INTERNATIONAL MARITIME ORGANIZATION

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4 ALBERT EMBANKMENT
LONDON SE1 7SR
Telephone: +44 (0)20 7735 7611 Fax: +44 (0)20 7587 3210

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REVISED GUIDELINES ON OPERATIONAL INFORMATION FOR MASTERS OF PASSENGER SHIPS FOR SAFE RETURN TO PORT*

1 The Maritime Safety Committee, at its ninety-sixth session (11 to 20 May 2016), having considered a proposal by the Sub-Committee on Ship Design and Construction, at its third session, approved the *Revised guidelines on operational information for masters of passenger ships for safe return to port* to provide additional guidance for the uniform implementation of SOLAS regulation II-1/8-1.3.

2 The Maritime Safety Committee, at its ninety-ninth session (16 to 25 May 2018), approved the revision of the *Revised guidelines on operational information for masters of passenger ships for safe return to port* (MSC.1/Circ.1532), as set out in the annex, updating the references to the paragraphs of SOLAS regulation II-1/8-1.3 amended by resolution MSC.436(99).

3 Member States are invited to apply the annexed Revised guidelines to passenger ships constructed on or after 13 May 2016 and to bring them to the attention of owners of passenger ships, operators and all other parties concerned.

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* In accordance with the decision of MSC 99 (MSC 99/22, paragraph 3.81.6), these Guidelines should be kept in abeyance until the date of the entry into force of the amendments to SOLAS regulation II-1/8-1.3 adopted by resolution MSC.436(99), i.e. 1 January 2020.

ANNEX

REVISED GUIDELINES ON OPERATIONAL INFORMATION FOR MASTERS OF PASSENGER SHIPS FOR SAFE RETURN TO PORT

General

1 When an onboard stability computer is provided in accordance with regulation II-1/8-1.3.1.1, the system referred to in these Guidelines should comprise an onboard stability computer capable of receiving and processing manual and electronic data to provide the master with regularly updated operational information on the residual damage stability of the ship after a flooding casualty. Two-way communication links to shore-based support should also be available to provide the master with post-damage residual structural strength information.

2 When shore-based support is provided in accordance with regulation II-1/8-1.3.1.2, the system referred to in these Guidelines should comprise two-way communication links to the shore-based support with a stability computer capable of receiving and processing manual and electronic data to provide the master with regularly updated operational information on the residual damage stability of the ship after a flooding casualty. In addition, the shore-based support should also have the capability to provide the master with post-damage residual structural strength information.

3 The stability computers should utilize software with the following capabilities:

Using the pre-damage loading condition, software calculating the residual damage stability following any flooding casualty by processing data from both manual entry and from sensor readings to compute operational information required by the master using an accurate and detailed computer model of the entire hull, including superstructures and appendages, all internal compartments and tanks, etc. together with up-flooding/down-flooding points, cross-flooding arrangements, escape routes, ship profile and watertight door status (i.e. open or closed).

System overview

4 At least two independent stability computers should be available at all times (either two onboard, or two through shore-based support, or one each), which are capable of receiving and processing the data necessary to provide operational information to the master.

5 The onboard system should have an uninterruptible power supply (UPS) connected to both main and emergency switchboards.

Input

6 The system should be pre-loaded with a detailed computer model of the complete hull, including appendages, all compartments, tanks and the relevant parts of the superstructure considered in the damage stability calculation, wind profile, down-flooding and up-flooding openings, cross-flooding arrangements, internal compartment connections and escape routes. Each internal space should be assigned its standard regulation II-1/7-3 permeability, unless a more accurate permeability has been calculated.

7 The system should utilize the latest approved lightship weight and centre of gravity information.

8 Details of the damage location(s) and extent(s) or the damaged compartments should be input manually by the ship's staff and combined with data from electronic sensors such as draught gauges, tank level devices, watertight door indicators and flooding level sensors.

9 If it is considered at any time that a sensor or sensors are faulty, or have been damaged, the ship's staff should be able to override the sensor data with manual data. The system should clearly indicate to the operator if a sensor that should be available is being manually overridden.

10 The system should always be updated to the current loading condition which will form the basis of any damage stability calculation.

Calculation methods

The system should:

11 Utilize software (see paragraph 3) capable of analysing the damage stability following any real flooding casualty including multi-compartment, non-linked breaches.

12 Use the actual pre-damage loading state obtained from the routine operations mode.

13 Be capable of accounting for applied moments such as wind, lifeboat launching, cargo shifts and passenger relocation.

14 Account for the effect of wind by using the method in regulation II-1/7-2.4.1.2 as the default, but allow for manual input of the wind speed/pressure if the on-scene pressure is significantly different ($P = 120\ N/m^2$ equates to Beaufort 6; approximately 13.8 m/s or 27 knots).

15 Be capable of assessing the impact of open main watertight doors on stability.

16 Have the capability of using the same detailed hull model for damage control drills or to assess potential damage and stability scenarios during a flooding casualty. This should not interfere with the ability of the onboard computer or shore-based support to monitor the actual situation and provide operational information to the master.

Output

17 The system should output the residual GZ curve both graphically and numerically. It should also provide the following information: draught (forward, midships and aft), trim, heel angle, GZ max, GZ range, angle of vanishing stability, down-flooding immersion angles and escape route immersion angles.

18 The output format and units of the information supplied by the ship's staff or shore-based support team should be consistent with the format and units of the approved stability booklet in order to facilitate easy comparison. The output should be within the tolerances specified in the *Guidelines for the approval of stability instruments* (MSC.1/Circ.1229).

19 The system should show a profile view, deck views and cross-sections of the ship, indicating the flooded water-plane and the damaged compartments.

Other issues

20 An operation manual should be provided for the system software printed in a language in which the ship's staff are fully conversant. The manual should also indicate the limitations of the system.

21 At least two crew members should be competent in the operation of the system including the communication links to the shore-based support. They should be capable of interpreting the output of the system in order to provide the required operational information to the master.

22 When shore-based support is provided in accordance with regulation II-1/8-1.3.1.2, there should be a contract for the supply of shore-based support at all times during the validity of the ship's certificate.

23 When shore-based support is provided in accordance with regulation II-1/8-1.3.1.2, the shore-based support should be manned by adequately qualified persons with regard to stability and ship strength; no less than two qualified persons should be available to be on call at all times.

24 When shore-based support is provided in accordance with regulation II-1/8-1.3.1.2, the shore-based support should be operational within one hour (i.e. with the ability to input details of the condition of the ship, including structural damage, as instructed).

Strength

25 The system should have the capability of two-way communication with the shore-based team with an agreed method of specifying and transmitting details of structural loss and/or degradation.

26 The strength aspects of the shore-based computer should be in compliance with the requirements of a classification society which is recognized by the Administration.

Ro-ro passenger ships

27 There should be algorithms in the software for estimating the effect of water accumulation on deck (WOD).

Approval and testing

28 The stability aspects of the system should be initially approved and periodically checked against validated test conditions based on a number of loading/damage scenarios from the approved stability information book to ensure that it is operating correctly and that the stored data has not been subject to unauthorized alteration.

Limitations of the system

29 The system is not intended to compute transient asymmetrical flooding whereby the ship could capsize under the immediate inrush of floodwater before there is time for equalization measures to take effect.

30 The system is not intended to make any allowance for the motion of the ship in a seaway, including the effects of tide, current or wave action.

Equivalence

31 Equivalent arrangements for the provision of operational information to the master following a flooding casualty may be employed to the satisfaction of the Administration.