INTERNATIONAL MARITIME ORGANIZATION

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SUB-COMMITTEE ON STABILITY AND LOAD LINES AND ON FISHING VESSELS SAFETY
51st session
Agenda item 10

SLF 51/10/1
6 May 2008
Original: ENGLISH

GUIDANCE ON THE IMPACT OF OPEN WATERTIGHT DOORS ON EXISTING AND NEW SHIP SURVIVABILITY

Proposed guidance to determine the impact of open watertight doors on survivability

Submitted by Sweden and the United States

SUMMARY

Executive summary:	This document provides an updated version of the previously proposed guidance by which Administrations may determine the impact of open watertight doors on survivability
Strategic direction:	2
High-level action:	2.1.1
Planned output:	2.1.1.2
Action to be taken:	Paragraph 4
Related documents:	SLF 50/15, SLF 50/15/1 and SLF 50/19

Introduction

1 The Sub-Committee, at its fiftieth session, considered a new high priority agenda item on "Guidance on the impact of open watertight doors on existing and new ship survivability". Under this item the Sub-Committee considered documents SLF 50/15 and SLF 50/15/1, but noted mixed views on the guidance proposed by Sweden and the United States in SLF 50/15 and also noted some delegations' intention to contribute at SLF 51. This item has a target completion date of 2008.

Guidance for determining the impact on survivability

2 In document SLF 50/15, Sweden and the United States proposed guidance for determining the impact of open watertight doors on survivability. After that document was submitted, we received a suggestion that the proposed stability criteria associated with the "floatability" assessment be modified to align with the intermediate stage flooding criteria. This suggestion highlighted the fact that although our proposed criteria was similar, it did not

align with either the existing or new harmonized damage stability criteria. We have subsequently reviewed this issue and agree. Therefore we have modified the stability criteria in our proposed guidance to align with the intermediate stage flooding criteria in the new harmonized SOLAS chapter II-1, regulation 7-2.2. Our updated proposal is provided in the annex.

3 Sweden and the United States continue to believe this guidance should be applicable to both existing and new ships, as noted in SLF 50/15.

Action requested of the Sub-Committee

4 The Sub-Committee is invited to consider the information provided and take action as appropriate.

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ANNEX

GUIDANCE FOR THE DETERMINATION BY ADMINISTATIONS OF THE IMPACT OF OPEN WATERTIGHT DOORS ON SHIP SURVIVABILITY UNDER SOLAS REGULATION II-1/15.9.3 (REVISED SOLAS REGULATION II-1/22.4)

1 Introduction

1.1 Watertight subdivision is vital to the survival of flooding damage. Accordingly, openings in watertight bulkheads are to be kept to a minimum in accordance with SOLAS regulation II-1/15.1 (revised SOLAS regulation II-1/13.1). SOLAS regulation II-1/15.9.1 (revised SOLAS regulation II-1/22.1) requires that all watertight doors be kept closed during navigation except that they may be opened during navigation as specified in certain circumstances. SOLAS regulation II-1/15.9.2 (revised SOLAS regulation II-1/22.3) allows a watertight door to be opened to permit the passage of passengers or crew, or when work in the immediate vicinity of a door necessitates it being open. However the door must be immediately closed when transit is complete or the work is finished.

1.2 These regulations reflect prudent watertight door practices that serve to safeguard a ship's watertight subdivision. The maintenance issues that may be associated with the high open/close cycling of certain individual watertight doors can be addressed by incorporating advanced materials into the door's working parts, and using other enhanced reliability/maintainability focused measures.

1.3 SOLAS regulation II-1/15.9.3 (revised SOLAS regulation II-1/22.4) permits certain watertight doors "to remain open during navigation only if considered absolutely necessary; that is, being open is determined essential to the safe and effective operation of the ship's machinery or to permit passengers normally unrestricted access throughout the passenger area". Further, "Such determination shall be made by the Administration only after careful consideration of the impact on ship operations and survivability." If permitted to remain open, watertight doors shall be ready at all times to be immediately closed.

1.4 This Guidance is only for the purpose of determining the impact of open watertight doors on ship survivability. It is intended that this Guidance be applied by Administrations only after they have initially determined the need for a watertight door(s) to remain open during navigation.

1.5 Care should be exercised not to confuse the "floatability assessment" criteria used in this Guidance (for determining the impact of open watertight doors on survivability) with the requirements in the SOLAS chapter II-1 damage stability regulations.

2 Damage and flooding extent for the floatability assessment

2.1 In every case in which a determination has been made by the Administration that keeping one or more watertight doors open during navigation is absolutely necessary, floatability assessment calculations should be performed.

2.2 The extent of damage to be assumed for the floatability assessment is as follows:

Longitudinal damage extent: $0.03L_S$ but not less than 3 m, at any position along the side shell.

Transverse damage extent: 0.5B measured inboard from the side, at right angles to the centerline at the level of the deepest subdivision draught

Vertical damage extent: from the moulded baseline to a position up to 12.5 m above the deepest subdivision draught.

If any lesser damage extents than indicated above would result in a more severe condition with respect to the floatability criteria, then such damage extents should be assumed in the calculations. In this context, the damage extent should be assumed as both penetrating and not penetrating the double bottom.

2.3 The floatability assessment should account for the worst cases involving the progressive flooding of compartments associated with watertight doors requested to remain open during navigation. The extent of flooding assumed for the floatability assessment calculations should be as follows:

.1 All watertight doors located on the double bottom level that are requested to remain open during navigation should be assumed to remain open after damage.

.2 Any watertight door that is requested to remain open during navigation may be considered closed after a casualty if it is in a watertight bulkhead that is located away from the damage extent by at least one undamaged watertight bulkhead/door and also located at least one full deck above the double bottom level.

2.4 A watertight door should not be permitted to remain open during navigation if the ship does not meet the floatability criteria given in paragraph 3 for each associated extent of flooding.

3 Criteria for the floatability assessment

3.1 In all loading conditions and in each assumed flooding case described in paragraph 2, the ship should meet the following floatability criteria:

.1 The bulkhead deck may be immersed provided that no progressive flooding occurs (i.e. closed weathertight openings may be immersed during intermediate stages; only closed watertight opening may be immersed at the final equilibrium stage of flooding).

.2 The maximum righting arm should not be less than 0.05 m in any stage of flooding.

.3 The range of stability should not be less than 7 degrees in any stage of flooding.

.4 The maximum heel angle should not exceed 15 degrees in any stage of flooding.