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**No. S 872**

MERCHANT SHIPPING ACT  
(CHAPTER 179)

MERCHANT SHIPPING  
(SAFETY CONVENTION)  
(AMENDMENT) REGULATIONS 2019

In exercise of the powers conferred by section 100 of the Merchant Shipping Act, the Maritime and Port Authority of Singapore, with the approval of the Minister for Transport, makes the following Regulations:

**Citation and commencement**

1. These Regulations are the Merchant Shipping (Safety Convention) (Amendment) Regulations 2019 and come into operation on 1 January 2020.

**Amendment of Regulation 1 of Chapter II-1**

2. Regulation 1 of Chapter II-1 of the Merchant Shipping (Safety Convention) Regulations (Rg 11) (called in these Regulations the principal Regulations) is amended —

(a) by deleting sub-paragraph (i) of paragraph (a) and substituting the following sub-paragraph:

“(a)(i) Unless expressly provided otherwise, this Chapter shall apply to ships the keels of which are laid or which are at a similar stage of construction on or after 1 January 2009.

(1) Unless expressly provided otherwise, Parts B, B-1, B-2 and B-4 of this Chapter shall only apply to ships —

(A) for which the building contract is placed on or after 1 January 2020;

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- (B) in the absence of a building contract, the keel of which is laid or which are at a similar stage of construction on or after 1 July 2020; or
  - (C) the delivery of which is on or after 1 January 2024.
- (2) Unless expressly provided otherwise, ships not subject to the provisions of sub-paragraph (a)(i)(1) but constructed on or after 1 January 2009 shall —
- (A) comply with the requirements for Parts B, B-1, B-2 and B-4 which are applicable under Chapter II-1 of the International Convention for the Safety of Life at Sea, 1974, as amended by resolutions MSC.216(82), MSC.269(85) and MSC.325(90); and
  - (B) comply with the requirements of Regulations 8-1(c) and 19-1.”;
- (b) by deleting the semi-colon at the end of paragraph (a)(iii)(3) and substituting a full-stop;
- (c) by deleting sub-paragraph (4) of paragraph (a)(iii); and
- (d) by deleting paragraph (b) and substituting the following paragraph:
- “(b) Unless expressly provided otherwise, ships constructed before 1 January 2009 shall —
- (i) comply with the requirements which are applicable under Chapter II-1 of the International Convention for the Safety of Life at Sea, 1974, as amended by resolutions MSC.1(XLV), MSC.6(48), MSC.11(55), MSC.12(56), MSC.13(57), MSC.19(58), MSC.26(60), MSC.27(61), Resolution 1 of the 1995 SOLAS Conference, MSC.47(66), MSC.57(67), MSC.65(68), MSC.69(69), MSC.99(73), MSC.134(76), MSC.151(78) and MSC.170(79); and
  - (ii) comply with the requirements of Regulations 8-1(c) and 19-1.”.

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**Amendment of Regulation 2 of Chapter II-1**

3. Regulation 2 of Chapter II-1 of the principal Regulations is amended —

(a) by deleting paragraph (b) and substituting the following paragraph:

“(b) “amidships” is at the middle of the length (“L”);”;

(b) by deleting paragraphs (i) and (j) and substituting the following paragraphs:

“(i) “draught (“d”)” is the vertical distance from the keel line at —

(i) in the case of ships subject to the provisions of Regulation 1(a)(i)(1) of Chapter II-1 — amidships; and

(ii) in the case of ships not subject to the provisions of Regulation 1(a)(i)(1) of Chapter II-1 but constructed on or after 1 January 2009 — the mid-point of the subdivision length (“L<sub>s</sub>”),

to the waterline in question;

(j) “deepest subdivision draught (“d<sub>s</sub>”)” is the summer load line draught of the ship;”;

(c) by deleting paragraph (m) and substituting the following paragraph:

“(m) “trim” is the difference between the draught forward and the draught aft, where the draughts are measured at the forward and aft —

(i) in the case of ships subject to the provisions of Regulation (1)(a)(i)(1) of Chapter II-1 — perpendiculars respectively, as defined in the International Convention on Load Lines in force; and

(ii) in the case of ships not subject to the provisions of Regulation (1)(a)(i)(1) of Chapter II-1 but constructed on or after 1 January 2009 — terminals respectively,

disregarding any rake of keel;”;

(d) by deleting paragraph (s) and substituting the following paragraph:

“(s) “bulkhead deck” in a passenger ship means the uppermost deck —

- (i) in the case of ships subject to the provisions of Regulation 1(a)(i)(1) of Chapter II-1 — to which the main bulkheads and the ship’s shell are carried watertight; and
- (ii) in the case of ships not subject to the provisions of Regulation 1(a)(i)(1) of Chapter II-1 but constructed on or after 1 January 2009 — at any point in the subdivision length (“L<sub>s</sub>”) to which the main bulkheads and the ship’s shell are carried watertight and the lowermost deck from which passenger and crew evacuation will not be impeded by water in any stage of flooding for damage cases defined in Regulation 8 and in Part B-2 of this Chapter.

The bulkhead deck may be a stepped deck. In a cargo ship not subject to the provisions of Regulation 1(a)(i)(1) of Chapter II-1 but constructed on or after 1 January 2009, the freeboard deck may be taken as the bulkhead deck;”;

(e) by deleting paragraph (z); and

(f) by renumbering the existing paragraphs (aa), (ab), (ac) and (ad) as paragraphs (z), (aa), (ab) and (ac), respectively.

### **Amendment of Regulation 3-12 of Chapter II-1**

4. Regulation 3-12 of Chapter II-1 of the principal Regulations is amended by deleting sub-paragraph (i) of paragraph (b) and substituting the following sub-paragraph:

“(i) contracted for construction before 1 July 2014 and the keels of which are laid or which are at similar stage of construction on or after 1 January 2009; or”.

### **Deletion and substitution of Regulation 4 of Chapter II-1**

5. Regulation 4 of Chapter II-1 of the principal Regulations is deleted and the following Regulation substituted therefor:

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“Regulation 4

*General*

(a) Unless expressly provided otherwise, the requirements in Parts B-1 to B-4 shall apply to passenger ships.

(b) For cargo ships, the requirements in Parts B-1 to B-4 shall apply as follows:

(i) In Part B-1:

- (1) Unless expressly provided otherwise, Regulation 5 shall apply to cargo ships and Regulation 5-1 shall apply to cargo ships other than tankers, as defined in Regulation 2 of Chapter I;
- (2) Regulation 6 to Regulation 7-3 shall apply to cargo ships having a length (“L”) of 80 m and upwards, but may exclude those ships subject to the following instruments and shown to comply with the subdivision and damage stability requirements of that instrument:
  - (A) Annex I to MARPOL, except that combination carriers (as defined in SOLAS Regulation 3(n) of Chapter II-2 with type B freeboards shall be in compliance with Regulation 6 to Regulation 7-3\*;
  - (B) the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code)\*;
  - (C) the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code)\*;
  - (D) the damage stability requirements of Regulation 27 of the 1966 Load Lines Convention as applied in compliance with resolutions A.320(IX) and A.514(13), provided that in the case of cargo ships to which Regulation 27(9) applies, main transverse watertight bulkheads, to be considered effective, are spaced according to paragraph (12)(f) of resolution A.320(IX), except that ships intended for the carriage of deck cargo shall be in compliance with Regulation 6 to Regulation 7-3;

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- (E) the damage stability requirements of Regulation 27 of the 1988 Load Lines Protocol, except that ships intended for the carriage of deck cargo shall be in compliance with Regulation 6 to Regulation 7-3; or
- (F) the subdivision and damage stability standards in other instruments\*\* developed by the Organisation.

\* Refer to Guidelines for verification of damage stability requirements for tankers (MSC.1/Circ.1461).

\*\* .1 For offshore supply vessels of not more than 100 m in length (“L”), the Guidelines for the design and construction of offshore supply vessels, 2006 (resolution MSC.235(82), as amended by resolution MSC.335(90)); or

.2 For special purpose ships, the Code of safety for special purpose ships, 2008 (resolution MSC.266(84), as amended).

- (ii) Unless expressly provided otherwise, the requirements in Parts B-2 and B-4 shall apply to cargo ships.

(c) The Director may, for a particular ship or group of ships, accept alternative methodologies if he is satisfied that at least the same degree of safety as represented by these Regulations is achieved.

(d) Ships shall be as efficiently subdivided as is possible having regard to the nature of the service for which they are intended. The degree of subdivision shall vary with the subdivision length “L<sub>s</sub>” of the ship and with the service, in such manner that the highest degree of subdivision corresponds with the ships of greatest subdivision length “L<sub>s</sub>” primarily engaged in the carriage of passengers.

(e) Where it is proposed to fit decks, inner skins or longitudinal bulkheads of sufficient tightness to seriously restrict the flow of water, the Director shall be satisfied that proper consideration is given to beneficial or adverse effects of such structures in the calculations.”.

## **Amendment of Regulation 5 of Chapter II-1**

**6.** Regulation 5 of Chapter II-1 of the principal Regulations is amended —

- (a) by deleting paragraphs (a) and (b) and substituting the following paragraphs:

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“(a) Every passenger ship, regardless of size, and every cargo ship having a length (“L”) of 24 m and upwards, shall be inclined upon its completion. The lightship displacement and the longitudinal, transverse and vertical position of its centre of gravity shall be determined. In addition to any other applicable requirements of the present Regulations, ships having a length of 24 m and upwards shall as a minimum comply with the requirements of Part A of the 2008 IS Code.

(b) The Director may allow the inclining test of an individual cargo ship to be dispensed with provided basic stability data are available from the inclining test of a sister ship and it is shown to the satisfaction of the Director that reliable stability information for the exempted ship can be obtained from such basic data, as required by Regulation 5-1. A lightweight survey shall be carried out upon completion and the ship shall be inclined whenever in comparison with the data derived from the sister ship, a deviation from the lightship displacement exceeding 1% for ships of 160 m or more in length and 2% for ships of 50 m or less in length and as determined by linear interpolation for intermediate lengths or a deviation from the lightship longitudinal centre of gravity exceeding 0.5% of L is found.”;

(b) by deleting paragraph (e) and substituting the following paragraph:

“(e) At periodical intervals not exceeding five years, a lightweight survey shall be carried out on all passenger ships to verify any changes in lightship displacement and longitudinal centre of gravity. The ship shall be re-inclined whenever, in comparison with the approved stability information, a deviation from the lightship displacement exceeding 2% or a deviation of the longitudinal centre of gravity exceeding 1% of L is found or anticipated.”; and

(c) by deleting the Regulation heading (including the footnote) and substituting the following Regulation heading:

*“Intact Stability”*.

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**Amendment of Regulation 5-1 of Chapter II-1**

7. Regulation 5-1 of Chapter II-1 of the principal Regulations is amended —

(a) by deleting paragraph (a) and substituting the following paragraph:

“(a) The master shall be supplied with such information to the satisfaction of the Director as is necessary to enable him by rapid and simple processes to obtain accurate guidance as to the stability of the ship under varying conditions of service. A copy of the stability information shall be furnished to the Director.”;

(b) by deleting sub-paragraph (i) of paragraph (b) and substituting the following sub-paragraph:

“(i) curves or tables of minimum operational metacentric height (GM) and maximum permissible trim versus draught which assures compliance with the intact and damage stability requirements where applicable, alternatively corresponding curves or tables of the maximum allowable vertical centre of gravity (KG) and maximum permissible trim versus draught, or with the equivalents of either of these curves or tables.”;

(c) by deleting paragraphs (c), (d) and (e) and substituting the following paragraphs:

“(c) The intact and damage stability information required by paragraph (b) shall be presented as consolidated data and encompass the full operating range of draught and trim. Applied trim values shall coincide in all stability information intended for use on board. Information not required for determination of stability and trim limits should be excluded from this information.

(d) If the damage stability is calculated in accordance with Regulation 6 to Regulation 7-3 and, if applicable, with Regulation 8 and Regulation 9(h), a stability limit curve is to be determined using linear interpolation between the minimum required GM assumed for each of the three draughts  $d_s$ ,  $d_p$  and  $d_l$ . When additional subdivision indices are calculated for different trims, a single envelope curve based on the minimum values from these calculations shall be presented. When it is intended to develop curves of maximum permissible KG it shall be ensured

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that the resulting maximum KG curves correspond with a linear variation of GM.

(e) As an alternative to a single envelope curve, the calculations for additional trims may be carried out with one common GM for all of the trims assumed at each subdivision draught. The lowest values of each partial index  $A_s$ ,  $A_p$  and  $A_l$  across these trims shall then be used in the summation of the attained subdivision index A according to Regulation 7(a). This will result in one GM limit curve based on the GM used at each draught. A trim limit diagram showing the assumed trim range shall be developed.

(f) When curves or tables of minimum operational metacentric height (GM) or maximum allowable KG versus draught are not provided, the master shall ensure that the operating condition does not deviate from approved loading conditions, or verify by calculation that the stability requirements are satisfied for this loading condition.”; and

(d) by deleting the footnote to the Regulation heading and substituting the following footnote:

“\* Refer also to the Guidelines for the preparation of intact stability information (MSC/Circ.456) and the Revised Guidance to the master for avoiding dangerous situations in adverse weather and sea conditions (MSC.1/Circ.1228).”.

### **Amendment of Regulation 6 of Chapter II-1**

**8.** Regulation 6 of Chapter II-1 of the principal Regulations is amended —

- (a) by deleting the words “For all ships to which the damage stability requirements of this Chapter apply” in paragraph (b) and substituting the words “For ships to which the damage stability requirements of this Part apply”;
- (b) by deleting the words “not less than 80 m in  $L_s$  and not greater than 100 m in  $L_s$ ” in paragraph (b)(ii) and substituting the words “not less than 80 m in length (“L”) and not greater than 100 m in length (“ $L_s$ ”)”;
- (c) by deleting sub-paragraph (iii) of paragraph (b) and substituting the following sub-paragraph:

“(iii) In the case of passenger ships:

Persons on board	R
$N < 400$	$R = 0.722$
$400 \leq N \leq 1,350$	$R = N / 7,580 + 0.66923$
$1,350 < N \leq 6,000$	$R = 0.0369 \times \ln(N + 89.048) + 0.579$
$N > 6,000$	$R = 1 - (852.5 + 0.03875 \times N) / (N + 5,000)$

where N is the total number of persons on board.”; and

(d) by deleting sub-paragraph (iv) of paragraph (b).

### Amendment of Regulation 7 of Chapter II-1

9. Regulation 7 of Chapter II-1 of the principal Regulations is amended —

(a) by deleting the words “The attained subdivision index “A” is obtained by the summation of the partial indices  $A_s$ ,  $A_p$  and  $A_l$  (weighted as shown) calculated for the draughts “ $d_s$ ”, “ $d_p$ ” and “ $d_l$ ” defined in Regulation 2 in accordance with the following formula” in paragraph (a) and substituting the words “An attained subdivision index “A” is obtained by the summation of the partial indices “ $A_s$ ”, “ $A_p$ ” and “ $A_l$ ”, weighted as shown and calculated for the draughts “ $d_s$ ”, “ $d_p$ ” and “ $d_l$ ” defined in Regulation 2 in accordance with the following formula”; and

(b) by deleting paragraphs (b) and (c) and substituting the following paragraphs:

“(b) As a minimum, the calculation of “A” shall be carried out at the level trim for the deepest subdivision draught “ $d_s$ ” and the partial subdivision draught “ $d_p$ ”. The estimated service trim may be used for the light service draught “ $d_l$ ”. If, in any anticipated service condition within the draught range from “ $d_s$ ” to “ $d_l$ ”, the trim variation in comparison with the calculated trims is greater than 0.5% of “L”, one or more additional calculations of “A” are to be performed for the same draughts but including sufficient trims to ensure that, for all intended service conditions, the difference in trim in comparison with the reference trim used for

one calculation will be not more than 0.5% of “L”. Each additional calculation of “A” shall comply with Regulation 6(a).

(c) When determining the positive righting lever (GZ) of the residual stability curve in the intermediate and final equilibrium stages of flooding, the displacement used should be that of the intact loading condition. All calculations should be done with the ship freely trimming.”.

### **Amendment of Regulation 7-1 of Chapter II-1**

**10.** Regulation 7-1 of Chapter II-1 of the principal Regulations is amended by deleting the words “deepest subdivision loadline” wherever they appear in the notation “b” in paragraph (a) and substituting in each case the words “deepest subdivision draught”.

### **Amendment of Regulation 7-2 of Chapter II-1**

**11.** Regulation 7-2 of Chapter II-1 of the principal Regulations is amended —

(a) by deleting paragraphs (b), (c), (d), (d)(i) and (e) (including the footnote to paragraph (e)) and substituting the following paragraphs:

“(b) For passenger ships, and cargo ships fitted with cross-flooding devices, the factor “ $S_{\text{intermediate},i}$ ” is taken as the least of the s-factors obtained from all flooding stages including the stage before equalisation, if any, and is to be calculated as follows:

$$S_{\text{intermediate},i} = \left[ \frac{GZ_{\text{max}}}{0.05} \times \frac{\text{Range}}{7} \right]^{\frac{1}{4}}$$

where —

“ $GZ_{\text{max}}$ ” is not to be taken as more than 0.05 m;

“Range” is not to be taken as more than 7°; and

“ $S_{\text{intermediate},i}$ ” = 0, if the intermediate heel angle exceeds 15° for passenger ships and 30° for cargo ships.

For cargo ships not fitted with cross-flooding devices the factor “ $S_{\text{intermediate},i}$ ” is taken as unity, except if the Director considers that the stability in intermediate

stages of flooding may be insufficient, it should require further investigation thereof.

For passenger and cargo ships, where cross-flooding devices are fitted, the time for equalisation shall not exceed 10 min.

(c) The factor “ $S_{\text{final},i}$ ” shall be obtained from the formula —

$$S_{\text{final},i} = K \times \left[ \frac{GZ_{\text{max}}}{TGZ_{\text{max}}} \times \frac{\text{Range}}{\text{TRange}} \right]^{\frac{1}{4}}$$

where —

“ $GZ_{\text{max}}$ ” is not to be taken as more than “ $TGZ_{\text{max}}$ ”;

“Range” is not to be taken as more than “TRange”;

“ $TGZ_{\text{max}}$ ” = 0.20 m, for ro-ro passenger ships each damage case that involves a ro-ro space;

“ $TGZ_{\text{max}}$ ” = 0.12 m, otherwise;

“TRange” = 20°, for ro-ro passenger ships each damage case that involves a ro-ro space;

“TRange” = 16°, otherwise;

“K” = 1 if  $\theta_e \leq \theta_{\text{min}}$

“K” = 0 if  $\theta_e \geq \theta_{\text{max}}$

$$\text{“K”} = \sqrt{\frac{\theta_{\text{max}} - \theta_e}{\theta_{\text{max}} - \theta_{\text{min}}}} \text{ otherwise,}$$

where —

$\theta_{\text{min}}$  is 7° for passenger ships and 25° for cargo ships; and

$\theta_{\text{max}}$  is 15° for passenger ships and 30° for cargo ships.

(d) The factor “ $S_{\text{mom},i}$ ” is applicable only to passenger ships (for cargo ships “ $S_{\text{mom},i}$ ” shall be taken as unity) and shall be calculated at the final equilibrium from the formula —

$$S_{\text{mom},i} = \frac{(GZ_{\text{max}} - 0.04) \times \text{Displacement}}{M_{\text{heel}}}$$

where —

“Displacement” is the intact displacement at the respective draught (“ $d_s$ ”, “ $d_p$ ” or “ $d_l$ ”);

“ $M_{\text{heel}}$ ” is the maximum assumed heeling moment as calculated in accordance with paragraph (d)(i); and

“ $S_{\text{mom},i}$ ”  $\leq 1$ .

(d)(i) The heeling moment “ $M_{\text{heel}}$ ” is to be calculated as follows:

$$M_{\text{heel}} = \text{maximum } (M_{\text{passenger}} \text{ or } M_{\text{wind}} \text{ or } M_{\text{survivalcraft}}).$$

(d)(i)(1) “ $M_{\text{passenger}}$ ” is the maximum assumed heeling moment resulting from movement of passengers, and is to be obtained as follows:

$$M_{\text{passenger}} = (0.075 \times N_p) \times (0.45 \times B) \text{ (tm)}$$

where —

“ $N_p$ ” is the maximum number of passengers permitted to be on board in the service condition corresponding to the deepest subdivision draught under consideration; and

“ $B$ ” is the breadth of the ship as defined in Regulation 2(h).

Alternatively, the heeling moment may be calculated assuming the passengers are distributed with 4 persons per square metre on available deck areas towards one side of the ship on the decks where muster stations are located and in such a way that they produce the most adverse heeling moment. In doing so, a weight of 75 kg per passenger is to be assumed.

(2) “ $M_{\text{wind}}$ ” is the maximum assumed wind moment acting in a damage situation:

$$M_{\text{wind}} = (P \times A \times Z)/9,806 \text{ (tm)}$$

where —

“ $P$ ” = 120 N/m<sup>2</sup>;

“A” = projected lateral area above waterline;

“Z” = distance from centre of lateral projected area above waterline to T/2; and

“T” = respective draught (“d<sub>s</sub>”, “d<sub>p</sub>” or “d<sub>l</sub>”).

(3) “M<sub>survivalcraft</sub>” is the maximum assumed heeling moment due to the launching of all fully loaded davit-launched survival craft on one side of the ship. It shall be calculated using the following assumptions:

- (A) all lifeboats and rescue boats fitted on the side to which the ship has heeled after having sustained damage shall be assumed to be swung out fully loaded and ready for lowering;
- (B) for lifeboats which are arranged to be launched fully loaded from the stowed position, the maximum heeling moment during launching shall be taken;
- (C) a fully loaded davit-launched liferaft attached to each davit on the side to which the ship has heeled after having sustained damage shall be assumed to be swung out ready for lowering;
- (D) persons not in the life-saving appliances which are swung out shall not provide either additional heeling or righting moment;
- (E) life-saving appliances on the side of the ship opposite to the side to which the ship has heeled shall be assumed to be in a stowed position.

(e) Unsymmetrical flooding is to be kept to a minimum consistent with the efficient arrangements. Where it is necessary to correct large angles of heel, the means adopted shall, where practicable, be self-acting, but in any case where controls to equalisation devices are provided they shall be operable from above the bulkhead deck of passenger ships and the freeboard deck of cargo ships. These fittings together with their controls shall be acceptable to the Director\*. Suitable information concerning the use of equalisation devices shall be supplied to the master of the ship.

\* Reference is made to the Revised recommendation on a standard method for evaluating cross-flooding arrangements, adopted by the Organisation by resolution MSC.362(92), as may be amended.”;

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- (b) by deleting the words “In all cases,” in paragraph (e)(ii) and substituting the words “The factor”;
- (c) by deleting sub-paragraph (iii) of paragraph (e) and substituting the following sub-paragraph:

“(iii) The factor “ $s_i$ ” is to be taken as zero if, taking into account sinkage, heel and trim, any of the following occur in any intermediate stage or in the final stage of flooding:

- (1) immersion of any vertical escape hatch in the bulkhead deck of passenger ships and the freeboard deck of cargo ships intended for compliance with Chapter II-2;
- (2) any controls intended for the operation of watertight doors, equalisation devices, valves on piping or on ventilation ducts intended to maintain the integrity of watertight bulkheads from above the bulkhead deck of passenger ships and the freeboard deck of cargo ships become inaccessible or inoperable;
- (3) immersion of any part of piping or ventilation ducts located within the assumed extent of damage and carried through a watertight boundary if this can lead to the progressive flooding of compartments not assumed as flooded.”; and

- (d) by deleting sub-paragraph (v) of paragraph (e) and substituting the following sub-paragraph:

“(v) Except as provided in paragraph (e)(iii)(1), openings closed by means of watertight manhole covers and flush scuttles, remotely operated sliding watertight doors, sidescuttles of the non-opening type as well as watertight access doors and watertight hatch covers required to be kept closed at sea need not be considered.”.

### **Amendment of Regulation 8 of Chapter II-1**

**12.** Regulation 8 of Chapter II-1 of the principal Regulations is amended —

- (a) by deleting paragraphs (a) and (b) and substituting the following paragraphs:

“(a) A passenger ship intended to carry 400 or more persons shall have watertight subdivision abaft the collision bulkhead so that “ $s_i$ ” = 1 for a damage involving all the compartments within 0.08 L measured from the forward perpendicular for the three loading conditions used to calculate the attained subdivision index “A”. If the attained subdivision index “A” is calculated for different trims, this requirement shall also be satisfied for those loading conditions.

(b) A passenger ship intended to carry 36 or more persons is to be capable of withstanding damage along the side shell to an extent specified in paragraph (c). Compliance with this Regulation is to be achieved by demonstrating that “ $s_i$ ”, as defined in Regulation 7-2, is not less than 0.9 for the three loading conditions used to calculate the attained subdivision index “A”. If the attained subdivision index “A” is calculated for different trims, this requirement shall also be satisfied for those loading conditions.”;

- (b) by deleting the words “The damage extent to be assumed when demonstrating compliance with paragraph (b), is to be dependent on both “N” as defined in Regulation 6, and “ $L_s$ ” as defined in Regulation 2,” in paragraph (c) and substituting the words “The damage extent to be assumed when demonstrating compliance with paragraph (b), is to be dependent on the total number of persons carried, and “L”,”;
- (c) by deleting the word “angle” in paragraph (c)(ii) and substituting the word “angles”;
- (d) by deleting “0.015  $L_s$ ” in paragraph (c)(iv) and substituting “0.015 L”.

### **Amendment of Regulation 8-1 of Chapter II-1**

**13.** Regulation 8-1 of Chapter II-1 of the principal Regulations is amended by deleting paragraphs (a), (b) and (c) (including the footnotes to paragraphs (b) and (c)) and substituting the following paragraphs:

“(a) *Application*

Passenger ships having length, as defined in Regulation 2(e) of Chapter II-1, of 120 m or more or having three or more main

vertical zones shall comply with the provisions of this Regulation.

(b) *Availability of essential systems in case of flooding damage\**

A passenger ship shall be designed so that the systems specified in Regulation 21(d) of Chapter II-2 remain operational when the ship is subject to flooding of any single watertight compartment.

\* Refer to the Interim Explanatory Notes for the assessment of passenger ship systems' capabilities after a fire or flooding casualty (MSC.1/Circ.1369).

(c) *Operational information after a flooding casualty*

(i) For the purpose of providing operational information to the master for safe return to port after a flooding casualty, passenger ships, as specified in paragraph (a), shall have —

- (1) an onboard stability computer; or
- (2) shore-based support,

based on the guidelines developed by the Organisation.\*\*

\*\* Refer to the Guidelines on operational information for masters of passenger ships for safe return to port by own power or under tow (MSC.1/Circ.1400) for ships constructed on or after 1 January 2014 but before 13 May 2016, or the Revised Guidelines on operational information for masters of passenger ships for safe return to port (MSC.1/Circ.1532/Rev.1) for ships constructed on or after 13 May 2016, or the Guidelines on operational information for masters in case of flooding for passenger ships constructed before 1 January 2014 (MSC.1/Circ.1589).

(ii) Passenger ships constructed before 1 January 2014 shall comply with the provisions in paragraph 3(a) not later than the first renewal survey after 1 January 2025.”.

## **Amendment of Regulation 9 of Chapter II-1**

**14.** Regulation 9 of Chapter II-1 of the principal Regulations is amended —

- (a) by deleting paragraph (c) and substituting the following paragraph:

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“(c)(i) Small wells constructed in the double bottom in connection with drainage arrangements shall not extend downward more than necessary. The vertical distance from the bottom of such a well to a plane coinciding with the keel line shall not be less than  $h/2$  or 500 mm, whichever is greater, or compliance with paragraph (h) shall be shown for that part of the ship.

(ii) Other wells (e.g. for lubricating oil under main engines) may be permitted by the Director if satisfied that the arrangements give protection equivalent to that afforded by a double bottom complying with this Regulation.

(1) For a cargo ship of 80 m in length and upwards or for a passenger ship, proof of equivalent protection is to be shown by demonstrating that the ship is capable of withstanding bottom damages as specified in paragraph (h). Alternatively, wells for lubricating oil below main engines may protrude into the double bottom below the boundary line defined by the distance “h” provided that the vertical distance between the well bottom and a plane coinciding with the keel line is not less than  $h/2$  or 500 mm, whichever is greater.

(2) For cargo ships of less than 80 m in length the arrangements shall provide a level of safety to the satisfaction of the Director.”; and

(b) by deleting paragraphs (f), (g) and (h) and substituting the following paragraphs:

“(f) Any part of a cargo ship of 80 m in length and upwards or of a passenger ship that is not fitted with a double bottom in accordance with paragraphs (a), (d) or (e), as specified in paragraph (b), shall be capable of withstanding bottom damages, as specified in paragraph (h), in that part of the ship. For cargo ships of less than 80 m in length the alternative arrangements shall provide a level of safety to the satisfaction of the Director.

(g) In the case of unusual bottom arrangements in a cargo ship of 80 m in length and upwards or a passenger ship, it shall be demonstrated that the ship is capable of withstanding bottom damages as specified in paragraph (h). For cargo ships of less than 80 m in length the alternative arrangements shall provide a level of safety to the satisfaction of the Director.

(h) Compliance with paragraphs (c)(i), (c)(ii)(1), (f) or (g) is to be achieved by demonstrating that “ $s_i$ ”, when calculated in accordance with Regulation 7-2, is not less than 1 for all service conditions when subject to bottom damage with an extent specified in sub-paragraph (ii) below for any position in the affected part of the ship —

- (i) Flooding of such spaces shall not render emergency power and lighting, internal communication, signals or other emergency devices inoperable in other parts of the ship.
- (ii) Assumed extent of damage shall be as follows:

	For 0.3 L from the forward perpendicular of the ship	Any other part of the ship
Longitudinal extent	$1/3 L^{2/3}$ or 14.5 m, whichever is less	$1/3 L^{2/3}$ or 14.5 m, whichever is less
Transverse extent	B/6 or 10 m, whichever is less	B/6 or 5 m, whichever is less
Vertical extent, measured from the keel line	B/20, to be taken not less than 0.76 m and not more than 2 m	B/20, to be taken not less than 0.76 m and not more than 2 m

- (iii) If any damage of a lesser extent than the maximum damage specified in sub-paragraph (ii) would result in a more severe condition, such damage should be considered.”.

### **Amendment of Regulation 10 of Chapter II-1**

**15.** Regulation 10 of Chapter II-1 of the principal Regulations is amended by inserting, immediately after the words “bulkhead deck” in paragraph (a), the words “of passenger ships and the freeboard deck of cargo ships”.

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**Deletion and substitution of Regulation 12 of Chapter II-1**

16. Regulation 12 of Chapter II-1 of the principal Regulations is deleted and the following Regulation substituted therefor:

“Regulation 12

*Peak and Machinery Space Bulkheads, Shaft Tunnels, etc.*

(a) A collision bulkhead shall be fitted which shall be watertight up to the bulkhead deck of passenger ships and the freeboard deck of cargo ships. This bulkhead shall be located at a distance from the forward perpendicular of not less than  $0.05L$  or 10 m, whichever is the less, and, except as may be permitted by the Director, not more than  $0.08L$  or  $0.05L + 3$  m, whichever is the greater.

(b) The ship shall be so designed that “ $s_i$ ” calculated in accordance with Regulation 7-2 will not be less than 1 at the deepest subdivision draught loading condition, level trim or any forward trim loading conditions, if any part of the ship forward of the collision bulkhead is flooded without vertical limits.

(c) Where any part of the ship below the waterline extends forward of the forward perpendicular, e.g. a bulbous bow, the distances stipulated in paragraph (a) shall be measured from a point either —

- (i) at the mid-length of such extension;
- (ii) at a distance  $0.015L$  forward of the forward perpendicular; or
- (iii) at a distance 3 m forward of the forward perpendicular,

whichever gives the smallest measurement.

(d) The bulkhead may have steps or recesses provided they are within the limits prescribed in paragraph (a) or (c).

(e) No doors, manholes, access openings, ventilation ducts or any other openings shall be fitted in the collision bulkhead below the bulkhead deck of passenger ships and the freeboard deck of cargo ships.

(f)(i) Except as provided in paragraph (f)(ii), the collision bulkhead may be pierced below the bulkhead deck of passenger ships and the freeboard deck of cargo ships by not more than one pipe for dealing with fluid in the forepeak tank, provided that the pipe is fitted with a screw-down valve capable of being operated from above the bulkhead deck of passenger ships and the freeboard deck of cargo ships, the valve being located inside the forepeak at the collision bulkhead. The Director may, however, authorise the fitting of this valve on the after side of the collision bulkhead provided that the valve is readily accessible under all service conditions and the space in which it is

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located is not a cargo space. Alternatively, for cargo ships, the pipe may be fitted with a butterfly valve suitably supported by a seat or flanges and capable of being operated from above the freeboard deck. All valves shall be of steel, bronze or other approved ductile material. Valves of ordinary cast iron or similar material are not acceptable.

(f)(ii) If the forepeak is divided to hold two different kinds of liquids, the Director may allow the collision bulkhead to be pierced below the bulkhead deck of passenger ships and the freeboard deck of cargo ships by two pipes, each of which is fitted as required by paragraph (f)(i), provided the Director is satisfied that there is no practical alternative to the fitting of such a second pipe and that, having regard to the additional subdivision provided in the forepeak, the safety of the ship is maintained.

(g) Where a long forward superstructure is fitted, the collision bulkhead shall be extended weathertight to the deck next above the bulkhead deck of passenger ships and the freeboard deck of cargo ships. The extension need not be fitted directly above the bulkhead below provided that all parts of the extension, including any part of the ramp attached to it are located within the limits prescribed in paragraph (a) or (c), with the exception permitted by paragraph (h) and that the part of the deck which forms the step is made effectively weathertight. The extension shall be so arranged as to preclude the possibility of the bow door or ramp, where fitted, causing damage to it in the case of damage to, or detachment of, a bow door or any part of the ramp.

(h) Where bow doors are fitted and a sloping loading ramp forms part of the extension of the collision bulkhead above the bulkhead deck of passenger ships and the freeboard deck of cargo ships the ramp shall be weathertight over its complete length. In cargo ships the part of the ramp which is more than 2.3 m above the freeboard deck may extend forward of the limit specified in paragraph (a) or (c). Ramps not meeting the above requirements shall be disregarded as an extension of the collision bulkhead.

(i) The number of openings in the extension of the collision bulkhead above the freeboard deck shall be restricted to the minimum compatible with the design and normal operation of the ship. All such openings shall be capable of being closed weathertight.

(j) Bulkheads shall be fitted separating the machinery space from cargo and accommodation spaces forward and aft and made watertight up to the bulkhead deck of passenger ships and the freeboard deck of cargo ships. An afterpeak bulkhead shall also be fitted and made watertight up to the bulkhead deck or the freeboard deck. The afterpeak bulkhead may, however, be stepped below the bulkhead deck or the freeboard deck, provided the degree of safety of the ship as regards subdivision is not thereby diminished.

(k) In all cases stern tubes shall be enclosed in watertight spaces of moderate volume. In passenger ships the stern gland shall be situated in a watertight shaft tunnel or other watertight space separate from the stern tube compartment and of such volume that, if flooded by leakage through the stern gland, the bulkhead deck will not be immersed. In cargo ships other measures to minimise the danger of water penetrating into the ship in case of damage to stern tube arrangements may be taken at the discretion of the Director.”.

### **Amendment of Regulation 13 of Chapter II-1**

17. Regulation 13 of Chapter II-1 of the principal Regulations is amended by deleting the word “stokehold” in paragraph (k)(i) and substituting the words “machinery spaces”.

### **Amendment of Regulation 15 of Chapter II-1**

18. Regulation 15 of Chapter II-1 of the principal Regulations is amended —

- (a) by deleting the words “other than that for steerage passengers” in paragraph (d);
- (b) by deleting the words “or coal” in paragraph (e)(i);
- (c) by deleting sub-paragraph (1) of paragraph (h)(ii) and substituting the following sub-paragraph:

“(h)(ii)(1) Subject to the requirements of the International Convention on Load Lines in force, and except as provided in paragraph (h)(iii), each separate discharge led through the shell plating from spaces below the bulkhead deck of passenger ships and the freeboard deck of cargo ships shall be provided with either one automatic non-return valve fitted with a positive means of closing it from above the bulkhead deck of passenger ships and the freeboard deck of cargo ships or with two automatic non-return valves without positive means of closing, provided that the inboard valve is situated above the deepest subdivision draught and is always accessible for examination under service conditions. Where a valve with positive means of closing is fitted, the operating position above the bulkhead deck of passenger ships and the freeboard deck of cargo ships shall always be readily accessible and means shall be provided for indicating whether the valve is open or closed.”; and

- (d) by inserting, immediately after the words “bulkhead deck” in paragraph (h)(iv), the words “of passenger ships and the freeboard deck of cargo ships”.

### **Deletion and substitution of Regulation 16 of Chapter II-1**

**19.** Regulation 16 of Chapter II-1 of the principal Regulations is deleted and the following Regulation substituted therefor:

“Regulation 16

*Construction and Initial Tests of Watertight Closures*

(a)(i) The design, materials and construction of all watertight closures such as doors, hatches, sidescuttles, gangway and cargo ports, valves, pipes, ash-chutes and rubbish-chutes referred to in these Regulations shall be to the satisfaction of the Director.

(a)(ii) Such valves, doors, hatches and mechanisms shall be suitably marked to ensure that they may be properly used to provide maximum safety.

(a)(iii) The frames of vertical watertight doors shall have no groove at the bottom in which dirt might lodge and prevent the door closing properly.

(b) Watertight doors and hatches shall be tested by water pressure to the maximum head of water they might sustain in a final or intermediate stage of flooding. For cargo ships not covered by damage stability requirements, watertight doors and hatches shall be tested by water pressure to a head of water measured from the lower edge of the opening to one metre above the freeboard deck. Where testing of individual doors and hatches is not carried out because of possible damage to insulation or outfitting items, testing of individual doors and hatches may be replaced by a prototype pressure test of each type and size of door or hatch with a test pressure corresponding at least to the head required for the individual location. The prototype test shall be carried out before the door or hatch is fitted. The installation method and procedure for fitting the door or hatch on board shall correspond to that of the prototype test. When fitted on board, each door or hatch shall be checked for proper seating between the bulkhead, the frame and the door or between deck, the coaming and the hatch.”.

### **Amendment of Regulation 16-1 of Chapter II-1**

**20.** Regulation 16-1 of Chapter II-1 of the principal Regulations is amended by deleting paragraphs (b) and (c) and substituting the following paragraphs:

“(b) In passenger ships, where a ventilation trunk passing through a structure penetrates a watertight area of the bulkhead deck, the trunk shall be capable of withstanding the water pressure that may be present within the trunk, after having taken into account the maximum heel angle during flooding, in accordance with Regulation 7-2.

(c) In ro-ro passenger ships, where all or part of the penetration of the bulkhead deck is on the main ro-ro deck, the trunk shall be capable of withstanding impact pressure due to internal water motions (sloshing) of water trapped on the ro-ro deck.”.

### **Amendment of Regulation 17 of Chapter II-1**

**21.** Regulation 17 of Chapter II-1 of the principal Regulations is amended by deleting paragraph (c) and substituting the following paragraph:

“(c) Air pipes terminating within a superstructure which are not fitted with watertight means of closure shall be considered as unprotected openings when applying paragraph (f)(i)(1) of Regulation 7-2.”.

### **Amendment of Regulation 19 of Chapter II-1**

**22.** Regulation 19 of Chapter II-1 of the principal Regulations is amended —

(a) by deleting paragraph (b); and

(b) by renumbering the existing paragraphs (c), (d) and (e) as paragraphs (b), (c) and (d), respectively.

### **New regulation 19-1 of Chapter II-1**

**23.** The principal Regulations are amended by inserting, immediately after Regulation 19 of Chapter II-1, the following Regulation:

“Regulation 19-1

#### *Damage Control Drills for Passenger Ships*

(a) This Regulation applies to passenger ships constructed before, on or after 1 January 2020.

(b) A damage control drill shall take place at least every three months. The entire crew need not participate in every drill, but only those crew members with damage control responsibilities.

(c) The damage control drill scenarios shall vary each drill so that emergency conditions are simulated for different damage conditions and shall, as far as practicable, be conducted as if there were an actual emergency.

(d) Each damage control drill shall include —

- (i) for crew members with damage control responsibilities, reporting to stations and preparing for the duties described in the muster list required by Regulation 8 of Chapter III;
- (ii) use of the damage control information and the onboard damage stability computer, if fitted, to conduct stability assessments for the simulated damage conditions;
- (iii) establishment of the communications link between the ship and shore-based support, if provided;
- (iv) operation of watertight doors and other watertight closures;
- (v) demonstrating proficiency in the use of the flooding detection system, if fitted, in accordance with muster list duties;
- (vi) demonstrating proficiency in the use of cross-flooding and equalisation systems, if fitted, in accordance with muster list duties;
- (vii) operation of bilge pumps and checking of bilge alarms and automatic bilge pump starting systems; and
- (viii) instruction in damage survey and use of the ship's damage control systems.

(e) At least one damage control drill each year shall include activation of the shore-based support, if provided in compliance with Regulation 8-1(c) of Chapter II-1, to conduct stability assessments for the simulated damage conditions.

(f) Every crew member with assigned damage control responsibilities shall be familiarised with their duties and about the damage control information before the voyage begins.

(g) A record of each damage control drill shall be maintained in the same manner as prescribed for the other drills in Regulation 19(e) of Chapter III.”.

## **Amendment of Regulation 20 of Chapter II-1**

**24.** Regulation 20 of Chapter II-1 of the principal Regulations is amended —

(a) by deleting paragraph (a) and substituting the following paragraph:

“(a) On completion of loading of the ship and prior to its departure, the master shall determine the ship’s trim and stability and also ascertain and record that the ship is upright and in compliance with stability criteria in relevant regulations. The determination of the ship’s stability shall always be made by calculation or by ensuring that the ship is loaded according to one of the precalculated loading conditions within the approved stability information. The Director may accept the use of an electronic loading and stability computer or equivalent means for this purpose.”; and

(b) by deleting the word “*Passenger*” in the Regulation heading.

### **Amendment of Regulation 21 of Chapter II-1**

**25.** Regulation 21 of Chapter II-1 of the principal Regulations is amended —

(a) by deleting paragraph (a) and substituting the following paragraph:

“(a) Operational tests of watertight doors, sidescuttles, valves and closing mechanisms of scuppers, ash-chutes and rubbish-chutes shall take place weekly. In ships in which the voyage exceeds one week in duration a complete set of operational tests shall be held before the voyage commences, and others thereafter at least once a week during the voyage.”; and

(b) by deleting paragraph (d) and substituting the following paragraph:

“(d) A record of all operational tests and inspections required by this Regulation shall be recorded in the logbook with an explicit record of any defects which may be disclosed.”.

### **Amendment of Regulation 22 of Chapter II-1**

**26.** Regulation 22 of Chapter II-1 of the principal Regulations is amended —

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- (a) by deleting the words “paragraphs (c) and (d)” in paragraph (a) and substituting the words “paragraph (c)”;
- (b) by deleting paragraphs (b) to (h) and substituting the following paragraphs:

“(b) Watertight doors located below the bulkhead deck of passenger ships and the freeboard deck of cargo ships having a maximum clear opening width of more than 1.2 m shall be kept closed during navigation, except for limited periods when absolutely necessary as determined by the Director.

(c) A watertight door may be opened during navigation to permit the passage of passengers or crew, or when work in the immediate vicinity of the door necessitates it being opened. The door must be immediately closed when transit through the door is complete or when the task which necessitated it being open is finished. The Director shall authorise that such a watertight door may be opened during navigation only after careful consideration of the impact on ship operations and survivability taking into account guidance issued by the Organisation\*. A watertight door permitted to be opened during navigation shall be clearly indicated in the ship’s stability information and shall always be ready to be immediately closed.

\* Refer to the Revised Guidance for watertight doors on passenger ships which may be opened during navigation (MSC.1/Circ.1564).

(d) Portable plates on bulkheads shall always be in place before the voyage commences, and shall not be removed during navigation except in case of urgent necessity at the discretion of the master. The necessary precautions shall be taken in replacing them to ensure that the joints are watertight. Power-operated sliding watertight doors permitted in machinery spaces in accordance with Regulation 13(j) shall be closed before the voyage commences and shall remain closed during navigation except in case of urgent necessity at the discretion of the master.

(e) Watertight doors fitted in watertight bulkheads dividing cargo between deck spaces in accordance with Regulation 13(i)(i) shall be closed before the voyage commences and shall be kept closed during navigation. The time at which such doors are opened or closed shall be recorded in such log-book as may be prescribed by the Director.

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(f) Gangway, cargo and fuelling ports fitted below the bulkhead deck of passenger ships and the freeboard deck of cargo ships shall be effectively closed and secured watertight before voyage commences, and shall be kept closed during navigation.

(g) The following doors, located above the bulkhead deck of passenger ships and the freeboard deck of cargo ships, shall be closed and locked before the voyage commences and shall remain closed and locked until the ship is at its next berth:

- (i) cargo loading doors in the shell or the boundaries of enclosed superstructures;
- (ii) bow visors fitted in positions as indicated in sub-paragraph (i);
- (iii) cargo loading doors in the collision bulkhead; and
- (iv) ramps forming an alternative closure to those defined in sub-paragraphs (i) to (iii) inclusive.”;

(c) by renumbering the existing paragraph (i) as paragraph (h);

(d) by deleting paragraphs (j) to (p) and substituting the following paragraphs:

“(i) Notwithstanding the requirements of paragraphs (g)(i) and (g)(iv), the Director may authorise that particular doors can be opened at the discretion of the master, if necessary for the operation of the ship or the embarking and disembarking of passengers when the ship is at safe anchorage and provided that the safety of the ship is not impaired.

(j) The master shall ensure that an effective system of supervision and reporting of the closing and opening of the doors referred to in paragraph (g) is implemented.

(k) The master shall ensure, before any voyage commences, that an entry in such log-book as may be prescribed by the Director is made of the time the doors specified in paragraph (l) are closed and the time at which particular doors are opened in accordance with paragraph (m).

(l) Hinged doors, portable plates, sidescuttles, gangway, cargo and bunkering ports and other openings, which are required by these Regulations to be kept closed during navigation, shall be closed before the voyage commences. The time at which such doors are opened and closed (if permissible under these

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Regulations) shall be recorded in such log-book as may be prescribed by the Director.

(*m*) Where in a between-deck, the sills of any of the sidescuttles referred to in Regulation 15(c)(ii) are below a line drawn parallel to the bulkhead deck at side of passenger ships and the freeboard deck at side of cargo ships, and having its lowest point 1.4 m plus 2.5% of the breadth of the ship above the water when the voyage commences, all the sidescuttles in that between-deck shall be closed watertight and locked before the voyage commences, and they shall not be opened before the ship arrives at the next port. In the application of this paragraph the appropriate allowance for fresh water may be made when applicable.

(i) The time at which such sidescuttles are opened in port and closed and locked before the voyage commences shall be recorded in such log-book as may be prescribed by the Director.

(ii) For any ship that has one or more sidescuttles so placed that the requirements of paragraph (*m*) would apply when it was floating at its deepest subdivision draught, the Director may indicate the limiting mean draught at which these sidescuttles will have their sills above the line drawn parallel to the bulkhead deck at side of passenger ships and the freeboard deck at side of cargo ships, and having its lowest point 1.4 m plus 2.5% of the breadth of the ship above the waterline corresponding to the limiting mean draught, and at which it will therefore be permissible for the voyage to commence without them being closed and locked and to be opened during navigation on the responsibility of the master during navigation. In tropical zones as defined in the International Convention on Load Lines in force, this limiting draught may be increased by 0.3 m.

(*n*) Sidescuttles and their deadlights which will not be accessible during navigation shall be closed and secured before the voyage commences.

(*o*) If cargo is carried in spaces referred to in Regulation 15(e)(ii), the sidescuttles and their deadlights shall be closed watertight and locked before the cargo is shipped and the time at which such scuttles and deadlights are closed and

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locked shall be recorded in such log-book as may be prescribed by the Director.”; and

- (e) by renumbering the existing paragraph (q) as paragraph (p).

### **Amendment of Regulation 22-1 of Chapter II-1**

27. Regulation 22-1 of Chapter II-1 of the principal Regulations is amended by deleting the words “*Constructed on or after 1st July 2010*” in the Regulation heading.

### **Amendment of Regulation 23 of Chapter II-1**

28. Regulation 23 of Chapter II-1 of the principal Regulations is amended —

- (a) by deleting the words “whilst the ship is underway” in paragraph (a) and substituting the words “during navigation”;
- (b) by deleting the words “the ship leaves the berth on any voyage” in paragraphs (c) and (e) and substituting in each case the words “the voyage commences”;
- (c) by deleting the words “official log book” in paragraph (e) and substituting the word “log-book”;
- (d) by deleting the words “Regulation 22(m)” in paragraph (e) and substituting the words “Regulation 22(l)”;
- (e) by deleting the words “the ship leaves the berth” in paragraph (g) and substituting the words “the voyage commences”; and
- (f) by deleting the words “when the ship is under way” in paragraph (i) and substituting the words “during navigation”.

### **Amendment of Regulation 24 of Chapter II-1**

29. Regulation 24 of Chapter II-1 of the principal Regulations is amended —

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- (a) by deleting the words “while at sea” in paragraph (a) and substituting the words “during navigation”;
- (b) by deleting paragraph (c) and substituting the following paragraph:
- “(c) Watertight doors or ramps fitted to internally subdivide large cargo spaces shall be closed before the voyage commences and shall be kept closed during navigation. The time at which such doors are opened or closed shall be recorded in such log-book as may be prescribed by the Director.”; and
- (c) by deleting the Regulation heading and substituting the following Regulation heading:

*“Additional Requirements for Prevention and Control  
of Water Ingress, etc., in Cargo Ships”.*

### **Amendment of Regulation 35-1 of Chapter II-1**

**30.** Regulation 35-1 of Chapter II-1 of the principal Regulations is amended —

- (a) by inserting, immediately after the words “thereby impaired.” in paragraph (b)(vi), the words “For ships subject to the provisions of Regulation 1(a)(i)(1) of Chapter II-1, for the special hazards associated with loss of stability when fitted with fixed pressure water-spraying fire-extinguishing systems refer to Regulation 20(f)(i)(4) of Chapter II-2.”;
- (b) by deleting the words “, provision and mail rooms” in the definition of “P” in paragraph (c)(ii) and substituting the words “and provision rooms”;
- (c) by deleting sub-paragraph (iv) of paragraph (c) and substituting the following sub-paragraph:

“(iv) On a ship of 91.5 m in length “L” and upwards or having a bilge pump numeral, calculated in accordance with sub-paragraph (ii), of 30 or more, the arrangements shall be such that at least one power bilge pump shall be available for use in all flooding conditions which the ship is required to withstand, and, for ships subject to

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the provisions of Regulation 1(a)(i)(1) of Chapter II-1, in all flooding conditions derived from consideration of minor damages as specified in Regulation 8 of Chapter II-1 as follows:

- (1) one of the required bilge pumps shall be an emergency pump of a reliable submersible type having a source of power situated above the bulkhead deck; or
- (2) the bilge pumps and their sources of power shall be so distributed throughout the length of the ship that at least one pump in an undamaged compartment will be available.”; and

(d) by inserting, immediately after the words “open end.” in paragraph (c)(x), the words “For ships subject to the provisions of Regulation 1(a)(i)(1) of Chapter II-1, the deepest subdivision load line shall be taken as the deepest subdivision draught.”.

### **Amendment of Regulation 1 of Chapter II-2**

**31.** Regulation 1 of Chapter II-2 of the principal Regulations is amended by inserting, immediately after sub-paragraph (viii) of paragraph (b), the following sub-paragraph:

“(ix) Regulation 10(e)(i)(2)(B), as amended by resolution MSC.409(97), applies to ships constructed before 1 January 2020, including those constructed before 1 July 2012.”.

### **Amendment of Regulation 3 of Chapter II-2**

**32.** Regulation 3 of Chapter II-2 of the principal Regulations is amended by deleting paragraph (ddd) and substituting the following paragraphs:

“(ddd) “Vehicle carrier” means a cargo ship which only carries cargo in ro-ro spaces or vehicle spaces, and which is designed for the carriage of unoccupied motor vehicles without cargo, as cargo.

(*eee*) “Helicopter landing area” is an area on a ship designated for occasional or emergency landing of helicopters but not designed for routine helicopter operations.

(*fff*) “Winching area” is a pick-up area provided for the transfer by helicopter of personnel or stores to or from the ship, while the helicopter hovers above the deck.”.

### **Amendment of Regulation 9 of Chapter II-2**

**33.** Regulation 9 of Chapter II-2 of the principal Regulations is amended by inserting, immediately after sub-paragraph (C) of paragraph (*d*)(i)(3), the following sub-paragraphs:

“(D) Notwithstanding the requirement in paragraph (*d*)(i)(3)(C), the requirements in paragraphs (*d*)(i)(3)(E) and (*d*)(i)(3)(F) shall apply to ships constructed on or after 1 January 2020.

(E) For ships carrying more than 36 passengers, windows facing survival craft, embarkation and assembly stations, external stairs and open decks used for escape routes, and windows situated below liferaft and escape slide embarkation areas shall have fire integrity as required in table 9.1. Where automatic dedicated sprinkler heads are provided for windows, “A-0” windows may be accepted as equivalent. To be considered under this paragraph, the sprinkler heads must either be —

- (I) dedicated heads located above the windows, and installed in addition to the conventional ceiling sprinklers;
- (II) conventional ceiling sprinkler heads arranged such that the window is protected by an average application rate of at least 5 l/min per square metre and the additional window area is included in the calculation of the area of coverage; or
- (III) water-mist nozzles that have been tested and approved in accordance with the Guidelines approved by the Organisation\*; and

\* Refer to the Revised Guidelines for approval of sprinkler systems equivalent to that referred to in SOLAS Regulation II-2/12 (resolution A.800(19), as amended).

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windows located in the ship's side below the lifeboat embarkation area shall have fire integrity at least equal to "A-0" class.

- (F) For ships carrying not more than 36 passengers, windows facing survival craft and escape slide, embarkation areas and windows situated below such areas shall have fire integrity at least equal to "A-0" class."

### **Amendment of Regulation 10 of Chapter II-2**

**34.** Regulation 10 of Chapter II-2 of the principal Regulations is amended by inserting, immediately after "175 kW" in paragraph (e)(i)(2)(B), the words ", or boilers protected by fixed water-based local application fire-extinguishing systems as required by paragraph (e)(vi),".

### **Amendment of Regulation 13 of Chapter II-2**

**35.** Regulation 13 of Chapter II-2 of the principal Regulations is amended —

- (a) by inserting, immediately after sub-paragraph (6) of paragraph (c)(ii), the following sub-paragraph:

“(7) Evacuation analysis for passenger ships

- (A) Escape routes shall be evaluated by an evacuation analysis early in the design process. This analysis shall apply to —

(I) ro-ro passenger ships constructed on or after 1 July 1999; and

(II) other passenger ships constructed on or after 1 January 2020 carrying more than 36 passengers.

- (B) The analysis shall be used to identify and eliminate, as far as practicable, congestion which may develop during an abandonment, due to normal movement of passengers and crew along escape routes, including the possibility that crew may need to move along these routes in a direction opposite to the movement of passengers. In addition, the analysis shall be used to demonstrate that

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escape arrangements are sufficiently flexible to provide for the possibility that certain escape routes, assembly stations, embarkation stations or survival craft may not be available as a result of a casualty.”; and

- (b) by deleting sub-paragraph (iv) of paragraph (g) (including the footnote).

### **Amendment of Regulation 18 of Chapter II-2**

**36.** Regulation 18 of Chapter II-2 of the principal Regulations is amended —

- (a) by deleting sub-paragraph (iii) of paragraph (b) and substituting the following sub-paragraphs:

“(iii) Notwithstanding the requirements of paragraph (b)(ii) above, ships constructed on or after 1 January 2020, having a helicopter landing area, shall be provided with foam firefighting appliances which comply with the relevant provisions of Chapter 17 of the Fire Safety Systems Code.

(iv) Notwithstanding the requirements of paragraph (b)(ii) or (b)(iii) above, ro-ro passenger ships without helidecks shall comply with Regulation 28 of Chapter III.”;

- (b) by inserting, immediately after sub-paragraph (5) of paragraph (e)(i), the following sub-paragraph:

“(6) in lieu of the requirements of paragraphs (e)(i)(3) through (e)(i)(5), on ships constructed on or after 1 January 2020 having a helideck, foam firefighting appliances which comply with the provisions of the Fire Safety Systems Code;”;

- (c) by renumbering the existing sub-paragraphs (6) and (7) of paragraph (e)(i) as sub-paragraphs (7) and (8), respectively.

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**Amendment of Regulation 20 of Chapter II-2**

37. Regulation 20 of Chapter II-2 of the principal Regulations is amended by deleting sub-paragraph (i) of paragraph (b) and substituting the following sub-paragraph:

“(i) Application

- (1) In addition to complying with the requirements of Regulations in Parts B, C, D and E, as appropriate, vehicle, special category and ro-ro spaces shall comply with the requirements of this Regulation.
- (2) On all ships, vehicles with fuel in their tanks for their own propulsion may be carried in cargo spaces other than vehicle, special category or ro-ro spaces, provided that all the following conditions are met:
  - (A) the vehicles do not use their own propulsion within the cargo spaces;
  - (B) the cargo spaces are in compliance with the appropriate requirements of Regulation 19;
  - (C) the vehicles are carried in accordance with the IMDG Code, as defined in Regulation 1 of Chapter VII.”.

**Amendment of Regulation 20-1 of Chapter II-2**

38. Regulation 20-1 of Chapter II-2 of the principal Regulations is amended by deleting sub-paragraph (i) of paragraph (b) and substituting the following sub-paragraph:

“(i) In addition to complying with the requirements of Regulation 20, as appropriate, vehicle carriers constructed on or after 1 January 2016 intended for the carriage of motor vehicles with compressed hydrogen or compressed natural gas in their tanks for their own propulsion as cargo shall comply with the requirements in paragraphs (c) to (e) of this Regulation.”.

**Amendment of Regulation 1 of Chapter III**

39. Regulation 1 of Chapter III of the principal Regulations is amended by deleting paragraph (d) and substituting the following paragraph:

- “(d) Ships constructed before 1 July 1998 shall —
- (i) subject to the provisions of paragraph (d)(ii), comply with the requirements which are applicable under Chapter III of the International Convention for the Safety of Life at Sea, 1974, in force prior to 1 July 1998 to new or existing ships as prescribed by that Chapter;
  - (ii) when life-saving appliances or arrangements on such ships are replaced or such ships undergo repairs, alterations or modifications of a major character which involve replacement of, or any addition to, their existing life-saving appliances or arrangements, such life-saving appliances or arrangements, in so far as is reasonable and practicable, comply with the requirements of this Chapter. However, if a survival craft other than an inflatable liferaft is replaced without replacing its launching appliance, or vice versa, the survival craft or launching appliance may be of the same type as that replaced; and
  - (iii) comply with the requirements of Regulation 30(c) and Regulation 37(c)(ix).”.

### **Deletion and substitution of Regulation 3 of Chapter III**

**40.** Regulation 3 of Chapter III of the principal Regulations is deleted and the following Regulation substituted therefor:

“Regulation 3

#### *Definitions*

For the purpose of this Chapter, unless expressly provided otherwise —

(a) “Anti-exposure suit” is a protective suit designed for use by rescue boat crews and marine evacuation system parties;

(b) “Certificated person” is a person who holds a certificate of proficiency in survival craft issued under the authority of, or recognised as valid by, the Director in accordance with the requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, in force; or a person who holds a certificate issued or recognised by the Administration of a State not a Party to that Convention for the same purpose as the convention certificate;

(c) “Detection” is the determination of the location of survivors or survival craft;

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(d) “Embarkation ladder” is the ladder provided at survival craft embarkation stations to permit safe access to survival craft after launching;

(e) “Float-free launching” is that method of launching a survival craft whereby the craft is automatically released from a sinking ship and is ready for use;

(f) “Free-fall launching” is that method of launching a survival craft whereby the craft with its complement of persons and equipment on board is released and allowed to fall into the sea without any restraining apparatus;

(g) “Immersion suit” is a protective suit which reduces the body heat loss of a person wearing it in cold water;

(h) “Inflatable appliance” is an appliance which depends upon non-rigid, gas-filled chambers for buoyancy and which is normally kept uninflated until ready for use;

(i) “Inflated appliance” is an appliance which depends upon non-rigid, gas-filled chambers for buoyancy and which is kept inflated and ready for use at all times;

(j) “International Life-Saving Appliance (LSA) Code” (referred to as “the Code” in this Chapter) means the International Life-Saving Appliance (LSA) Code adopted by the Maritime Safety Committee of the Organisation by resolution MSC.48(66), as it may be amended by the Organisation, provided that such amendments are adopted, brought into force and take effect in accordance with the provisions of article VIII of the Present Convention concerning the amendment procedures applicable to the Annex other than Chapter I;

(k) “Launching appliance or arrangement” is a means of transferring a survival craft or rescue boat from its stowed position safely to the water;

(l) “Length” is 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel, or the length from the fore-side of the stem to the axis of the rudder stock on that waterline, if that be greater. In ships designed with a rake of keel the waterline on which this is measured shall be parallel to the designed waterline;

(m) “Lightest sea-going condition” is the loading condition with the ship on even keel, without cargo, with 10% stores and fuel remaining and in the case of a passenger ship with the full number of passengers and crew and their luggage;

(n) “Marine evacuation system” is an appliance for the rapid transfer of persons from the embarkation deck of a ship to a floating survival craft;

(o) “Moulded depth”

- (i) the moulded depth is the vertical distance measured from the top of the keel to the top of the freeboard deck beam at side. In wood and composite ships the distance is measured from the lower edge of the keel rabbet. Where the foam at the lower part of the midship section is of a hollow character, or where thick garboards are fitted, the distance is measured from the point where the line of the flat of the bottom continued inwards cuts the side of the keel;
- (ii) in ships having rounded gunwales, the moulded depth shall be measured to the point of intersection of the moulded lines of the deck and side shell plating, the lines extending as though the gunwale were of angular design;
- (iii) where the freeboard deck is stepped and the raised part of the deck extends over the point at which the moulded depth is to be determined, the moulded depth shall be measured to a line of reference extending from the lower part of the deck along a line parallel with the raised part;

(p) “Novel life-saving appliance or arrangement” is a life-saving appliance or arrangement which embodies new features not fully covered by the provisions of this Chapter or the Code but which provides an equal or higher standard of safety;

(q) “Positive stability” is the ability of a craft to return to its original position after the removal of a heeling moment;

(r) “Recovery time” for a rescue boat is the time required to raise the boat to a position where persons on board can disembark to the deck of the ship. Recovery time includes the time required to make preparations for recovery on board the rescue boat such as passing and securing a painter, connecting the rescue boat to the launching appliance, and the time to raise the rescue boat. Recovery time does not include the time needed to lower the launching appliance into position to recover the rescue boat;

(s) “Rescue boat” is a boat designed to rescue persons in distress and to marshal survival craft;

(t) “Retrieval” is the safe recovery of survivors;

(u) “Ro-ro passenger ship” means a passenger ship with ro-ro cargo spaces or special category spaces as defined in Regulation 3 of Chapter II-2;

(v) “Short international voyage” is an international voyage in the course of which a ship is not more than 200 miles from a port or place in which the passengers and crew could be placed in safety. Neither the

distance between the last port of call in the country in which the voyage begins and the final port of destination nor the return voyage shall exceed 600 miles. The final port of destination is the last port of call in the scheduled voyage at which the ship commences its return voyage to the country in which the voyage began;

(w) “Survival craft” is a craft capable of sustaining the lives of persons in distress from the time of abandoning the ship;

(x) “Thermal protective aid” is a bag or suit made of waterproof material with low thermal conductance;

(y) “Requirements for maintenance, thorough examination, operational testing, overhaul and repair” means the Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear, adopted by the Maritime Safety Committee of the Organisation by resolution MSC.402(96), as may be amended by the Organisation, provided that such amendments are adopted, brought into force and take effect in accordance with the provisions of article VIII of the present Convention concerning the amendment procedures applicable to the Annex other than Chapter I.”.

### **Amendment of Regulation 20 of Chapter III**

**41.** Regulation 20 of Chapter III of the principal Regulations is amended —

(a) by deleting sub-paragraph (i) of paragraph (c) (including the footnote) and substituting the following sub-paragraph:

“(i) Maintenance, testing and inspections of life saving appliances shall be carried out in a manner having due regard to ensuring reliability of such appliances.”; and

(b) by deleting paragraph (k) and substituting the following paragraph:

“(k) *Maintenance, thorough examination, operational testing, overhaul and repair of lifeboats, rescue boats and fast rescue boats, launching appliances and release gear*

(i) Launching appliances shall be —

(1) subject to a thorough examination at the annual surveys required by Regulations 7 or 8 of Chapter I, as applicable; and

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- (2) upon completion of the examination referred to in paragraph (k)(i)(1), subjected to a dynamic test of the winch brake at maximum lowering speed. The load to be applied shall be the mass of the survival craft or rescue boat without persons on board, except that, at intervals of at least once every five years, the test shall be carried out with a proof load equal to 1.1 times the weight of the survival craft or rescue boat and its full complement of persons and equipment.
- (ii) Lifeboat and rescue boat release gear, including fast rescue boat release gear and free-fall lifeboat release systems, shall be —
    - (1) subject to a thorough examination and operational test during the annual surveys required by Regulations 7 and 8 of Chapter I;
    - (2) in case of on-load release gear, operationally tested under a load of 1.1 times the total mass of the boat when loaded with its full complement of persons and equipment whenever the release gear is overhauled. Such overhauling and operational test shall be carried out at least once every five years; and
    - (3) notwithstanding paragraph (k)(ii)(2), the operational testing of free-fall lifeboat release systems shall be performed either by free fall launch with only the operating crew on board or by a test without launching the lifeboat carried out based on Requirements for maintenance, thorough examination, operational testing, overhaul and repair.
  - (iii) Davit-launched liferaft automatic release hooks shall be —
    - (1) subject to a thorough examination and operational test during the annual surveys required by Regulations 7 and 8 of Chapter I; and
    - (2) operationally tested under a load of 1.1 times the total mass of the liferaft when loaded with its full complement of persons and equipment

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whenever the automatic release hook is overhauled. Such overhauling and operational test shall be carried out at least once every five years.

- (iv) Lifeboats and rescue boats, including fast rescue boats, shall be subject to a thorough examination and operational test during the annual surveys required by Regulations 7 and 8 of Chapter I.
- (v) The thorough examination, operational testing and overhaul required by paragraphs (k)(i) to (k)(iv) and the maintenance and repair of equipment specified in paragraphs (k)(i) to (k)(iv) shall be carried out in accordance with the Requirements for maintenance, thorough examination, operational testing, overhaul and repair, and the instructions for onboard maintenance as required by Regulation 36.”.

### **Amendment of Regulation 30 of Chapter III**

**42.** Regulation 30 of Chapter III of the principal Regulations is amended by inserting, immediately after paragraph (b), the following paragraph:

“(c) Damage control drills shall be conducted as required in Regulation 19-1 of Chapter II-1.”.

### **Amendment of Regulation 37 of Chapter III**

**43.** Regulation 37 of Chapter III of the principal Regulations is amended —

- (a) by deleting the word “and” at the end of paragraph (c)(vii);  
and
- (b) by deleting sub-paragraph (viii) of paragraph (c) and substituting the following sub-paragraphs:

- “(viii) special duties assigned in respect to the use of fire-fighting equipment and installations; and
- (ix) for passenger ships only, damage control for flooding emergencies.”.

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**Amendment of Regulation 2 of Chapter IV**

**44.** Regulation 2 of Chapter IV of the principal Regulations is amended —

- (a) by deleting the full-stop at the end of paragraph (a)(xv) and substituting a semi-colon; and
- (b) by deleting sub-paragraph (xvi) of paragraph (a) and substituting the following sub-paragraphs:

“(xvi) “Global maritime distress and safety system (GMDSS) identities” means maritime mobile services identity, the ship’s call sign, recognised mobile satellite service identities and serial number identity which may be transmitted by the ship’s equipment and used to identify the ship;

(xvii) “Recognised mobile satellite service” means any service which operates through a satellite system and is recognised by the Organisation, for use in the global maritime distress and safety system (GMDSS).”.

**Amendment of Regulation 7 of Chapter IV**

**45.** Regulation 7 of Chapter IV of the principal Regulations is amended by deleting sub-paragraph (v) of paragraph (a) (including the footnotes) and substituting the following sub-paragraph:

“(v) a radio facility for reception of maritime safety information by a recognised mobile satellite service enhanced group calling system if the ship is engaged in voyages in sea area A1, or A2 or A3 but in which an international NAVTEX service is not provided. However, ships engaged exclusively in voyages in areas where an HF direct-printing telegraphy maritime safety information service is provided and fitted with equipment capable of receiving such service, may be exempt from this requirement.\*

\* Refer to the Recommendation on promulgation of maritime safety information adopted by the Organisation by resolution A.705(17), as amended.”.

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### **Amendment of Regulation 8 of Chapter IV**

**46.** Regulation 8 of Chapter IV of the principal Regulations is amended by deleting sub-paragraph (v) of paragraph (a) (including the footnote) and substituting the following sub-paragraph:

“(v) through a recognised mobile satellite service; this requirement may be fulfilled by:

(1) a ship earth station;\* or

\* This requirement can be met by recognised mobile satellite service ship earth stations capable of two-way communications, such as Fleet-77 (resolutions A.808(19) and MSC.130(75)) or Inmarsat-C (resolution A.807(19), as amended) ship earth stations. Unless otherwise specified, this footnote applies to all requirements for a recognised mobile satellite service ship earth station prescribed by this Chapter.

(2) the satellite EPIRB, required by sub-paragraph (a)(vi) of Regulation 7, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the ship is normally navigated.”.

### **Amendment of Regulation 9 of Chapter IV**

**47.** Regulation 9 of Chapter IV of the principal Regulations is amended —

(a) by deleting the words “the INMARSAT geostationary satellite service” in paragraph (a)(iii)(3) and substituting the words “a recognised mobile satellite service”; and

(b) by deleting the words “an INMARSAT” in paragraph (c)(ii) and substituting the words “a recognised mobile satellite service”.

### **Amendment of Regulation 10 of Chapter IV**

**48.** Regulation 10 of Chapter IV of the principal Regulations is amended —

(a) by deleting the words “an INMARSAT” in paragraph (a)(i) and substituting the words “a recognised mobile satellite service”;

- (b) by deleting the words “the INMARSAT geostationary satellite service” in paragraph (a)(iv)(3) and substituting the words “a recognised mobile satellite service”; and
- (c) by deleting the words “the INMARSAT geostationary satellite service” in paragraph (b)(iii)(2) and substituting the words “a recognised mobile satellite service”.

### **Amendment of Regulation 12 of Chapter IV**

**49.** Regulation 12 of Chapter IV of the principal Regulations is amended by deleting the words “an INMARSAT” in paragraph (a)(iv) and substituting the words “a recognised mobile satellite service”.

### **Amendment of Regulation 13 of Chapter IV**

**50.** Regulation 13 of Chapter IV of the principal Regulations is amended by deleting “INMARSAT” in paragraph (b).

### **New Regulation 2-1 of Chapter XI-1**

**51.** The principal Regulations are amended by inserting, immediately after Regulation 2 of Chapter XI-1, the following Regulation:

“Regulation 2-1

*Harmonisation of Survey Periods of  
Cargo Ships not subject to the ESP Code*

For cargo ships not subject to enhanced surveys under Regulation 2 of Chapter XI-1, notwithstanding any other provisions, the intermediate and renewal surveys included in Regulation 10 of Chapter I may be carried out and completed over the corresponding periods as specified in the 2011 ESP Code, as may be amended, and the guidelines developed by the Organisation\*, as appropriate.

\* Refer to Survey Guidelines under the harmonised system of survey and certification (HSSC), 2015, as adopted by the Assembly of the Organisation by resolution A.1104(29), as may be amended.”.

### **Amendment of Second Schedule**

**52.** The Second Schedule to the principal Regulations is amended —

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- (a) by deleting the words “Inmarsat ship” in item 1.4 of paragraph 3 of the Record of Equipment for Passenger Ship Safety (Form P) and substituting the words “Recognised mobile satellite service ship”;
- (b) by deleting the word “system<sup>3, 4</sup>” in item 3.1 of paragraph 5 of the Record of Equipment for Passenger Ship Safety (Form P) and substituting the words “system/multi-system shipborne radionavigation receiver<sup>3, 4</sup>”;
- (c) by deleting the word “system<sup>2, 3</sup>” in item 3.1 of paragraph 3 of the Record of Equipment for Cargo Ship Safety (Form E) and substituting the words “system/multi-system shipborne radionavigation receiver<sup>2, 3</sup>”;
- (d) by deleting the words “Inmarsat ship” in item 1.4 of paragraph 2 of the Record of Equipment for Cargo Ship Safety Radio (Form R) and substituting the words “Recognised mobile satellite service ship”;
- (e) by deleting the words “Inmarsat ship” in item 1.4 of paragraph 3 of the Record of Equipment for Cargo Ship Safety (Form C) and substituting the words “Recognised mobile satellite service ship”; and
- (f) by deleting the word “system<sup>2, 3</sup>” in item 3.1 of paragraph 5 of the Record of Equipment for Cargo Ship Safety (Form C) and substituting the words “system/multi-system shipborne radionavigation receiver<sup>2, 3</sup>”.

*[G.N. Nos. S 287/99; S 40/2000; S 511/2000; S 533/2001; S 314/2002; S 613/2002; S 645/2003; S 217/2004; S 697/2005; S 282/2006; S 691/2006; S 339/2008; S 686/2008; S 286/2009; S 664/2009; S 366/2010; S 793/2010; S 622/2011; S 284/2012; S 621/2012; S 847/2013; S 432/2014; S 866/2014; S 375/2015; S 802/2015; S 277/2016; S 669/2016]*

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*Chairman,*  
*Maritime and Port Authority of*  
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