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## PROPOSED MANDATORY CODE FOR SHIPS OPERATING IN POLAR WATERS

### Shipping management issues to be addressed

Submitted by FOEI, IUCN, Greenpeace, IFAW and WWF

#### SUMMARY

**Executive summary:** In this document, FOEI, IUCN, Greenpeace, IFAW and WWF<sup>1</sup> identify a range of shipping management issues which we submit should be considered and addressed through the development of a mandatory code for ships operating in polar waters

**Strategic directions:** 5.2 and 7.2

**High-level actions:** 5.2.1 and 7.2.2

**Planned outputs:** 5.2.1.1 and 7.2.2.1

**Action to be taken:** Paragraph 38

**Related document:** MSC 86/23/19

#### Introduction

1 The volume and nature of shipping in remote polar regions is changing, increased traffic is being experienced in the Arctic and the Southern Ocean. A significant recorded decrease in sea ice cover in each polar region, particularly during summer months, is likely to accelerate this trend, although in some areas of the Southern Ocean sea ice cover is increasing<sup>2</sup>. In addition, the number of icebergs calving from glaciers or from collapsing ice sheets is expected to increase in both oceans.

<sup>1</sup> This document was prepared for the IMO's DE Sub-Committee by the Antarctic and Southern Ocean Coalition (ASOC), an umbrella NGO (members include FOEI, Greenpeace, IFAW and WWF) with expert observer status at Antarctic Treaty Consultative Meetings (ATCM) and meetings of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), in collaboration with Arctic experts from FOEI, IFAW and WWF.

<sup>2</sup> Constable, A.J., Doust, S. (2009) Southern Ocean Sentinel – an international program to assess climate change impacts on marine ecosystems: report of an international Workshop, Hobart, April 2009. ACE CRC, Commonwealth of Australia, and WWF-Australia.

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2 In the Southern Ocean, shipping and fishing continue to increase, leading to an elevated risk of incidents and potentially disastrous accidents. In the previous summer season (08/09), two vessel groundings made headlines. In early December 2008, the **MV Ushuaia** ran aground at the entrance to Wilhemina Bay on the north-west Antarctic Peninsula, resulting in hull damage and the spillage of an unknown amount of fuel, and in February 2009 the **Ocean Nova** grounded, reportedly in extremely high winds, on the Western Antarctic Peninsula. Furthermore, in the past summer season there were reports of a number of fishing vessels beset in ice in the Amundsen Sea and, more recently, it has been reported that the Russian icebreaker, **Kapitan Khlebnikov** was stuck in ice in the Weddell Sea for a number of days with 184 passengers, staff and crew on board.<sup>3</sup> Information on several other recent incidents has been provided previously (see MSC 86/23/19), including a fire on the **Nisshin Maru** whale processing vessel in February 2007 which resulted in the loss of one life and loss of power for several days, the loss of power to the **Argos Georgia** fishing in the Ross Sea, which drifted for 15 days until replacement parts could be airlifted to the vessel, and the **M/S Explorer** which was holed by ice and sank, spilling an unknown quantity of fuel, fortunately all passengers and crew were rescued.

3 In Antarctica over the past decade tourism has been characterised by steep annual increases, diversification and geographic expansion.<sup>4</sup> Some operating companies are now owned by parent companies that are not traditional Antarctic operators and involve practices such as the use of larger ships from the global cruise industry and the use of ships flagged by non-Antarctic Treaty parties. These changes are influencing the way ship-borne tourism is conducted, and with increased ships operating in the area comes an increased probability of maritime incidents. The potential for environmental problems are compounded as larger, non-ice class ships enter the market.

4 In the Arctic, approximately 3,000 vessels currently operate (6,000 vessels, if the North Pacific Great Circle Route is included)<sup>5</sup> and that number is likely to grow as summer sea ice wanes.<sup>6</sup> Community re-supply, fishing vessel operations and marine transport of oil, gas and minerals all constitute significant portions of Arctic vessel activity.<sup>7</sup> According to the Arctic Council's Arctic Marine Shipping Assessment 2009 Report (AMSA), "[n]atural resource development and regional trade are the key drivers of increased Arctic marine activity".<sup>8</sup> In addition, cruise ship activity in Arctic waters is rapidly expanding. In 2004, about 250 passenger ships operated within the region, with cruise ships carrying more than 1.2 million passengers; by 2007, the number of cruise ship passengers had more than doubled.<sup>9</sup> Arctic cruise ships are also venturing into new territory. In 2008, twenty-eight vessels planned to travel to Uummannaq,

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<sup>3</sup> 16 November, 2009 IAATO Press release.

<sup>4</sup> ASOC (2008) A decade of Antarctic tourism: Status, change, and actions needed. XXXI ATCM, ASOC IP041.

<sup>5</sup> Arctic Council, *Arctic Marine Shipping Assessment 2009 Report* 72 (2009), available at [http://pame.arcticportal.org/images/stories/PDF\\_Files/AMSA\\_2009\\_Report\\_2nd\\_print.pdf](http://pame.arcticportal.org/images/stories/PDF_Files/AMSA_2009_Report_2nd_print.pdf) [hereinafter AMSA].

<sup>6</sup> See AMSA, at 25-32; J. Richter-Menge et al., *Sea Ice Cover*, in NOAA Arctic Report Card 2008, Oct. 14, 2008, available at <http://www.arctic.noaa.gov/report08/seaice.html> (noting that in 2007, the extent of Arctic sea ice cover was 39 percent lower than the long-term average from 1979 to 2000); R. Lindsay & J. Zhang, *The Thinning of Arctic Sea Ice, 1988–2003: Have We Passed a Tipping Point?*, 18 J. of Climate 4879 (2005); Associated Press, *Arctic is Seeing Thinner Sea Ice, Experts Warn*, msnbc.com, April 6, 2009, available at <http://www.msnbc.msn.com/id/30074699/> (finding that 90 percent of Arctic sea ice is only 1 or 2 years old).

<sup>7</sup> AMSA, at 75-77; see also USGS Newsroom, *90 Billion Barrels of Oil and 1,670 Trillion Cubic Feet of Natural Gas Assessed in the Arctic*, July 23, 2008, available at <http://www.usgs.gov/newsroom/article.asp?ID=1980> (estimating that the Arctic holds about 13 percent of the undiscovered oil, 30 percent of the undiscovered natural gas, and 20 percent of the undiscovered natural gas liquids in the world).

<sup>8</sup> AMSA, at 120.

<sup>9</sup> *Id.* at 71, 79.

Greenland, with some continuing northward to Qaanaaq – both locations are far north of the Arctic Circle.<sup>10</sup> Further, three different cruise ships voyaged through the Northwest Passage in the summer of 2007, while at least seven cruise ships scheduled trips to the northern Bering Sea and other Arctic Alaskan waters for the summer of 2008.<sup>11</sup> Lastly, nascent trans-Arctic shipping activities are beginning: In September 2009, two German cargo ships completed a commercial voyage from South Korea to the Netherlands via the Northeast Passage.<sup>12</sup>

5 With the current level of shipping activity in the Arctic, shipping accidents are relatively common. From 1995 to 2004, nearly 300 accidents and incidents occurred in the region.<sup>13</sup> The risk to Arctic waters from shipping is exemplified by the 2004 grounding and breakup of the bulk carrier m/v **Selendang Ayu**, which lost power near the Aleutian Islands while travelling to China. During operations to rescue the crew from the **Selendang Ayu** six of the crew died. The vessel also discharged an estimated 1.7 million litres of intermediate fuel oil into Alaskan waters.<sup>14</sup> For several weeks severe weather and the remoteness of the spill delayed cleanup and the search for oiled animals. Six sea otter and 1,603 bird carcasses were finally recovered. The cleanup effort ended in June 2006.<sup>15</sup>

6 In addition to accidents, legally permissible, routine vessel discharges of sewage, grey water, sewage sludge, garbage and oily bilge water also threaten vulnerable polar waters. Furthermore, increased vessel emissions of black carbon and ozone precursors such as nitrogen oxide will harm human health and contribute to regional warming – which, in turn, will have global climatic ramifications.<sup>16,17,18</sup> Already, the Arctic has warmed at twice the rate of the rest of the world over the past century,<sup>19</sup> and may rise another four to seven degrees Celsius over the next century.<sup>20</sup> Air and water pollution from vessels poses a threat to the four million inhabitants, including over thirty different indigenous peoples, of the Arctic and the ecosystems upon which they rely.

7 It is vital that the development of a Polar Code is informed by comprehensive analysis of recent incidents. For example, the report of the sinking of the Liberian flagged **Explorer** in November 2007 reveals that the main cause of the accident was the Master's misjudgement of the ice field encountered, believing it to be relatively thin first-year ice when it was actually

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<sup>10</sup> *Id.* at 81.

<sup>11</sup> M. Treadwell & T. Wiepking, *Why the Arctic Matters: America's Responsibilities as an Arctic Nation*, A Commonwealth North Study Report 21-22 (May 2009), available at [http://www.commonwealthnorth.org/index.cfm?fa=documents\\_overview&doctype=54](http://www.commonwealthnorth.org/index.cfm?fa=documents_overview&doctype=54).

<sup>12</sup> N. Jameson, *Ships Complete North East Passage*, [sustainableshipping.com](http://www.sustainableshipping.com), September 14, 2009, available at [http://www.sustainableshipping.com/news/i88309/Two\\_commercial\\_ships\\_complete\\_North\\_East\\_Passage](http://www.sustainableshipping.com/news/i88309/Two_commercial_ships_complete_North_East_Passage).

<sup>13</sup> AMSA, at 86.

<sup>14</sup> Committee for Risk of Vessel Accidents and Spills in the Aleutian Islands: A Study to Design a Comprehensive Risk Assessment, *Special Report 293: Risk of Vessel Accidents and Spills in the Aleutian Islands: Designing a Comprehensive Risk Assessment*, Transportation Research Board of the National Academies 2 (2008) available at [http://books.nap.edu/catalog.php?record\\_id=12443](http://books.nap.edu/catalog.php?record_id=12443).

<sup>15</sup> AMSA, at 151.

<sup>16</sup> *Hearing on the Role of Black Carbon as a Factor in Climate Change: Hearing Before the House Comm. on Oversight and Government Reform*, 110th Cong. (2007) (written testimony of Dr. Joel Schwartz, Professor, Departments of Environmental Health and Epidemiology, Harvard University).

<sup>17</sup> D. Shindell & G. Faluvegi, *Climate Response to Regional Radiative Forcing During the Twentieth Century*, 2 *Nature Geoscience* 294 (2009).

<sup>18</sup> P. Quinn et al., Short-Lived Pollutants in the Arctic: Their Climate Impact and Possible Mitigation Strategies, 9 *Atmos. Chem. & Physics* 1723, 1725 (2008).

<sup>19</sup> Intergovernmental Panel on Climate Change, *Observations: Surface and Atmospheric Climate Change*, in *Climate Change 2007: The Physical Science Basis*, Contribution of Working Group I to the Fourth Assessment Report 237 (2007), available at <http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter3.pdf>.

<sup>20</sup> Arctic Climate Impact Assessment, *Impacts of a Warming Arctic* 10, 12 (2004), available at <http://amap.no/acia/>.

harder, thicker land ice. Because of this judgment, the **Explorer** hit the ice at full speed, causing significant damage along 3.6 metres of the hull. This damage led to the extensive flooding and eventual sinking of the ship.<sup>21</sup> It seems the decision to abandon the ship when it was clear that flood abatement efforts had failed was timely, but the evacuation process was described by passengers as disorganized and chaotic. It appears that established safety procedures were not followed and passengers had not been adequately briefed on what to do in such an emergency. Further, the equipment on board was inadequate for the conditions, including open lifeboats and no thermal gear. The master also failed to remove the voyage data recorder (VDR) and the Crash Survival Module prior to departing the ship. The report also reveals other problems, including the watertight door into the separator room being left open; door seals to the generator room failed, allowing water to leak near electrical equipment; three out of four lifeboat engines did not start; and passengers were unevenly distributed in the lifeboats, leading to the very risky transferring of passengers from overcrowded lifeboats on the open water while passengers and crew manually held the crafts together. Inoperable lifeboats meant that many passengers travelled in Zodiacs, which unlike lifeboats could not be hoisted onto the **Nordnorge's** deck during rescue. These passengers had to climb a rope ladder up the side of the ship.

8 Based on the poles' remoteness, and unique ecological characteristics – particularly sea ice – heightened safety and environmental standards for polar shipping are needed in order to prevent or mitigate harm to the regions' people, marine waters, wildlife and climate.

### **Geographic extent of a Polar Code**

#### *Antarctica*

9 In the Southern Hemisphere, a Polar Code should apply to the full extent of Antarctic polar waters south of the Antarctic convergence, which is recognized as the most natural (chemical and physical) boundary at this latitude. This is further north than the 60°S boundary which mirrors the historic boundaries used to define Antarctic waters in MARPOL Annex I, regulation 1/11.7; however, it would be wholly appropriate for IMO regulations to apply to all vessels consistently across the Southern Ocean ecosystems south of the Antarctic Convergence. Vessels have already practised exchanging ballast water before this boundary when entering Antarctic waters, and now the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) has taken similar action in respect of ballast water management and extended the guidelines for ballast water exchange in the Antarctic Treaty Area to cover the area north of 60°S, but south of the Antarctic Convergence. In April 2009, Antarctic Treaty Parties considered a paper submitted by the United States proposing Parties agree to seek, through coordinated action within the IMO, to extend the current restrictions on discharges from vessels in the Antarctic Treaty Area northward to the Antarctic Convergence. A decision is due at the next meeting of Antarctic Treaty Consultative Parties, which is due to take place in May 2010, following consideration of the views of CCAMLR Members.

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<sup>21</sup> Republic of Liberia. 26 March 2009. Decision of the Commissioner of Maritime Affairs and the Report of Investigation in the Matter of Sinking of Passenger Vessel EXPLORER (O.N. 8495) 23 November 2007 in the Bransfield Strait near the South Shetland Islands.

## *Arctic*

10 The Guidelines for ships operating in polar waters, as approved by MSC 86, define Arctic waters<sup>22</sup>, however this excludes significant portions of the Barents Sea which should be considered as polar waters. As such, in the Northern Hemisphere, a Polar Code should apply to all waters north of the Arctic circle (66° 33' N) and any areas currently encompassed by the definition used in the Guidelines south of 66° 33' N. In addition, there is a much larger area where ships emissions can have an impact on the Arctic – generally called the Arctic Front (roughly north of 40° N). So for some issues, such as air emissions, it would be necessary to consider a wider area of application.

## **Binding nature**

11 The risks associated with navigating in polar waters are applicable to all vessels and impacts on the marine environment are possible from the full range of vessels operating in the areas, including fishing vessels. As such there should be a presumption that measures contained within the Code should be mandatory. Where a measure or measures might not be appropriate to all vessels, the measure could be recommendatory for non-Convention vessels. In addition, it is essential that retrospective application to existing vessels, where practicable, be required, including particularly where vessels are being converted for polar service. In addressing all vessels operating in polar waters, it will be necessary to consider how a Polar Code might be rendered binding. Various options are possible, for example, a stand-alone instrument or amendments to SOLAS or MARPOL. A stand-alone instrument would offer the most comprehensive and flexible option.

## **Principles**

### *Comprehensiveness*

12 It is important that a mandatory Polar Code is developed which is comprehensive. In addition to vessel design, construction, equipment provision and operation, training for ice navigators and ships' crews, it should address vessel routeing and reporting; provision and coordination of remote search and rescue; environmental response to pollution or environmentally damaging events; and all forms of environmental protection pertinent to polar waters. It should explicitly cross-reference existing IMO instruments which are specific to polar waters and those which apply to all ships and are of relevance for polar waters.

### *Standards*

13 The development of a Polar Code should ensure that the highest possible safety and environmental standards are applied for all vessels operating in polar waters.

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<sup>22</sup> Arctic waters are defined as those waters which are located north of a line from the latitude 58°00'0 N and longitude 042°00'0 W to latitude 64°37'0 N, longitude 035°27'0 W and thence by a rhumb line to latitude 67°03'9 N, longitude 026°33'4 W and thence by a rhumb line to Sørkapp, Jan Mayen and by the southern shore of Jan Mayen to the Island of Bjørnøya, and thence by a great circle line from the Island of Bjørnøya to Cap Kanin Nos and thence by the northern shore of the Asian Continent eastward to the Bering Strait and thence from the Bering Strait westward to latitude 60°N as far as Il'pyrskiy and following the 60th North parallel eastward as far as and including Etolin Strait and thence by the northern shore of the North American continent as far south as latitude 60°N and thence eastward along parallel of latitude 60°N, to longitude 56°37'1 W and thence to the latitude 58°00'0 N, longitude 042°00'0 W.

## **Definitions**

14 A wide range of definitions will be necessary in the final Polar Code. The definitions identified below warrant particular consideration.

### ***Ice-covered waters***

15 A Polar Code should include a full and unambiguous definition of polar ice-covered waters which provides clear guidance on which waters will be considered ice-covered and which waters will be considered polar but not ice-covered.

### ***Pollution***

16 A Polar Code should include a broad definition of “pollution” which covers, but is not limited to, MARPOL Annexes I – VI and recognizes other forms of marine pollution and environmental threats that are addressed through other IMO instruments and deliberations, including underwater noise, the introduction of alien species, etc.

## **Ship design and construction**

### ***Polar class vessels***

17 In considering both safety of passengers and crews and environmental protection, an important requirement will be for vessels to conform to the highest relevant polar class for the anticipated ice conditions in the area in which they are operating, and only polar class vessels with adequate ice-strengthening should operate in polar ice-covered waters.

### ***Stability standards***

18 The highest possible stability standards should be included for both intact and damaged vessels, taking into account the potential for ice formation on vessels and the possible extreme sea and storm conditions.

### ***Icing***

19 The threat of icing, both build-up on a vessels’ structure and icing of equipment, must be adequately addressed, through prevention and mitigation, and the Code should include reference to the environmental and vessel characteristics that can influence sea icing.

## **Ships’ equipment**

20 The Code should require that comprehensive life-saving equipment, including fully enclosed lifeboats for polar class vessels, or if appropriate for other vessels partially covered lifeboats, and full thermal gear, for every passenger, staff and crew member is available and that clear, comprehensive provisions are included which require training for all crew on the use of all life-saving equipment. Guidance should be developed on the level of knowledge and training appropriate for expedition staff (non-ships’ crew) and passengers.

## **Ships' operations**

21 A Polar Code should address the need for accident mitigation measures such as the identification and establishment of mandatory navigation routes such as traffic routing and separation schemes, areas to be avoided because of higher associated risks, speed restrictions, where appropriate, to reduce the risk of accidents, and mandatory ship reporting to ensure the constant safety of passengers, crews and cargoes.

## **Training standards and requirements**

22 Ships operating in, or anticipating operating in or adjacent to polar ice-covered waters should be required to have ice navigators on board. The Code should contain provisions requiring high standards of training for ships' crews, including ice navigators. Training should include both classroom/simulation training and "on the job" training alongside experienced ice-navigators and crews in polar waters. In addition, knowledge of polar ecosystems and awareness programmes should be included in the training.

## **Environmental protection (accidental)**

### ***Vulnerability***

23 A vulnerability assessment, including sensitivity analysis should be undertaken to inform the need for establishing routing measures and areas to be avoided to minimize risks of collision and grounding and to protect polar environments. Mitigation measures such as mandatory ship reporting, routing measures and greater protection of areas with higher risks, through, for example, the designation of areas to be avoided should be included within a Polar Code.

### ***Shipboard oil pollution emergency plan***

24 The Polar Code should require that tailored procedures for operations under accident conditions, which recognize the remoteness and sensitivity of polar environments, should be included in the shipboard oil pollution emergency plan. The Polar Code should establish a coordinated response framework for environmental emergencies.

## **Environmental protection (operational)**

### ***Ships' discharges***

25 Comprehensive provisions, including zero discharge provisions where appropriate, aimed at minimizing the impact of routine vessel operations in sensitive polar environments, or where appropriate cross-reference existing provisions for environmental protection, aimed at all vessels operating in polar waters should be encompassed by a Polar Code. This should include stringent provisions for oil, noxious liquids, sewage and grey water, garbage, sewage sludge (from advanced wastewater treatment) and air emissions, including nitrogen oxides, sulphur oxides, and black carbon emissions. In addition, consideration should be given to establishing special area status for the Arctic with respect to all MARPOL Annexes.

***Ship strikes***

26 A Polar Code should seek to reduce collisions with marine mammals through the use of all measures identified in the IMO Guidelines on ship collisions with whales (as adopted by MEPC 59, July 2009) including identifying high risk areas where implementing speed restrictions, routing options and areas to be avoided may be appropriate.

***Underwater noise***

27 A Polar Code should seek to reduce vessel disturbance to marine life through ship noise reduction measures, including ship quieting technology identified in the IMO noise reduction guidelines (under development), speed restrictions, routing options and areas to be avoided (taking into account bathymetric features, endemic marine mammal underwater sound sensitivity and migratory corridors). Particular attention should be given to noise and disturbance from icebreakers.

***Ballast water management***

28 The Polar Code should apply the provisions of the Ballast Water Management Convention in polar waters, and consider the necessity of more stringent application of ballast water management requirements in polar waters, particularly in light of the greater potential for the transfer of alien species as the waters warm in response to climatic change.

***Anti-fouling systems***

29 The Polar Code should apply the provisions of the Anti-fouling Systems Convention in polar waters, and consider the need for further restrictions on alternative anti-fouling systems due to the potential for major impact on pristine polar waters.

***Incineration***

30 Consideration should be given to a ban on incineration potentially throughout all polar waters, or to some areas of the Arctic and Southern Ocean, e.g., special areas or a specified distance from the ice-face and/or land.

***Ship's operating manual***

31 A Polar Code should require that tailored procedures for the protection of polar environments under normal operations be included in the ship's operating manual.

**Infrastructure support and compliance*****Polar vessel traffic monitoring and information systems***

32 A Polar Code should address the need for the development of polar vessel traffic monitoring and information systems making use of recent developments such as Long-Range Identification and Tracking (LRIT) and mandatory use of Automatic Identification Systems (AIS), mandatory ship reporting and improved communication systems for polar waters, including provision of accurate and timely ice and weather forecasting (including current conditions and maps) information, and coordination of ice-breaking assistance.

***Search and rescue response and environmental response capacity and coordination***

33 Mechanisms for coordinated Arctic or Antarctic polar responses to remote ship-based emergencies for both search and rescue, and for oil and chemical spill response, including addressing vessel reporting on a regular basis to the relevant regional maritime rescue coordination centres while operating in polar waters, should be addressed through a Polar Code.

***Hydrographic conditions***

34 A Polar Code should address currently inadequate mapping of hydrographic conditions in polar waters, including the need to generate accurate navigational charts. Where data are lacking, risk profiles of areas should be established and when a risk profile is too high, no ships should be allowed into the area.

***Waste reception facilities***

35 A Polar Code should address the provision of adequate waste reception facilities for Annexes I, II, IV and V wastes in remote polar regions.

***Port State Control***

36 A Polar Code should introduce collaborative systems of port State control (PSC) for the polar regions, which involve sharing information and increasing inspections and controls over vessels operating in polar regions in order to ensure strict compliance with the highest safety and environmental standards, for example through an Arctic and an Antarctic PSC protocol or memorandum of understanding (MoU).

***Compliance***

37 A Polar Code should identify priority IMO shipping instruments which will enhance the safety and minimize environmental impact of shipping in polar waters, and encourage rapid ratification and full implementation, including compensation and liability instruments.

**Action requested of the Sub-Committee**

38 The Sub-Committee is invited to consider the issues covered by this submission and agree to the information being used to inform, and where appropriate guide the work of developing a mandatory Polar Code.

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