INTERNATIONAL MARITIME ORGANIZATION

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DEVELOPMENT OF REQUIREMENTS FOR ADDITIONAL MEANS OF ESCAPE FROM MACHINERY SPACES

Proposed amendments to SOLAS regulations II-2/13.4.1 and 13.4.2

Submitted by the Bahamas, the Institute of Marine Engineering, Science and Technology (IMarEST) and the International Chamber of Shipping (ICS)

SUMMARY

Executive summary:	The document proposes amendments to SOLAS regulations II-2/13.4.1 and 13.4.2 on means of escape from machinery control rooms and main workshops within machinery spaces of cargo and passenger ships. The document takes into account comment made by the Sub-Committee on an earlier proposal and aims to satisfy the request for adjustment and clarification of the proposals contained in document FP 55/10/1.
Strategic direction:	5.2
High-level action:	5.2.1
Planned output:	5.2.1.6
Action to be taken:	Paragraph 13
Related documents:	MSC 83/25/12, MSC 83/28 (paragraph 25.23); FP 53/16, FP 53/23 (paragraphs 16.1 to 16.5); FP 54/14; FP 55/10/1 and FP 55/INF.5

Introduction

1 MSC 83 included a new item on "Means of escape from machinery spaces" in the work programme of the Sub-Committee (MSC 83/28, paragraph 25.23). The proposal made in document MSC 83/25/12 focussed on improvements to the means of escape from control rooms inside machinery spaces and the addition of means of escape from workshops.

2 FP 54 discussed a proposal by Chile, Denmark, Norway and Sweden in document FP 54/14 on amending SOLAS regulations II-2/13.4.1 and 13.4.2 aimed at ensuring effective means of escape from engine control rooms and other enclosed working spaces located within machinery spaces in both cargo and passenger ships.

3 The proposal had its background in two engine-room fires. One of them occurred on a Danish cargo ship where the lack of sufficient means of escape from the engine control room caused fatalities, and the other on the Chilean ship **Rio Blanco** in 2008 (FP 54/25, paragraphs 14.4 to 14.6).

4 At FP 55, the Sub-Committee continued to discuss this subject with the submission of additional material and clarifications by Chile, Norway and Sweden (FP 55/10/1 and FP 55/INF.5). While a draft amending the SOLAS text was developed by the drafting group, difficulties were encountered by the Sub-Committee in dealing with the proposal to include escape requirements for enclosed rooms in machinery spaces. Due to lack of time, FP 55 could not conclude its consideration of the draft amendments to regulation II-2/13.4 and invited Member States and international organizations to submit their comments on the draft text contained in paragraph 10.9 of document FP 55/23 to FP 56.

5 While preparing comments to the draft text mentioned above, the co-sponsors of this document sought to examine the two casualties referenced in paragraph 3 to see if they contained any information that would assist in the development of a text which may be acceptable to the Sub-Committee. Having done so, the co-sponsors have concluded that, while the draft text to amend SOLAS regulation II-2/13.4 with respect to escape from cargo ship machinery control rooms is beneficial, adoption of the proposed text referring to escapes from all enclosed rooms within machinery spaces would prove difficult to apply and could have an adverse effect on safety.

Background

6 Document FP 54/25 referred to two cases to support a compelling need to amend the current SOLAS requirements:

.1 the first was a casualty on an unidentified Danish vessel. This casualty had occurred several years ago and led to changes in the Danish national regulations. Unfortunately, details of this casualty are no longer available, as it occurred before the current Danish casualty investigation mechanisms were formalized; and

.2 the second casualty occurred on the 1981-built Chilean registered car carrier **Rio Blanco**. The Flag Administration casualty investigation report describes how two engine-room personnel lost their lives as a result of being unable to exit the machinery control room in which they sought refuge, when a major fire in the engine-room prevented them from using either of the machinery space escape routes provided under the current regulations. The incident occurred when the filling valve of a diesel oil tank was opened for internal inspection. The valve was still under pressure and an escaping spray of oil was ignited by a hot spot on a generator located below this valve. There were a total of seven personnel within the machinery space at the time: one was working on the valve and tragically died as a result of oil ignition; four were engaged in other tasks and two managed to reach the open deck via the after escape route. Two others were in the machinery control room but entered the main machinery space when the fire occurred; they subsequently escaped via the forward exit, after being forced to climb over the main engine when fire blocked access to ladders leading to the escape routes.

7 The lessons learned from the tragic accident on the **Rio Blanco**, from the point of view of means of escape, lead to the following conclusions:

.1 there is a compelling need to provide a direct escape route from machinery control rooms. Such spaces – even in an unattended machinery space – are used from time to time by several crew members simultaneously. In the event of a machinery space fire, the machinery control room can provide temporary shelter prior to evacuation and may well be used as a control and communication centre in the early stages of a fire;

.2 improved access to the normal exit and emergency escape routes, with the provision of heat and flame barriers below open-tread inclined ladders/stairways, may have assisted in the safe evacuation from the machinery space; and

.3 supported by other recommendations stemming from the **Rio Blanco** casualty report, ship managers and crews need to carry out thorough risk assessment of all machinery spaces, backed up by realistic fire and rescue drills to ensure that, as far as possible, all emergency situations are identified and evaluated, as is required by the ISM Code, section 8.

8 The co-sponsors of this document are concerned that protracted discussions on what criteria should be used to define an "enclosed space" may result in further delay in the introduction of these long-needed safety improvements. Should the deliberations continue to focus on the floor area and/or communicating openings as the criteria, then the co-sponsors fear that machinery space and enclosed space design may be optimized by avoiding the provision of a fire-protected escape route. There is an additional risk that equipment with a higher fire risk, e.g. fuel treatment equipment, which at present is commonly installed in enclosed rooms, may in future be located in open areas of the machinery space. The co-sponsors consider this risk to be critical.

9 The co-sponsors recommend that the Sub-Committee take these concerns into account and revert to the original proposal in paragraph 10 of document MSC 83/25/12 – "It is intended that the proposal should apply to spaces in which personnel are working for longer periods, i.e. machinery control rooms and workshops".

10 The co-sponsors also argue that, in reference to escape from workshops, the phrase "in which crew members are normally employed" used in the text developed at FP 55, constitutes a vague expression. This is subject to interpretation and it is proposed that the measures should simply apply to "the main workshop within a machinery space" to avoid potential confusion.

11 The co-sponsors firmly believe that the provision of flame and heat shields to the underside of any inclined ladders within machinery spaces provides a low cost but high reward safety improvement, and propose the addition of suitable text.

12 Taking into account the above considerations, the co-sponsors propose a modified text of the SOLAS amendments, as set out in the annex.

Action requested of the Sub-Committee

13 The Sub-Committee is invited to consider the above comments and proposal referred to in the foregoing paragraph and take action as appropriate.

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ANNEX

DRAFT AMENDMENTS TO SOLAS CHAPTER II-2

Regulation 13 – Means of escape

1 In paragraph 13.4.1, "Means of escape on passenger ships", add at the end of existing subparagraph .2 (4.1.1.2) a semi-colon and the word "and".

2 Insert a new subparagraph 4.1.1.3 after existing subparagraph 4.1.1.2 as follows:

".3 all inclined ladders or stairways with open treads, not located within a protected enclosure, are to be of steel and protected against heat and flame by steel shields attached to their undersides."

3 Insert a new paragraph 4.1.5 after existing paragraph 4.1.4 as follows:

"*4.1.5 Escape from workshops within machinery spaces*

Two means of escape shall be provided from the main workshop within a machinery space. At least one of these escape routes shall provide a continuous fire shelter to a safe position outside the machinery space."

4 In paragraph 13.4.2, "Means of escape on cargo ships", add at the end of existing subparagraph .2 (4.2.1.2) a semi-colon and the word "and".

5 Insert a new subparagraph 4.2.1.3 after existing subparagraph 4.2.1.2:

".3 all inclined ladders or stairways with open treads, not located within a protected enclosure, are to be of steel and protected against heat and flame by steel shields attached to their undersides."

6 After existing paragraph 4.2.1, insert new paragraphs 4.2.2 and 4.2.3 as follows:

"*4.2.2 Escape from machinery control rooms in machinery spaces of category "A"*

Two means of escape shall be provided from a machinery control room located within a machinery space. At least one of these escape routes shall provide a continuous fire shelter to a safe position outside the machinery space.

4.2.3 Escape from workshops in machinery spaces of category "A"

Two means of escape shall be provided from the main workshop within a machinery space. At least one of these escape routes shall provide a continuous fire shelter to a safe position outside the machinery space."

7 Renumber the existing paragraphs 4.2.2 and 4.2.3 as 4.2.4 and 4.2.5, correspondingly.

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