RUSSIAN MARITIME REGISTER OF SHIPPING

HEAD OFFICE

CIRCULAR LETTER **№** 313-39- 701c dated 12.12.2013

Re:

Amendments to the Rules for the Classification and Construction of Sea-Going Ships, 2014, due to enforcement of IMO resolution MSC.327(90) "Adoption of Amendments to the International Code for Fire Safety Systems (FSS Code)" and IACS Unified Interpretation SC262 "Fixed Foam Fire Extinguishing Systems, Foam-generating Capacity (FSS Code/CHAPTER 6/ 3.2.1.2 and 3.3.1.2 as amended by MSC.327(90))".

Item of technical supervision:

Foam Fire Extinguishing System

Implementation since	01.01.2014
Valid: till	
Validity period extended till	
~~Cancels/amends/adds Circular letter №~~	dated
Number of pages:	1+4
Appendices:	Amendments to Part VI "Fire Protection", Rules for the Classification and Construction of Sea-Going Ships, 2014.

Head of Directorate V.I. Evenko

Amends Rules for the Classification and Construction of Sea-Going Ships, 2014, ND № 2-020101-077.

We hereby inform that on 25.05.2012 IMO resolution MSC.327 (90) adopted amendments to the "International Code for Fire Safety Systems (IMO resolution MSC.98(73)) completely replacing the text of Chapter 6 "Fixed Foam Fire Extinguishing Systems" as well as specifying the sprinkler fire-extinguishing systems (Chapter 8 of the Code);

in June, 2013, IACS Unified Interpretation SC 262 was developed to amend paras 3.2.1.2 and 3.3.1.2 of a new text of Chapter 6 of the Code.

Since 01.01.2014 the above amendments and IACS Unified Interpretation SC 262 shall have been introduced to Part VI "Fire Protection", Rules for the Classification and Construction of Sea-Going Ships, 2014, as references to this circular letter. In subsequent editions of the Rules the attached amendments shall be included in the main body of the text.

It is necessary to do the following:

from 01.01.2014 be guided by the requirements of the Appendix during approval of fire-extinguishing systems.

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DMS "THESIS" № 13-221879

Appendix to Circular letter No. 313-39-701c
dated 12.12.2013

Amendments to Part VI "Fire Protection", Rules for the Classification and Construction of Sea-Going Ships, 2013, in view of IMO Resolution MSC.327(90) and IACS UI SC 262 becoming effective

1.2 DEFINITIONS AND EXPLANATIONS.

1.2.1 The definition of the term "Foam expansion ratio" shall be amended as follows:

Nominal foam expansion ratio is the ratio of the volume of foam to the volume of foam solution from which it was made, under non-fire conditions, and at an ambient temperature of e.g. around 20 °C.

1.2.1 shall be supplemented with the following definitions:

Foam delivery ducts are supply ducts for introducing high-expansion foam into the protected space from foam generators located outside the protected space;

Outside air foam system is a fixed high-expansion foam system with foam generators installed outside the protected space that are directly supplied with fresh air;

Inside air foam system is a fixed high-expansion foam fire-extinguishing system with foam generators located inside the protected space and drawing air from that space;

High-expansion foam fire-extinguishing systems are fixed total flooding extinguishing systems that use either inside air or outside air for aeration of the foam solution. A high-expansion foam system consists of both the foam generators and the dedicated foam concentrate approved during the fire testing specified in 3.7.3.1.1.

Table 3.1.2.1 Note «[1]» In the second sentence reference "(refer to 1.5.1.2)" shall be replaced by "(refer to 3.3.1.1)".

3.3.1.1 The first sentence shall be replaced as follows: "Automatic sprinkler systems shall be a water-filled type, as specified by definition 9 of IMO MSC/Circ.1165. According to agreement with the Register for small exposited sections, as well as at control stations, where water may cause damage to essential equipment, may be fitted with a dry pipe system or a pre-action system as permitted by definitions 5 or 7 of IMO MSC/Circ.1165."

3.7.1.2 The following shall be supplemented after the second sentence:

"The foam concentrate for generating high-expansion foam shall be approved by the Register in compliance with IMO MSC/Circ.670." and the rest remaining as it stands.

3.7.1.4 In the fourth sentence "a foam concentrate" shall be replaced by "the water".

3.7.3 The text shall be amended as follows:

3.7.3 Fixed high-expansion foam fire-extinguishing system.

3.7.3.1 General.

3.7.3.1.1 The system shall be of approved type and capable of fire extinction and tested based on the procedure in Appendix 1 of MSC.1/Circ.1384.

3.7.3.1.2 The system shall be capable of manual release. It shall be designed to produce foam at the required application rate within 1 minute of release. Automatic release of the system shall not be permitted unless appropriate operational measures or interlocks are provided to prevent any local application systems or others from interfering with the effectiveness of the system.

3.7.3.1.3 The system and its components shall be suitably designed to withstand ambient temperature changes, vibration, humidity, shock, clogging and corrosion normally encountered on ships that shall be approved by tests in compliance with Appendix 2 of IMO MSC.1/Circ.1384. Piping, fittings and related components inside the protected spaces (except gaskets) shall be designed to withstand 925 °C.

3.7.3.1.4 System piping, foam concentrate storage tanks, components and pipe fittings in contact with the foam concentrate shall be compatible with the foam concentrate and be constructed of corrosion resistant materials such as stainless steel, or equivalent. Other system piping and foam generators shall be full galvanized steel or equivalent.

3.7.3.1.5 Means shall be provided for the crew to safely check the quantity of foam concentrate and take periodic control samples for foam quality. Means for testing the operation of the system and assuring the required pressure and flow shall be provided by pressure gauges at both inlets (water and foam concentrate supply) and at the outlet of the foam proportioner. A test valve shall be installed on the distribution piping downstream of the foam proportioner, along with orifices which reflect the calculated pressure drop of the system. All sections of piping shall be provided with connections for flushing, draining and purging with air. All nozzles shall be able to be removed for inspection in order to prove clear of debris.

3.7.3.1.6 Operating instructions for the system shall be displayed at each operating position. Besides, installation, operation and maintenance instructions/plans for the system shall be supplied to the ship and be readily available on board. The above instructions shall be in English and the working language of the crew.

3.7.3.1.7 If an internal combustion engine is used as a prime mover for the seawater pump for the system, the fuel oil tank to the prime mover shall contain sufficient fuel to enable the pump to run on full load for at least 3 h. Sufficient reserves of fuel shall be available outside the machinery space of category A to enable the pump to be run on full load for an additional 15 h. If the fuel tank serves other internal combustion engines simultaneously, the total fuel tank capacity shall be adequate for all connected engines.

3.7.3.1.8 The arrangement of foam generators and piping in the protected space shall not interfere with access to the installed machinery for routine maintenance activities.

3.7.3.1.9 The system source of power supply, foam concentrate supply and means of controlling the system shall be readily accessible and simple to operate, and shall be arranged at positions outside the protected space not likely to be cut off by a fire in the protected space. All electrical components directly connected to the foam generators shall have at least an IP 54 rating.

3.7.3.1.10 The foam generator room shall be ventilated to protect against overpressure, and shall be heated to avoid the possibility of freezing. The foam generators of external foam generating shall be located where an adequate fresh air supply can be arranged in an amount in compliance with its specifications.

3.7.3.1.11 The quantity of foam concentrate available shall be sufficient to produce a volume of foam equal to at least five times the volume of the largest protected space enclosed by steel

bulkheads, at the nominal expansion ratio, or enough for 30 minutes of full operation for the largest protected space, whichever is greater.

3.7.3.1.12 Machinery spaces, cargo pump-rooms, vehicle spaces, ro-ro spaces and special category spaces shall be provided with audible and visual alarms within the protected space warning of the release of the system. The alarms shall operate for the length of time needed to evacuate the space, but in no case less than 20 s.

3.7.3.2 Systems for the protection of machinery spaces and cargo pump-rooms.

3.7.3.2.1 The system shall be supplied by both main and emergency sources of power in compliance with 4.3.1, 9.3 and 19.1.2 of Part XI "Electrical equipment". The emergency power supply shall be provided from outside the protected space.

3.7.3.2.2 Sufficient foam-generating capacity shall be provided to ensure the minimum design filling rate for the system is met and in addition shall be adequate to completely fill the largest protected space within 10 min. Where such a machinery space includes a casing (e.g. a machinery space containing internal combustion machinery, and/or a boiler, with an engine casing), the volume of such casing, above the level up to which foam shall be filled to protect the highest positioned fire risk objects within the machinery space, need not be included in the volume of the protected space.
The level up to which foam shall be filled to protect the highest positioned fire risk objects within the machinery space shall not be less than:
1 m above the highest point of any such object; or
the lowest part of the casing, whichever is higher. In this case, as a minimum, the equipment listed in the definitions of "Machinery Spaces of Category A" and "Fuel Oil Units" in 1.2 of Part VII "Machinery Installations" pertains to fire risk objects.

3.7.3.2.3 The arrangement of delivery ducts of the outside air foam system/ foam generators of the inside air foam system shall in general be designed based on the approval test results in compliance with 3.7.3.1.1. A minimum of two generators/ delivery ducts shall be installed in every space containing combustion engines, boilers, purifiers, and similar equipment. Small workshops and store rooms listed in 1.5.8.1 and 1.5.3.2.2, may be covered with only one foam generator.

3.7.3.2.4 Foam delivery ducts of the outside air foam system/ foam generators of the inside air foam system shall be uniformly distributed under the uppermost ceiling in the protected spaces including the engine casing. The number and location of foam generators shall be adequate to ensure all high risk areas are protected in all parts and at all levels of the spaces. Extra foam delivery ducts/foam generators may be required in obstructed locations. The foam delivery ducts/foam generators shall be arranged with at least 1 m free space in front of the foam outlets, unless tested with less clearance. The foam delivery ducts/foam generators shall be located behind main structures, and above and away from engines and boilers in positions where damage from an explosion is unlikely.

3.7.3.2.5 The arrangement of the foam delivery ducts of the outside air foam system shall be such that a fire in the protected space will not affect the foam-generating equipment. If the foam generators are located adjacent to the protected space, foam delivery ducts shall be installed to allow at least 450 mm of separation between the generators and the protected space, and the separating divisions shall be class "A-60" rated.
3.7.3.2.6 Foam delivery ducts shall be constructed of steel having a thickness of not less than 5 mm.
In addition, stainless steel dampers (single or multi-bladed) with a thickness of not less than 3 mm shall be installed at the openings in the boundary bulkheads or decks between the foam generators and the protected space. The dampers shall be automatically operated (electrically, pneumatically or hydraulically) by means of remote control of the foam generator related to them. The dampers shall be arranged to remain closed until the foam generators begin operating.

3.7.3.3 Systems for the protection of vehicle, ro-ro, special category and cargo spaces.

3.7.3.3.1 The system shall be supplied by the ship's main power source.
3.7.3.3.2 Sufficient foam-generating capacity shall be provided to ensure the minimum design filling rate for the system is met defined while testing in compliance with 3.7.3.1.1 and in addition shall be adequate to completely fill the largest protected space within 10 min. However, for systems protecting vehicle and ro-ro spaces and special category spaces, with decks that are reasonably gas-tight and that have a deck height of 3 m or less, the filling rate shall be not less than two thirds of the design filling rate defined in accordance with 3.7.3.1.1and in addition sufficient to fill the largest protected space within 10 min..

3.7.3.3.3 The system may be divided into sections. However, the capacity and design of the system shall be based on the protected space demanding the greatest volume of foam. Adjacent protected spaces need not be served simultaneously if the boundaries between the spaces are "A" class divisions.

3.7.3.3.4 A minimum of two foam delivery ducts of the outside air foam system/ foam generators of the inside air foam system shall be installed in every space. The arrangement of foam delivery ducts/ foam generators shall in general be designed based on the approval test results and be arranged to uniformly distribute foam in the protected spaces, and the layout shall take into consideration obstructions that can be expected when cargo is loaded on board. As a minimum, ducts/ generators shall be led to every second deck, including movable decks. The horizontal spacing of the ducts shall ensure rapid supply of foam to all parts of the protected space. This shall be established on the basis of full scale tests.

3.7.3.3.5 The foam delivery ducts/ foam generators shall be arranged with at least 1 m free space in front of the foam outlets, unless tested with less clearance..

3.7.3.3.6 The design and arrangement of outside air foam fire-extinguishing systems shall be in compliance with 3.7.3.2.5 and 3.7.3.2.6.

3.7.3.4 Systems using outside air with generators installed inside the protected space.

3.7.3.4.1 To protect spaces specified in 3.7.3.2 and 3.7.3.3 fixed high-expansion foam systems with foam generators using outside air but with generators located inside the protected space and supplied by fresh air ducts may be applied. Such systems shall be equivalent to the outside air foam systems.

3.7.3.4.2 For acceptance, the following minimum design features shall be considered:

.1 lower and upper acceptable air pressure and flow rate in supply ducts,

.2 function and reliability of damper arrangements,

.3 arrangements and distribution of air delivery ducts including foam outlets; and,

.4 separation of air delivery ducts from the protected space.