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# Project of thematic fact sheets on PAME's Arctic Shipping Best Practice Information Forum

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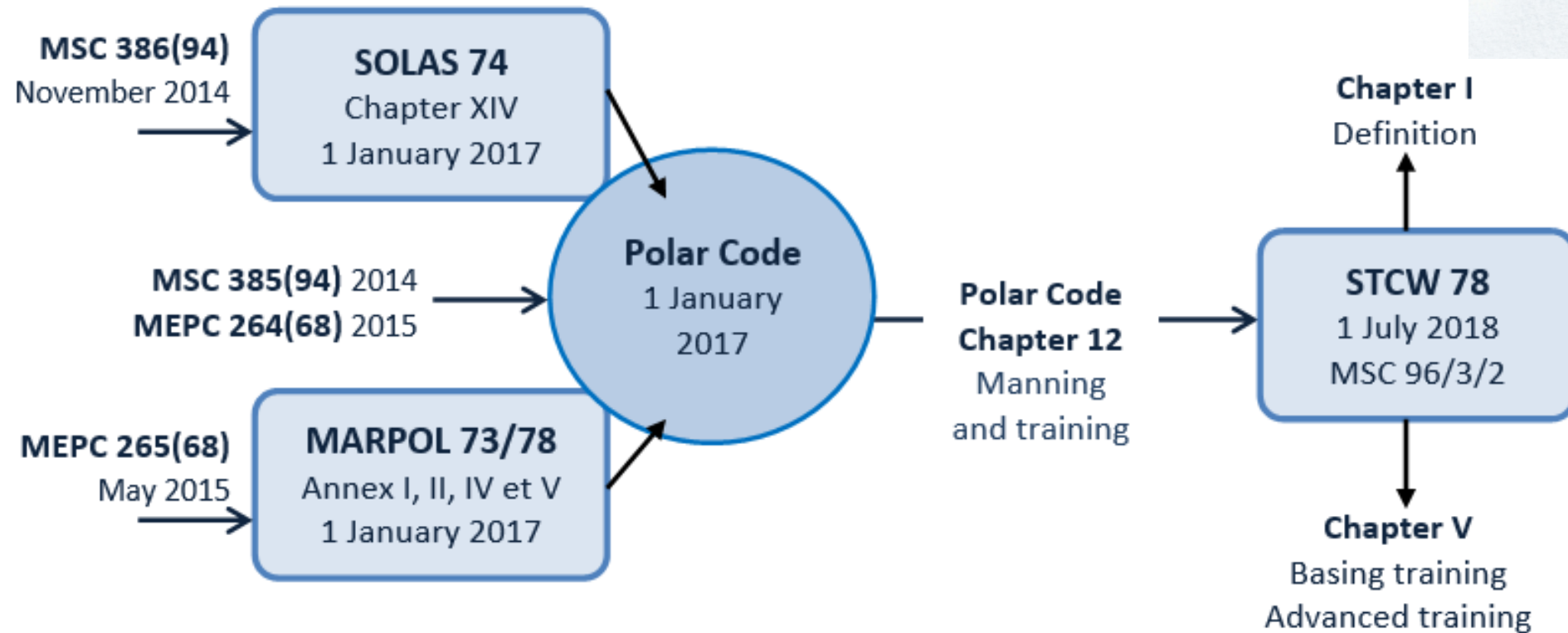
The fifth meeting of the Arctic Council's Arctic Shipping Best Practice Information Forum

18th Nov 21

**Project supported by the French observer state of the Arctic Council**  
Pr Hervé Baudu, senior lecturer in nautical sciences



## Polar Code entered into force on 1st January 2017



- Equipment
- Operations & construction
- Manning

- Environment protection
- Oil pollution
- Sewage and Garbage restrictions

## 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

### 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

### 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

### 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

## 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



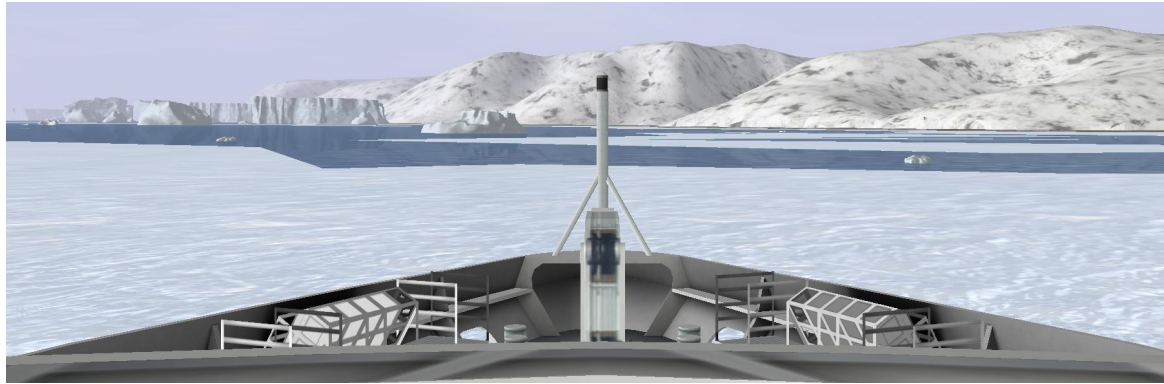
**FAST ICE:** Sea ice which forms and remains fast along the coast, where it is attached to the shore, to an ice wall, to an ice front, between shoals or grounded icebergs



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

- 2 kind of training :
  - ✓ **Basic** for master, chief mate and officers in charge of a navigational watch (34h);
  - ✓ **Advanced** for master and chief mate (30h)
- At the standard of the IMO Model Course 7.11 & 7.12

Ice conditions	Tankers	Passenger ships	Others
Ice free	Not applicable	Not applicable	Not applicable
Open waters ( < 1/10 and no growlers)	<b>Basic training</b> for master, chief mate and officers in charge of a navigational watch	<b>Basic training</b> for master, chief mate and officers in charge of a navigational watch	Not applicable
Others waters ( > 1/10 and old Ice inclusions )	<b>Advanced training</b> for master and chief mate. Basic training for officers in charge of a navigational watch	<b>Advanced training</b> for master and chief mate. Basic training for officers in charge of a navigational watch	<b>Advanced training</b> for master and chief mate. Basic training for officers in charge of a navigational watch



## About 25 Ice training centers



## Study program

Phase 1	Subject	Actor	Deadline
1.1	Online/internet research to identify nautical training centers in the Arctic States and as many of the Observer States as may be practicable.	France	Sept 2021
1.2	Survey to the nautical training centers with the aim of gathering name of the center, point of contact, Basic and/or Advanced training course...	France	Oct 2021
1.3 to 1.4	The Forum Coordinating Committee would forward the inventory of centers to the Arctic States and Observer States through the PAME Shipping Experts Group for review and input.	SEG	Dec 2021
Phase 2	Subject	Actor	Deadline
2.1	Distribution to the list of nautical training centers by the State in which the center is located	SEG	Feb 2022
2.2 to 2.3	Each training center would be contacted and invited on a voluntary basis to prepare a thematic sheet (1 sheet by states). Drafting of thematic sheets by State	France	Mar 2022
2.4 to 2.5	Compilation and harmonization of sheets. Posting on the PAME's Arctic Shipping Best Practice Information Forum website	France - SEG	Mar 2023

For exemple: Phase 1, Canada State

States	Name of the center	Status	Point of contact	Website	Polar ice training	Link to polar training courses	Name of the person in charge
<b>Arctic States</b>							
<b>Canada</b>							
Port Hawksbury N-É	Nova Scotia Community College	public	<a href="mailto:Rajeshwar.DeviPrasad@nsc.ca">Rajeshwar.DeviPrasad@nsc.ca</a>	<a href="https://www.nsc.ca/learning_programs/programs/plandescr.aspx?prg=MNTD&amp;pln=MNTECHDIP">https://www.nsc.ca/learning_programs/programs/plandescr.aspx?prg=MNTD&amp;pln=MNTECHDIP</a>	Basic and Advanced		Rajeshwar Devi Prasad
Sydney	Canadian Coast Guard College	public	<a href="mailto:David.Gerbasi@dfo-mpo.gc.ca">David.Gerbasi@dfo-mpo.gc.ca</a>	<a href="https://www.ccg-gcc.gc.ca/college/index-fra.html">https://www.ccg-gcc.gc.ca/college/index-fra.html</a>	Basic and Advanced		David Gerbasi
Levis	IMQ	public	<a href="mailto:bourfield@gmail.com">bourfield@gmail.com</a>	<a href="https://www.imq.gc.ca/">https://www.imq.gc.ca/</a>	Basic and Advanced	<a href="https://sidel.cegep-rimouski.qc.ca/cours.aspx?entite=cfmu#39">https://sidel.cegep-rimouski.qc.ca/cours.aspx?entite=cfmu#39</a>	Capt Michel Bourdeau
St. John's	Marine Institute	public	<a href="mailto:Fabian.lambert@mi.mun.ca">Fabian.lambert@mi.mun.ca</a> - <a href="mailto:Christopher.Hearn@mi.mun.ca">Christopher.Hearn@mi.mun.ca</a>	<a href="https://www.mi.mun.ca/programsandcourses">https://www.mi.mun.ca/programsandcourses</a>	Basic and Advanced	<a href="https://www.mi.mun.ca/Add">https://www.mi.mun.ca/Add</a>	Christopher Hearn and Fabian Lambert





One Fact Sheet by Polar Code chapters

# POLAR CODE CHAPTERS

## EXPLANATION AND SUBMISSIONS

### Part IA: Safety Measures

**Chapter 1:** General

**Chapter 2:** Polar Water Operation Manual

**Chapter 3:** Ship structure

**Chapter 4:** Subdivision and stability

**Chapter 5:** Watertight and weathertight integrity

**Chapter 6:** Machinery installations

**Chapter 7:** Fire safety/Protection

**Chapter 8:** Life saving appliances and arrangements

**Chapter 9:** Safety of navigation

**Chapter 10:** Communication

**Chapter 11:** Voyage planning

**Chapter 12:** Manning and training

### Part IB

Additional Guidance

Regarding the Provisions of the Introduction and Part I-A

### Part IIB

Additional Guidance

Regarding the Provisions of the Introduction and Part II-A

### Part IIA: Pollution Prevention Measures

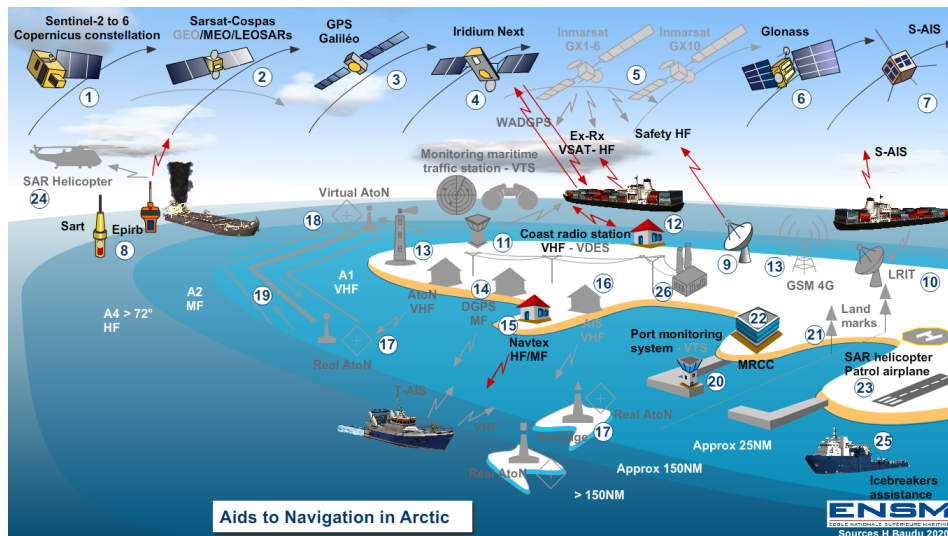
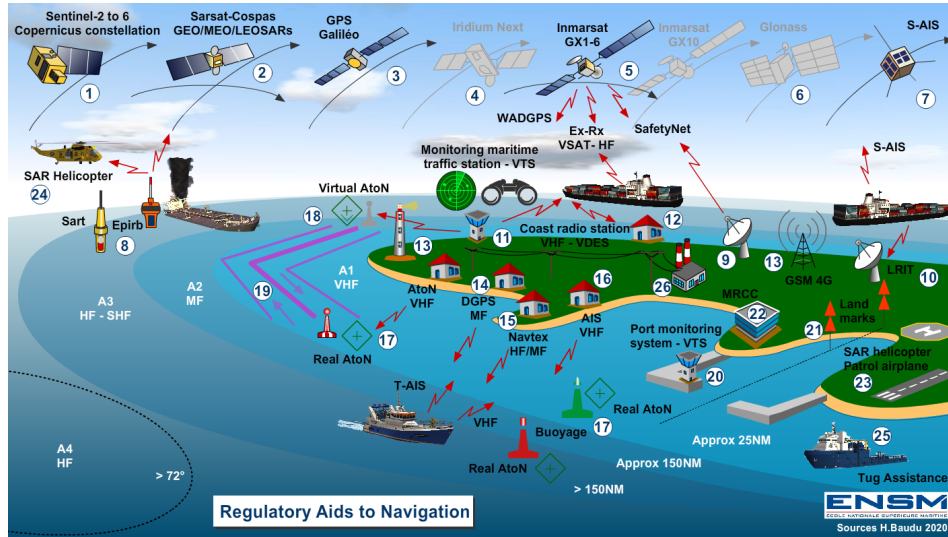
**Chapter 1:** Prevention of Pollution by Oil

**Chapter 2:** Control of pollution by noxious liquid substances in bulk

**Chapter 4:** Prevention of pollution by sewage from ships

**Chapter 5:** Prevention of pollution by garbage from ships

For example: Fact Sheet of « Radiocommunication in Arctic »



	Systems	Zones	Characteristics	Subpolar Zones < 70°	Polar zones > 70°
Satellites systems	1 Sentinel 2A	A1-4	LEO; Ice charts	Yes	Yes
	2 Sarsat COSPAS SMDSM	A1-4	GEO/MEO/LEO; detection and SAR alert of distress beacons EPIRB du SMDSM	Yes	Yes; but longer time due to lack of relay GEO
	3 GPS Galileo	A1-4	US and EU satellites positioning means	Yes; with increased SBAS precision (EGNOS, WAAS)	Yes without SBAS
	4 Iridium Next SafetyCast	A1-4	Medium-speed data and telephony transmissions; support GMDSS, MSI	Yes, poorer performance in equatorial zones	Optimized for communications due to its polar orbit
	5 Inmarsat GMDSS	A1-3	Satellites for high speed commercial data transmission, distress, MSI	Yes and transmitted by WADGPS	No; GEO satellites not visible > 72° North substituted by HF link
	6 GX10A -10B	A1-4	HEO Orbit Project (2023)	Yes	Yes with HEO
	7 Glonass	A1-4	Russian positioning device	Yes	Yes, optimized for Russia
Onshore Systems	8 EPIRB - SART SMDSM	A1-4	GPS and Radar Emergency Position Indicating Beacons	Yes	Yes; longer time in the absence of a GEO relay
	9 SafetyNet GMDSS	A1-3	GMDSS distress links via Inmarsat	Yes	No, additional HF for zone A4
	10 LRIT	A1-3	Automatic vessel tracking system to coastal States	Yes, for States that have it	No
	11 Coastal VTS	A1	Monitoring and control of coastal maritime traffic	Yes	NSR Coordination Centre in Murmansk
	12 VHF Radio relay - VDES	A1	Full Coastal VHF Coverage	Yes - VDES under study	Approaches to ports only
	13 GSM	A1	Coastal coverage in mobile phones	Yes, depending on the country	Approaches to ports only
	14 DGPS Station	A1-2	GPS differential corrections	Yes, on most shipping routes	No, in project
	15 Navtex HF/MF	A1-2	Broadcast Weather Information	Yes	Yes, only MF in the Kara Sea and Laptev Sea (HF IDBE possible)
	16 Coastal AIS	A1	Traffic monitoring via AIS	Yes	No, except Murmansk
	17 Real buoyage + AIS	A1	AtoN: AIS signal associated with a real beacon	Yes	No
	18 Virtual buoyage + AIS	A1	AtoN: AIS signal instead of the beacon	Yes	No
	19 TSS	A1	Organization of traffic in the Straits	Yes	Only one in the Bering Strait.
	20 Port VTS	A1	Vessel traffic organisation and control	Yes	In Murmansk and Arkhangelsk
	21 Navigation buoyage	A1	Navigation assistance	Yes	Only around the main ports
	22 MRCC	A1-4	Maritime Rescue Coordination Centre	Yes	Only one permanent in Murmansk
	23 Air Base	A1-2	Aeronautical rescue means for SAR operations	Yes	In main ports, few civilian means; military bases along the NSR
	24 Aeronautical means of rescue	A1-2	Aeronautical rescue means for SAR operations	Yes	Yes, but little compared to the area to be covered
	25 Maritime means of assistance	A1-4	Support tugs or icebreakers	Yes	Yes, but little compared to the area to be covered
	26 Power plant	/	Means of generating electricity	Yes	Difficult outside coastal ports

Include a new tab “Polar Code thematic fact sheet”  
in the Web-Portal of the Arctic Shipping Best Practice Information Forum:

## OTHER INFORMATION

- + Annual Forum meetings
- + Submit Information to the Web-Portal
- + Covid-19 Guidance
- + Operational Documents
- + Other Information

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Thank you for your attention

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