

SUB-COMMITTEE ON SHIP DESIGN AND
EQUIPMENT
55th session
Agenda item 12

DE 55/12/9
14 January 2011
Original: ENGLISH

DEVELOPMENT OF A MANDATORY CODE FOR SHIPS OPERATING IN POLAR WATERS

Vessel monitoring and traffic system

Submitted by FOEI, IFAW, WWF and Pacific Environment

SUMMARY

Executive summary: In this document FOEI, IFAW, WWF and Pacific Environment provide information on recent developments and existing initiatives on monitoring and tracking of vessels with a view to enhancing safety, minimizing marine pollution, and aiding compliance and enforcement. It is proposed that the Sub-Committee give consideration to including provisions in the mandatory Polar Code which would require the development of polar vessel traffic monitoring and information systems.

Strategic direction: 5.2

High-level action: 5.2.1

Planned output: 5.2.1.19

Action to be taken: Paragraph 18

Related documents: DE 53/18/3; DE 54/13/3; DE 55/12, DE 55/12/1 and DE 55/12/3

Introduction

1 The Sub-Committee on Ship Design and Equipment has been tasked by the MSC to develop a mandatory Polar Code and through the work of two Correspondence Groups and the fifty-fourth session of DE progress is being made. This document¹ provides information on recent developments and existing initiatives for monitoring and tracking vessels which could be developed for use in polar regions. Such measures would provide greater and

¹ The preparation of this document for the IMO's DE Sub-Committee was assisted by the Whale and Dolphin Conservation Society (WDCS) and by the Antarctic and Southern Ocean Coalition (ASOC), an umbrella NGO (whose members include FOEI, IFAW and WWF) with expert observer status at the Antarctic Treaty Consultative meetings (ATCM) and meetings of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).

proportionate protection for polar waters, and it is proposed that the Sub-Committee gives consideration to including provisions requiring the development of polar vessel monitoring and information systems in the mandatory Polar Code.

Vessel traffic monitoring, control and information systems

2 The primary purpose of a vessel traffic monitoring, control, and information system is to enhance safety and minimize environmental impact of shipping accidents. Benefits of vessel traffic monitoring and information systems are not restricted to improved response time for search and rescue and for environmental incidents, but also include enhanced compliance and enforcement. Moreover, vessel monitoring components such as the Automated Identification System (AIS) can improve understanding of the spatial and temporal resolution of shipping density patterns to assess environmental threats (for example emissions², collision risk with marine mammals³, underwater noise⁴), and serve as an aid to navigation⁵.

Example of a vessel traffic monitoring and information system

3 In 2002, the European Parliament and the Council introduced a new directive⁶ to establish a European community vessel traffic monitoring and information system as part of its response to recent disasters in European waters including the loss of the oil tanker **Erika** off the coast of France in 1999 and the subsequent oil spill. The aim is to help prevent accidents and pollution at sea and to minimize the impact on the marine and coastal environment, and on the economy and health of local communities. Its purpose is to ensure that ships in EU waters and cargoes are monitored more effectively and that there is a consistent approach. In addition, the directive⁷ recognizes that vessel traffic services and ships' routing systems have been introduced in some areas which are congested or hazardous for shipping and have played an important role in the prevention of accidents and pollution.

4 The system was developed with a view⁸ to enhancing the safety and efficiency of maritime traffic; improving the response to incidents, accidents or potentially dangerous situations, including search and rescue operations; and contributing to better prevention and detection of pollution by ships. The provisions include that the operator of a ship bound for a port in the region must provide to the port authority in advance certain information such as ship identification, total number of persons on board, port of destination, and estimated time of arrival. In addition, ships calling at ports in the region should be fitted with AIS and a voyage data recorder; and the operator, agent or master of a ship carrying dangerous or polluting goods must notify general information and information provided by the shipper to the competent authority.

² Miola *et al.*, 2010; Olesen *et al.*, 2009.

³ Leaper and Danbolt, 2008.

⁴ Hatch *et al.*, 2008.

⁵ IALA, *Display of Automatic Identification System (AIS) as an Aid to Navigation (AtoN)* (May 18, 2007) (submitted to IMO's Sub-Committee on Safety of Navigation and reviewed as document NAV 53/13/4).

⁶ Directive 2002/59/EC of 27 June 2002 establishing a Community vessel traffic monitoring and information system.

⁷ Directive 2000/59/EC pre-ambular paragraph 6.

⁸ https://extranet.emsa.europa.eu/index.php?option=com_content&view=article&id=70:ssn-main&catid=103&Itemid=114 5/01/11.

5 Furthermore, the parties must transmit relevant information to the other parties concerned, and take all appropriate actions to deal with incidents and accidents at sea, including cooperating with affiliates (operator, ship's master, owner of the dangerous goods) to minimize the consequences of an accident. The master of a ship must immediately report:

- .1 any incident affecting the safety of the ship;
- .2 any incident or accident which compromises shipping safety;
- .3 any situation liable to lead to pollution of the waters or shore; and
- .4 any slick of polluting materials and containers or packages seen drifting at sea.

6 The European Maritime Safety Agency provides the technical support needed to implement the directive and is responsible for the management of SafeSeaNet – a pan-European electronic information system which deals with ship movements and cargoes. SafeSeaNet⁹ is a system of receipt, storage, retrieval, and exchange of information for the purpose of maritime safety, port and maritime security, marine environment protection, and efficiency of maritime traffic and transport. Information is gathered by AIS-based vessel position reports and notification reports provided by appropriate authorities. The information is centralized and can be used by maritime administrations, port authorities, traffic monitoring services, search and rescue centres, coast guards and pollution prevention centres.

Polar vessel traffic monitoring and information systems

7 Recent meetings and decisions identify the widely recognized need for the development of polar vessel traffic monitoring and information systems. In 2009, the University of the Arctic's Institute for Applied Circumpolar Policy (IACP) organized a workshop focused on the Arctic Council's Arctic Marine Shipping Assessment (AMSA). The workshop identified a number of key policy issues which require attention in the near-term to enhance Arctic marine safety and marine environmental protection. The development of a mandatory Polar Code was considered to be the issue of highest priority, and the second highest priority identified was the need for full tracking and monitoring of Arctic commercial ships¹⁰. Also in 2009, a meeting of Antarctic Treaty Experts on ship-borne tourism took place in Wellington, New Zealand. A recommendation¹¹ was agreed that Antarctic Treaty Parties should continue to encourage tourist and non-governmental organizations' vessels which do not currently participate in the IAATO or COMNAP vessel monitoring schemes to report their positions to the relevant MRCC.

8 The building blocks for polar vessel traffic monitoring and information systems already exist and include Automatic Identification Systems (AIS), Long Range Information and Tracking Systems (LRIT), and Vessel Monitoring Systems (VMS).

⁹ https://extranet.emsa.europa.eu/index.php?option=com_content&task=view&id=70&Itemid=114 5/1/11.

¹⁰ Considering a Roadmap Forward: The Arctic Marine Shipping Assessment Workshop Report, University of Alaska Fairbanks, October 22 – 24, 2009. Editors: Lawson W. Brigham and Michael P. Sfraga.

¹¹ Working Paper 1, Antarctic Treaty Consultative Meeting XXXIII 3rd – 14th May, 2010. Chairs' Report Antarctic Treaty Meeting of Experts on the Management of Ship-borne Tourism in the Antarctic Treaty Area.

9 AIS is an automated ship tracking scheme. Regulation 19 of SOLAS chapter V requires, as of December 2004, the fitting of AIS on board internationally voyaging ships of 300 GT or more, cargo ships of 500 GT and upwards not engaged in international transits, and all passenger ships regardless of size. Information exchanged through AIS includes static data (e.g., IMO number, vessel type), dynamic data (e.g., position, course and speed over ground), and voyage-specific data (e.g., possible hazardous cargo, destination).¹²

10 As of 2008, 40,000 ships worldwide were estimated to carry AIS¹³, and the number of ships that presently utilize it is likely higher. However, due to a lack of land-side communication infrastructure, AIS use in the Arctic has been limited¹⁴. Moreover, VHF signals from traditional AIS systems have a horizontal range of only 74 kilometres, further restricting vessel coverage¹⁵.

11 Nevertheless, enhanced forms of AIS that integrate satellite technology can now service the poles¹⁶. Satellite AIS (S-AIS) enables global coverage of vessel activity, and its use is supported by IALA¹⁷. The use of S-AIS would also further the aims of Canada, Denmark, Norway, the Russian Federation, and the United States, as expressed in a meeting organized by IALA in February 2010, to establish "a common Arctic ship reporting and data sharing system" as well as "a common approach to marine traffic awareness and monitoring."¹⁸ In potential bottleneck zones, such as the Bering Strait and similar areas that pose an elevated risk of vessel collisions, S-AIS coupled with a local Vessel Traffic Service (VTS) should be employed.

12 Comprehensive AIS coverage will also enable tracking of vessel speed,¹⁹ which could be particularly useful in areas of the Arctic and Antarctic subject to speed restrictions, and monitoring of vessels in areas that have been formally protected, for example as marine protected areas, where more stringent regulation of activities might be imposed. Reduced ship speeds can lessen the risk of accidents, particularly in treacherous environments such as polar seas, minimize the threat of marine mammal collisions, and decrease underwater noise production.

13 The development of a Long Range Information and Tracking System (LRIT)²⁰ was adopted via resolution in 2006, and while the primary purpose was initially international security, the purpose and scope has been extended to include safety and environmental protection. It provides for global identification and tracking of ships with information on ship identity and current location provided to a data centre. It is mandatory for a number of types of vessels and has been operational since 31 December 2008. Accurate information on ships in distress and ships in the vicinity that could lend assistance could be invaluable in saving lives and minimizing pollution of the marine environment. The European Union has

12 Miola *et al.*, 2010.

13 *Id.*

14 See Government Accountability Office, *Efforts to Identify Arctic Requirements Are Ongoing, but More Communication about Agency Planning Efforts Would be Beneficial*, GAO-10-870, (2010), *available at* <http://www.gao.gov/new.items/d10870.pdf>.

15 http://www.esa.int/SPECIALS/Technology/SEMVDZ9NJTF_0.html.

16 See, for example, ExactEarth, IHS Fairplay, Lloyd's List Intelligence, and Norway's AISat-1.

17 IALA, *Aids to Navigation in Arctic Waters* (Mar. 9, 2010) (submitted to IMO's Maritime Safety Committee and reviewed as document MSC 87/INF.15).

18 *Id.*

19 See Silber and Bettridge, 2010.

20 <http://www.imo.org/OurWork/Safety/Navigation/Pages/LRIT.aspx> and https://extranet.emsa.europa.eu/index.php?option=com_content&view=article&id=52:long-range-identification-and-tracking-system&catid=65&Itemid=91 5/1/11.

developed its own EU LRIT data centre which is used for identification and tracking of EU-flagged ships. This will be integrated with the SafeSeaNet system, other systems such as CleanSeaNet that handle pollution monitoring, and THETIS regarding ship inspections.

14 Mandatory reporting systems offer a simple but effective way of monitoring ship movements and are already used to some extent in polar waters.

15 The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) operates a satellite-based vessel monitoring system which is used to monitor (location and activity) fishing vessels within the Area regulated by the Convention on the Conservation of Antarctic Marine Living Resources – it encompasses all the waters south of the Antarctic Convergence. Vessels are required to be equipped with a satellite-linked monitoring device which allows continuous reporting of vessel position. The device should communicate at least every four hours to a land-based fisheries monitoring centre of the flag State, providing information on the vessels identification, the current geographical position, and the date and time of the fixing of the position of the vessel²¹. VMS reports and messages are subsequently forwarded to the CCAMLR Secretariat. Although it would be possible to centralize the monitoring, such an approach has as yet not been adopted by CCAMLR Members, despite being proposed. Reports and messages are treated in a confidential manner and used for compliance purposes.

16 The Council of Managers of National Antarctic Programs (COMNAP) operates an optional, voluntary ship position reporting system²² for the exchange of information about national research programme ship operations and capabilities. The purpose of the system is to facilitate collaboration between national research programmes and with relevant stakeholders. The International Association of Antarctic Tour Operators also operates a passenger vessel position reporting scheme.

17 Considering the sensitive and hazardous nature of the polar regions, the remoteness and limited possibilities for search and rescue, and the paramount importance of preventing incidents/accidents, along with the value of vessel traffic monitoring and information systems in minimizing the risks of an accident, supporting faster response (safety and environmental) and assisting compliance and enforcement, the co-sponsors of this paper strongly support the development of fit for polar operations purpose vessel traffic monitoring and information systems for each of the poles. Such systems should make use of appropriate tools, such as those described, tailored for application in polar waters.

Action requested of the Sub-Committee

18 The Sub-Committee is invited to note the information provided and consider introducing provisions requiring the development of polar vessel traffic monitoring and information systems during its work to develop a mandatory Polar Code.

²¹ CCAMLR Conservation Measure 10-04 (2010) Automated satellite-linked Vessel Monitoring Systems (VMS).

²² [https://www.comnap.aq/sprs/?searchterm=ship position reporting system 10/01/11](https://www.comnap.aq/sprs/?searchterm=ship%20position%20reporting%20system%2010/01/11).