



# RUSSIAN MARITIME REGISTER OF SHIPPING

**CIRCULAR LETTER**

**No. 313-10-1077c**

**dated 21.12.2017**

**Re:**

amendments to Part XVII "Distinguishing Marks and Descriptive Notations in the Class Notation Specifying Structural and Operational Particulars of Ships" of the Rules for the Classification and Construction of Ships, 2018, ND No. 2-020101-104-E

**Item of technical supervision:**

**Ships under construction and in service**

**Implementation:** from 1 January 2018

**Valid: till** ----

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~~Cancels / Amends / Supplements Circular Letter~~  
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**Appendices:** text of amendments to Part XVII "Distinguishing Marks and Descriptive Notations in the Class Notation Specifying Structural and Operational Particulars of Ships" of the Rules for the Classification and Construction of Ships, 2018, ND No. 2-020101-104-E

**Director General**

**K.G. Palnikov**

**Amends** Rules for the Classification and Construction of Sea-Going Ships, 2018, ND No. 2-020101-104-E

We hereby inform that new distinguishing marks and descriptive notations shall be introduced to the Rules for the Classification and Construction of Sea-Going Ships, 2018, ND No. 2-020101-104-E.

**It is necessary to do the following:**

1. Familiarize surveyors of the RS Branch Offices and interested organizations in the area of the RS Branch Offices' activity with the content of the Circular Letter..
2. Apply the requirements specified in the Appendix to the Circular Letter to the RS practical activity.

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**RULES FOR THE CLASSIFICATION AND CONSTRUCTION  
OF SEA-GOING SHIPS, 2018,  
ND No. 2-020101-104**

**PART I. CLASSIFICATION**

**2.2. CLASS NOTATION OF A SHIP**

The Chapter shall be supplemented by new para **2.2.38** reading as follows:

**"2.2.38 Distinguishing mark for ships fitted with boiler plant monitoring system.**

If a ship is fitted with a boiler plant monitoring system that allows to carry out internal surveys of steam boilers internal surveys without participation of Register Surveyor, the distinguishing mark **BMS** (Boiler Monitoring System) shall be added to the character of classification".

**Paras 2.2.38 and 2.2.39** shall be renumbered as **paras 2.2.39 and 2.2.40** accordingly.

**PART XVII. DISTINGUISHING MARKS AND DESCRIPTIVE NOTATIONS IN THE  
CLASS NOTATION SPECIFYING STRUCTURAL AND OPERATIONAL  
PARTICULARS OF SHIPS**

New **Section 16** shall be introduced reading as follows:

**"16 REQUIREMENTS FOR BOILER MONITORING SYSTEMS**

**16.1 GENERAL PROVISIONS AND APPLICATION**

**16.1.1** Distinguishing mark **BMS** (Boiler Monitoring System) may be added to the character of classification of ships fitted with boiler plant monitoring system that allows not to carry out internal surveys of steam boilers at the presence of the RS surveyor. This Section specifies technical and organizational requirements for the ships with the distinguishing mark **BMS**, which shall be followed to allow the survey carried out by the chief engineer to be credited by the Register as boiler internal survey. Documentation on the performed internal survey shall be presented to the attending RS surveyor who shall carry out the remaining scope of the boiler survey.

**16.1.2** To assign the distinguishing mark **BMS**, the initial survey shall be performed to confirm that the boiler design and technical condition make it possible for the crew to perform the survey, that the ship is fitted with appropriate boiler condition control and



monitoring system, and that the ship's chief engineer is qualified to partially perform the scope of boiler survey.

**16.1.3** Distinguishing mark **BMS** may be assigned to auxiliary oil-fired steam boilers and waste-heat boilers with working pressure not exceeding 2,0 MPa.

**16.1.4** Distinguishing mark **BMS** may be assigned to both ships with new boilers and boilers in service.

**16.1.5** Distinguishing mark **BMS** can be withdrawn at the discretion of the shipowner or proceeding from the results of ship survey carried out by the RS surveyor. After that, the ship's boiler plant shall be submitted to the Register on a common basis.

## **16.2 TERMS AND DEFINITIONS**

In addition to the below mentioned, the definitions specified in Chapter 1.2, Part X "Boilers, Heat Exchangers and Pressure Vessels" and in 1.1.1, Part I "Classification" of the Rules for the Classification and Construction of Sea-Going Ships are applicable to the requirements of this Section.

Monitoring means continuous process of reading and recording item's parameters under control, which are assumed essential for the life duration, and comparing these parameters with specified values.

Boiler water means water inside the boiler and all its components.

Feed water means water supplied by feed water pumps to the steam boiler to generate steam; it is a mixture of condensate and make-up water.

Make-up water means water added to the feed water for replenishing the leaks and condensate losses; it is a mixture of distillate and chemically treated water.

Condensate means water generated in the condensate and feed water system upon the waste steam condensation.

Distillate means water generated in the desalinating plant by evaporation and condensation of sea water.

## **16.3 TECHNICAL AND OPERATING DOCUMENTATION**

**16.3.1** For steam boilers, the ship's *Maintenance manual on boiler water monitoring and treatment* shall be developed. This document shall provide recommendations on pre-boiler and in-boiler water treatment and on prevention of scale formation and other factors leading to boiler plant excessive wear. This document shall be developed considering the requirements of instructions developed by boiler firms (manufacturers), standard instructions and applicable industry standards. The content and availability of this document on board the ship shall be checked by the RS surveyor during the initial survey for assigning the distinguishing mark **BMS** to the ship.

**16.3.2** Maintenance manual on boiler water monitoring and treatment shall contain:

- .1 specification and brief description of water preparation process and equipment applied;
- .2 schedule, scope and methods of water quality control;
- .3 list and diagram of the sampling points;
- .4 make-up, feed, boiler water and condensate quality standards;
- .5 list of reagents necessary for water treatment and for ship's water laboratory;
- .6 data on filter regeneration (if applicable);
- .7 recommendations on boiler conservation for the period when they are not in operation.

**16.3.3** The ship shall be provided with ship's boiler monitoring log-book. The following shall be recorded in the log-book:

data on boiler maintenance in accordance with the manufacturer's recommendations and boiler survey results;  
results of water chemical analyses;  
measures taken to provide the feed and boiler water quality standards;  
measures taken for burner units maintenance in accordance with the manufacturer's recommendations;  
periodic testing of automatic burner unit interlocking and protecting devices as specified in Chapter 5.3, Part X "Boilers, Heat Exchangers and Pressure Vessels".

## **16.4 ADDITIONAL REQUIREMENTS FOR THE SHIPS WITH THE DISTINGUISHING MARK BMS.**

### **16.4.1 Additional requirements for boiler plants of ships with distinguishing mark BMS.**

**16.4.1.1** Special devices shall be provided for metering the chemicals and adding them to boiler and feed water.

**16.4.1.2** Regular facilities shall be provided for collecting representative samples from boiler and feed water at safe temperature (e.g. by installing a sample cooler).

**16.4.1.3** Facilities shall be provided for continuous early detection of excessive salinity, which shall immediately alarm when salt water is detected in the system.

**16.4.1.4** Facilities shall be provided in condensate and feed water system for continuous early detection of oil products or transported goods in the boiler and feed water.

**16.4.1.5** To remove oxygen, the feed water shall be kept in an open tank (e.g. in observation tank, hot well or a special deaerator) at temperature of at least 80°C.

**16.4.1.6** Regular facilities shall be provided for monitoring pressure difference before and after exhaust boilers.

### **16.4.2 Boiler, feed and make-up water quality monitoring.**



**16.4.2.1** Feed water shall contain minimum dissolved salts, gases, organics and insoluble suspended solids. The main water quality indicators to be controlled within the monitoring process are total hardness, chloride, oxygen and oil products content.

**16.4.2.2** Boiler water quality shall be maintained and documented in accordance with recommended limiting values of boiler and feed water quality indicators as specified by the boiler manufacturer. Where there are no any special instructions from the boiler manufacturer, the boiler and feed water quality requirements specified in Table 16.4.2 for steam boilers with working pressure not exceeding 2 MPa shall be followed.

**16.4.2.3** Water quality shall be regularly checked using regular facilities and periodical water analysis in land-based laboratories. Boiler and feed water shall be monitored with the use of on-board regular facilities at least every 24 h. Boiler and feed water analysis results shall be recorded in a ship's log book.

**16.4.2.4** Boiler water analysis in land-based laboratories shall be carried out at least once a month, and results shall be kept on board the ship.

**16.4.2.5** In any cases, deviation of boiler water quality from the prescribed standards shall be immediately corrected. Acceptable methods of maintaining water quality are maximum condensate return, surface and bottom blowdown, pre-boiler chemical treatment of the feed and make-up water, in-boiler chemical water treatment. Another method to ensure water quality may be adopted instead of chemical treatment, provided that its equivalence is substantiated.

**16.4.2.6** Boiler water quality shall be annually analyzed by the shipowner and corrected, if necessary. Measures to improve the boiler water quality shall be developed to prevent hard deposit formation and corrosion damages; these measures shall be based on analyses (examinations) of hard deposits found in boiler and corrosion damages.

**Table 16.4.2**

**Recommended boiler and feed water quality standards**

Water type	Quality indicator	Measurement unit	Gas-tube boilers	Water-tube and composite boilers
Feed water	Total hardness	mg-eq/l	not more than 0,5	not more than 0,3
	Oil and oil products	mg/l	not more than 3	not more than 3
	Oxygen	mg/l	not more than 0,1	not more than 0,1
	Chlorides	mg/l	not more than 50	not more than 15
Condensate	Chlorides	mg/l	not more than 50	not more than 15

Distillate <sup>3</sup>	Total hardness	mg-eq/l	–	not more than 0,05
Make-up water <sup>3</sup>	Total hardness	mg-eq/L	not more than 8	not more than 5
Boiler water	Chlorides	mg/L	not more than 8000	not more than 1200
	Base number	mg/L	150 to 200	150 to 200
	Residual hardness	mg-eq/L	not more than 0,4	not more than 0,2
	Total salinity	mg/L	not more than 13000	not more than 3000
	Phosphate number <sup>1</sup>	mg/L	30 to 60	30 to 60
	Nitrate number <sup>1</sup>	mg/L	75 to 100 <sup>2</sup>	75 to 100 <sup>2</sup>
Notes:  1. To be monitored for boilers with phosphate/nitrate water treatment mode. 2. The nitrate number shall be 50 % of the actual base number. 3. To be monitored during make-up water preparation.				

## 16.5 SURVEYS

### 16.5.1 Initial survey.

**16.5.1.1** Initial survey for assigning the distinguishing mark **BMS** to the ship shall be carried out by the RS surveyor in the scope of special survey, including internal survey and furnace inspection.

**16.5.1.2** During initial survey for assigning the distinguishing mark **BMS** to the ship, the RS surveyor shall check boiler's overall technical condition in accordance with 16.4.1, compliance with the requirements of 16.4.2 and availability of the log-books required.

**16.5.1.3** The boiler shall comply with strength and design requirements of the RS rules as specified in Part X "Boilers, Heat Exchangers and Pressure Vessels". The boiler shall not have indications of any damages, which were not documented and agreed with the Register during the last repair. Plugged tubes are not allowed. The boiler heating surfaces shall be free of soot, sludge, ripple or metal overheat marks. The boiler components shall not have any visible deformations or damages.

### 16.5.2 Periodical surveys.

**16.5.2.1** Periodical internal surveys of boiler's water/steam and furnace/fire sides for ships with boiler plant monitoring system and distinguishing mark **BMS** shall be performed by



the crew against requirements of 2.9.3, Part II "Survey Schedule and Scope" of the Rules for the Classification Surveys of Ships in Service without participation of the RS surveyor. The Report on Survey supplemented with photos of the boiler's components subject to internal survey shall be signed by the chief engineer.

**16.5.2.2** Internal surveys of boiler's water/steam side shall be performed by the crew at least once a year but not more than 30 days before annual ship survey. If the boiler has components not accessible for internal survey, the internal survey shall be followed by hydraulic tests with test pressure equal to 1,25 working pressure in accordance with 2.9.2.3, Part II "Survey Schedule and Scope" of the Rules for the Classification Surveys of Ships in Service; the testing shall be reflected in the Report on Survey signed by the chief engineer.

**16.5.2.3** Internal survey of boiler's furnace/fire side shall be performed by the ship crew at least twice a year.

**16.5.2.4** During annual survey, the documentation on performed internal surveys and photos of boiler's components subject to internal survey shall be submitted to the RS surveyor, who reviews the submitted materials and performs the boiler external examination in accordance with 2.9.1, Part II "Survey Schedule and Scope" of the Rules for the Classification Surveys of Ships in Service. If the boiler internal survey (internal examination) documents are drawn up improperly or there are reasonable doubts regarding reliability of the photos submitted, the RS surveyor is entitled to require repeated boiler internal survey in his presence.

**16.5.2.5** During annual survey of the ship, the documentation on boiler and feed water monitoring along with results of annual boiler water analysis shall be submitted to the RS surveyor in accordance with 16.4.2.6."