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ADDITIONAL CONSIDERATIONS FOR THE SAFE LOADING OF BULK CARRIERS

1 The Maritime Safety Committee, at its eighty-seventh (12 to 21 May 2010) session, noted concerns that the provisions of SOLAS chapter VI, regulation 7 (Loading, unloading and stowage of solid bulk cargoes), and the Code of Practice for the Safe Loading and Unloading of Bulk Carriers (BLU Code) are not being universally applied. In particular, the Committee noted that these concerns may be attributed to the lack of a mutual agreement between terminal representatives and masters on appropriate loading and unloading rates for solid bulk cargoes to prevent over-stressing of the ship's structure. In addition, the Committee noted that an agreed loading/unloading plan between the terminal representative and master is a mandatory requirement under SOLAS regulation VI/7.3.

2 The Committee recognized the need to provide further guidance to supplement the Code of practice for the safe loading and unloading of bulk carriers (BLU Code) and agreed to the Additional considerations for the safe loading of bulk carriers, set out in the annex.

3 The Committee further noted IACS Recommendation No.46, which provides relevant guidance and information on bulk cargo loading and discharging to reduce the likelihood of over-stressing the hull structure for bulk carriers.

4 The Committee urges Member Governments, terminal representatives, shipowners, ship operators, ship masters, ship charterers, shippers, receivers and other relevant parties to consider IACS Recommendation No.46 and the annexed Additional consideration for the safe loading of bulk carriers when developing an agreed loading or unloading plan in accordance with SOLAS regulation VI/7 and the BLU Code (resolution A.862(20), as amended).

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ANNEX

ADDITIONAL CONSIDERATIONS FOR THE SAFE LOADING OF BULK CARRIERS

Introduction

1 SOLAS chapter VI, regulation 7.3 requires that before any solid bulk cargo is loaded or unloaded, the master and the terminal representative shall agree on a plan which shall ensure that the permissible forces and moments on the ship are not exceeded during loading and unloading. To facilitate the development of the plan, the Code of Practice for the Safe Loading and Unloading of Bulk Carriers (BLU Code) (resolution A862(20), as amended) is referenced.

2 The BLU Code requires co-operation and mutual agreement between the terminal representative and master with regard to how the ship is to be loaded and unloaded. The basic requirement of the Code is an agreed plan detailing the loading, unloading, ballasting and de-ballasting sequences. The preparation of a plan and maintaining control of the loading and unloading process in accordance with the plan and the BLU Code is fundamental to the safe loading of dry bulk cargoes.

3 The BLU Code also advises that charterers and shippers should allocate ships to terminals at which the ship will be capable of safely loading or unloading. Ships should be maintained in a sound, seaworthy condition and be free of defects that may prejudice the ships' safe loading, unloading or navigation. Terminal equipment should be properly certified, maintained and operated by duly qualified and, if appropriate, certificated personnel. All personnel, on board ship and terminal, should be trained in all aspects of safe loading and unloading of bulk carriers, commensurate with their responsibilities, including knowledge of the adverse effect that failure to comply with the agreed loading/unloading plan may have on the safety of the ship.

4 To supplement the BLU Code, guidance for terminal representatives and others involved in the handing of solid bulk cargoes is given in the Manual on Loading and Unloading of Solid Bulk Cargoes for Terminal Representatives (MSC/Circ.1160, as amended).

5 This document is intended to provide further guidance for Member Governments, terminal representatives, shipowners, ship operators, ship masters, ship charterers, shippers, receivers and other relevant parties in the loading of bulk cargoes with the aim of supporting the safe operation of ships and terminals.

Time taken for loading

6 The total time to load and the nominal loading rate should be agreed to in advance of loading and should take into account the safe operational limits of the ship and the terminal. This agreement should be a part of the loading plan required under SOLAS, regulation VI/7.3, and should also be in line with the provisions of the BLU Code.

7 While a terminal may have a high nominal loading rate (the pour rate that can be achieved by the loading equipment), the total time taken for loading will also be influenced by the steps required to safely load a ship in order to keep the structural stresses within permissible limits.

Arrival condition

8 Arrival in port in a very lightly ballasted state should be avoided as such conditions can have detrimental consequences on manoeuvrability and structural strength. Manoeuvrability can be significantly affected by a large trim associated with a very light ballast condition, for example by increasing bodily drift and difficulty in swinging the ship in windy conditions, decreasing turning performance and increasing difficulty in maintaining the ship's course and position under the actions of wind and currents. In terms of hull structures, loading cargo in a shallow draught condition can impose high stresses in the double bottom, cross deck and transverse bulkhead structures if the cargo in the holds is not adequately supported by the buoyancy up thrust.

9 In developing the loading plan, and determining the arrival condition, consideration should be given to manoeuvrability issues and local loading criteria in the loading manual.

Loading sequences

10 The loading sequences should be agreed to in advance of loading and must take into account the safe operational limits of the ship and the terminal. This agreement should be a part of the loading plan required under SOLAS regulation VI/7.3, and should also be in line with the provisions of the BLU Code.

11 In developing loading sequences it should be noted that in general the stress range imposed on the ship can be reduced by increasing the number of pours.

12 It is recommended that the loading sequences consist of a minimum of two pours per hold plus two trim pours. When calculating the stresses at each step consideration may be given to using a margin (i.e. using less than 100% of the permissible limit) to allow for potential over-runs or decoupling of ballast synchronization; providing time to stop loading operations, and subsequently take corrective action, while remaining within permissible limits.

During loading

13 Ballast operations need to be synchronized with loading operations as laid down and agreed in the loading plan required under SOLAS regulation VI/7.3. Ballast and loading operations should be carried out in a controlled manner in accordance with the loading plan and the provisions of BLU Code.

14 If at any time during loading the safe operational limits of the ship are exceeded, or likely to become so if the loading continues, the ship master has the right to suspend loading operations in order to take corrective actions (see SOLAS regulation VI/7.7).

Consequences of failure to apply BLU Code

15 Exceeding the permissible limits specified in the ship's approved loading manual will lead to over-stressing of the ship's structure and may result in catastrophic failure of the hull structure.

16 It is important to be aware that over-stressing of local structural members can occur even when the hull girder still water shear forces and bending moments are within their permissible limits. In this regard particular attention should be given to double bottom loading utilizing local loading diagrams in the loading manual.

17 If time for ensuring the cargo in each hold is trimmed (evenly distributed) is not included in the loading plan there is an increased risk of asymmetric loading. Asymmetric loading in the fore-aft direction can increase the lateral cargo pressure acting on the transverse bulkhead and increase the loads carried by the transverse bulkhead structure and the magnitude of transverse compressive stresses in the cross deck. Transverse asymmetric loading will introduce torsional loads leading to warping of the hull section giving rise to shearing and bending of the cross deck structure.

18 For more guidance please refer to IACS Recommendation No.46 Guidance and Information on Bulk Cargo Loading and Discharging to Reduce the Likelihood of Over-stressing the Hull Structure.

References

19 International Maritime Organization (IMO), 4 Albert Embankment, London, SE1 7SR, United Kingdom.

The IMO Code of practice for the Safe Loading and Unloading of Bulk Carriers, also known as the "BLU Code", as adopted by resolution A.862(20) and amended by resolution MSC.238(82).

The IMO Manual on Loading and Unloading of Solid Bulk Cargoes for Terminal Representatives, MSC/Circ.1160, as amended by MSC.1/Circ.1230.

IMO publications are available for purchase from www.imo.org.

20 International Association of Classification Societies (IACS), 36 Broadway, London, SW1H 0BH, United Kingdom.

IACS Recommendation No.46: Guidance and Information on Bulk Cargo Loading and Discharging to Reduce the Likelihood of Over-stressing the Hull Structure, available for downloading from www.iacs.org.uk.