INTERNATIONAL MARITIME ORGANIZATION

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SUB-COMMITTEE ON STABILITY AND LOAD LINES AND ON FISHING VESSELS SAFETY
51st session
Agenda item 4

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REVISION OF THE INTACT STABILITY CODE

Further proposal for so-called new generation intact stability criteria

Submitted by Germany

SUMMARY

Executive summary:	This document proposes that the currently developed framework may be applied in what the Sub-Committee called new generation intact stability criteria. By means of a specific demonstration of the application of the framework to partial stability failure interim results are proposed for discussion
Strategic direction:	5.2
High-level action:	5.2.1
Planned output:	5.2.1.1
Action to be taken:	Paragraph 10
Related documents:	SLF 45/6/2, SLF 50/WP.2, SLF 51/4, SLF 51/4/1 and SLF 51/INF.3

Introduction

1 Starting at its forty-fifth session, the Sub-Committee has elaborated on a review of the Intact Stability Code (IS Code) (refer to SLF 45/6/2) among other matters, with a view to making the Code mandatory. At the same time the Sub-Committee was tasked to attempt to develop what is now called "new generation intact stability criteria" (SLF 51/4, paragraph 5).

2 At the fiftieth session, the Sub-Committee updated the plan of action on Intact Stability and stressed that the justification and tasks proposed earlier were still valid. The urgency to complete them increases with the introduction of new ship types (SLF 50/WP.2, paragraph 20).

3 SLF 50 noted that ships complying with the criteria contained in the IS Code have continued to suffer from intact stability accidents. It endorsed the following statement contained in part A of the IS Code: "It is recognized by the Organization that performance-oriented criteria for the identified phenomena listed above need to be developed and implemented to ensure a uniform international level of safety."

Organization of the work

4 The Sub-Committee established the correspondence group to continue the work on the relevant items contained in the Updated Plan, as set out in annex 6 to document SLF 50/WP.2, taking into account documents SLF 50/4/3, SLF 50/4/4, SLF 50/4/6, SLF 50/4/9, SLF 50/4/11, SLF 50/4/12, SLF 50/INF.2, SLF 50/INF.3 and relevant documents from previous sessions. The Updated Work Plan of the Sub-Committee aims:

.1 to develop an enhanced framework for the development of new generation intact stability criteria by 2008 (paragraph 2.1);

.2 to define terms used in the new generation intact stability criteria development by 2008 (paragraph 2.2);

.3 to develop procedures for direct assessment (as part or an alternative for published criteria) by 2010 (paragraph 2.4) for:

.3.1 stability failures under dead ship conditions (paragraph 2.4.1);

.3.2 stability failures in following seas associated with matters related to stability variation in waves, in particular reduced righting levers of a ship situated on a wave crest (paragraph 2.4.2);

.3.3 stability failures caused by parametric resonance, including consideration of matters related to large accelerations and loads on cargo and stability variation in waves (paragraph 2.4.3); and

.3.4 stability failures caused by broaching including consideration of matters related to manoeuvrability and course keeping ability as they affect stability (paragraph 2.4.4);

.4 to develop standard requirements for on-board guidance (ref. paragraph 2.5.1), and an implementation plan for the new generation intact stability criteria into the IS Code, including procedures for direct assessment as well as parametric (simplified) criteria (paragraph 2.5.3) by 2012.

Outcome of the Correspondence Group

5 The Correspondence Group agreed on the framework for the development of new generation intact stability criteria as explained in annex 2 of the IS Correspondence Group report (SLF 51/4/1).

6 The framework addresses the concept of intact stability failure as a state of inability of a ship to remain within design limits of roll angle and combination of lateral and vertical accelerations. Two categories of intact stability failures are distinguished:

.1 a total stability failure or capsizing, which results in total loss of a ship's operability with likely loss of lives; and

.2 a partial stability failure as an event that includes the occurrence of very large roll angles and/or excessive accelerations, which will not result in loss of the ship, but which would impair normal operation of the ship and could be dangerous to crew, passengers, cargo or ship equipment. Two subtypes of partial stability failure are intended to be included in the development: roll angles exceeding a prescribed limit, and combination of lateral and vertical accelerations exceeding prescribed limits.

Proposed way ahead based on the agreed framework

7 In an attempt to envisage the functionalities of such new generation intact stability criteria, Germany had submitted a proposal for a general approach and a methodology for the development of such criteria (SLF 50/INF.2). When presenting these views to the Sub-Committee a number of questions were raised. Germany was invited to take such comments into consideration in the further work.

8 The work on the development of procedures for direct assessment and on-board guidance is ongoing. Germany wishes to inform the Sub-Committee on some interim results of this work (SLF 51/INF.3).

9 A particular type of partial stability failures related to possible cargo loss or damage for container ships due to large lateral accelerations is presented. The paper includes further validation of numerical tools used, which Germany proposes to be useful for the procedures for direct assessment and for the development of on-board guidance, testing of different procedures for design assessment and an example of a methodology for on-board guidance using the same methods as applied in the design assessment criteria.

Action requested of the Sub-Committee

10 The Sub-Committee is invited to consider the information provided in this paper and take action as appropriate.

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