

SUB-COMMITTEE ON SHIP DESIGN AND
EQUIPMENT
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Agenda item 11

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**DEVELOPMENT OF A MANDATORY CODE FOR SHIPS OPERATING IN
POLAR WATERS**

Inflatable liferafts designed for polar conditions/operation

Submitted by Iceland

SUMMARY

Executive summary: This document contains information on technical requirements for inflatable liferafts as required by Icelandic regulations for installation on board Icelandic fishing vessels and which are intended for use in polar conditions. The particular design features required by Iceland have the aim of improving the stability of the liferafts in rough seas, improve structural design of entrance openings, provide better protection against cold and wet climate and thus improve the effectiveness of liferafts as a life-saving appliance.

Strategic direction: 5.2

High-level action: 5.2.1

Planned output: 5.2.1.19

Action to be taken: Paragraph 13

Related documents: Resolution A.1024(26) and DE 57/11/6

General

1 The DE Sub-Committee has been assigned the task of developing a mandatory Polar Code covering the specific safety aspects of maritime operations in polar waters. This task involves the development of rules covering functional and technical requirements to safety equipment that take into consideration the particular hazards which are to be expected when operating in polar waters.

2 This document provides information on the particular requirements for the construction of inflatable liferafts and their equipment as required by Icelandic regulations since 1980 for installation on Icelandic fishing vessels of 15 m in length overall and over.

Icelandic national requirements for inflatable liferafts for installation on board fishing vessels

- 3 The particular requirements referred to above include:
- .1 double-skin bottom construction allowing the space between the two skins to be inflated with air in order to reduce heat transmission through the bottom surfaces;
 - .2 double-skin canopy construction, allowing the space between the two skins to be inflated with air in order to reduce heat transmission through the canopy;
 - .3 circular entrance openings provided with sleeve-type closing device;
 - .4 extra size and capacity of water ballast pockets for the purpose of adding stability and reducing drifting speed;
 - .5 larger and more effective sea anchor also for the purpose of adding stability and reducing drifting speed; and
 - .6 installed approved emergency radio beacon (COSPAS/SARSAT) operating on frequency 406 MHz.

4 In adverse weather conditions in Icelandic waters the canopy of inflatable liferafts had in some incidents been found torn due to limited material strength, in particular at the corners of the standard square type entrance opening. Also, the design of the closure of entrance openings of those liferafts in use was not found effective in adverse wind. In order to solve this weakness, the entrance opening was modified to an oval or a circular shape connected to a sleeve that could be used for closing of the entrance opening in a very simple and efficient way.

Full scale trial tests undertaken in 1980

5 The above national requirements are based on previous experience with the active use of inflatable liferafts as survival crafts and on the results of full-scale trials of inflatable liferafts under adverse weather conditions in the waters off the north-west coast of Iceland, undertaken in 1980. The aim of these trials was to gain knowledge and experience, which could lead to an improvement in the design and manufacture of inflatable liferafts and their associated equipment.

6 The full scale tests were undertaken to study how to improve stability of the inflatable liferaft and, in particular, to reduce the drifting speed in strong wind by introduction of a larger water ballast pockets and a new design of a sea anchor.

7 The trials were undertaken in March 1980. Six inflatable liferafts, supplied by different manufacturers, were tested. Three of those had been fitted with larger water ballast pockets and a new design of sea anchors with the purpose of testing the stability of inflatable liferafts in gale wind and heavy swells, frequently experienced in Icelandic waters. The sea-anchor systems were examined and their effectiveness tested.

8 The tests lasted for several days and were carried out at wind speed exceeding 80 knots, at a temperature close to 0°C and wave height of up to 10 m. The extract from the report from these trials is available on: <http://www.sigling.is/pages/1374>.

The tests were based on previous experience gained from SAR operations in cases of maritime casualties which strongly indicated that the drifting speed was in excess of that previously assumed or estimated. During SAR operations, the missing inflatable liferafts were sometimes found outside the pre-defined potential searching area. It had also been expressed by survivors that once the painter line had been detached from the sinking ship, the inflatable liferafts, in case of strong wind, started to drift with a speed that exceeded the speed of a swimming person.

9 Although the Icelandic type-approved inflatable liferafts have in recent years been fitted with approved emergency radio beacon, improving dramatically the ability to locate a missing liferaft, the requirement to limit the drifting speed is still considered important so that the inflatable liferafts can remain close to those survivors that are still in the water so as to provide them the best possible chance of survival even after the painter line has broken or been cut or released/detached.

Discussions

10 The above national requirements have since their introduction proved their effectiveness by effectively:

- .1 reducing the range of the searching area during SAR operations and thus made the rescue operations much more effective and less time- and cost-consuming;
- .2 increasing the survivability of those that are in the water after a marine casualty. We have examples of persons that have already managed to enter the inflatable liferaft, but which have returned into the water to help or assist others in the water that are less capable to enter the inflatable liferaft;
- .3 increasing the survivability of those that have managed to enter the inflatable liferaft by shortening the time needed for detecting the liferaft and shortening the duration of stay in the liferaft; and
- .4 reducing the risk of being effected by hypothermia.

11 The Icelandic Maritime Administration believes the experience gained with respect to construction of inflatable liferafts and their equipment should be brought to the attention of those presently developing the appropriate requirements for life-saving equipment for ships operating in polar waters.

Demonstration of an Icelandic type inflatable liferaft

12 Iceland, in close cooperation with Viking Life-Saving Equipment, has been granted the Secretariat's permission to demonstrate, during DE 57, an inflated liferaft of the Icelandic type for the purpose of permitting representatives to familiarize themselves with the special features specified in this document. The liferaft demonstrated at DE 57 will differ from the drawing attached to this document due to later developments.

Action requested of the Sub-Committee

13 The Sub-Committee is invited to note the information provided.

ANNEX

INFLATABLE LIFERAFTS DESIGNED FOR POLAR CONDITIONS/OPERATION

