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## IMCC Dublin

**The Arctic:  
Politics, Regulations and Shipping Cost Benefit**

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Master Mariner

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# Agenda

- Time Line
- Arctic Council
- Polar Code
- Polar Class
- Environmental Pollution
- Search and Rescue
- Does it make financial sense?



# Time Line

- 1989 Gathering of Arctic countries
- 1990 Production of Environmental Protection Strategy
- 1996 Formation of ARCTIC COUNCIL
  - PAME – Working Group
- 2009 Approval of Arctic Marine Shipping Assessment
- 2010 Adoption of *Guidelines for Ships Operating in Polar Waters* by IMO (A.1024(26))
- 2010 Implementation of METAREAS
- 2016 ? Implementation of the Polar Code

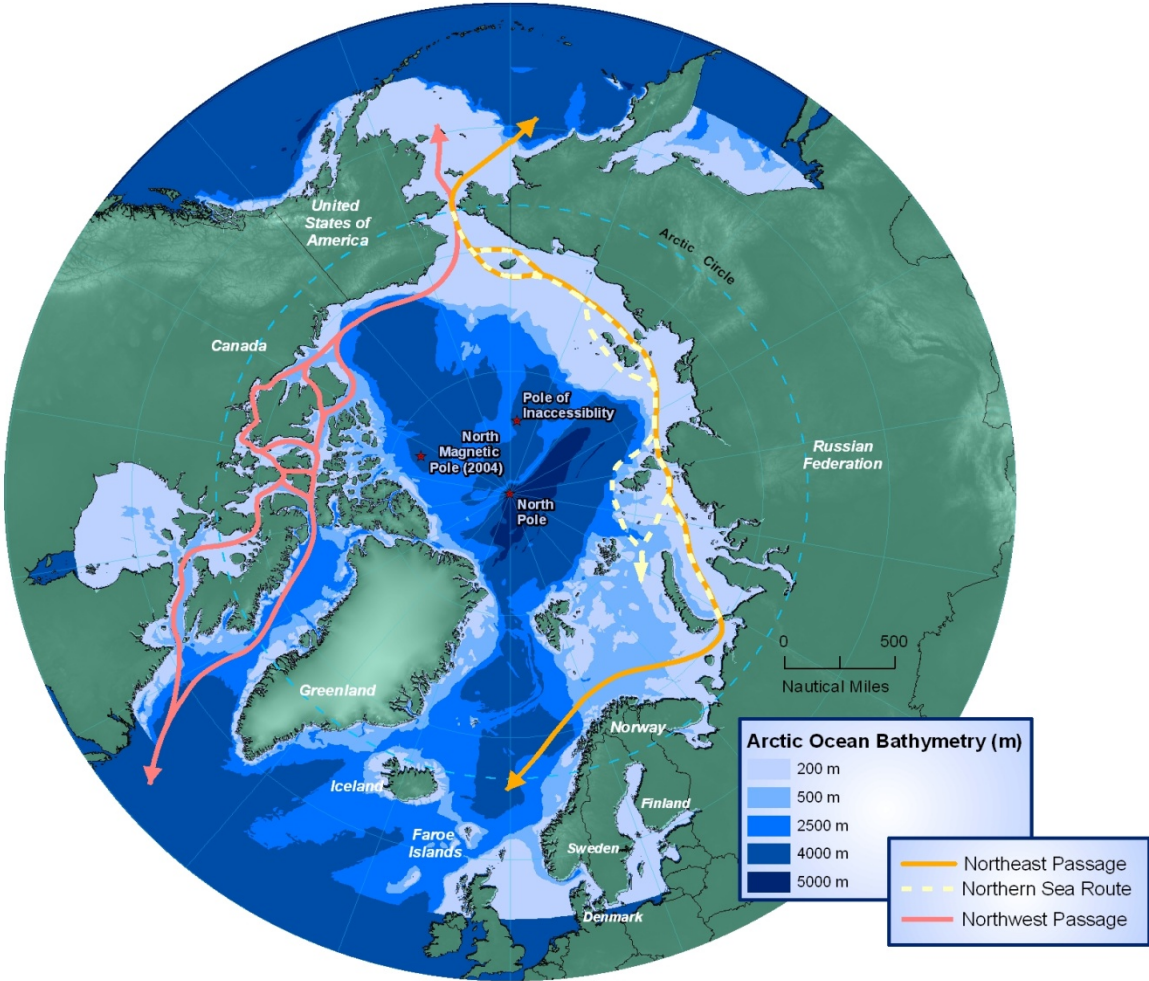


# The Arctic

- Geographical boundary of the Arctic waters
- IMO Resolution A.1024(26)



# The Arctic Countries



# Political overview of the Arctic

- ARCTIC COUNCIL
  - Canada
  - Denmark (Greenland and Faroe Islands)
  - Finland
  - Iceland
  - Sweden
  - Norway
  - Russian Federation
  - United States
  
  - Permanent Participants
  
  - Observers



# Political overview of the Arctic

- PERMANENT PARTICIPANTS

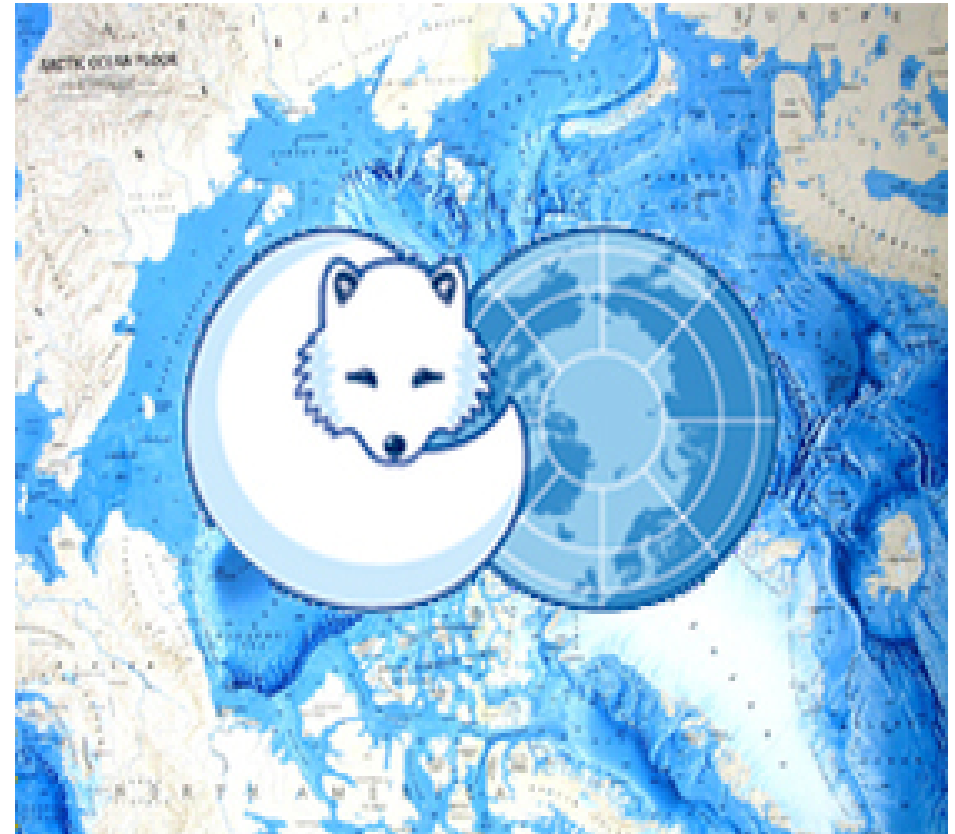
- Aleut International Association (AIA)
- Arctic Athabaskan Council (AAC)
- Gwich'in Council International (GCI)
- Inuit Circumpolar Council (ICC)
- Russian Association of Indigenous Peoples of the North, Siberia and Far East (RAIPON)
- Saami Council (SC)



# Political overview of the Arctic

- OBSERVERS

- Non-Arctic States – currently 6
- Inter-governmental and inter-parliamentary organisations, global and regional – currently 9
- Non-governmental organisations – currently 11





# Arctic Council Government Matrix

	UNCLOS signatory? (Year ratified)	Arctic continental shelf claim? (Year submitted to CLCS)	Arctic Council?	A-5	Permanent Member of the United Nations Security Council	EU	NATO	Dedicated polar research
Canada	2003	(Expected 2012/2013)	✓	✓			✓	✓
Denmark (Greenland)	2004	(Expected 2013/2014)	✓	✓		Greenland is not part of the EU	✓	✓
Finland	1996		✓			✓		✓
Iceland	1985	2009 (under consideration)	✓			EU Candidate	✓	✓
Norway	1994	2006 (adopted 2009)	✓	✓		EEA state	✓	✓
Russia	1997	2001 (revised submission expected 2012)	✓	✓	✓			✓
Sweden	2003		✓			✓		✓
United States	Not ratified	Data collection: but no timeline for submission	✓	✓	✓		✓	✓
France	1996		Permanent observer		✓	✓	✓	✓
Germany	1994		Permanent observer			✓	✓	✓
United Kingdom	1997		Permanent observer		✓	✓	✓	✓

Source Chatham House

# Uniformity of Arctic Shipping Governance

## Existing Regulatory Framework

- United Nations Conventions on the Law of the Sea - UNCLOS
- Safety of Life at Sea – SOLAS
- International Convention for the Prevention of Pollution from Ships – MARPOL
- International Convention on Standards of Training, Certification and Watchkeeping for Seafarers - STCW



# Russian rules / regulations



## Guide to navigation through the Northern Sea Route

Russian Register specify limits to navigation based on:

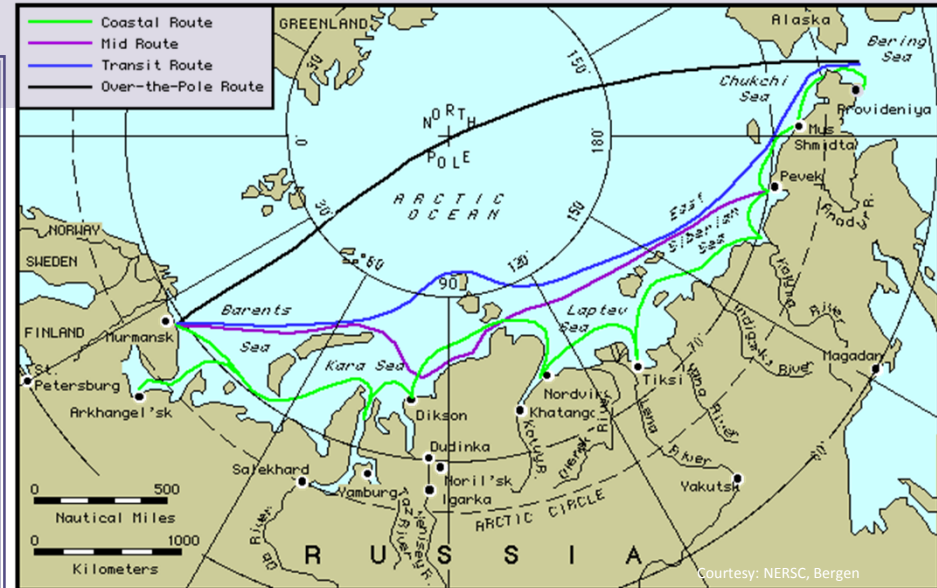
Ice class **(minimum 1A for summer season transit)**

Sea area

Season

Icebreaker escorted or independent navigation

Local port requirements



CNIIMF - Issue ice certificate

NSRA - Grant permission to navigate on the Northern Sea Route

Rosatomflot - Provides year round icebreaker services for ships operating on the Northern Sea Route

# Some of the Russian requirements

Vessels must have a double bottom from fore peak to aft peak tanks

Vessels with bulbous bow are not permitted to transit NSR

Ballast tanks to be fitted with heating coils

Fuel and lube oils must be sufficient for 30 days

Vessels to carry a spare propeller and two spare propeller blades

Additional radio and navigation equipment may be required to be fitted

Master and crew to have experience of operating in ice



# International Regulatory Framework

- Currently no mandatory requirements
- IMO adopted “*Guidelines for ships operating in Polar Waters*” in 2009.
  - Propulsion power (icebreaking capability)
  - Damage stability
  - Life-saving and fire fighting arrangements
  - Environmental protection
  - Damage control
  - Ice Navigator during a passage

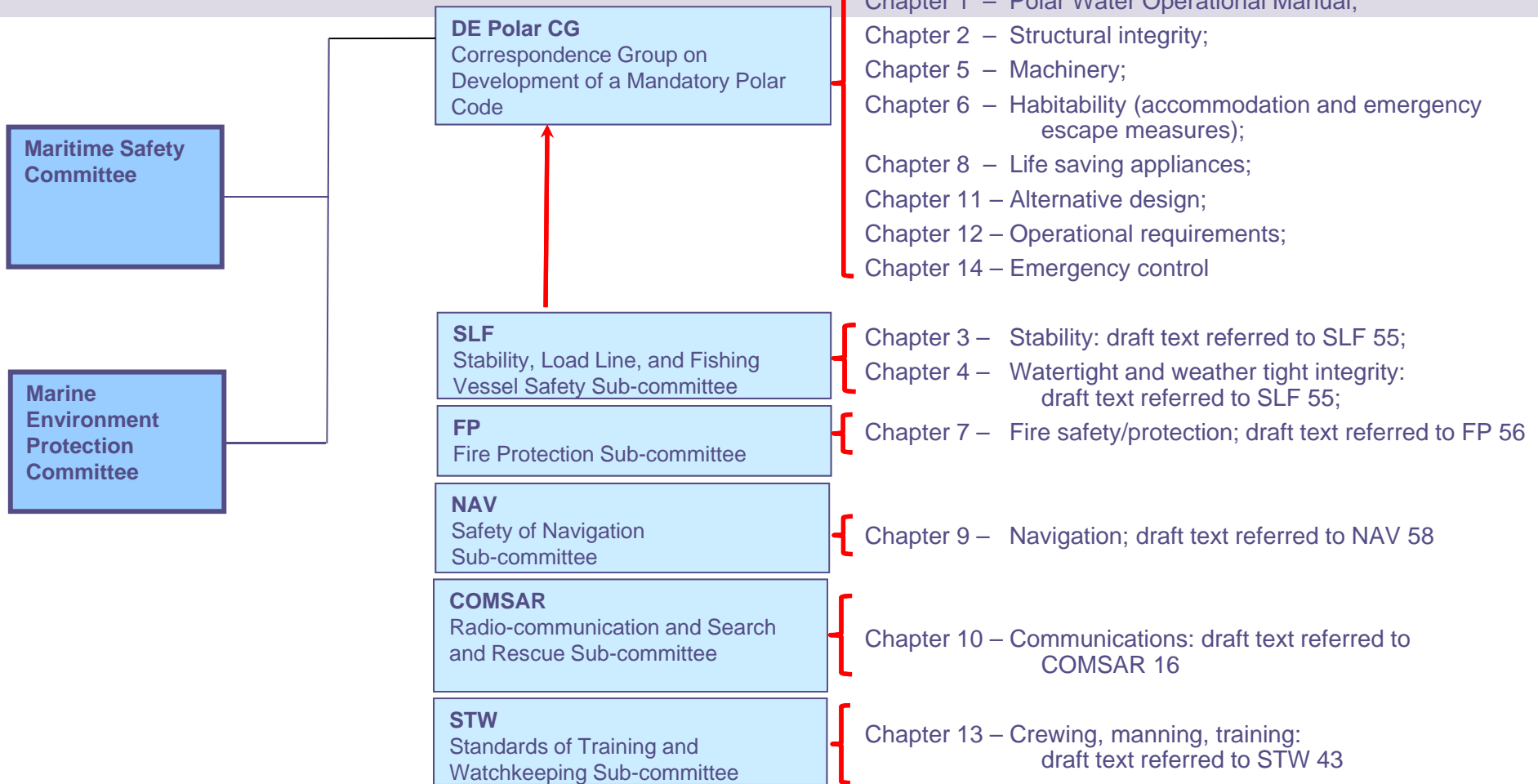


# Polar Code

- IMO working group (DE) established to draft mandatory Polar Code
- Code will cover:
  - Design and operational issues
  - Environmental protection and pollution
  - Search and Rescue
  - Crew training and ice navigation
  - Ice certificate
- Code will contain two parts:
  - Mandatory requirements
  - Non-mandatory recommendations



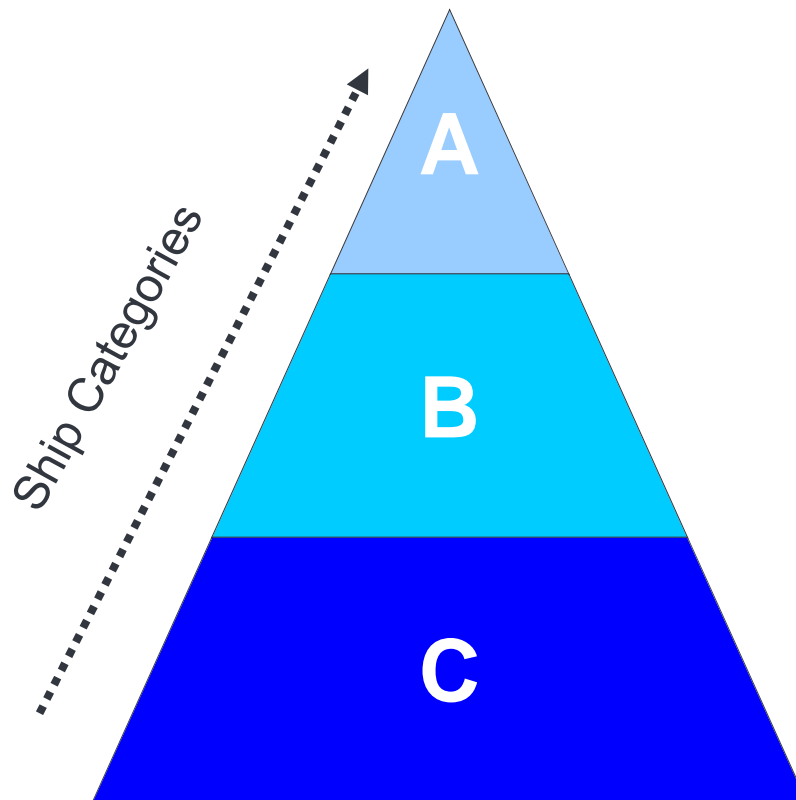
# Work plan for the Polar Code (2012-2013)



Source IMO

# Mandatory Polar Code

## Proposed Categories of ships operating in polar waters



- Operating in waters with 10% or more ice
- Polar class or equivalent
- .....
- Operating in waters with less than 10% ice, but which may pose a structural risk
- Assessment/ice-strengthening
- .....
- Operating in waters with 0 to 10% ice, but which does not pose a structural risk
- No ice-strengthening



# Ice Classification to support SOLAS requirements

## Polar Class Designation

### Year round operation in:

- PC 1 all ice-covered waters
- PC 2 moderate multi-year ice
- PC 3 second-year ice + multi-year
- PC 4 thick first-year ice + old ice
- PC 5 medium first-year ice + old ice

### Summer/autumn operation in:

- PC 6 medium first-year ice + old ice
- PC 7 first year ice + old ice

Only ships with Polar Class or equivalent should operate in polar waters – Polar Guidelines



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# Adoption of the Polar Code

- IMO forecast draft ready in 2014
- Estimated adoption by 2016



# Ratification of International environmental protection agreements by the Arctic States

Arctic States	Environment legislation												
	London Dumping Convention		MARPOL 73/78					Salvage 1989*	Oil Pollution Preparedness, Response and Co-operation (OPRC)		Anti-fouling 2001*	Ballast Water 2004	Wreck Removal 2007
	London Convention 1972*	Protocol 1996*	Annex I/II*	Annex III*	Annex IV*	Annex V*	Annex VI*		OPRC Convention 1990*	OPRC/HNS 2000			
Canada	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	✓	X
Denmark	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X
Finland	✓	X	✓	✓	✓	✓	✓	✓	✓	X	✓	X	X
Iceland	✓	✓	✓	✓	X	✓	X	✓	✓	X	✓	X	X
Norway	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	✓	X
Russian Federation	✓	X	✓	✓	✓	✓	✓	✓	✓	X	X	X	X
Sweden	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X
United States	✓	X	✓	✓	X	✓	✓	✓	✓	X	X	X	X

Key: ✓ = Ratification      x = Not Party;      \* = In force

Source: IMO (2012)

# Environmental protection being considered

## Marine Environment Protection Committee

Discharge of noxious liquid substances in Arctic

Discharge into the sea of oil or oily mixtures in Arctic

Leakage of harmful substances from stern tube bearings, seals and other components outside the hull

Discharging of any form of garbage into polar waters

Discharge of treated and untreated sewage

Discharge of grey water

Restriction of incineration in Arctic and Antarctic

Resistance of anti-fouling systems against mechanical damage to coating when navigating in ice

**BLG**  
Bulk, Liquid and Gas  
Sub-committee

Accidental damage;  
Use of HFO in Arctic;  
Emission of soot / black carbon  $\text{No}_x$  and  $\text{So}_x$ ;  
Fouling control strategies, including biocide-free AFS;  
Ballast water discharge in Polar waters;  
Introduction and spread of harmful aquatic organisms

**DE**  
Ship Design and Equipment  
Sub-committee

Underwater noise

**DSC**  
Carriage of Dangerous Goods, Solid  
Cargoes, and Containers  
Sub-committee

Containers carrying harmful substances or dangerous goods

**NAV**  
Safety of Navigation  
Sub-committee

Speed limitations

Source IMO



# Current and future Emission Control Areas (ECAs)

## Coming ECAs:

- North American Coasts  
SO<sub>x</sub> from 1<sup>st</sup> August 2012
- US Caribbean  
SO<sub>x</sub> from 1<sup>st</sup> January 2014
- North America & US Caribbean  
NO<sub>x</sub> from 1<sup>st</sup> January 2016

## Possible future ECAs:

*Arctic Marine Shipping Assessment 2009* called for reductions in NO<sub>x</sub>, SO<sub>x</sub> and PM in the Arctic

*EU proposal to IMO (1/2011)* to ban heavy oil in the Arctic

**Arctic Circle**

## Current ECAs:

Baltic Sea and North Sea since 2006/2007

## Not only ECAs:

ban on use and carriage of heavy oils in the Antarctic area (south of latitude 60°S) since 1<sup>st</sup> August 2011

Source Lloyds Register

# Likely environmental protections in the Polar Code

- Noxious liquid substances,
- Discharge into the sea of oil or oily mixtures
- Leakage of harmful substances from stern tube bearings, seals and other components outside the hull
- Garbage
- Treated and untreated sewage
- Grey water
- Incineration
- Resistance of anti-fouling systems against mechanical damage to coatings



# Arctic Council Environmental Emergency Response

## EPPR

- IMO Polar Code developments
- Industry involvement
- Oil spill response exercises



# Search and Rescue in Polar waters

- Arctic Automated Mutual Assistance Vessel Rescue Network (AAMverNet)
- Arctic Council encouraged implementation of May 2011 agreement
- Vessel position reporting cooperation
- SAR Exercises





# Russian Federation Search and Rescue promise

- 10 S+R centres along NSR
- First planned in Murmansk 2013

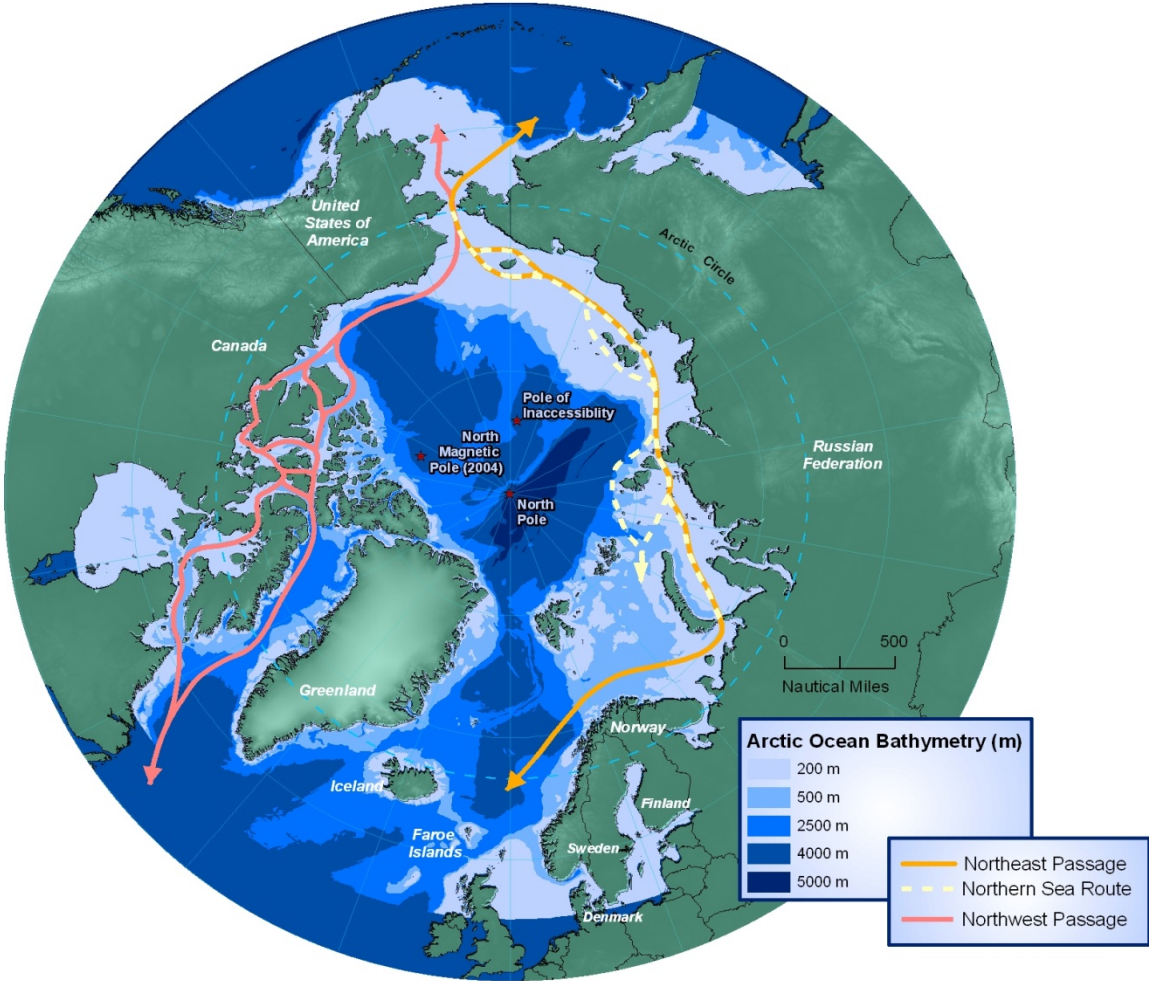


# Arctic shipping routes



- North West Passage
- Northern Sea Route

# The Arctic Countries



# Northern Sea Route



# Northern Sea Route v Suez Canal

## Transits from Kirkenes (Norway) and Murmansk (Russia)

Destination	Via Suez Canal			Through Northern Sea Route			Days saved
	Distance (Nm)	Speed (Knots)	Days	Distance (Nm)	Speed (Knots)	Days	
Shanghai (China)	12050	14.0	37	6500	12.9	21	-16
Busan (Korea)	12400	14.0	38	6050	12.9	19.5	-18.5
Yokohama (Japan)	12730	14.0	39	5750	12.9	18.5	-20.5

# Estimated costs: Northern Sea Route vs Suez Canal

Murmansk to Yokohama	Northern Sea Route transit	via Suez Canal
Distance Days Consumption Bunker costs	5,750 miles 22 days 700 tons circa US\$ 450,000	12,730 miles 38 days 1350 tons circa US\$ 860,000
Other costs	Ice certificate US\$ 25,000 NSRA permission US\$ 5,000 Ice pilots US\$ 7,000 Insurance ??? US\$ 45,000 Icebreaker fees ??? US\$360,000	Insurance (Gulf of Aden) ??? US\$ 10,000 Anti-piracy equipment ??? US\$ 90,000 Suez Canal transit fees US\$250,000

Panamax tanker with assumed open water speed/consumption of 14 knots on 35 tons (laden) per day

Bunker costs based on US\$ 635 per ton in Rotterdam (May/ 2012)

Assuming icebreaker (11 knots) assistance costs US\$ 40,000 per day, the overall cost savings via the NSR = US\$318,000

However if icebreaker assistance increased to US\$60,000 per day then costs savings via the NSR = US\$ 138,000

The question is what is the true cost of icebreaker assistance on the NSR?

# Summary

**Will we see the draft IMO Polar Code in 2014 and could it enter force in 2016?**

**Will agreement in local, national and international legalisation ever be achievable?**

**Will protection of the environment and safety concerns make the design, construction and operation of ships in the Arctic uneconomic?**

**Will Arctic transit ever be normal practice?**



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