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GUIDELINES FOR ASSESSING THE LONGITUDINAL STRENGTH OF BULK CARRIERS DURING LOADING, UNLOADING AND BALLAST WATER EXCHANGE

1 The Maritime Safety Committee, at its seventy-sixth session (2 to 13 December 2002), having considered the results of various FSA studies on bulk carrier safety, agreed that the risk control option calling for the provision of detailed, comprehensive and user-friendly information covering stability and strength characteristics of the ship's hull during loading and unloading should be applied to new bulk carriers. Furthermore, MSC 76 noted that the above-mentioned risk control option was more relevant for smaller ships with respect to stability and for larger ships with respect to structural strength, and instructed the Sub-Committee on Stability and Load Lines and on Fishing Vessels Safety (SLF) and the Sub-Committee on Ship Design and Equipment (DE) to develop relevant guidelines.

2 The DE Sub-Committee, at its forty-seventh session (25 February to 5 March 2004), noting that the SLF Sub-Committee, at its forty-sixth session (8 to 12 September 2003), had prepared draft SOLAS amendments to address the stability issues on bulk carriers of less than 150 m in length, agreed that for bulk carriers of 150 m in length and above, user-friendly guidelines for assessing the longitudinal strength would be more appropriate.

3 The Maritime Safety Committee, at its seventy-eighth session (12 to 21 May 2004), following the recommendation of DE 47, approved the Guidelines for assessing the longitudinal strength of bulk carriers during loading, unloading and ballast water exchange, set out in the annex.

4 Member Governments are invited to bring the annexed Guidelines to the attention of loading instrument manufacturers, related computer software developers, mariners, dry cargo terminal operators and other parties involved in loading, unloading and ballast water exchange operations.

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ANNEX

GUIDELINES FOR ASSESSING THE LONGITUDINAL STRENGTH OF BULK CARRIERS DURING LOADING, UNLOADING AND BALLAST WATER EXCHANGE

1 Preamble

The aim of these Guidelines is to ensure the provision of detailed, comprehensive and user-friendly information covering the longitudinal strength characteristics of the ship's hull during loading, unloading and ballast water exchange.

2 Definitions

2.1 Loading manual

The loading manual is a document which describes:

.1 the loading conditions on which the design of the ship has been based, including permissible limits of still water bending moments and shear forces;

.2 the results of the calculations of still water bending moments, shear forces and, where applicable, limitations due to torsional loads;

.3 envelope results and permissible limits of still water bending moments and shear forces in the hold flooded condition as applicable;

.4 the cargo hold(s) or combination of cargo holds that might be empty at full draught. If no cargo hold is allowed to be empty at full draught, this should be clearly stated in the loading manual; and

.5 the allowable local loads for the structure (e.g. hatch covers, decks, double bottom, tank top).

2.2 Loading instrument

2.2.1 A loading instrument is an instrument, either analogue or digital, by means of which it can be easily and quickly ascertained that, at specified read-out points, the still water bending moments, shear forces, loads on the double bottom and the still water torsional moments, where applicable, in any loading or ballast condition will not exceed the specified permissible values during planned loading, unloading and ballast water exchange.

2.2.2 In this context the loading instrument comprises the hardware and software.

3 Information to be provided

3.1 Loading manual

3.1.1 For the loading, unloading and stowage of solid bulk cargoes, reference should be made to SOLAS regulation VI/7 and the related Code of Practice for the Safe Loading and Unloading of Bulk Carriers (BLU Code).

3.1.2 The loading manual should contain typical loading sequences from commencement of cargo loading to reaching full deadweight capacity for homogeneous conditions, relevant part load conditions and alternate hold loading conditions where applicable. Typical unloading sequences for these conditions should be included.

3.1.3 The typical loading sequences should be developed paying due attention to the loading rate, the deballasting capacity and the applicable strength and draught limitations.

3.1.4 The typical loading and unloading sequences should include, as relevant:

.1 alternate light and heavy cargo loading condition;

.2 homogeneous light and heavy cargo loading condition;

.3 short voyage condition where the ship is loaded to maximum draught with limited bunkers;

.4 multiple port loading/unloading condition;

.5 deck cargo condition, where permitted;

.6 block loading; and

.7 ballast water exchange conditions, if not covered by other documents.

3.2 Loading instrument

3.2.1 The input/output format of the loading instrument should, as far as practicable, be easily comparable in information and format to the loading manual so that the operators will easily gain familiarity with the loading calculations.

3.2.2 The loading instrument should readily provide any information that may be obtained from the loading manual by incremented calculation, reflecting the operation scenario in a clearly presented format.

3.2.3 A simple and straightforward user manual written in the same language as the loading manual should be provided. The user manual should contain the approved test conditions and be written in a language with which the ship's officers responsible for cargo operations are familiar. If this language is not English, the ship should be provided with a manual written also in the English language.

3.2.4 For each occasion when the ship is loaded or unloaded or ballast water is exchanged at sea, the sequence of the operations should be checked, using the approved loading instrument.

3.2.5 Where applicable, the loading instrument should also be capable of performing calculations for break bulk cargo and loading of different grades of cargo in the same cargo hold.

3.2.6 The sequence should be built up step by step from commencement of cargo loading to reaching full deadweight capacity. A step occurs each time the loading equipment changes position to a new hold. Each step should be documented. In addition to longitudinal strength, the local strength of each hold should be considered.

3.2.7 For each loading condition a summary of all steps should be included. This summary should highlight the essential information for each step such as:

.1 how much cargo is loaded into each hold during the different steps;

.2 how much ballast water is discharged from each ballast tank during the different steps;

.3 the maximum still water bending moments and shear forces at the end of each step; and

.4 the ship's trim and draught at the end of each step.

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