Polar Code and Its Implementation for Arctic Shipping

Ocean Issues for the Pacific Islands and East Asia

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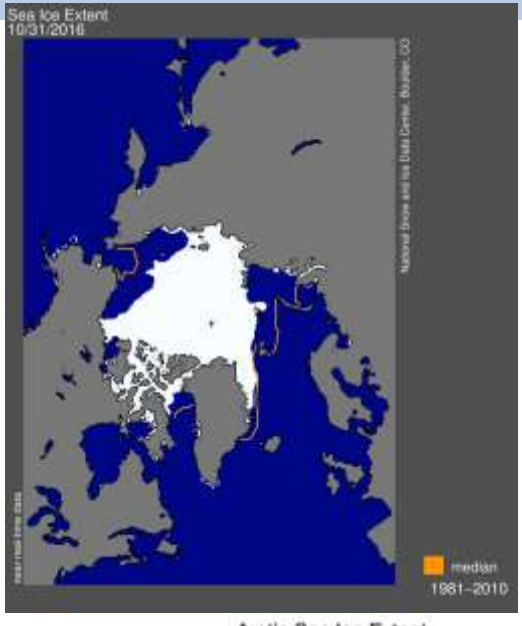
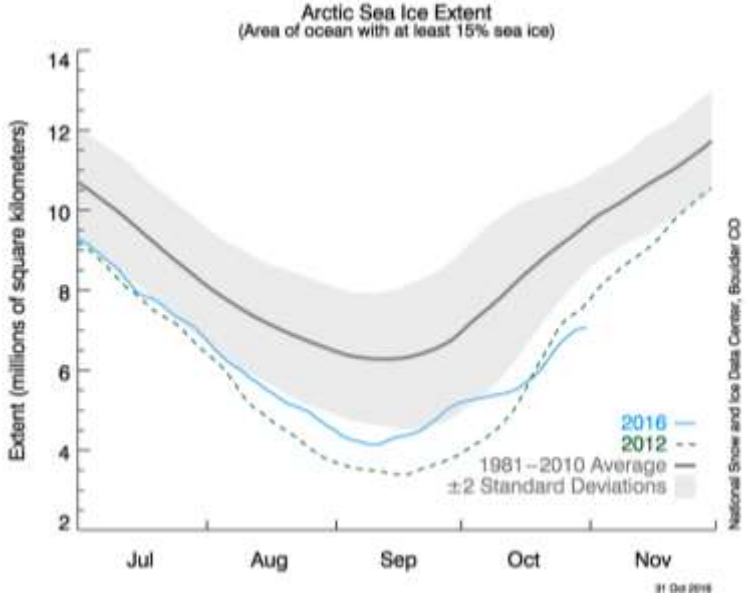
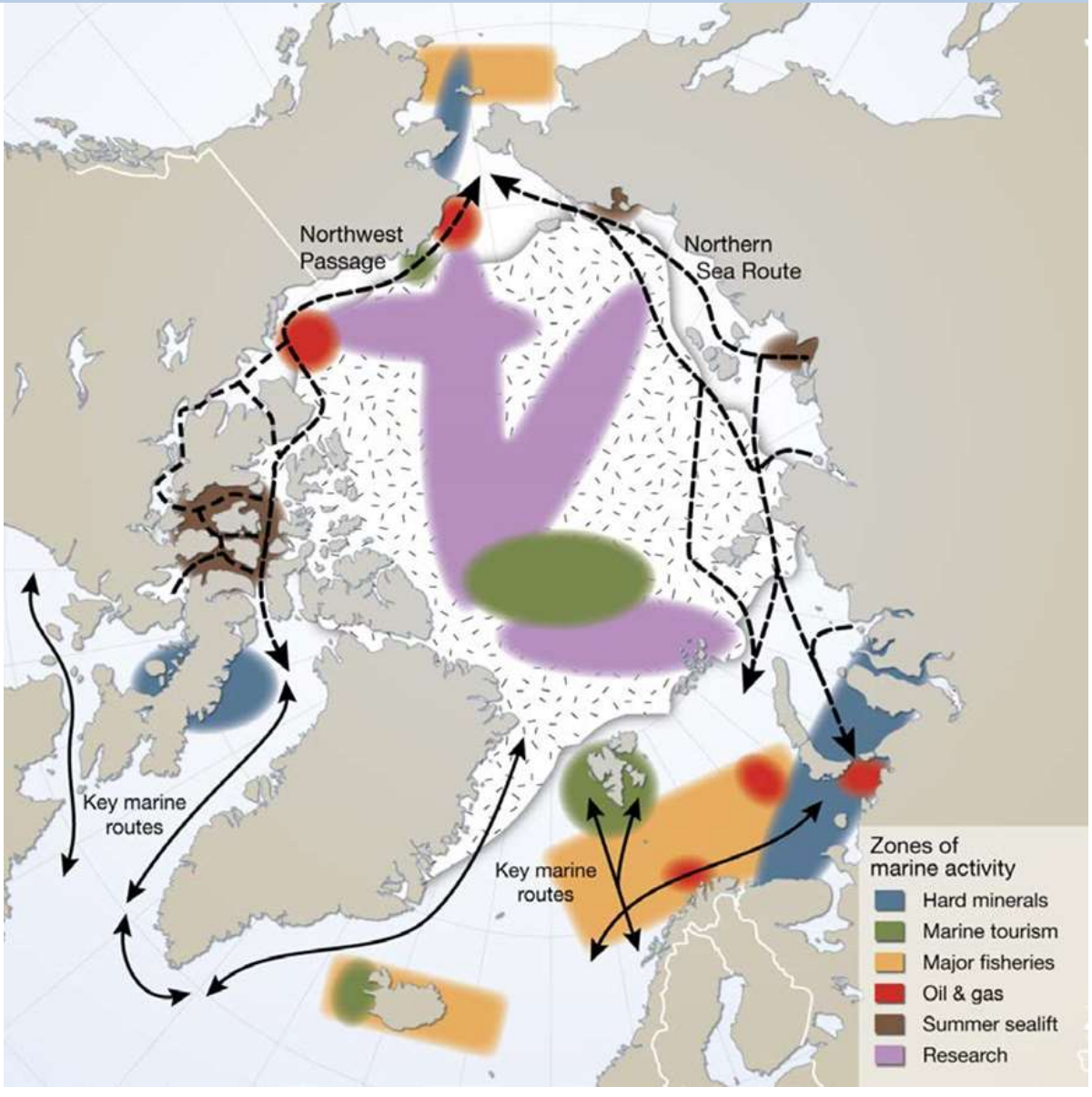
I. Arctic Shipping

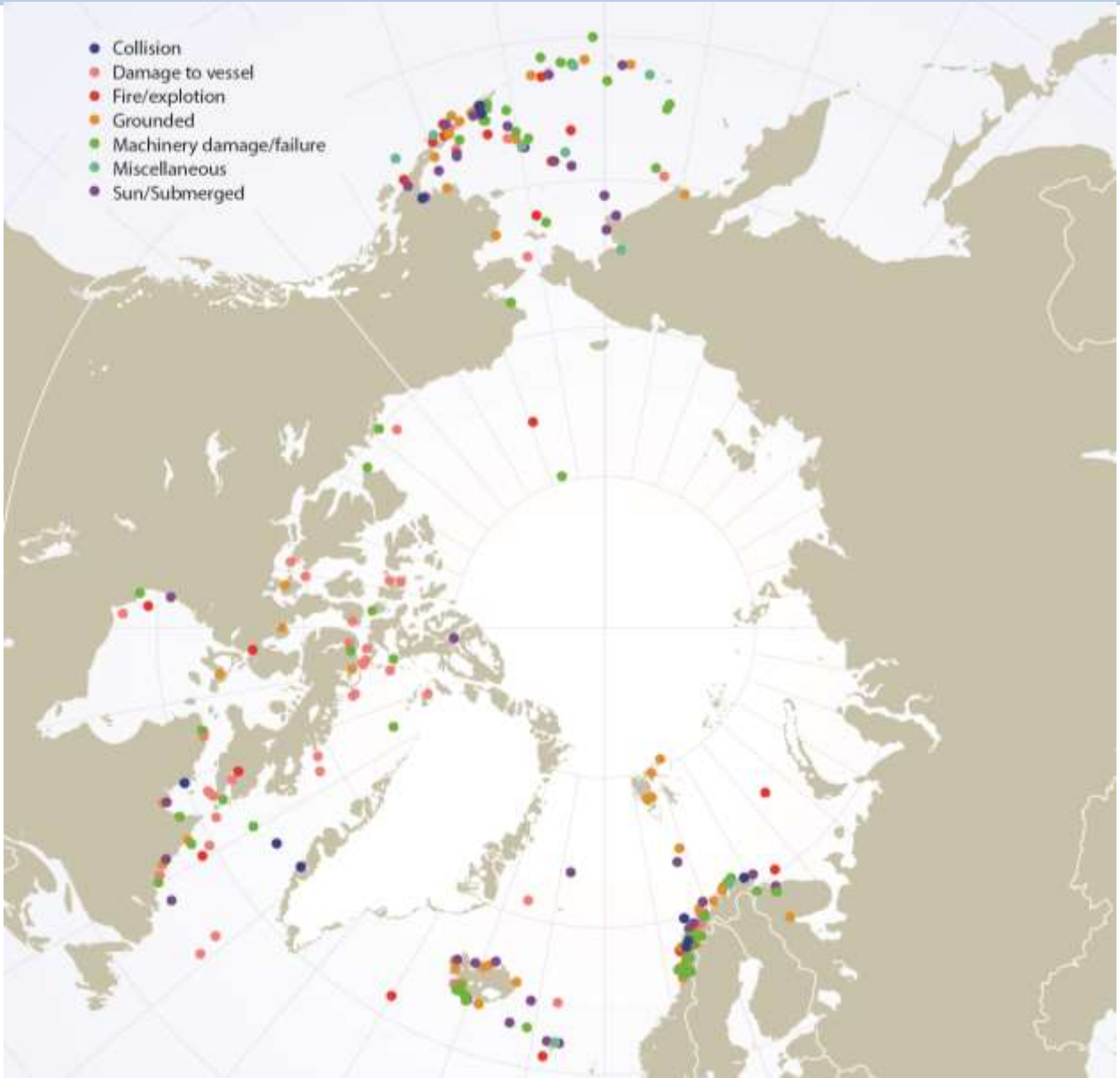
Background







I. Arctic Shipping



Challenges

- **Natural hazards**: presence of ice, low temperature, extended periods of darkness/daylight;
- **Facilities**: reduced effectiveness of equipment, lack of navigational aids/SAR facilities, insufficient port infrastructure;
- **Knowledge**: lack of hydrographic data and information;
- **Manning**: lack of experience in polar operations;

I. Arctic Shipping

Arctic Shipping Routes

Recent Northern Sea Route Transits

Year	Total Tran.	Int'l Tran.	Flag States	Departure/Destination Ports
2015	18		Russia, China, St. Kitts & Nevis, Netherlands, Bahamas, Liberia, Sweden	Russia, China, Sweden, Norway, Japan, South Korea, Poland, USA
2014	53	31	Russia, Sweden, Bahamas, Curacao, Panama	
2013	71	28	Russia, Panama, Greece, Cyprus, Marshall Island, Liberia, Malta, Norway, Hong Kong, Bermuda, Finland, Barbuda	Russia, China, Japan, Norway, Iceland, Malaysia, USA, Poland, Vietnam, South Korea, Netherlands, Denmark, Taiwan, Finland
2012	46	27	Russia, Panama, Norway, Finland, China, Marshall Island, Liberian, Cyprus	Russia, South Korea, Finland, Finland, China, Iceland, Singapore, France, Netherland, Germany, Norway, Canada, Japan, Denmark, USA
2011	41	16	Singapore, Marshall Islands, Norway, Liberia, Finland, Panama, Bahamas, Germany, Spain	Russia, China, Thailand, Norway, South Korea, France, Netherland

II. Legal Framework

UNCLOS & IMO

- **The United Nations Convention on the Law of the Sea**
  - Constitution for the Oceans
  - Framework Convention
  - Article 234 Ice-Covered Areas

- **The International Maritime Organization**
  - United Nations Specialized Agency
  - Responsible for the Safety and Security of Shipping and the Prevention of Marine Pollution by Ships

- IMO has a mandate under UNCLOS as a global legislative entity to adopt international rules and standards on the basis of many of its provisions.

II. Legal Framework

IMO Mandates under UNCLOS

- UNCLOS Articles 22(3)(a), 41(4)&(5), 53(9), 60(3)&(5), 211(1)-(3)&(5)&(6)(a), 217(1)(4)&(7), 218(1), 220(7), 223, and 297(1)(c) refer to "Competent International Organization" – **maritime safety and efficiency of navigation;**

- Articles 197-202, 204-205, 207(4), 208(5), 210(4), 212(3), 213-214, 216(1), 222, and 262, "Competent International Organizations" – **prevention and control of marine pollution**;

- UNCLOS Articles 21(2)&(4), 39(2), 41(3), 53(8), 60(3)&(5)-(6), 94(4)(c)&(5), 211(2)&(5)&(6)(c), and 216(1)(a) refer to "Generally Accepted International Rules, Standards, Regulations" – technical matters of all kinds affecting international shipping: Design, construction, manning or equipment; Safety of navigation and prevention of collisions at sea; Prevention, reduction and control of pollution from ships;

II. Legal Framework

Major IMO Conventions

- International Convention on Safety of Life at Sea, 1974 (SOLAS)
  - 162 Parties, 99.17 % of world gross tonnage
- International Convention for the Prevention of Pollution from Ships 1973, as modified by the 1978 Protocol (MARPOL)
  - 154 Parties, 99.15 % of world gross tonnage
- Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW)
  - 161 Parties, 99.21 % of world gross tonnage

III. Development of the Polar Code

History

- 1993 – IMO Polar Code Outside Working Group established.
- 1998 – Working Group Draft Polar Code sent to IMO.
- 2002 – IMO Guidelines for Ship's Operating in Arctic Ice-Covered Waters.
- 2004-2009 – Conduct of the Arctic Council's Arctic Marine Shipping Assessment; Arctic States call for mandatory application of the Guidelines and augmentation of the IMO Conventions for ships operating in polar waters.
- 2006-2008 – International Association of Classification Societies (IACS) Unified Requirements for Polar Class Ships adopted.
- 2009 – IMO Guidelines for Ships Operating in Polar Waters.
- 2010 – IMO Working Group on mandatory polar ship requirements established.
- 2014-2015 – IMO MSC/MEPC adopted the Polar Code and SOLAS/MARPOL amendments.

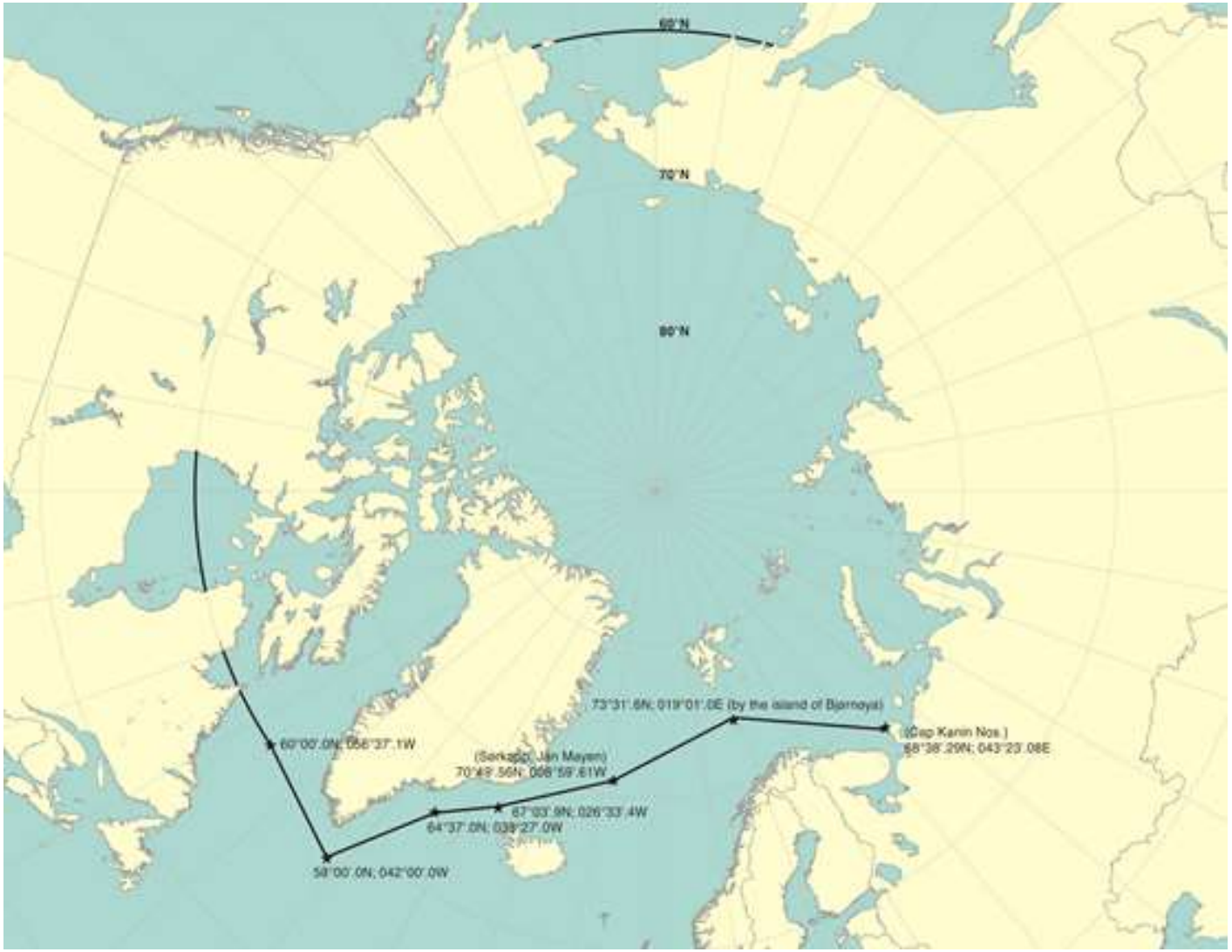
III. Development of the Polar Code

Adoption

	Committee Meeting	Interval	Committee Meeting	Interval	Entry into Force
SOLAS Article VIII Amendments to Regulations except Chapter I	MSC 93 approved for circulation new Chapter XIV May 2014	Minimum 6 months	MSC 94 adopted Nov. 2014	Minimum one year	Deemed accepted 1 July 2016 EIF 1 January 2017
MARPOL Article 16 Amendments to Annexes I, II, IV, V	MEPC 67 approved for circulation October 2014	Minimum 6 months	MEPC 68 adopted May 2015	Minimum 10 months	Deemed accepted 1 July 2016 EIF 1 January 2017
STCW Article XII Amendments to Annex	MSC 95 approved for circulation June 2015	Minimum 6 months	MSC 97 adoption Nov 2016	Minimum one year	Dates to be set at MSC 97 DA 01/07/2017 (T) EIF 01/07/2018 (T)

III. Development of the Polar Code

Application



Areas north of 60° N;

Slight deviations to include the entire southern exposure of Greenland while excluding Iceland and the Norwegian coastline.

Intend to balance vessel traffic, ice cover, safety considerations, and environmental ecosystems.

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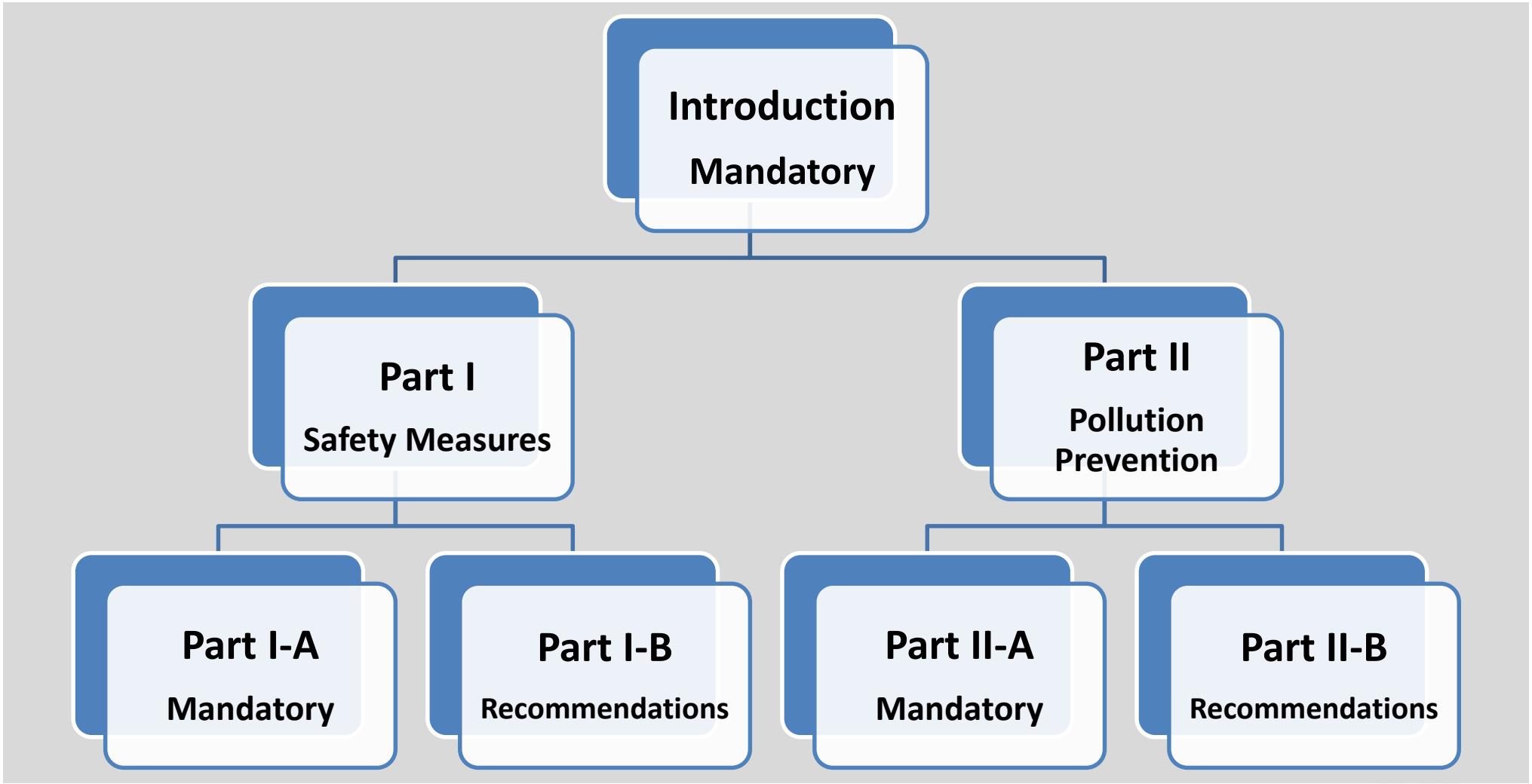
III. Development of the Polar Code

Structure



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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

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

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

INVASIVE SPECIES

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

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

IV. Implementation

Application

- New ships constructed after 1 January 2017;
- Ships constructed before 1 January 2017 will be required to meet the relevant requirements of the Polar Code by the first intermediate or renewal survey, whichever occurs first, after 1 January 2018.
  - Exempted from the requirements of:
  - ➢ Ice damage residual stability
  - ➢ Escape routes arrangements for persons wearing ‘polar clothing’
  - ➢ Navigation equipment redundancy (i.e., two independent echo-sounding devices)
  - ➢ Enclosed bridge wings on ice class ships
  - ➢ Oil tank separation distance from the side shell

IV. Implementation

Flag States

- **Flag States** – primary obligation (Articles 94 & 217)
  - Duty to certify and ensure compliance
  - ➢ Polar Ship Certificate – Category A/B/C
  - ➢ Polar Water Operational Manual
- **Shipping Industry** – supporting role
  - Classification Society
  - P & I Club
  - Training

IV. Implementation

Port States

- **Port States** – enforcement jurisdiction (Article 218)
- **IMO A.27/Res.1052 Procedures for Port State Control, 2011**
  - Amendments to the PSC procedures are normally developed by the Sub-Committee on Implementation of IMO Instruments (III) (formerly FSI) under the agenda "Measures to harmonize port State control (PSC) activities and procedures worldwide" and approved by MSC and MEPC
- **MoUs – Paris & Tokyo**
  - Maritime Authorities of member States (Canada & Russia; US-observer)
  - May develop guidance before A.27/Res.1052 revised

IV. Implementation

Coastal State

- **Coastal State** – enforcement jurisdiction (Articles 220 & 234)
- **Relationship between the Polar Code & National Laws of Canada and Russia:**
  - Nothing in Polar Code shall prejudice rights and obligations of States under international law (e.g. SOLAS XIV Reg. 2/5)
  - Coastal State may adopt and enforcement laws and regulations more stringent than the Polar Code?
  - Does Polar Code apply to Canadian and Russian flag vessels on domestic voyages (most of current traffic)?

V. Further Development

- **Second phase?**
  - Non-SOLAS/MARPOL ships
  - Government or military ships
  - Fishing vessels
- **Other Measures applicable to Arctic Shipping**
  - Routeing and reporting systems, VTS
  - Marine protected areas: special areas under MARPOL, PSSA
  - Anti-fouling
  - Ballast water management

Thanks for your attention!

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