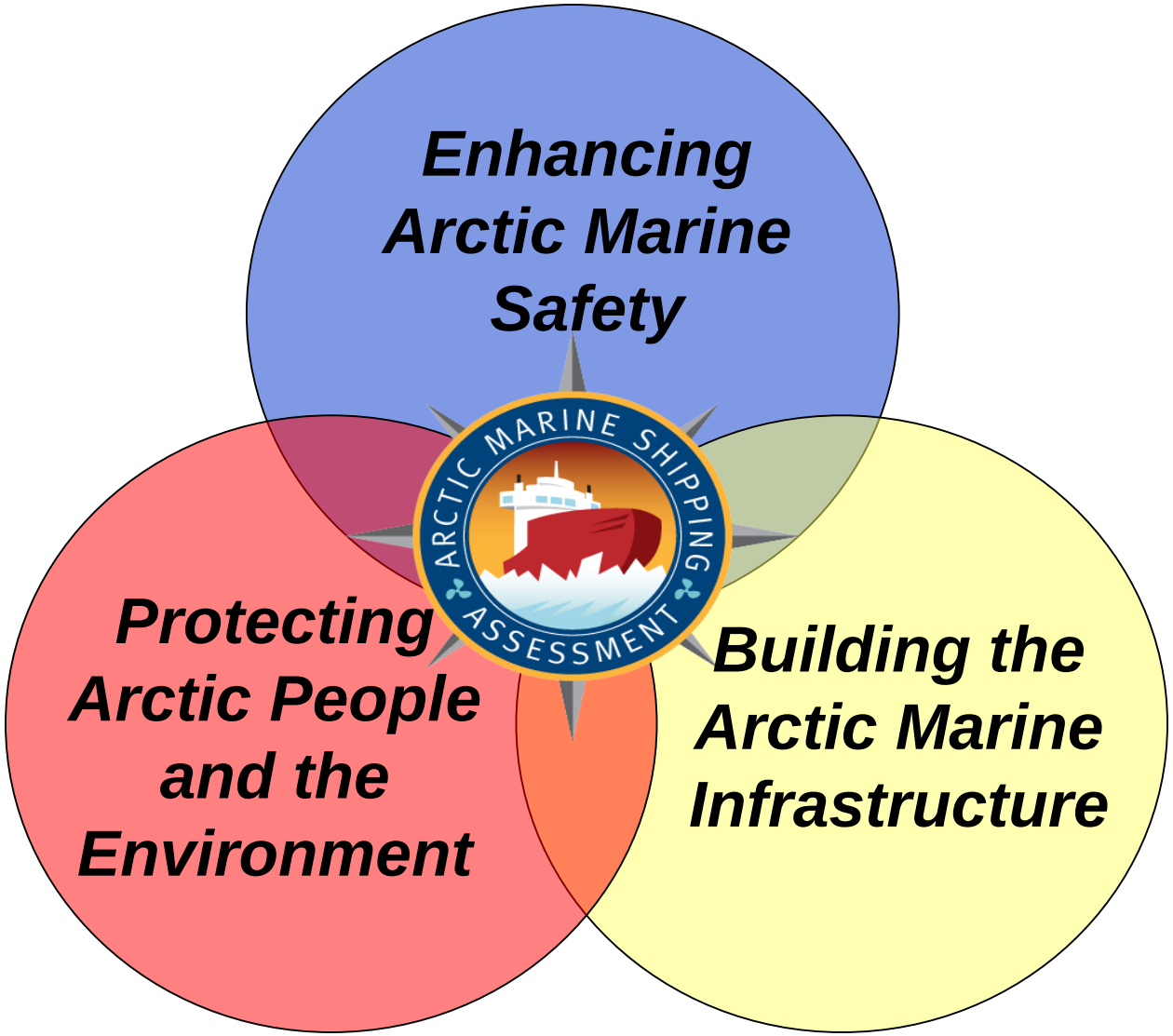
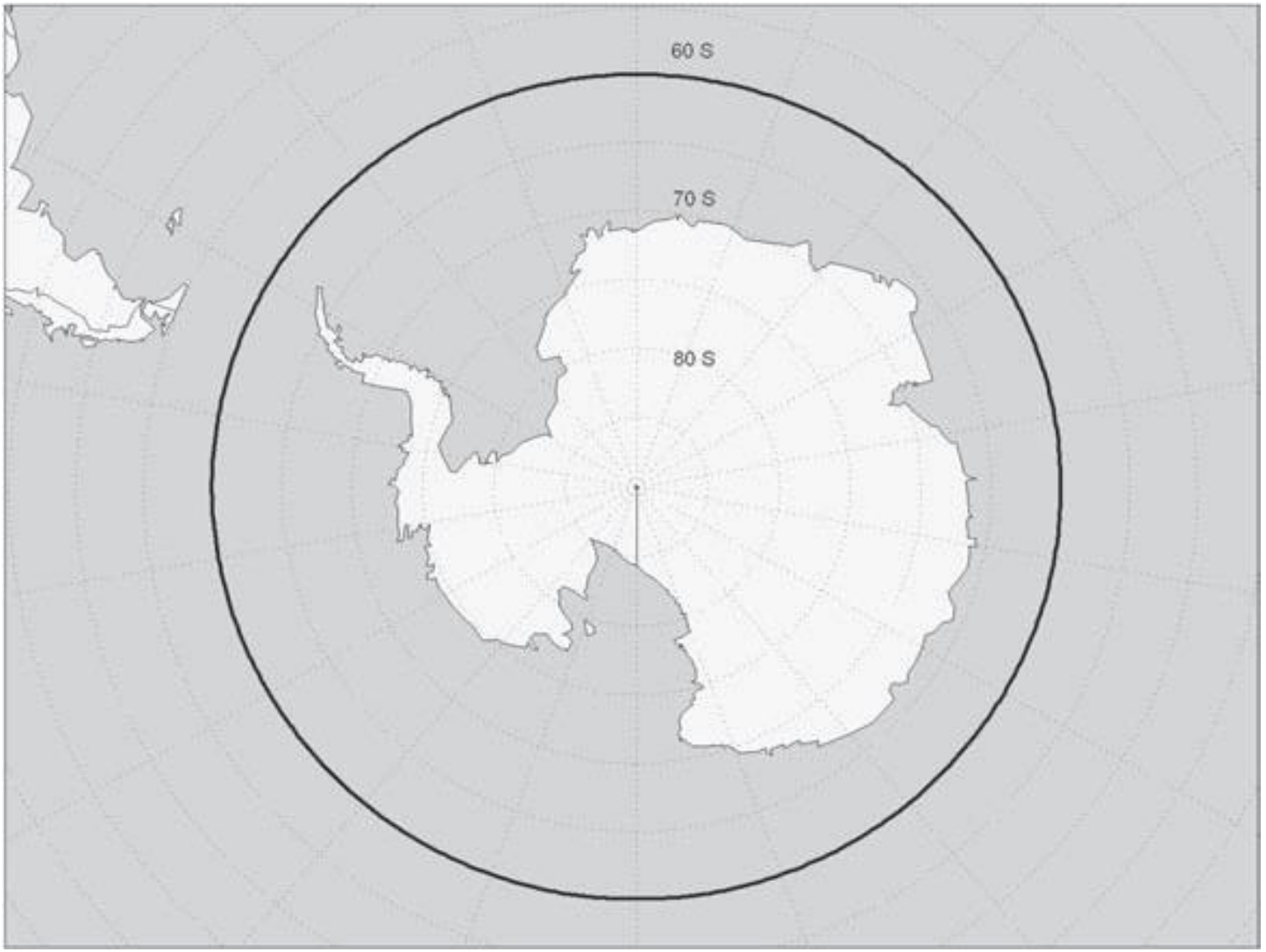
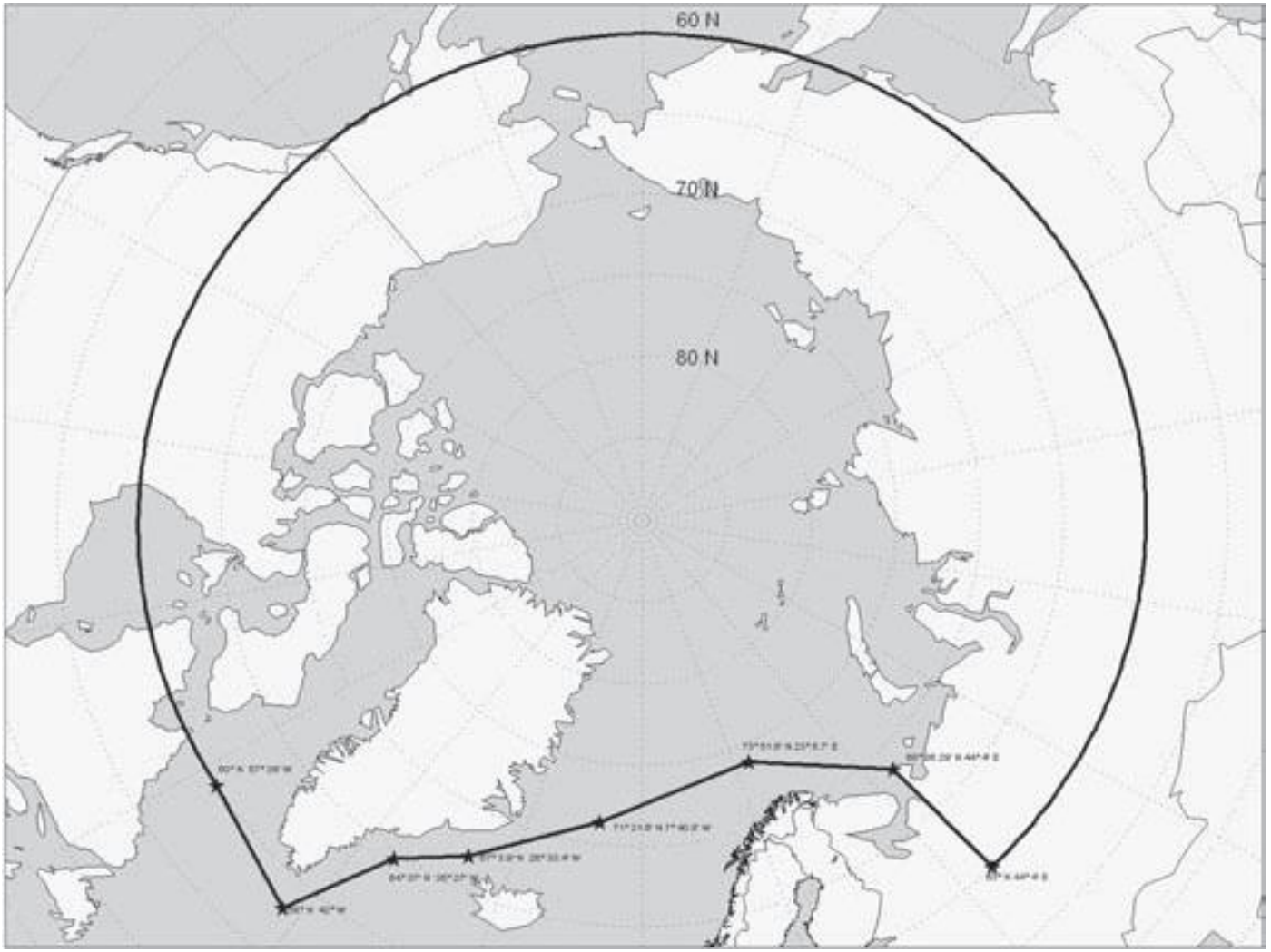


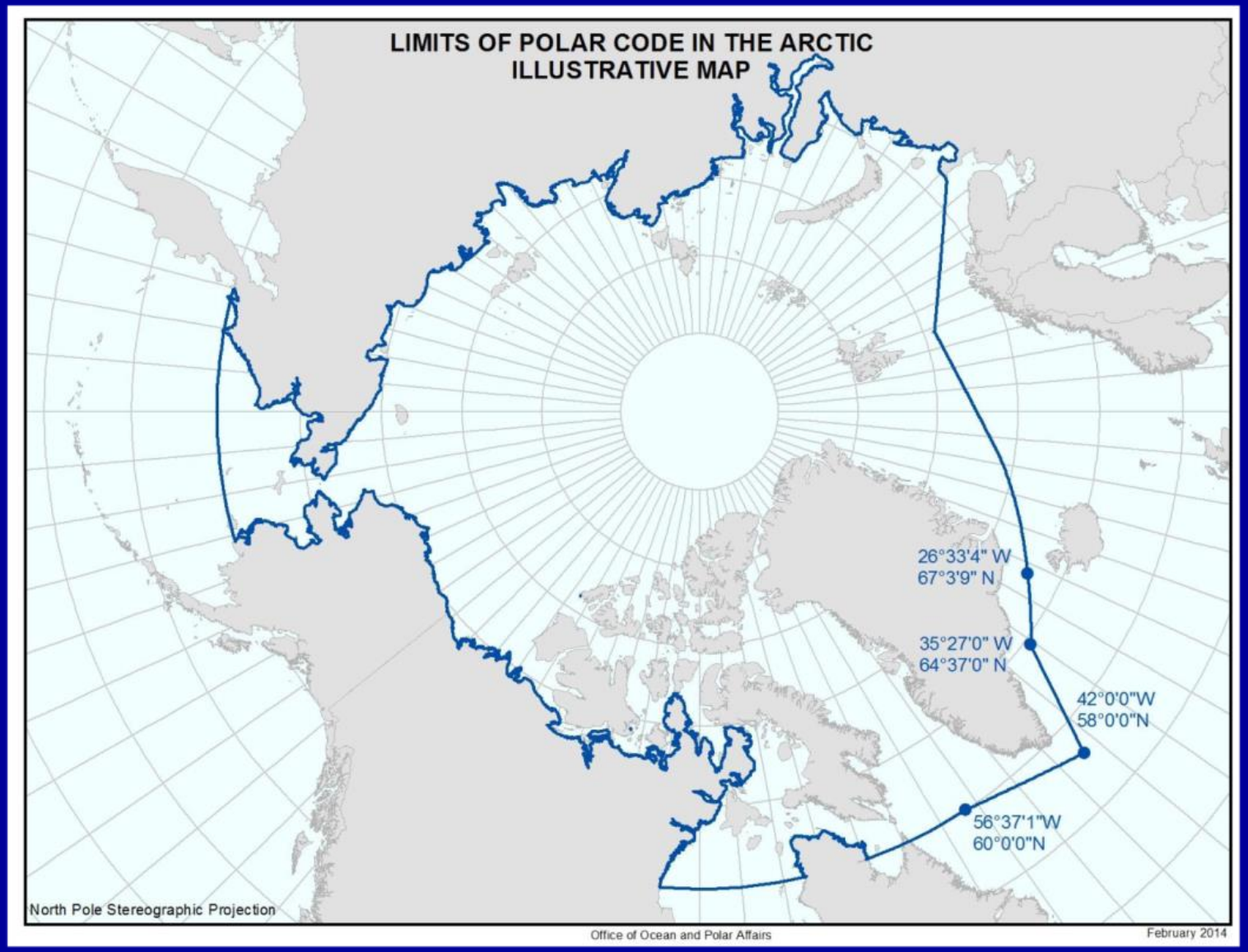
AMSA RECOMMENDATIONS (17) ~ THEMES

OWG, IMO Guidelines &Mandatory Polar Code: Maximum Extent of Antarctic Waters Application



OWG, IMO Guidelines & Mandatory Polar Code: Maximum Extent of Arctic Waters Application




LIMITS OF POLAR CODE IN THE ARCTIC
ILLUSTRATIVE MAP
26°33'4" W
67°3'9" N
35°27'0" W
64°37'0" N
42°0'0"W
58°0'0"N
56°37'1"W
60°0'0"N
North Pole Stereographic Projection
Office of Ocean and Polar Affairs
February 2014

Elements of the IMO Polar Code

Process ~ 1993 to 1 January 2017

Amendments to SOLAS, MARPOL & STCW

Commercial Carriers & Passenger Ships (500 tons or more)

I. SOLAS Amendments:

- **Polar Ship's Structural & Equipment Standards (Ice Classes: PC1/ PC7)**
- **Marine Safety and Lifesaving Equipment**
- **Training & Experience of Polar Mariners**
- **Polar Ship Certificate (Flag State ~ Ship Classes A,B,C)**
- **Polar Waters Operations Manual (Ship Specific)**

II. Environmental Rules ~ MARPOL Annexes:

- **Annex I ~ Oil & Oily Mixtures (No Discharge)**
- **Annex II ~ Noxious Liquid Substances (No Discharge)**
- **Annex IV ~ Sewage**
- **Annex V ~ Food Waste/Garbage**

Ship Categories

- Provide broad indications of ship capabilities to help structure contents
- Tied to ice classes
- Polar Ship Certificate (PSC) will establish operational limitations for ice

Cat.	Description	Ice Class
A	Designed for operation in Polar Waters in at least **medium first-year ice** which may include old ice inclusions	IACS PC1 - PC5*
B	Designed for operation in Polar Waters in at least **thin first-year ice** which may include old ice inclusions	IACS PC6 - PC7*
C	Designed to operate in open water or in ice conditions less severe than those included in Cat A or B	Scantlings adequate for intended ice types and concentrations
***or alternative standard offering an equivalent level of safety**		

Ship Categories

Category A

Category B

Category C

Polar Code Challenges

- Tight Implementation Timetable (1 Jan 2017 – 2018)
- Key Roles: Marine Insurers & Ship Classification Societies
- Meeting Passenger Vessel Requirements?
- Polar Mariners ~ Sources & Training?
- Advocacy by the Arctic States (& Arctic Council)
- Enforcement by Flag/Port States ~ Cooperation among the Arctic Port States (Role of the Arctic Coast Guard Forum)
- Monitoring & Tracking ~ Data, Assessment & Compliance
- Polar Code ~ One Element of the Large Arctic Marine Infrastructure Gap

Future Issues

- Uniformity of Application by the Coastal States
  - Beyond Commercial Carriers & Passenger Vessels ~ Fishing Vessels & Smaller Ships
    - Addressing Black Carbon & HFO
- Establishment ~ Arctic Emissions Control Area
- Integration with MPAs, PSSA, Protected Areas

HOW THE **POLAR** CODE PROTECTS THE ENVIRONMENT

OIL

DISCHARGES
Discharge into the sea of oil or oily mixtures from any ship is prohibited

STRUCTURE
Double hull and double bottom required for all oil tankers, including those less than 5,000dwt (A/B ships constructed on or after 1 January 2017)

HEAVY FUEL OIL
Heavy fuel oil is banned in the Antarctic (under MARPOL). Ships are encouraged not to use or carry heavy fuel oil in the Arctic

LUBRICANTS
Consider using non-toxic biodegradable lubricants or water-based systems in lubricated components outside the underwater hull with direct seawater interfaces

INVASIVE SPECIES

INVASIVE AQUATIC SPECIES
Measures to be taken to minimize the risk of invasive aquatic species through ships' ballast water and biofouling

SEWAGE

DISCHARGES I
No discharge of sewage in polar waters allowed (except under specific circumstances)

TREATMENT PLANTS
Discharge is permitted if ship has an approved sewage treatment plant, and discharges treated sewage as far as practicable from the nearest land, any fast ice, ice shelf, or areas of specified ice concentration

DISCHARGES II
- Sewage not comminuted or disinfected can be discharged at a distance of more than 12nm from any ice shelf or fast ice
- Comminuted and disinfected sewage can be discharged more than 3nm from any ice shelf or fast ice

GARBAGE

PLASTICS
All disposal of plastics prohibited (under MARPOL)

FOOD WASTES I
Discharge of food wastes onto the ice is prohibited

FOOD WASTES II
Food wastes which have been comminuted or ground (no greater than 25mm) can be discharged only when ship is not less than 12nm from the nearest land, nearest ice shelf, or nearest fast ice

ANIMAL CARCASSES
Discharge of animal carcasses is prohibited

CARGO RESIDUES
Cargo residues, cleaning agents or additives in hold washing water may only be discharged if: they are not harmful to the marine environment; both departure and destination ports are within Arctic waters; and there are no adequate reception facilities at those ports. The same requirements apply to Antarctic area under MARPOL

CHEMICALS

DISCHARGES
Discharge of noxious liquid substances (NLS) or mixtures containing NLS is prohibited in polar waters

BACKGROUND INFO

- THE INTERNATIONAL CODE FOR SHIPS OPERATING IN POLAR WATERS WILL ENTER INTO FORCE ON 1 JANUARY 2017
- IT APPLIES TO SHIPS OPERATING IN ARCTIC AND ANTARCTIC WATERS: ADDITIONAL TO EXISTING MARPOL REQUIREMENTS
- IT PROVIDES FOR SAFE SHIP OPERATION AND PROTECTS THE ENVIRONMENT BY ADDRESSING THE UNIQUE RISKS PRESENT IN POLAR WATERS BUT NOT COVERED BY OTHER INSTRUMENTS

DEFINITIONS

SHIP CATEGORIES
Three categories of ship designed to operate in polar waters in:
A) at least medium first-year ice
B) at least thin first-year ice
C) open waters/ice conditions less severe than A and B

FAST ICE: Sea ice which forms and remains fast along the coast, where it is attached to the shore, to an ice wall, to an ice front, between shoals or grounded icebergs

ICE SHELF: A floating ice sheet of considerable thickness showing 2 to 50m or more above sea-level, attached to the coast

IMO INTERNATIONAL MARITIME ORGANIZATION

WHAT DOES THE POLAR CODE MEAN FOR SHIP SAFETY?

EQUIPMENT

WINDOWS ON BRIDGE
Means to clear melted ice, freezing rain, snow, mist, spray and condensation

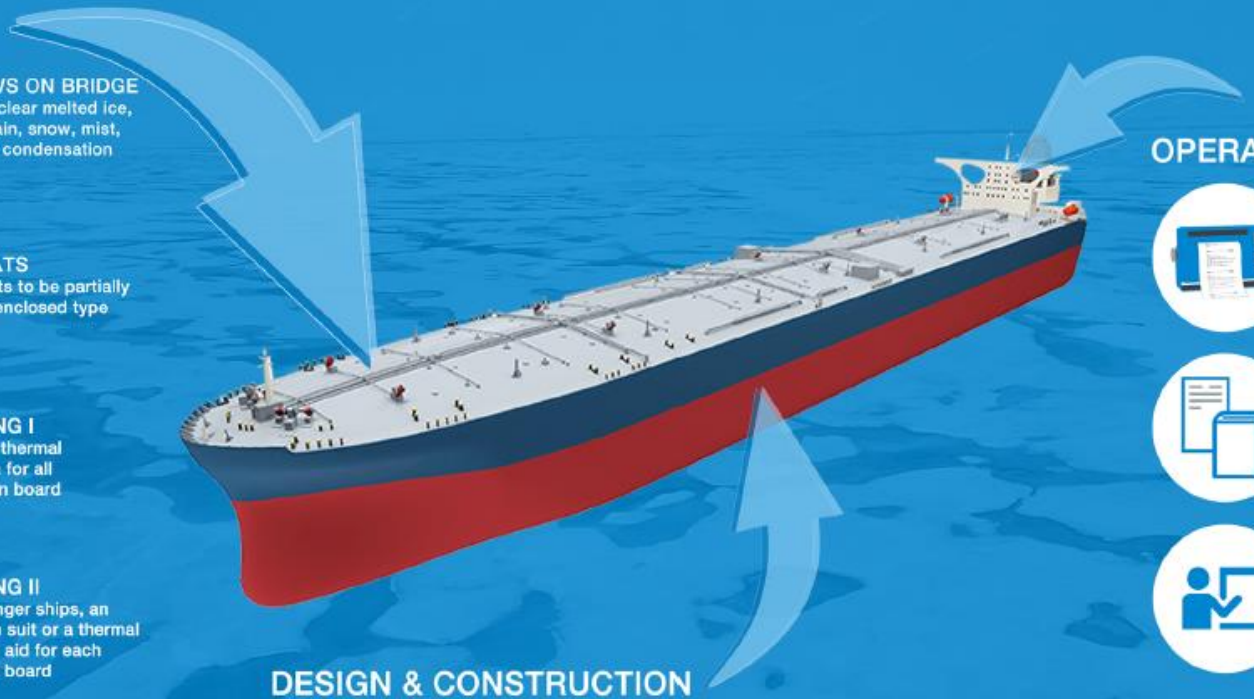
LIFEBOATS
All lifeboats to be partially or totally enclosed type

CLOTHING I
Adequate thermal protection for all persons on board

CLOTHING II
On passenger ships, an immersion suit or a thermal protective aid for each person on board

ICE REMOVAL
Special equipment for ice removal: such as electrical and pneumatic devices, special tools such as axes or wooden clubs

FIRE SAFETY
Extinguishing equipment operable in cold temperatures; protect from ice; suitable for persons wearing bulky and cumbersome cold weather gear



OPERATIONS & MANNING

NAVIGATION
Receive information about ice conditions

CERTIFICATE & MANUAL
Required to have on board a Polar Ship Certificate and the ship's Polar Water Operational Manual

TRAINING
Masters, chief mates and officers in charge of a navigational watch must have completed appropriate basic training (for open-water operations), and advanced training for other waters, including ice

DESIGN & CONSTRUCTION

SHIP CATEGORIES
Three categories of ship which may operate in Polar Waters, based on:
A) medium first-year ice
B) thin first-year ice
C) open waters/ice conditions less severe than A and B

INTACT STABILITY
Sufficient stability in intact condition when subject to ice accretion and the stability calculations must take into account the icing allowance

MATERIALS
Ships intended to operate in low air temperature must be constructed with materials suitable for operation at the ships polar service temperature

STRUCTURE
In ice strengthened ships, the structure of the ship must be able to resist both global and local structural loads

BACKGROUND INFO

- THE INTERNATIONAL CODE FOR SHIPS OPERATING IN POLAR WATERS WAS ADOPTED NOVEMBER 2014 BY THE IMO MARITIME SAFETY COMMITTEE
- IT APPLIES TO SHIPS OPERATING IN ARCTIC AND ANTARCTIC WATERS
- THE AIM IS TO PROVIDE FOR SAFE SHIP OPERATION AND THE PROTECTION OF THE POLAR ENVIRONMENT BY ADDRESSING RISKS PRESENT IN POLAR WATERS AND NOT ADEQUATELY MITIGATED BY OTHER INSTRUMENTS

IMO INTERNATIONAL MARITIME ORGANIZATION