

**ANNEX 3**

**RESOLUTION MSC.339(91)  
(adopted on 30 November 2012)**

**ADOPTION OF AMENDMENTS TO THE INTERNATIONAL  
CODE FOR FIRE SAFETY SYSTEMS (FSS CODE)**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

NOTING resolution MSC.98(73), by which it adopted the International Code for Fire Safety Systems (hereinafter referred to as "the FSS Code"), which has become mandatory under chapter II-2 of the International Convention for the Safety of Life at Sea, 1974 (hereinafter referred to as "the Convention"),

NOTING ALSO Article VIII(b) and regulation II-2/3.22 of the Convention concerning the procedure for amending the FSS Code,

HAVING CONSIDERED, at its ninety-first session, amendments to the FSS Code, proposed and circulated in accordance with Article VIII(b)(i) of the Convention,

1. ADOPTS, in accordance with Article VIII(b)(iv) of the Convention, amendments to the International Code for Fire Safety Systems, the text of which is set out in the annex to the present resolution;
2. DETERMINES, in accordance with Article VIII(b)(vi)(2)(bb) of the Convention, that the amendments shall be deemed to have been accepted on 1 January 2014, unless, prior to that date, more than one third of the Contracting Governments to the Convention or Contracting Governments the combined merchant fleets of which constitute not less than 50 per cent of the gross tonnage of the world's merchant fleet, have notified their objections to the amendments;
3. INVITES Contracting Governments to the Convention to note that, in accordance with Article VIII(b)(vii)(2) of the Convention the amendments shall enter into force on 1 July 2014, upon their acceptance in accordance with paragraph 2 above;
4. REQUESTS the Secretary-General, in conformity with Article VIII(b)(v) of the Convention, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Contracting Governments to the Convention;
5. ALSO REQUESTS the Secretary-General to transmit copies of this resolution and its annex to Members of the Organization which are not Contracting Governments to the Convention.

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## ANNEX

### AMENDMENTS TO THE INTERNATIONAL CODE FOR FIRE SAFETY SYSTEMS (FSS CODE)

#### CHAPTER 3 PERSONNEL PROTECTION

- 1 The existing paragraph 2.1.2 is replaced by the following two new paragraphs:
- "2.1.2.1 Breathing apparatus shall be a self-contained compressed air breathing apparatus for which the volume of air contained in the cylinders shall be at least 1,200 l, or other self-contained breathing apparatus which shall be capable of functioning for at least 30 min. All air cylinders for breathing apparatus shall be interchangeable.
- 2.1.2.2 Compressed air breathing apparatus shall be fitted with an audible alarm and a visual or other device which will alert the user before the volume of the air in the cylinder has been reduced to no less than 200 l."

#### CHAPTER 5 FIXED GAS FIRE-EXTINGUISHING SYSTEMS

- 2 In paragraph 2.1.1.1, after the second sentence, the following new sentence is added:
- "Adjacent spaces with independent ventilation systems not separated by at least A-0 class divisions should be considered as the same space."
- 3 In paragraph 2.1.1.3, after the first sentence, the following new sentence is added:
- "It shall not be necessary to move the containers completely from their fixing position for this purpose. For carbon dioxide systems, hanging bars for a weighing device above each bottle row, or other means shall be provided. For other types of extinguishing media, suitable surface indicators may be used."
- 4 In paragraph 2.1.3.2, the first sentence is replaced by the following:
- "Means shall be provided for automatically giving audible and visual warning of the release of fire-extinguishing medium into any ro-ro spaces, container holds equipped with integral reefer containers, spaces accessible by doors or hatches, and other spaces in which personnel normally work or to which they have access."
- 5 The following new paragraph 2.2.1.2 is added after the existing paragraph 2.2.1.1 and the subsequent paragraphs are renumbered accordingly, including references to those paragraphs:
- "2.2.1.2 For vehicle spaces and ro-ro spaces which are not special category spaces, the quantity of carbon dioxide available shall be at least sufficient to give a minimum volume of free gas equal to 45% of the gross volume of the largest such cargo space which is capable of being sealed, and the arrangements shall be such as to ensure that at least two thirds of the gas required for the relevant space shall be

introduced within 10 min. Carbon dioxide systems shall not be used for the protection of special category spaces."

6 The following new paragraph 2.2.1.7 is added after the renumbered paragraph 2.2.1.6:

"2.2.1.7 For container and general cargo spaces (primarily intended to carry a variety of cargoes separately secured or packed) the fixed piping system shall be such that at least two thirds of the gas can be discharged into the space within 10 min. For solid bulk cargo spaces the fixed piping system shall be such that at least two thirds of the gas can be discharged into the space within 20 min. The system controls shall be arranged to allow one third, two thirds or the entire quantity of gas to be discharged based on the loading condition of the hold."

7 In paragraph 2.2.2, the first sentence is replaced by the following:

"Carbon dioxide systems for the protection of ro-ro spaces, container holds equipped with integral reefer containers, spaces accessible by doors or hatches, and other spaces in which personnel normally work or to which they have access shall comply with the following requirements:"

8 Section 2.4 is deleted.

9 Section 2.5 is renumbered as "2.4" and the words "in paragraphs 2.2 to 2.4" are replaced with the words "in paragraphs 2.2 and 2.3".

## CHAPTER 7 FIXED PRESSURE WATER-SPRAYING AND WATER-MIST FIRE-EXTINGUISHING SYSTEMS

10 The following new paragraph 2.4 is added after the existing paragraph 2.3:

### **"2.4 Fixed water-based fire-fighting systems for ro-ro spaces, vehicle spaces and special category spaces**

Fixed water-based fire-fighting systems for ro-ro spaces, vehicle spaces and special category spaces shall be approved by the Administration based on guidelines developed by the Organization .

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\* Refer to the Revised guidelines for approval of fixed water-based fire-fighting systems for ro-ro spaces and special category spaces (MSC.1/Circ.1430)."

## CHAPTER 8 AUTOMATIC SPRINKLER, FIRE DETECTION AND FIRE ALARM SYSTEMS

11 In paragraph 2.5.2.3, after the first sentence, the following new sentence is added:

"For this purpose, nominal area shall be taken as the gross horizontal projection of the area to be covered."

## CHAPTER 9 FIXED FIRE DETECTION AND FIRE ALARM SYSTEMS

12 In paragraph 2.2.1, after the third sentence, the following new sentence is added:

"On ships constructed on or after 1 July 2014, the changeover switch shall be arranged such that a fault will not result in the loss of both power supplies."

13 The following new paragraph is added after paragraph 2.2.1, and the existing paragraph 2.2.2 is renumbered as paragraph 2.2.3:

"2.2.2 On ships constructed on or after 1 July 2014, the operation of the automatic changeover switch or a failure of one of the power supplies shall not result in loss of fire detection capability. Where a momentary loss of power would cause degradation of the system, a battery of adequate capacity shall be provided to ensure continuous operation during changeover."

14 The existing paragraph 2.2.3 is deleted and the following new paragraphs are added after the renumbered paragraph 2.2.3:

"2.2.4 The emergency source of power specified in paragraph 2.2.1 above may be supplied by accumulator batteries or from the emergency switchboard. The power source shall be sufficient to maintain the operation of the fire detection and fire alarm system for the periods required under chapter II-1, regulations 42 and 43, of the Convention and, at the end of that period, shall be capable of operating all connected visual and audible fire alarm signals for a period of at least 30 min.

2.2.5 On ships constructed on or after 1 July 2014, where the system is supplied from accumulator batteries, they shall be located in or adjacent to the control panel for the fire detection system, or in another location suitable for use in an emergency. The rating of the battery charge unit shall be sufficient to maintain the normal output power supply to the fire detection system while recharging the batteries from a fully discharged condition."

15 In paragraphs 2.3.1.2, 2.3.1.3 and 2.3.1.5, the referenced standard "IEC 60092 505:2001" is replaced by "IEC 60092-504".

16 In paragraph 2.5.1.3, after the second sentence, the following new sentence is added:

"In ships constructed on or after 1 July 2014, with a cargo control room, an additional indicating unit shall be located in the cargo control room."

17 In paragraph 2.5.2, after the second sentence, the following new sentence is added:

"On ships constructed on or after 1 July 2014, detectors installed within cold spaces such as refrigerated compartments shall be tested using procedures having due regard for such locations."

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Refer to the recommendations of the International Electrotechnical Commission, in particular publication IEC 60068-2-1 – Section one -Test Ab, *Environmental Testing – Part 2-1: Tests – Test A: Cold.*"

## **CHAPTER 12 FIXED EMERGENCY FIRE PUMPS**

- 18 The existing paragraph 2.2.2.1 is replaced by the following:

### **"2.2.2.1 Starting of diesel engine**

Any diesel-driven power source for the pump shall be capable of being readily started in its cold condition down to the temperature of 0°C by hand (manual) cranking. Where ready starting cannot be assured, if this is impracticable, or if lower temperatures are likely to be encountered, and if the room for the diesel driven power source is not heated, electric heating of the diesel engine cooling water or lubricating oil system shall be fitted, to the satisfaction of the Administration. If hand (manual) starting is impracticable, the Administration may permit compressed air, electricity, or other sources of stored energy, including hydraulic power or starting cartridges to be used as a means of starting. These means shall be such as to enable the diesel-driven power source to be started at least six times within a period of 30 min and at least twice within the first 10 min."

## **CHAPTER 13 ARRANGEMENT OF MEANS OF ESCAPE**

- 19 The existing paragraph 2.2.4 is replaced by the following:

### **"2.2.4 Landings**

With the exception of intermediate landings, landings at each deck level shall be not less than 2 m<sup>2</sup> in area and shall increase by 1 m<sup>2</sup> for every 10 persons provided for in excess of 20 persons, but need not exceed 16 m<sup>2</sup>, except for those landings servicing public spaces having direct access onto the stairway enclosure. Intermediate landings shall be sized in accordance with paragraph 2.3.1."

## **CHAPTER 14 FIXED DECK FOAM SYSTEMS**

- 20 The existing chapter 14 is replaced by the following:

### **"1 Application**

1.1 This chapter details the specification of fixed deck foam systems which are required to be provided by chapter II-2 of the Convention.

### **2 Engineering specifications**

#### **2.1 General**

2.1.1 The arrangements for providing foam shall be capable of delivering foam to the entire cargo tanks deck area as well as into any cargo tank the deck of which has been ruptured.

2.1.2 The deck foam system shall be capable of simple and rapid operation.

2.1.3 Operation of a deck foam system at its required output shall permit the simultaneous use of the minimum required number of jets of water at the required pressure from the fire main. Where the deck foam system is supplied by a common line from the fire main, additional foam concentrate shall be provided for operation of two nozzles for the same period of time required for the foam system. The simultaneous use of the minimum required jets of water shall be possible on deck over the full length of the ship, in the accommodation, service spaces, control stations and machinery spaces.

## **2.2 Component requirements**

### *2.2.1 Foam solution and foam concentrate*

#### 2.2.1.1 For tankers carrying:

- .1 crude oil or petroleum products having a flashpoint not exceeding 60°C (closed cup), as determined by an approved flashpoint apparatus, and a Reid vapour pressure which is below atmospheric pressure or other liquid products having a similar fire hazard, including cargoes in chapter 18 of the IBC Code, having a flashpoint not exceeding 60°C (closed cup) for which a regular foam fire-fighting system is effective (refer to regulations II-2/1.6.1 and 10.8 of the Convention); or
- .2 petroleum products with a flashpoint exceeding 60°C (closed cup), as determined by an approved flashpoint apparatus (refer to regulation II-2/1.6.4 of the Convention); or
- .3 IBC Code chapter 17 products with a flashpoint exceeding 60°C (closed cup) determined by an approved flashpoint apparatus (refer to paragraph 11.1.3 of the IBC Code and regulation II-2/1.6.4 of the Convention),

the rate of supply of foam solution shall be not less than the greatest of the following:

- .1 0.6 //min per square metre of cargo tanks deck area, where cargo tanks deck area means the maximum breadth of the ship multiplied by the total longitudinal extent of the cargo tank spaces;
- .2 6 //min per square metre of the horizontal sectional area of the single tank having the largest such area; or
- .3 3 //min per square metre of the area protected by the largest monitor, such area being entirely forward of the monitor, but in no case should the output of any monitor be less than 1,250 //min.

2.2.1.2 For tankers carrying chemicals in bulk listed in chapter 17 of the IBC Code having a flashpoint not exceeding 60°C (closed cup), the rate of supply of foam solution shall be as required by the IBC Code.

2.2.1.3 Sufficient foam concentrate shall be supplied to ensure at least 20 min of foam generation in tankers fitted with an inert gas installation or 30 min of foam generation in tankers not fitted with an inert gas installation or not required to use an inert gas system.

2.2.1.4 The foam concentrate supplied on board shall be approved by the Administration\* for the cargoes intended to be carried. Type B foam concentrates shall be supplied for the protection of crude oil, petroleum products and non-polar solvent cargoes. Type A foam concentrates shall be supplied for polar solvent cargoes, as listed in the table of chapter 17 of the IBC Code. Only one type of foam concentrate shall be supplied, and it shall be effective for the maximum possible number of cargoes intended to be carried. For cargoes for which foam is not effective or is incompatible, additional arrangements to the satisfaction of the Administration shall be provided.

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\* Refer to the *Guidelines for performance and testing criteria and surveys of foam concentrates for fixed fire-extinguishing systems* (MSC.1/Circ.1312).

2.2.1.5 Liquid cargoes with a flashpoint not exceeding 60°C for which a regular foam fire-fighting system is not effective shall comply with the provisions of regulation II-2/1.6.2.1 of the Convention.

## 2.2.2 *Monitors and foam applicators*

2.2.2.1 Foam from the fixed foam system shall be supplied by means of monitors and foam applicators. Prototype tests of the monitors and foam applicators shall be performed to ensure the foam expansion and drainage time of the foam produced does not differ more than  $\pm 10$  per cent of that determined in paragraph 2.2.1.4. When medium expansion ratio foam (between 21 to 1 and 200 to 1 expansion ratio) is employed, the application rate of the foam and the capacity of a monitor installation shall be to the satisfaction of the Administration. At least 50 per cent of the foam solution supply rate required shall be delivered from each monitor. On tankers of less than 4,000 tonnes deadweight the Administration may not require installation of monitors but only applicators. However, in such a case the capacity of each applicator shall be at least 25 per cent of the foam solution supply rate required.

2.2.2.2 The capacity of any applicator shall be not less than 400 l/min and the applicator throw in still air conditions shall be not less than 15 m.

## 2.3 **Installation requirements**

### 2.3.1 *Main control station*

2.3.1.1 The main control station for the system shall be suitably located outside the cargo area, adjacent to the accommodation spaces and readily accessible and operable in the event of fire in the areas protected.

### 2.3.2 *Monitors*

2.3.2.1 The number and position of monitors shall be such as to comply with paragraph 2.1.1.

2.3.2.2 The distance from the monitor to the farthest extremity of the protected area forward of that monitor shall not be more than 75 per cent of the monitor throw in still air conditions.

2.3.2.3 A monitor and hose connection for a foam applicator shall be situated both port and starboard at the front of the poop or accommodation spaces facing the cargo tanks deck. The monitors and hose connections shall be aft of any cargo tanks, but may be located in the cargo area above pump-rooms, cofferdams, ballast tanks and void spaces adjacent to cargo tanks if capable of protecting the deck below and aft of each other. On tankers of less than 4,000 tonnes deadweight a hose connection for a foam applicator shall be situated both port and starboard at the front of the poop or accommodation spaces facing the cargo tanks deck.

### 2.3.3 *Applicators*

2.3.3.1 At least four foam applicators shall be provided on all tankers. The number and disposition of foam main outlets shall be such that foam from at least two applicators can be directed on to any part of the cargo tanks deck area.

2.3.3.2 Applicators shall be provided to ensure flexibility of action during fire-fighting operations and to cover areas screened from the monitors.

### 2.3.4 *Isolation valves*

2.3.4.1 Valves shall be provided in the foam main, and in the fire main when this is an integral part of the deck foam system, immediately forward of any monitor position to isolate damaged sections of those mains."

## **Footnotes:**

In paragraph 2.1.1, subparagraph .4, after the second sentence, the following footnote is added:

"Refer to the recommendations of the International Electrotechnical Commission, in particular publication IEC 60079, Electrical Apparatus for Explosive Gas Atmospheres."

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