INTERNATIONAL MARITIME ORGANIZATION

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SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT
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AMENDMENTS TO THE GUIDELINES FOR SHIPS OPERATING IN ARCTIC ICE-COVERED WATERS

Ice operation training

Submitted by Finland

SUMMARY

Executive summary:	This document gives information about the development of training courses on operation of ships in ice-covered waters.
Action to be taken:	Paragraph 8
Related document:	DE 51/11/1

1 This document provides comments on document DE 51/11/1 and is submitted in accordance with the provisions of paragraph 4.10.5 of the Guidelines on the organization and method of work of the MSC and the MEPC and their subsidiary bodies (MSC-MEPC.1/Circ.1).

Background for training

2 As a result of a development project called **MARITRAIN**, executed during the years 1996 to 1999 and funded by the European Union, a curriculum for a five-day Ice Operation Training Course was produced by the Maritime Safety Training Centre Meriturva and Helsinki University of Technology. The course targeted the Finnish maritime schools, to be used in the basic education of students as well as in refresher training of seagoing officers in order to upgrade their knowledge of winter navigation. One specific target group were shipping companies aiming to extend their round-the-year activities from the continent to the Baltic Sea. According to the produced curriculum (see annex), a couple of training courses were arranged during the years 1999 to 2002 and some 100 deck officers, engineer officers and inspectors from several European countries participated in these events.

3 Later on the activity of the Ice Operation Training in its full length was ceasing, partly due to ineffective marketing and insufficient resources for maintaining and developing the course contents further. From the year 2004 the two-day seminar **Ice Day**, arranged by the University of Turku, has served as a biennial international forum for discussing topics dealing with ice navigation. The number of participants has been some 150 persons per seminar. Also, Lloyd's List Events has been arranging its annual **Arctic Shipping Conference,** starting from April 2005. The popularity of these events indicates that subjects concerning ice operation are of increasing importance in shipping business.

4 The recently completed **ARCOP** (Arctic Operational Platform) was also a development project funded by the European Union, which was executed during the years 2003-2005. ARCOP was dealing with ship transports of crude oil and natural gas from the Russian Arctic areas to Central Europe and Russian organisations were also partners in the project set up. One of the work packages within the project focused on training. The main outputs of this study revealed that there are no internationally established norms or practices for training of ship personnel, or even assessing their competence, in ice navigation. Also, one fact that clearly showed was that the expectations and comprehension – dealing with appropriate training and required skills – of European shipping companies were very different from the views of Russian experts.

5 Already during ARCOP the public discussion started to reveal more and more elements of opinions calling the current nondescript status of training in question and also some clear claims for improving the situation were made. More recently, the attitudes of the authorities in Finland and within the European Union have also been favourable and encouraging in terms of improving and developing international training systems related to ice navigation. Moreover, the **BIM** (Baltic Icebreaking Meeting) group, consisting of representatives of the maritime authorities from several Baltic Sea coastal states, has launched a project in order to facilitate distribution of information for preliminary training for navigation in the Baltic Sea winter conditions.

6 In addition to the clear stimulation from the maritime authorities there are also environmental factors putting more pressure to improve the training systems and establish generally applicable ways to set and define standards for the competencies of ship personnel. The risk factors in severe ice conditions are hazards of collisions, groundings and environmental damages, which will obviously occur more frequently if no protective measures are taken. Also, during severe ice conditions the icebreaking resources are often completely occupied by the assisting operations and thus one can expect that the average time for a merchant ship navigating without any assistance will increase, thus setting more emphasis on the competence of deck and engineer officers.

7 In the near future, a rapid growth of shipping activities in the Northern Sea Route of the Russian Arctic region has also been predicted in several public presentations. Obviously, a remarkable portion of the increasing traffic entering the Northern Sea Route may be operated and managed by shipping companies having very limited experience and knowledge of the severe ambient conditions prevailing at the operating area. Visits by cruise passenger ships in remote areas are increasing and there have been discussions about the use of the North-West Route.

Action requested of the Sub-Committee

8 The Sub-Committee is invited to note the information given above and to take action as appropriate.

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ANNEX

ICE TRAIN – TRAINING COURSE FOR OPERATION IN ICE-COVERED WATERS

Curriculum

Ice ahead – is your crew prepared?

Does the crew recognize the prevailing risks in different ice conditions?

Ice may seriously impair ship's speed and manoeuvrability as well as hazard its structural integrity. Sign up now to learn the basic methods to maintain the ship in operable condition, reduce costs and save time!

Need for training
Heavily increased vessel traffic in the Baltic Sea has created urgent demand for crews with relevant ice navigation training. Ship officers with experience in ice navigation are, however, a very limited supply. Critical attention to ice navigation training ought to be paid, since virtually minor operational mistakes due to lack of training or experience in ice navigation can cause very costly damages and offhire.

Typical ice-induced damages include:
- broken or deformed propeller blade
- dented or ruptured shell plating and framing
- ship-to-ship collision
- damaged rudder blade and/or steering machinery
- grounding

The course includes
practical training sessions

USE OF RADAR
- Finding the way through ice
- Adjusting radar settings correctly

SIMULATOR TRAINING
- approaching the ice infested area
- independent navigation in ice conditions
- convoy operations and icebreaker assistance
- manoeuvring in port

ONBOARD TRAINING
- Demonstration and observation of operations onboard icebreaker
- Subject to an optional arrangement in course programme

Set 1: Introduction to Ice Operation

Ship-Ice -Interaction
- Physical properties of ice
- Ice conditions and ice qualities
- Ship performance in ice
- Ice induced damages

Ship design for Ice Operations
- Typical hull forms
- Propulsion concepts
- Ice classification and ice strengthening
- Special systems for ice going ships
- Aspects for detail design

Icebreaker Operations
- Operational qualities of icebreakers
- Management of icebreaking operations
- Real-time information systems
- Modes of escorting and assistance

Management issues
- Rules and regulations
- Safety and environmental aspects
- Setting the right attitude for ice operation
- Collaboration between fleet management, maritime authorities and ships

Set 2: Navigation and shiphandling, simulator exercises

Voyage planning and preparations
- Pilot books and navigation guides
- Weather information systems
- Ice information systems, ice codes and ice charts
- Planning the approach to forthcoming ice fields
- Preparations before entering cold ambient
- Real-time information and route plan updates

Watchkeeping during passage
- Routines during navigation in open sea areas
- Routines during navigation in ice infested areas
- Positioning methods
- Operation and maintenance of bridge accessories
- Use of radar

Shiphandling and manoeuvring
- Independent operation in different ice conditions
- Avoiding damages to hull, rudder and propeller
- Procedures when meeting and overtaking
- Operation under pilotage
- Procedures during icebreaker assistance
- Berthing and unmooring

Set 3: Cargo handling and deck machinery

Cargo handling operations
- Operation and controlling of ballast tanks and piping
- Adjusting draught and trim in accordance with ice class
- Items specific to given ship/cargo type

Operation of deck machinery and equipment
- Operation, maintenance and protection of deck piping, valves and fittings
- Operation, maintenance and protection of deck machinery

Set 4: Safety, emergency and survival

Icing and ship stability
- Ice build-up processes
- Factors affecting ice build-up rate
- Effect of icing upon ship's stability
- Estimating ice mass and its influence on stability
- Methods for removing of ice

Occupational health and medical first aid
- Effect of cold upon human organism
- Proper clothing and outfit
- Treatment of cold induced injuries
- Risk factors when working on slippery deck

Fire fighting, evacuation and survival
- Maintenance of fire-fighting equipment and systems
- Fire-fighting practice
- Maintenance of life-saving equipment and systems
- Operation of shipboard evacuation equipment
- Group survival equipment and techniques
- Personal survival equipment and techniques

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