

“IMO-Polar Code: history, content, and shortcomings”

Introduction

Due to vulnerability of the marine environment and difficulty in operational conditions, shipping in the Arctic waters is drastically different from the shipping in other areas in the world. Some of the risks involved in Arctic shipping are low temperatures, various sea ice forms, severe and unpredictable weather conditions, darkness, remoteness, lack of good charts, lack of experienced crew, and poor communication services. These risks can only be reduced with certain ship, equipment, and crew competency standards set for shipping in the polar waters.

A mandatory international code applying to ships operating in polar waters has been on the International Maritime Organization (IMO)'s table for a long time. However, it took some time to agree on a comprehensive set of standards for polar waters that are both distinctly similar and different at the same time.¹

The IMO sub-committee on Ship Design and Equipment (DE) has just recently developed, along with the assistance of DNV and others, a mandatory code for ships operating in polar waters known as the “Polar Code”.² The Polar Code is not a single document designed to be a self-standing convention, but rather a series of amendments added to annexes to supplement the International

¹ While there are some similarities, such as remoteness, low temperature and inhospitability, there exist some differences in the physical, political and legal circumstances of polar regions as well. Designing a one-size-fits-all code for Arctic and Antarctic shipping is therefore challenging.

² The 94th session of IMO-Maritime Safety Committee (MSC) meeting held on November 2014.

Convention for the Prevention of Marine Pollution from Ships (MARPOL) and the International Convention for the Safety of Life at Sea (SOLAS).

Background

The IMO created guidelines to apply only to ships in the Arctic waters in 2002.³ However, a request from the Antarctic Treaty Consultative Parties prompted the expansion of these guidelines into the Antarctic waters in 2004.⁴ During the work undertaken to amend and extend the Guidelines for ships operating in Arctic ice-covered waters to cover Antarctic waters by the IMO's DE sub-committee, some incidents occurred, including the sinking of the M/S Explorer in the Antarctic waters,⁵ and the importance of a mandatory instrument was therefore recognized.⁶ As a result, in June 2009, the IMO's Maritime Safety Committee (MSC) instructed the DE sub-committee to develop mandatory regulations for ships operating in Arctic and Antarctic waters.⁷

The DE sub-committee subsequently commenced working on an "International Code of Safety for Ships Operating in Polar Waters" in February 2010 and established a correspondence group to work inter-sessionally.⁸

³ IMO "Guidelines for Ship Operating in Arctic Ice-Covered Waters", 2002, MSC/Circ.1056-MEPC/Circ. 399, 23 December 2002.

⁴ Antarctic Treaty Secretariat, Antarctic Treaty Consultative Meeting Decision 4 (2004), 'Guidelines for Ships Operating in Arctic and Antarctic Ice-covered Waters' available at www.ats.aq/documents/recatt/att223_e.pdf

⁵ The Guardian "M/S Explorer sinks" 23 November 2007. Available at <http://www.theguardian.com/world/gallery/2007/nov/23/antarctica>

⁶ IMO Maritime Safety Committee 86th session, DE 52-21 paragraph 9.6, 9.31-9.32, 16 April 2009.

⁷ IMO Maritime Safety Committee, 86/26, paragraph 23.32, 5 June 2009.

⁸ IMO, DE 53/26 paragraph 18.11 – 18.12.

An inter-sessional Correspondence Group was established in between each meeting to further develop various aspects of the Code. Some preliminary decisions were made in the early discussions, including:

- the Code should be risk-based with functional requirements and prescriptive provisions,
- the Code should include both mandatory and recommendatory parts,
- separate requirements might be required for Arctic and Antarctic waters,
- the Code should be made mandatory under SOLAS, MARPOL or other instruments as appropriate,
- the Code should address environmental aspects.⁹

As part of ongoing international work on the Polar Code, an IMO Workshop on the Code's Environmental Aspects was held in Cambridge, United Kingdom, in September 2011.¹⁰ Later in February 2012, IMO MSC released a report detailing progress on the Polar Code.¹¹ As of 2012, the MSC decided to keep any decision on environmental requirements to be included in the Code in abeyance, pending further consideration. In May 2014, the MSC approved the Introduction and the mandatory and recommendatory safety provisions (Part I-A and I-B) during its

⁹ IMO DE 53/26 paragraph 18.9; MEPC 63/23 paragraph 11.14 – 11.18; DE 54/23 paragraph 13.17.

¹⁰ IMO Polar Code Workshop 2011, Available at <http://www.imo.org/MediaCentre/HotTopics/polar/Pages/Polar-Code-Workshop-2011.aspx>

¹¹ Id.

93rd session.¹² The Committee also approved the new Chapter XIV of the SOLAS Convention on “Safety measures for ships operating in polar waters”, making the Code mandatory. These proposals were also adopted during the 94rd MSC session (17-21 November 2014.)¹³ The preamble, the Introduction, the mandatory and recommendatory environmental provisions (Part II- A and B) and the amendments to the MARPOL 73/78 Annexes were discussed by MEPC 66 in May 2014 and later approved by the Committee during its 67th session (13-17 October 2014).

The Marine Environment Protection Committee (MEPC) of the IMO then met for its 68th session (11-15 May 2015) at IMO Headquarters in London and completed the process to make the Code mandatory under both the SOLAS and MARPOL treaties. The amendments to SOLAS and MARPOL are expected to enter into force on 1 January 2017.¹⁴

Impact of the Arctic Council

One of the most important contribution to the IMO Polar code comes from the Arctic Council with the Arctic Marine Shipping Assessment (AMSA)¹⁵ report,

¹² Friisk, Anders Grønstad; “Arctic Coastal State Jurisdiction in an Era of Climate Change, Vessel-Source Oil Pollution and International Shipping in Norwegian and Russian Arctic Waters”, Fridtjof Nansen Institute, November 2014, p.24.

¹³ Id.

¹⁴ IMO Media Centre, ‘Shipping in Polar waters’, IMO Home Page (Last visited on June 20, 2015). Available at <http://www.imo.org/en/MediaCentre/HotTopics/polar/Pages/default.aspx>

¹⁵ Arctic Council’s Protection of the Arctic Marine Environment (PAME) working group Arctic Marine Shipping Assessment Report (AMSA) report, released in 2009, available at http://www.arctic.noaa.gov/detect/documents/AMSA_2009_Report_2nd_print.pdf.

approved at the 2009 Ministerial Meeting in Tromsø and co-led by Canada, Finland, and the United States.¹⁶ This report is the culmination of a multi-year Arctic Council effort that assessed ships, their uses of the Arctic Ocean, their potential impacts on humans and the Arctic marine environment, and their marine infrastructure requirements.¹⁷

The key findings and associated recommendations of the AMSA report, when considered together, represent a strategic framework for the future safety and protection of the Arctic marine environment.

Particularly, the AMSA report's recommendation that the Arctic States should support the efforts of IMO to update and make the Arctic shipping guidelines mandatory has made a significant impact for the development of the mandatory polar code.¹⁸

¹⁶ Arctic Council Status on Implementation of the AMSA 2009 Report Recommendations. May 2013, available at https://oaarchive.arctic-council.org/bitstream/handle/11374/57/AMSA_Progress_Report_May_2013.pdf?sequence=1&isAllowed=y

¹⁷ Id.

¹⁸ Tromsø Declaration, on the occasion of the Sixth Ministerial Meeting of the Arctic Council, the 29th of April, 2009, Tromsø, Norway, available at <http://www.arctic-council.org/index.php/en/document-archive/category/5-declarations>

Content

The geographical scope of the IMO Polar Code is distinctly defined as it applies to both poles.

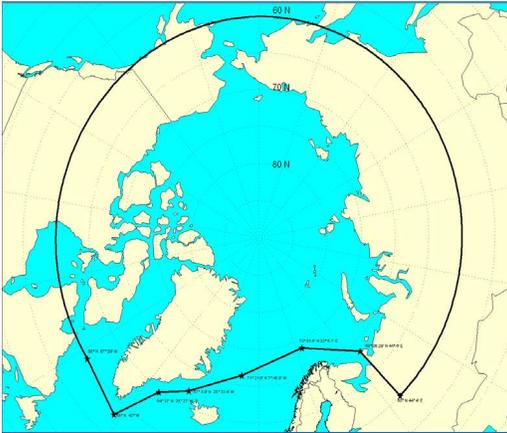


Fig.1 Arctic

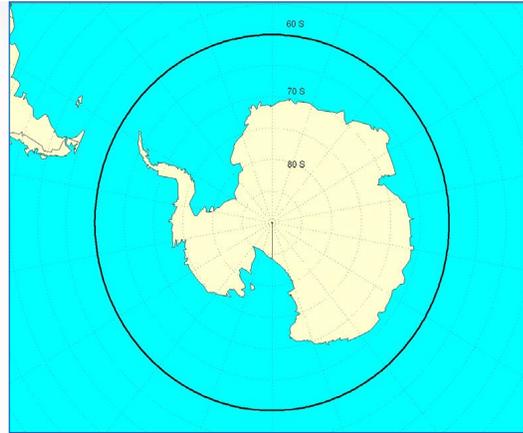


Fig.2 Antarctic

The Polar Code is intended to cover the full range of shipping-related matters relevant to navigation in waters surrounding the two poles - ship design, construction and equipment; operational and training concerns; search and rescue; and, equally important, the protection of the unique environment and eco-systems of the polar regions.¹⁹

¹⁹ IMO Shipping in Polar Waters. Available at <http://www.imo.org/MediaCentre/HotTopics/polar/Pages/default.aspx>



Fig.3

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: Adequately thermal protecting for all persons on board.

Clothing II: On passenger ships, an immersion suit or a thermal protection 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 AND 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 severely than A and B

Intact Stability: Sufficient stability in intact condition when subject to ice accretion and 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 structure 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 navigational watch must have completed appropriate basic training (for open-water operations), and advanced training for other waters, including ice.

The Polar Code has two parts. The First part (Part 1-A) sets safety, (SOLAS), measures, and the second part (Part II-A) sets pollution prevention, (MARPOL), measures. While the first section of each part is mandatory, the second section (Part I-B and Part II-B) is recommendatory.

Part I (A)

Part I-A contains mandatory safety measures, including a Polar Water Operational Manual and requirements for ship structure, stability and subdivision, watertight and weathertight integrity, machinery installations, operational safety, fire safety protection, LSA and arrangements, safety of navigation, communication, voyage planning, and manning and training.

Polar Ship Certificate

Ships intending to operate in defined waters of the Antarctic and the Arctic are required to apply for Polar Ship Certificate that issued by Flag states.²⁰ Polar Code classifies ships into three distinctive categories.

²⁰ This certificate aims to identify specific operational limitations as to when, which, where, and under which conditions vessels may navigate in the polar waters.

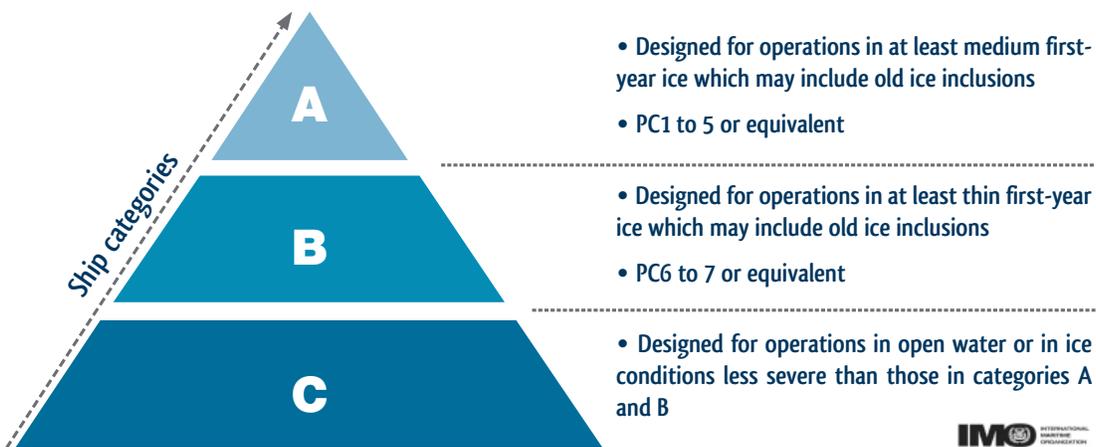


Figure 4. Ship categories operating in Polar Waters.

The issuance of a certificate would require an assessment, taking into account the anticipated range of operating conditions and hazards the ship may encounter in the polar waters.²¹ The assessment would include information on identified operation limits, and plans or procedures or additional safety equipment necessary to mitigate incidents with potential safety or environmental consequences.

Polar Water Operational Manual

Ships operating in polar waters are also required to obtain a Polar Water Operational Manual.²² This manual provides the Owner, Operator, Master and

²¹ This certificate will specify whether the vessel may sail in medium first year ice with ‘old ice inclusions,’ thin first year ice, or merely open water with minimal ice. Each category will provide various requirements for design, construction, hull strengthening, stability, safety, equipment and training. See Professional Mariner “Polar Code to impact Arctic navigation, discharges, safety” March 5, 2015. Available at <http://www.motorship.com/news101/regulation-and-classification/a-necessary-start-with-some-unnecessary-confusion>

²² The Flag State will survey the vessel and issue the Polar Ship Certificate. Certified vessels should avoid ice and temperatures below their operating limitation, but when this is not possible or practical, the Polar Water Operational Manual outlines risk based procedures the crew should follow to keep the vessel safe.

crew with sufficient information regarding the ship's operational capabilities and limitations in order to support their decision-making process.

Polar Water Certificates for crew

The most important element in polar navigation is the human factor, therefore, ensuring that crews have the mandatory qualification certificates is absolutely necessary.²³

The IMO Sub-Committee on Human Element, Training and Watchkeeping (HTW) held a meeting in London in February 2015. In this meeting, details regarding the STCW Convention with respect to training and certification of deck officers and masters are discussed and requirements under the Polar Code were finalized.²⁴

Under the new regime, deck officers and masters may be required to undergo training at either a basic or advanced level depending on the vessel, the ice condition and their position.

The Basic Polar Waters Certificate of Proficiency will be issued to deck officers after successfully completing an approved basic course and proof of meeting the standard of competence specified in section A-V/of STCW. No sea service is required for this certificate.

²³ "According to insurance industry statistics, by and large the majority of incidents that occur in ice occur because of a lack of knowledge. Not necessarily negligence, but ignorance." See Brigham, Lawson; "The Polar Code: What Does It Mean for Arctic Shipping?" Available at http://www.dnv.com/industry/oil_gas/publications/updates/arctic_update/2011/01_2011/thepolarcodewhatdoesitmeanforarcticshipping.asp One incident that would have been different under Polar Code rules was the sinking of the cruise ship MS Explorer in Antarctica in November 2007. In that case, the captain was inexperienced in Antarctic navigation and underestimated the ice thickness. The 91 passengers, all of whom survived, were evacuated using open lifeboats and drifted for five hours. No more open lifeboats or partially enclosed lifeboats. See supra, note 13.

²⁴ Supra, note 14.

The Advanced Polar Waters Certificate of Proficiency will be issued to the officers who must have (i) previously met the requirements for certification in basic training in polar waters, (ii) obtained at least two months approved sea going service in the deck department at management level or while watchkeeping in an operational level within polar waters or approved equivalent level within polar waters or approved equivalent seagoing service, and (iii) have completed advanced training and met the standards of competence specified in section A-V/4 of STCW.

Part I (B)

This part will contain additional recommended guidance to assist with interpretation and compliance with these rules. Part I (B) includes guidance on safe speeds and distance curves and how to interpret them, and tables determining the correspondence between old and new ice classes of ships.

Part II (A)

This part relates to mandatory MARPOL obligations to help reduce or prevent marine pollution caused by shipping.

Application of much of Part II (A) is still the subject of negotiation and final drafting. New rules, particularly as they relate to MARPOL Annex I,²⁵ will be tailored to the specific environmental conditions and resilience capabilities of polar waters. Essentially, any discharge into the sea of oil or oily mixtures from any ship will be prohibited. Ships must not carry oil or oily mixtures in tanks next to the hull and must have onboard oil pollution emergency plans.

²⁵ Annex I – Regulations for the Prevention of Pollution by Oil (entered into force 2 October 1983).

In Part II (A), Annex II of MARPOL²⁶ is invoked to strengthen pollution prevention in the polar regions. Essentially any discharge into the sea of noxious liquid substances, or mixtures containing these substances, will be prohibited. For tanks containing these liquids, separation distances from the hull apply, as in Annex I. It is also linked to Annex IV of MARPOL,²⁷ where similar rules apply to minimizing the risk of pollution by sewage from ships. These include minimum safe distances from ice shelves or land- fast ice for the discharge of various categories of substances and the absolute prohibition of the discharge of untreated waste. Treated or untreated food wastes are regulated under this part in accordance with Annex V of MARPOL.²⁸ All of the above,

contained in Part II (A), are mandatory rules. Although not in the draft, it is likely that the provisions of Annex VI on the prevention of air pollution from ships will also be included.

Part II (B)

In the non-mandatory Part II (B), additional guidance is provided to assist with interpretation and compliance. Existing IMO guidelines such as for biofouling and harmful aquatic species are noted, along with the Ballast Water Management Convention²⁹ not yet in force.

²⁶ Annex II – Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk (entered into force 2 October 1983).

²⁷ Annex IV – Prevention of Pollution by Sewage from Ships (entered into force 27 September 2003).

²⁸ Annex V – Prevention of Pollution by Garbage from Ships (entered into force 31 December 1988)

²⁹ International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) opened for signature 13 February 2004 [2005] ATNIF 18

Shortcomings

1-Terminology

Terms, such as “medium first year ice,” “thin first year ice,” “ice covered water,” “ice free water” and “ice navigator” are in need of detailed definition and standardization because Polar Code instruments, MARPOL, SOLAS and STCW do not have terminology unification. There are many more terms in these instruments that are in need of attention.³⁰

2-Enforcement

Flag states will review and approve the Polar Water Operation Manuals prepared for each voyage under the Polar Code. Cost of compliance for these manuals will be high considering the specific requirements for ships and skilled navigators; therefore, there will probably be enforcement problems considering the consistent failure of some flag States to discharge their duties under international laws. Flag State enforcement has been a particular problem for the integrity of the current system, and similar questions will be raised regarding Polar Code enforcement measures. There is no possible way to be absolutely sure about compliance.³¹

³⁰ The Motor Ship; “A necessary start with some unnecessary confusion”, 08 October 2014. Available at <http://www.motorship.com/news101/regulation-and-classification/a-necessary-start-with-some-unnecessary-confusion>.

³¹ The report of the UN Secretary-General to the 63rd session of the Assembly identifies that: “Many shipping accidents and resulting loss of life and marine pollution are not the result of inadequate regulation at the global level, but are due to ineffective flag State implementation and enforcement.”

3- Use of Heavy Fuel Oil

Heavy Fuel Oil (HFO) is identified as the biggest risk of shipping in the Arctic region.³²

When spilled, lighter, more refined marine fuels naturally disperse and evaporate much more quickly than HFO. Tests have shown that weathering can break down marine diesel in approximately three days, whereas over 90 percent of HFO by mass persisted even after 20 days in the water.³³

Additionally, over 70 percent of the large vessels (5,000 gt. and above) operating in the Arctic uses HFO. These larger vessels can hold substantial quantities of fuel for propulsion purposes and also presumably would be traveling with full bunker tanks since fueling options in the region are limited.³⁴

The use and carriage of heavy and intermediate fuel oils was banned in the Antarctic region in 2011.³⁵ It is still permitted in the Arctic waters because Polar Code fails to address the need to ban the use of HFO. The regulatory section in Part II (B) of the Polar Code only recommends voluntary compliance to avoid using HFO in the Arctic waters.³⁶

³² AMSA report. *Supra*, note 15.

³³ Det Norske Veritas (DNV), Report – Heavy fuel in the Arctic (Phase 1), Report for PAME, Report No./ DNV Reg. No.: 2011-0053/ 12RJ7IW-4, 30 (2011) at 38-39, *available at* <http://www.arctic-council.org/index.php/en/about/documents/category/26-pame-nuuk-ministerial>.

³⁴ *Id.* Panamax containerships, bulk carriers, and tankers can carry 5,600m³

³⁵ International Maritime Organization, ‘Amendments to MARPOL Annex I to add Chapter 9 – Special Requirements for the Use or Carriage of Oils in the Antarctic Area’, Resolution MEPC. 189(60), 26 March 2010.

³⁶ Petro Industry News; “How does the Polar Code Affect Oil Shipment?” Dec 31, 2014. Available at http://www.petro-online.com/news/fuel-for-thought/13/breaking_news/how_does_the_polar_code_affect_oil_shipment/32830/

4-Non Ice Strengthened Ships

The Code will contain regulations requiring ships operating in Polar waters to limit entry into ice according to the ability of ship's resistance to the ice pressure, but major concerns remain due to the fact that non-ice strengthened ships will still be allowed to operate in ice covered waters.

5-Wildlife Protection

While the Code includes requirements for ships to avoid marine mammals such as whales and walruses, it fails to consider seabird colonies, despite the fact that the Arctic and Antarctic coastline contain some of the most significant bird colonies in the world.³⁷

Ships sailing polar waters should report their positions on a regular basis to a centralized system, and should be routed away from important wildlife sites such as, bird nesting colonies, unless strict wildlife watching protocols are enforced

6-Ice Navigators

The Ice Navigator is not a pilot, but an additional resource that joins the bridge team bringing specialized skill, knowledge and competence that adds to the team. The Ice Navigator in no way undermines the master's hierarchy of command, but becomes a part of the bridge team that assists the master in making the right decision.³⁸

It takes years to get experience in ice recognition and operating in ice, and currently there is no global standard for Ice Navigators. There is some very minor

³⁷ Id

³⁸ Id.

direction that someone on board should be called an Ice Navigator and should have some very basic skills, but the directions don't go any further than that.

7-Oil Spill

In the event of an oil spill, wildlife is exposed to petroleum toxins through fume ingestion and direct contact with the spilled substance. Oil on sea birds and marine mammals, such as, eiders, polar bears, and seals compromises their feathers and fur which can lead to hypothermia and death.³⁹ Aside from mortality, sub-lethal effects from toxic exposure include loss of fertility and metabolic disorder.⁴⁰ These negative effects may be heightened for Arctic species due to their longevity and slow reproductive rates. Therefore, one of the most important messages given by the AMSA in 2009 was related to oil pollution in the Arctic region. According to this report “the greatest environmental threat presented by the marine shipping industry pertains to the release of oil into the Arctic waters”.⁴¹

Unfortunately, despite this call, the Polar Code currently does not contain any explicit measure for reducing risks related to oil spills directly.

³⁹ AMSA report, *supra*, note 15 at 136.

⁴⁰ R. Spies et al., *An Independent Review of USGS Circular 1370: “An Evaluation of the Science Needs to Inform Decisions on Outer Continental Shelf Energy Development in the Chukchi and Beaufort Seas, Alaska,”* prepared for the Pew Environment Group and Ocean Conservancy (2011) at 51, *available at* <http://www.pewenvironment.org/uploaded-Files/PEG/Publications/Report/USGS-Report-Review-Sept2011.pdf>.

⁴¹ AMSA, *supra*, note 15, at 152.

8-Bridge equipment

Ships should be equipped with systems to receive up to date ice information, ice charts, ice data for overlay on the ships electronic charts, ice reports, and forecasts.

There should be two way voice and data communications at all points along the intended operating routes. There are only a very few shore stations in the remote areas. Therefore, VHF systems should include two channels for voice communications with aircraft.

Ships must also have the means to prevent the accumulation of ice on all antennas used for navigation, communication, and safe operation, and they should be equipped with two remotely operated searchlights.

Conclusion

The Polar Code is due to enter into force on 1 January 2017. The Code will apply to new ships constructed after the entry date. Ships constructed before the entry date will be required to meet the relevant requirement of the Polar Code by the first intermediate or renewal survey, whichever occurs first, after 1 January 2018.⁴²

In its first phase, the Code will apply to passenger and cargo vessels covered by SOLAS. In the second phase, anticipated in around 2016, it will extend to reach non-SOLAS vessels including fishing vessels and pleasure craft.⁴³

⁴² IMO Media Centre, *supra*, note 14.

⁴³ Australian Journal of Maritime and Ocean Affairs, 2014. Vol. 6, No. 1, 64–67. Available at [http:// dx.doi.org/10.1080/18366503.2014.888135](http://dx.doi.org/10.1080/18366503.2014.888135)

Once agreed, this would mean that all parties to those treaties, which represent over 98 percent of the world merchant shipping tonnage, would have an obligation to ensure all ships engaged on international voyage and operating in polar waters comply with the Polar Code.⁴⁴

Overall, the Polar Code is not a perfect instrument, but it is a necessary start, and there will be improvements made in the future. As the Prof. Lawson Brigham puts it “it is a new, historic, seminal regime for the Arctic and Antarctic because it is putting into effect rules and regulations which don’t exist.”⁴⁵

⁴⁴ Lloyd’s Develops Arctic Ice Regime To Complement Polar Code, March 14, 2014. Available at <http://www.lloyds.com/news-and-insight/news-and-features/emerging-risk/emerging-risk-2014/a-common-ice-regime-for-arctic-shippers>

⁴⁵ Roach, John; “Who’s Driving That Tanker? New Polar Code for Sailing Emerges” August 24, 2014. Available at <http://www.nbcnews.com/science/environment/whos-driving-tanker-new-polar-code-sailing-emerges-n186106>