

# RULES

## FOR TECHNICAL SUPERVISION DURING CONSTRUCTION OF SHIPS AND MANUFACTURE OF MATERIALS AND PRODUCTS FOR SHIPS

ND No. 2-020101-175-E

### RULE CHANGE NOTICE

ENTERS INTO FORCE:

01.07.2024



St. Petersburg  
2024

## **RULES FOR TECHNICAL SUPERVISION DURING CONSTRUCTION OF SHIPS AND MANUFACTURE OF MATERIALS AND PRODUCTS FOR SHIPS**

---

The present Rule Change Notice to the Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships (hereinafter — RCN) has been approved in accordance with the established approval procedure and contains information on amendments and additions, except for editorial amendments. RCN amendments come into force on 1 July 2024 (excluding earlier approved amendments of an urgent matter, published by the Circular Letters after entering into force of the previous version of the Rule Change Notice to the Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships (hereinafter — RCN), specified in the Revision History and highlighted in yellow).

## REVISION HISTORY

### PART I. GENERAL REGULATIONS FOR TECHNICAL SUPERVISION

Item	Applicability	Description	Remarks
<a href="#">Para 7.4.2.2</a>	Manufacturers Quality management system	The requirements have been brought in compliance with current standards	ISO 9001 and GOST R ISO 9001 <b>Entry-into-force date: 31.01.2024</b> (Urgent rule change notice No. 311-05-1991 dated 31.01.2024
<a href="#">Paras 9.2.12.1 — 9.2.12.3</a>	Service suppliers Quality management system	The requirements have been brought in compliance with current standards	ISO 9001 and GOST R ISO 9001 <b>Entry-into-force date: 31.01.2024</b> (Urgent rule change notice No. 311-05-1991 dated 31.01.2024
<a href="#">Para 9.3.20.6.1</a>	Requirements for firms engaged in commissioning testing of ballast water management systems (BWMS) (code 22028000MK) Equipment and facilities	Reference to IMO circular regulating equipment to be used and procedures for ballast water analysis has been introduced	IMO circular BWM.2/Circ.42/Rev.2 <b>Entry-into-force date: 01.01.2024</b> (Circular Letter No. 311-05-1989c dated 29.12.2023

*Rules for Technical Supervision during Construction of Ships  
and Manufacture of Materials and Products for Ships*

4

Item	Applicability	Description	Remarks
<a href="#">Para 9.3.20.6.2</a>	Requirements for firms engaged in commissioning testing of ballast water management systems (BWMS) (code 22028000MK) Equipment and facilities	Reference to IMO circular regulating equipment to be used at commissioning tests has been introduced	IMO circulars BWM.2/Circ.42/Rev.2 and BWM.2/Circ.70/Rev.1 <b>Entry-into-force date: 01.01.2024</b> (Circular Letter No. 311-05-1989c dated 29.12.2023)
<a href="#">Para 9.3.20.7.2</a>	Requirements for firms engaged in commissioning testing of ballast water management systems (BWMS) (code 22028000MK) Sampling and analysis	Text has been amended to unify applicable terms	<b>Entry-into-force date: 01.01.2024</b> (Circular Letter No. 311-05-1989c dated 29.12.2023)
<a href="#">Para 9.3.20.9</a>	Requirements for firms engaged in commissioning testing of ballast water management systems (BWMS) (code 22028000MK) Reference documents	Format of references to IMO circulars has been amended considering possible future revisions	IMO circulars BWM.2/Circ.42/Rev.2 and BWM.2/Circ.70/Rev.1 <b>Entry-into-force date: 01.01.2024</b> (Circular Letter No. 311-05-1989c dated 29.12.2023)
<a href="#">Para 10.3.1</a>	Testing laboratories engaged in non-destructive testing of materials, products, weld quality (code 21001700) Special requirements	Para has been renamed considering Part XIV "Welding" of the RS Rules/C	

*Rules for Technical Supervision during Construction of Ships  
and Manufacture of Materials and Products for Ships*

5

Item	Applicability	Description	Remarks
<a href="#">Para 10.3.1.1</a>	Testing laboratories engaged in non-destructive testing of materials, products, weld quality (code 21001700) Special requirements	The terminology for non-destructive testing (NDT) has been unified in accordance with Part XIV "Welding" of the RS Rules/C	
<a href="#">Para 10.3.5.1.1</a>	Testing laboratories carrying out sampling and check tests (analysis) of anti-fouling system in accordance with AFS Convention (code 21001101MK) Special requirements	Reference has been amended due to adoption of the new IMO resolution MEPC.356(78)	IMO resolution MEPC.356(78) (revokes IMO resolution MEPC.104(49))
<a href="#">Para 10.3.8.2</a>	Special requirements for testing laboratories carrying out sampling and check test (analysis) of ballast water in accordance with International Convention for the Control of Management of Ship's Ballast Water and Sediments, 2004 (BWM Convention) (code 21002900MK) Certification of testing laboratories	Reference to IMO circular regulating procedures for carrying out the "indicative analysis" of ballast water has been introduced	IMO circular BWM.2/Circ.42/ Rev.2 <b>Entry-into-force date: 01.01.2024</b> (Circular Letter No. 311-05-1989c dated 29.12.2023)
<a href="#">Para 10.3.8.3</a> (new)	Special requirements for testing laboratories carrying out sampling and check test (analysis) of ballast water in accordance with International Convention for the Control of Management of Ship's Ballast Water and Sediments, 2004 (BWM Convention) (code 21002900MK) Certification of testing laboratories	New para containing requirements regarding procedure for recognition of testing laboratories performing ballast water analysis has been introduced	IMO circular BWM.2/Circ.42/Rev.2 <b>Entry-into-force date: 01.01.2024</b> (Circular Letter No. 311-05-1989c dated 29.12.2023)

*Rules for Technical Supervision during Construction of Ships  
and Manufacture of Materials and Products for Ships*

6

Item	Applicability	Description	Remarks
<a href="#">Para 11.2.7.1</a>	Manufacturers Quality management system	The requirements have been brought in compliance with current standards	ISO 9001 and GOST R ISO 9001 <b>Entry-into-force date: 31.01.2024</b> (Urgent rule change notice No. 311-05-1991 dated 31.01.2024
<a href="#">Para 11.2.7.2</a> (new)	Manufacturers Quality management system	New para has been introduced containing requirements	ISO 9001 and GOST R ISO 90019001 <b>Entry-into-force date: 31.01.2024</b> (Urgent rule change notice No. 311-05-1991 dated 31.01.2024
<a href="#">Para 12.2.9</a> (new)	Recognition of firms (organizations) Requirements for firms (organizations)	New para containing requirements for quality management system of the firm (organization) has been introduced	<b>Entry-into-force date: 01.01.2024</b> (Circular Letter No. 311-05-1989c dated 29.12.2023

*Rules for Technical Supervision during Construction of Ships  
and Manufacture of Materials and Products for Ships*

7

Item	Applicability	Description	Remarks
<a href="#">Paras 12.2.9.1 and 12.2.9.2</a>	Firms (organizations) Quality management system	The requirements have been brought in compliance with current standards	ISO 9001 and GOST R ISO 9001 <b>Entry-into-force date: 31.01.2024</b> (Urgent rule change notice No. 311-05-1991 dated 31.01.2024)
<a href="#">Appendix 1</a>	Nomenclature of Items of the Register Technical Supervision Fire-fighting outfit	Name of the item of technical supervision for code 06062100MK in the RS Nomenclature has been amended due to the absence of the requirements for fire extinguishing gases and other fire extinguishing substances	<b>Entry-into-force date: 01.01.2024</b> (Circular Letter No. 311-05-1989c dated 29.12.2023)
	Nomenclature of Items of the Register Technical Supervision Materials	Codes and names of the items of technical supervision for section 13000000 Materials in the RS Nomenclature have been amended following the introduction of para 3.4.1 in Part XVIII "Materials" of the Rules for the Classification and Construction of Sea-Going Ships, and the number of codes have been reduced	<b>Entry-into-force date: 01.01.2024</b> (Circular Letter No. 311-05-1989c dated 29.12.2023)
	Nomenclature of Items of the Register Technical Supervision Software	New code 20300000 Electronic record book software has been introduced	<b>Entry-into-force date: 01.01.2024</b> (Circular Letter No. 311-05-1989c dated 29.12.2023)

*Rules for Technical Supervision during Construction of Ships  
and Manufacture of Materials and Products for Ships*

8

Item	Applicability	Description	Remarks
	Nomenclature of Items of the Register Technical Supervision Radio equipment Navigational equipment	In the RS Nomenclature, codes and names of items of technical supervision for sections 04000000MK Radio equipment and 05000000MK Navigational equipment have been considerably revised	<b>Entry-into-force date: 01.01.2024</b> (Circular Letter No. 311-05-1989c dated 29.12.2023)
<a href="#">Appendix 1</a>	Nomenclature of Items of the Register Technical Supervision Switchboards and control and monitoring desks	Group of item of technical supervision for code 11040602 has been amended based on the experience of technical supervision	

**PART II. TECHNICAL DOCUMENTATION**

Item	Applicability	Description	Remarks
<a href="#">Para 4.8</a>	Ships Technical documentation	The terms have been revised for reviewing the technical documentation, which is submitted to the Register by parts	<b>Entry-into-force date: 07.05.2024</b> (Urgent rule change notice No. 311-05-2008 dated 07.05.2024)
<a href="#">Para 8.1</a>	Technical documentation Preparation of results of technical documentation review	Requirement has been added that in case of a single approval the technical documentation review shall be based upon results of technical supervision	
<a href="#">Para 12.2.2.4</a>	Software Report for renewal of the Type Approval Certificate for Software	Form of the Report has been replaced	

*Rules for Technical Supervision during Construction of Ships  
and Manufacture of Materials and Products for Ships*

Item	Applicability	Description	Remarks
Appendix 1, Table 1, <a href="#">item 7.3</a> (new)	Bulk carriers Cargo ships with one or more holds, other than bulk carriers and tankers Cargo holds	Flooding Detection System Manual has been excluded from the list of ship operational documentation. The list of ship operational documentation has been supplemented by Water Level Alarm System Manual	IMO Resolution MSC.188(79)/Rev.2
Appendix 1, Table 1, <a href="#">Item 24.9</a> (new)	Ship operational documentation Ships equipped for using gases as fuel	The list of ship operational documentation is supplemented by the Fuel Handling Manual	

**PART IV. TECHNICAL SUPERVISION DURING MANUFACTURE OF PRODUCTS**

Item	Applicability	Description	Remarks
<a href="#">Para 4.2.2</a>	Passenger ships and special purpose ships, which fire protection shall be arranged equivalent to that of passenger ships Pipe penetrations and cable transits	Cable transits have been exempted from both fire tests and tests of watertightness	IACS UI SC299 (July 2023)
<a href="#">Para 4.3.4</a>	Ships Fire extinguishing media Foam concentrates	Prohibition to use PFOS-containing foam concentrates has been implemented	IMO resolution MSC.532(107) <b>Entry-into-force date:</b> 01.01.2026
Chapter 4, <a href="#">Appendix 1</a>	Passenger ships and special purpose ships, which fire protection shall be arranged equivalent to that of passenger ships Pipe penetrations and cable transits	Cable transits have been exempted from both fire tests and tests for watertightness	IACS UI SC299 (July 2023)

*Rules for Technical Supervision during Construction of Ships  
and Manufacture of Materials and Products for Ships*

Item	Applicability	Description	Remarks
Section 5, Appendix 8, <a href="#">Table 2.2.2</a>	Internal combustion engines Certification of Engine Components Non-destructive examination (NDE)	Footnote 7 regarding requirements for NDE has been clarified	IACS UR M72 (Rev.3 Apr 2023)
Section 5, <a href="#">Appendix 9</a>	ICE with turbochargers Turbochargers Procedure for survey, testing and approval	Amendments have been introduced in accordance with the latest revision IACS UR M73	IACS UR M73 (Rev.2 May 2023)
Section 5, <a href="#">Appendix 12</a> (new)	Gas fueled ICE Explosion Relief Devices for Combustion Air Inlet and Exhaust Gas Manifolds of I.C. Engines Using Gas as Fuel	New Type Testing Procedure has been introduced	IACS UR M82 (Mar 2023)
<a href="#">Para 10.1.4</a> (new)	Manufacture of products Electrical equipment Tests	Possibility of using later versions (including revisions) of international standards, which are referenced to in the test descriptions, has been introduced	IACS UR E10 (Rev.9 Aug 2023)
<a href="#">Para 10.6.3.1</a>	Sea-Going Ships Electrical equipment EMC tests	Expired requirements have been deleted (advance introduction)	
<a href="#">Para 10.6.3.2</a>	Sea-Going Ships Electrical equipment EMC tests	Expired requirements have been deleted (advance introduction), the name and interferences units of measurement generated in power supply and input-output circuits have been corrected	

*Rules for Technical Supervision during Construction of Ships  
and Manufacture of Materials and Products for Ships*

Item	Applicability	Description	Remarks
<a href="#">Para 10.6.3.3</a>	Sea-Going Ships Electrical equipment EMC tests	Expired requirements have been deleted (advance introduction), the name and interferences units of measurement generated in power supply and input-output circuits have been corrected	
<a href="#">Para 12.2.4</a> (new)	Manufacture of products Automation equipment Tests of automation equipment	Possibility of using later versions (including revisions) of international standards, which are referenced to in the test descriptions, has been introduced	IACS UR E10 (Rev.9 Aug 2023)
<a href="#">Para 12.6.5</a>	Sea-Going Ships Automation equipment Vibration Tests	Expired requirements have been deleted (advance introduction)	
<a href="#">Para 12.6.8</a>	Sea-Going Ships Automation equipment Tests for heat stability	Reference to the IEC standard has been specified	
<a href="#">Para 12.6.10</a>	Sea-Going Ships Automation equipment Damp heat tests	Expired requirements have been deleted (advance introduction)	
<a href="#">Para 12.6.11</a>	Sea-Going Ships Automation equipment Tests for exposure to salt mist (corrosion resistance)	Expired requirements have been deleted (advance introduction)	
<a href="#">Para 12.6.14</a>	Sea-Going Ships Automation equipment Tests for the level of radiated electromagnetic emission	Expired requirements have been deleted (advance introduction)	

*Rules for Technical Supervision during Construction of Ships  
and Manufacture of Materials and Products for Ships*

Item	Applicability	Description	Remarks
<a href="#">Para 12.6.15.1</a>	Sea-Going Ships Automation equipment Resistance to conductive low frequency interference	Terms related to higher voltage harmonics have been specified	
<a href="#">Para 12.6.15.2</a>	Sea-Going Ships Automation equipment Tests for resistance to conducted radio frequency interference	Expired requirements have been deleted (advance introduction)	
<a href="#">Para 12.6.15.3</a>	Manufacture of products Automation equipment Test for resistance to nanosecond pulse interference due to fast transient processes in the circuits of the a.c. and d.c. supply sources, signal and control circuits	Requirements for tests using capacitive coupling clamps have been introduced. Expired requirements have been deleted (advance introduction)	
	Sea-Going Ships Automation equipment Test for resistance to nanosecond pulse interference due to burst electrical fast transient in the AC supply lines, signal, data and control circuits	Expired requirements have been deleted (advance introduction)	
<a href="#">Para 12.6.15.4</a>	Sea-Going Ships Automation equipment Tests for resistance to microsecond pulse interference (Surge)	Expired requirements have been deleted (advance introduction)	

*Rules for Technical Supervision during Construction of Ships  
and Manufacture of Materials and Products for Ships*

Item	Applicability	Description	Remarks
<a href="#">Para 12.6.15.5</a>	Sea-Going Ships Automation equipment Tests for electrostatic discharge resistance	Expired requirements have been deleted (advance introduction)	
<a href="#">Para 12.6.15.6</a>	Sea-Going Ships Automation equipment Tests for resistance to electromagnetic field	Expired requirements have been deleted (advance introduction)	
	Manufacture of products Automation equipment Tests for resistance to electromagnetic field	An additional reference has been introduced to the international standard IEC 61000-4-3:2006+AMD1:2007+AMD2:2010	IACS UR E10 (Rev.9 Aug 2023)
<a href="#">Para 12.6.16</a>	Sea-Going Ships Automation equipment Test for tolerable levels of radiated conductive interference	Reference to the IEC standard has been specified	
<a href="#">Para 12.6.17</a>	Sea-Going Ships Automation equipment Flame retardant tests	Expired requirements have been deleted (advance introduction)	
Chapter 17, Appendix 1, <a href="#">Section 7</a>	Equipment for the prevention of pollution from ships Specifications for the equipment tests	A reference to the relevant IMO resolution has been introduced in connection with its entry into force	IMO resolution MEPC.368(79)

## **PART I. GENERAL REGULATIONS FOR TECHNICAL SUPERVISION**

### **7 SURVEY OF SERIAL PRODUCTS**

#### **7.4 SURVEY BASED ON APPROVAL OF THE QUALITY CONTROL SYSTEM, TIER 2 — CKK2**

**Para 7.4.2.2** is replaced by the following text:

**"7.4.2.2** The manufacturer shall establish, document, implement, maintain and certify a quality management system in compliance with the requirements of ISO 9001/GOST R ISO 9001 (current version) or the integrated system. Availability and maintenance of the quality management system in compliance with the requirements of ISO 9001/GOST R ISO 9001 (current version) or the integrated system certified by an accredited certification body or in a voluntary certification system as well as capability to support and demonstrate the consistent fulfillment of the established requirements are deemed sufficient to meet the condition.

The Register reserves the right to audit the firm's quality management system certified in the voluntary certification system."

## **9 RECOGNITION OF SERVICE SUPPLIERS**

### **9.2 REQUIREMENTS**

**Paras 9.2.12.1 — 9.2.12.3** are replaced by the following text:

**"9.2.12.1** The supplier shall establish, document, implement and maintain a quality management system that is capable of supporting and demonstrating the consistent fulfillment of the established requirements and assuring the quality of works performed.

The quality management system shall be documented and, at least, include the following:

- .1 quality management system documentation;
- .2 internal audits and management reviews;
- .3 control of documents and records;
- .4 requirements for personnel and their competence;
- .5 requirements for equipment and premises;
- .6 measurement assurance and technical maintenance;
- .7 requirements for submission of reporting results;
- .8 requirements for engaging subcontractors;
- .9 ensuring monitoring, review and evaluation of the QMS elements established by

the service supplier, check and control to ensure the compliance of works with the working procedures.

**9.2.12.2** Availability and maintenance of the quality management system in compliance with the requirements of ISO 9001/GOST R ISO 9001 (current version) or the integrated system certified by an accredited certification body or in a voluntary certification system as well as capability to support and demonstrate the consistent fulfillment of the established requirements are deemed sufficient to meet the condition.

The Register reserves the right to audit the firm's quality management system certified in the voluntary certification system.

**9.2.12.3** A service supplier recognized by the equipment manufacturer or a person (agent) authorized by the equipment manufacturer shall ensure availability and maintenance of the quality management system in compliance with the requirements of ISO 9001/GOST R ISO 9001 (current version) or the integrated system certified by an accredited certification body or in a voluntary certification system. Capability of confirming and demonstrating the consistent fulfillment of the established requirements is deemed sufficient to meet the condition."

### **9.3 SPECIAL REQUIREMENTS**

**Para 9.3.20.5.1. The fourth paragraph** is amended as follows:

"have knowledge of the latest versions of IMO circulars BWM.2/Circ.70/Rev.1, as may be amended "Guidance for the Commissioning Testing of Ballast Water Management Systems" and IMO BWM.2/Circ.42/Rev.2 "Guidance on Ballast Water Sampling and Analysis for Trial Use in accordance with the BWM Convention and Guidelines (G2)", as may be amended;"

**Paras 9.3.20.6.1 and 9.3.20.6.2** are amended as follows:

**9.3.20.6.1** Equipment, procedures and methods for detailed analysis described in the latest version of IMO circular BWM.2/Circ.42 "Guidance on Ballast Water Sampling and Analysis for Trial Use in accordance with the BWM Convention and Guidelines (G2)", where applicable, shall be in accordance with relevant international standard and/or accepted industry standards.

**9.3.20.6.2** Testing shall be conducted using equipment for indicative analysis equipment described in the latest version of IMO circular BWM.2/Circ.42 "Guidance on Ballast Water Sampling and Analysis for Trial Use in accordance with the BWM Convention and Guidelines (G2)", accepted by the Register. Information and reference to the acceptance documents for the equipment used shall be submitted to the Register in the report which includes the results from the commissioning test as per the latest version of IMO circular BWM.2/Circ.70/Rev.4 "Guidance for the Commissioning Testing of Ballast Water Management Systems"; ~~as may be amended.~~ In case the indicative analysis equipment used has not been previously accepted by the Register, the following information shall be submitted:

equipment information — type, model, technology used, evidence of calibration, detection range, organism type/size classes that can be analyzed;

test results conduct for the verification of accuracy, detection range and repeatability; certificate of standards, if available."

**Para 9.3.20.7.2** is amended as follows:

**9.3.20.7.2** The representative samples shall be analyzed as a minimum for the two size classes of organisms, namely  $\geq 50 \mu\text{m}$  and  $\geq 10 \mu\text{m}$  to  $< 50 \mu\text{m}$ , specified in ~~IMO Circular~~ IMO circular BWM.2/Circ.70/Rev.4 "Guidance for the Commissioning Testing of Ballast Water Management Systems" using indicative analysis methods. Detailed analysis of all organism type/size classes or combination of ~~detail~~ detailed and indicative ~~analysis~~ analyses can also be performed."

**Para 9.3.20.9** is amended as follows:

**"9.3.20.9** Reference documents.

The service supplier shall have access to the following documents, as may be amended:  
IMO resolution MEPC.300(72) "Code for Approval of Ballast Water Management Systems (BWMS Code)";

IMO resolution MEPC.173(58) "Guidelines for Ballast Water Sampling (G2)";

IMO circular BWM.2/Circ.42/Rev.2 "Guidance on Ballast Water Sampling and Analysis for Trial Use in accordance with the BWM Convention and Guidelines (G2)" (the latest version);

IMO circular BWM.2/Circ.70/Rev.4 "Guidance for the Commissioning Testing of Ballast Water Management Systems" (the latest version);

IMO circular BWM.2/Circ.61/Rev.1 "Guidance on Methodologies that may be used for Enumerating Viable Organisms for Type Approval of Ballast Water Management Systems";

IMO circular BWM.2/Circ.69 "Guidance on System Design Limitations of Ballast Water Management Systems and their Monitoring";

IMO resolution MEPC.279(70) "2016 Guidelines for Approval of Ballast Water Management Systems (G8)";

IMO resolution A.1156(32) "Survey Guidelines under the Harmonized System of Survey and Certifications (HSSC), 2017 (for BWMS that were type approved to the 2016 (G8))".

## 10 RECOGNITION OF TESTING LABORATORIES

### 10.3 SPECIAL REQUIREMENTS

**Para 10.3.1** is amended as follows:

**"10.3.1 Special requirements for testing laboratories engaged in ~~penetrant testing (PT), radiographic testing (RT), ultrasonic testing (UT), magnetic particle testing (MT)~~ non-destructive testing (NDT) of materials, products, weld quality (code 21001700)."**

**Para 10.3.1.1** is amended as follows:

**"10.3.1.1** Abbreviations.

For the purpose of this Chapter, the following abbreviations apply:

NDT — non-destructive testing. Comprising, but not limited to the methods and techniques ~~VT, MT, PT, RT, RT-D, UT, PAUT, TOFD, ET and/or ACFM.~~

VT — visual testing.

MT — magnetic particle testing.

PT — penetrant testing.

RT — radiographic testing.

RT-D — digital radiography ~~(several techniques within the method RT, e.g. computed radiography using storage phosphor imaging plates (RT-CR) or direct digital detector array radiography (DDA)).~~

UT — ultrasonic testing.

PAUT — phased array ultrasonic testing (technique within the method UT).

TOFD — time of flight diffraction (technique within the method UT).

ET — electromagnetic testing (i.e. eddy current testing and/or alternating current field measurements [ACFM]).

~~VT—visual testing.~~"

**Para 10.3.5.1.1** is amended as follows:

"**10.3.5.1.1** The testing laboratory facilities shall be consistent with the procedures for sampling and check tests (analysis) of anti-fouling system specified in IMO resolution MEPC.404(49) 356(78) "Guidelines for Brief Sampling of Anti-Fouling Systems on Ships"."

**Para 10.3.8.2** is amended as follows:

"**10.3.8.2** ~~If the~~The testing laboratory performs certified under code 21002900MK and performing sampling on board the ship during BWMS commissioning tests in accordance with the latest version of IMO circular BWM.2/Circ.70/Rev.4 "Guidance for the Commissioning Testing of Ballast Water Management Systems" and/or their indicative analysis described in the latest version of IMO BWM.2/Circ.42 "Guidance on Ballast Water Sampling and Analysis for Trial Use in accordance with the BWM Convention and Guidelines (G2)", and has having operators participating in these tests, ~~the testing laboratory~~ shall be additionally certified as a service supplier under code 22028000MK and comply with the applicable requirements for service suppliers specified in 9.3.20 of this Part of the Rules."

**New para 10.3.8.3** is introduced reading as follows:

"**10.3.8.3** Certification as a service supplier is not required if the testing laboratory is certified under code 21002900MK, does not participate in ballast water sampling on board the ship during commissioning tests and performs only detailed analysis of samples submitted by the service supplier as described in the latest version of IMO circular BWM.2/Circ.42 "Guidance on Ballast Water Sampling and Analysis for Trial Use in accordance with the BWM Convention and Guidelines (G2)"."

## 11 RECOGNITION OF MANUFACTURERS

### 11.2 REQUIREMENTS

**Para 11.2.7.1** is replaced by the following text:

"**11.2.7.1** The manufacturer shall establish, document, implement and maintain a quality management system that is capable of supporting and demonstrating the consistent fulfillment of the established requirements and assuring the quality of works performed.

The quality management system shall be documented and, at least, include the following:

- .1 quality management system documentation;
- .2 internal audits and management reviews;
- .3 control of documents and records;
- .4 requirements for personnel and their competence;
- .5 requirements for equipment and premises;
- .6 measurement assurance and technical maintenance;
- .7 requirements for submission of reporting results;
- .8 requirements for engaging subcontractors;

.9 ensuring monitoring, review and evaluation of the QMS elements established by the manufacturer, check and control to ensure the compliance of works with the working procedures."

**New para 11.2.7.2** is introduced reading as follows:

"**11.2.7.2** Availability and maintenance of the quality management system in compliance with the requirements of ISO 9001/GOST R ISO 9001 (current version) or the integrated system certified by an accredited certification body or in a voluntary certification system as well as capability to support and demonstrate the consistent fulfillment of the established requirements are deemed sufficient to meet the condition.

The Register reserves the right to audit the firm's quality management system certified in the voluntary certification system."

## **12 RECOGNITION OF FIRMS (ORGANIZATIONS)**

### **12.2 REQUIREMENTS**

**New para 12.2.9** is introduced reading as follows:

**"12.2.9 Quality management system.**

**12.2.9.1** The firm shall have a documented system covering at least the following:

- .1 the Code of Ethics to conduct the relevant activity;
- .2 maintenance of equipment;
- .3 measurement assurance, checking (calibration) of measuring equipment;
- .4 supervision and verification to ensure compliance with operational procedures;
- .5 recording and reporting of information;
- .6 quality management of subsidiaries, agents and subcontractors;
- .7 job preparation;
- .8 corrective and preventive actions related to complaints;
- .9 periodic review of work process procedures, complaints, corrective actions, and issuance, maintenance and control of documents.

**12.2.9.2** A documented management quality system complying with the most current version of ISO 9000 series and including the above items, would be considered acceptable according to 12.2.9.1."

**Paras 12.2.9.1 and 12.2.9.2** are replaced by the following text:

**"12.2.9.1** The firm shall establish, document, implement and maintain a quality management system that is capable of supporting and demonstrating the consistent fulfillment of the established requirements and assuring the quality of works performed.

The quality management system shall be documented and, at least, include the following:

- .1 quality management system documentation;
- .2 internal audits and management reviews;
- .3 control of documents and records;
- .4 requirements for personnel and their competence;
- .5 requirements for equipment and premises;
- .6 measurement assurance and technical maintenance;
- .7 requirements for submission of reporting results;

- .8 requirements for engaging subcontractors;
- .9 ensuring monitoring, review and evaluation of the QMS elements established in the organization, check and control to ensure the compliance of works with working procedures.

**12.2.9.2** Availability and maintenance of the quality management system in compliance with the requirements of ISO 9001/GOST R ISO 9001 (current version) or the integrated system certified by an accredited certification body or in a voluntary certification system as well as capability to support and demonstrate the consistent fulfillment of the established requirements are deemed sufficient to meet the condition.

The Register reserves the right to audit the firm's quality management system certified in the voluntary certification system."

**APPENDIX 1**

**NOMENCLATURE OF ITEMS OF THE REGISTER TECHNICAL SUPERVISION**

**Code 06062100MK** is amended as follows:

"

06062100MK	foam concentrate, powder, <del>special gas and other fire extinguishing substances</del>	3			
------------	--	---	--	--	--

"

**Codes 13121000, 13121110, 13121120, 13121130, 13121300, 13121400, 13121410 and 13121420** are deleted.

**Codes 13120000, 13121100 and 13121200** are amended as follows:

"

13120000	<b><u>Tubes and pipes for ships, MODU and FOP:</u></b>				
13121100	<del>ship construction structural tubes for hulls and MODU:</del>	<u>4M</u>		<u>K</u>	<u>Single approval in accordance with 2.4.1.2 and 2.4.1.3 of Part III of these Rules is allowed</u>

*Rules for Technical Supervision during Construction of Ships  
and Manufacture of Materials and Products for Ships*

20

13121200	<del>Ship construction tubes for shipborne and MODU/FOP machinery tubes and pipes for Class I and II systems, boilers, heat exchangers, pressure vessels of Class I and II and machinery</del>	<del>54M</del>		K	Tubes used in ship arrangements and machinery, etc. supplied according to the approved technical documentation on the item of application in accordance with 2.4.1.3, Part III of these Rules Single approval in accordance with 2.4.1.2 and 2.4.1.3 of Part III of these Rules is allowed
----------	--	----------------	--	---	---

**Code 13162000** is amended as follows:

13162000	<del>pipes structural tubes, tubes and pipes for Class I and II systems, boilers, heat exchangers, pressure vessels of Class I and II and machinery</del>	<del>4M</del>			Single approval in accordance with 2.4.1.2, and 2.4.1.3 of Part III of these Rules is allowed
----------	---	---------------	--	--	---

**Code 13201200** is amended as follows:

13201200	<del>pipes structural tubes, tubes and pipes for Class I and II systems, boilers, heat exchangers, pressure vessels of Class I and II and machinery</del>	<del>4M</del>			Single approval in accordance with 2.4.1.2 and 2.4.1.3 of Part III of these Rules is allowed
----------	---	---------------	--	--	--

**Code 13202200** is amended as follows:

13202200	<del>pipes structural tubes, tubes and pipes for Class I and II systems, boilers, heat exchangers, pressure vessels of Class I and II and machinery</del>	<del>4M</del>			Single approval in accordance with 2.4.1.2 and 2.4.1.3 of Part III of these Rules is allowed
----------	---	---------------	--	--	--

*Rules for Technical Supervision during Construction of Ships  
and Manufacture of Materials and Products for Ships*

21

**Code 13203200** is amended as follows:

13203200	<del>pipes-structural tubes, tubes and pipes for Class I and II systems, boilers, heat exchangers, pressure vessels of Class I and II and machinery</del>	<u>4M</u>			Single approval in accordance with 2.4.1.2 and 2.4.1.3 of Part III of these Rules is allowed
----------	---	-----------	--	--	--

**New code 20300000** is introduced reading as follows:

20300000	Electronic record book software	2	СТОП		
----------	---------------------------------	---	------	--	--

**Sections 04000000MK Radio equipment and 05000000MK Navigational equipment** are replaced by the following text:

Code of item of technical supervision	Item of technical supervision	Technical supervision of the Register			Remarks
		Group of item of technical supervision (1 – 5)	Other documents issued by RS	Branding	
1	2	3	4	5	6
04000000MK	<b>RADIO EQUIPMENT</b>				
04021200MK	Aeronautical two-way VHF radio telephone apparatus	3			
04120000MK	VHF radio installation	3			
04130000MK	MF radio installation	3			
04140000MK	MF/HF radio installation	3			
04140010MK	HF receiver for MSI and SAR	3			
04150000MK	Inmarsat-C SES	3			
04150200MK	Ship security alert system (SSAS)	3			
04150300MK	Ship earth station for use in the GMDSS	3			
04160000MK	Emergency position-indicating radio beacon (EPIRB)	3			
04180000MK	NAVTEX receiver	3			
04190000MK	EGC receiver	3			
04220000MK	Search and rescue locating devices (SRLD): Radar SART	3			
04220100MK	Search and rescue locating devices (SRLD): AIS-SART	3			
04230000MK	Survival craft portable two-way VHF radiotelephone apparatus	3			
04230001MK	Fixed survival craft two-way VHF radiotelephone apparatus	3			
04300000MK	Integrated communication system (ICS)	3			

*Rules for Technical Supervision during Construction of Ships  
and Manufacture of Materials and Products for Ships*

Code of item of technical supervision	Item of technical supervision	Technical supervision of the Register			Remarks
		Group of item of technical supervision (1 — 5)	Other documents issued by RS	Branding	
04400000	Radio equipment not mentioned above	2			
05000000MK	<b>NAVIGATIONAL EQUIPMENT</b>				
05010000MK	Standard magnetic compass	3			
05010100MK	Transmitting heading device THD (GNSS method)	3			
05010200MK	Transmitting heading device THD (magnetic method)	3			
05010300MK	Transmitting heading device THD (Gyroscopic method)	3			
05020000MK	Gyro compass	3			
05020010MK	Gyro compass for high-speed craft	3			
05030000MK	Speed and distance measuring equipment through the water (SDME)	3			
05030100MK	Speed and distance measuring equipment over the ground in the forward and athwartships direction (SDME)	3			
05050000MK	Echo-sounding equipment	3			
05060000MK	Heading control system (HCS)	3			
05060010MK	Heading control system for high-speed craft	3			
05060100MK	Track control system	3			
05070000MK	Integrated navigation system	3			
05120000MK	Rate-of-turn indicator	3			
05130000MK	Electronic chart display and information system (ECDIS)	3			
05140000MK	<b>Radio navigation equipment:</b>				
05140210MK	Radar equipment for ships less than 500 gt (CAT 3)	3			
05140220MK	Radar equipment for ships less than 10000 gt (CAT 2)	3			
05140230MK	Radar equipment for ships of 10000 gt and upwards (CAT 1)	3			
05140231MK	Radar equipment for high-speed craft (CAT 1H, CAT 2H)	3			
05140232MK	Chart Radar equipment (CAT 1C, CAT 2C)	3			
05140233MK	Chart Radar equipment for high-speed craft (CAT 1HC, CAT 2HC)	3			
05140240	Radar ice display	3			
05140300MK	GNSS receiver (GPS)	3			
05140310MK	GNSS receiver (GLONASS)	3			
05140320MK	GNSS receiver (Galileo)	3			
05140330MK	Combined GPS/GLONASS equipment	3			
05140340MK	Differential beacon receiver for DGPS and DGLONASS equipment	3			
05140400MK	Radar reflector — passive type	2			

*Rules for Technical Supervision during Construction of Ships  
and Manufacture of Materials and Products for Ships*

Code of item of technical supervision	Item of technical supervision	Technical supervision of the Register			Remarks
		Group of item of technical supervision (1 — 5)	Other documents issued by RS	Branding	
05150000MK	Class A shipborne equipment of the automatic identification system (AIS)	3			
05160100MK	Voyage data recorder (VDR)	3			
05160200MK	Simplified voyage data recorder (S-VDR)	3			
05170000MK	Sound reception system	3			
05190000MK	Bridge Navigational Watch Alarm System (BNWAS)	3			
05200000MK	Equipment with Long Range Identification and Tracking (LRIT) capability	3			
05220000	Meteorological complex	2			
05220100MK	Night vision equipment for high-speed craft	3			
05230000	Electronic inclinometer	2			
05300000	Navigational equipment which is not mentioned above	2			
05410000	<b>Cyber safety equipment for radio and navigational equipment:</b>				
05411000	450-Node	2			This may be taken as an additional code for the equipment listed in sections 04000000MK and 05000000MK
05412000	460-Node	2			This may be taken as an additional code for the equipment listed in sections 04000000MK and 05000000MK
05413000	460-Switch	2			
05414000	460-Forwarder	2			
05415000	460-Gateway	2			

**Code 11040602** is amended as follows:

11040602	relays $I \leq 63$ A	<u>32</u>			
----------	----------------------	-----------	--	--	--

## **PART II. TECHNICAL DOCUMENTATION**

### **4 TECHNICAL DOCUMENTATION ON SHIPS**

**Para 4.8.** The **second paragraph** is amended as follows:

"In case the documentation is submitted by parts, ~~its review takes the review of each part~~ shall not exceed 30 working days from the date of receiving the last portion that part."

### **8 PREPARATION OF RESULTS OF TECHNICAL DOCUMENTATION REVIEW**

**Para 8.1** is amended as follows:

**"8.1** Depending on the type of documentation, the results of the technical documentation review by the Register are finalized by appropriate stamping of the documents and/or drawing up a conclusion letter.

When reviewing the technical documentation in electronic form, stamping is carried out by software tools and is certified by digital signature of the Register authorized specialist.

In case of a single approval of technical documentation simultaneously with the survey of products without compiling a conclusion letter, it is allowed to put the surveyor's stamp on the front page of the approved documentation with indication of the date of review ~~and, an~~ application number pursuant to which the documentation was reviewed, and the review result ("Approved", "For information", etc.)."

## **12 SOFTWARE**

### **12.2 ONBOARD SOFTWARE FOR STABILITY CALCULATIONS**

**Para 12.2.2.4** is amended as follows:

**"12.2.2.4** In case of satisfactory verifications results, the Report (form ~~6.3.406.3.29~~) and Type Approval Certificate for Software (CTOП) (form 6.8.5) are issued."

**SHIP OPERATIONAL DOCUMENTATION FOR THE ITEMS  
OF RS TECHNICAL SUPERVISION**

**Table 1. Item 2.20** is deleted:

2.20	Flooding Detection System Manual	+	+	Approved	For bulk carriers — refer to SOLAS reg. XII/12, IMO resolution MSC.145(77) and 3.4.11, Part V "Subdivision" of the Rules for the Classification and Construction of Sea-Going Ships; for cargo ships having length < 100 m, which are not bulk carriers — refer to IMO resolution MSC.216(82), 3.4.13, Part V "Subdivision" of the Rules for the Classification and Construction of Sea-Going Ships; cargo ships having one cargo hold and which are not bulk carriers, built before 01.01.2007, shall comply with relevant requirements not later than 31.12.2009
------	----------------------------------	---	---	----------	--

**Items 2.21 — 2.24 and references thereto** are renumbered **2.20 — 2.23** accordingly.

**Table 1. New item 7.3** is introduced reading as follows:

7.3	Water Level Alarm System Manual	+	+	Approved	For bulk carriers, ore carriers and combination carriers, as well as for cargo ships with one or more holds, other than bulk carriers, ore carriers, combination carriers and tankers — refer to IMO resolution MSC.188(79)/Rev.2; 7.10.9, Part XI "Electrical Equipment" of the Rules for the Classification and Construction of Sea-Going Ships
-----	---------------------------------	---	---	----------	---

**Table 1. New Item 24.9** is introduced reading as follows:

24.9	Fuel Handling Manual	+	–	Agreed	18.2.3 and 18.4.2.1 of the IGF Code (IMO resolution MSC.391(95), as amended); Sect. 9, 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 Sea-Going Ships
------	----------------------	---	---	--------	--

## **PART IV. TECHNICAL SUPERVISION DURING MANUFACTURE OF PRODUCTS**

### **4 FIRE PROTECTION MATERIALS, STRUCTURES AND PRODUCTS**

#### **4.2 FIRE PROTECTION MATERIALS, STRUCTURES AND PRODUCTS**

**Para 4.2.2** is amended as follows:

**"4.2.2** In addition to fire tests, structural fire protection products (like doors, fire dampers of ventilation systems, automatic closing devices of fire doors) are checked for operability according to the Register-approved program.

Type approval of pipe penetrations ~~and cable transits~~, where heat-sensitive materials are used and which are subject to fire integrity and watertightness requirements, and which are designed to be fitted in bulkheads and decks of passenger ships and special purpose ships, which fire protection shall be arranged equivalent to that of passenger ships, shall include a prototype test of watertightness in accordance with the procedure specified in Appendix 1 to this Section.

Fire tests and tests of watertightness for such penetrations ~~and transits~~ designed to be fitted in bulkheads and decks of cargo ships and special purpose ships, which fire protection shall be arranged equivalent to that of cargo ships may be performed independently of each other."

#### **4.3 ITEMS OF FIRE EXTINGUISHING SYSTEMS AND FIRE-FIGHTING OUTFIT, FIRE EXTINGUISHING MEDIA**

**Para 4.3.4** is supplemented by the following text:

"On ships contracted on or after 01.01.2026 the use of foam concentrates containing perfluorooctanesulfonic acid (PFOS) in fixed foam fire-fighting systems and foam fire extinguishers is prohibited."

#### *APPENDIX 1*

**Appendix 1** is amended as follows:

#### **"PROCEDURE FOR TYPE APPROVAL OF PIPE PENETRATIONS ~~AND CABLE TRANSITS WITH TESTS FOR WATERTIGHTNESS~~**

Type approval of pipe penetrations ~~and cable transits~~ fitted to ensure the watertight integrity of a bulkhead or deck where heat-sensitive materials are used and which are required to be both fireproof and watertight shall include two consecutive prototype tests of watertightness according to the intended location, namely:

**1** Pipe penetrations ~~or cable transits~~ after having undergone the standard fire test in accordance with the requirements of Part 3 of the FTP Code shall be tested for a period of at least 30 min under hydraulic pressure of not less than 1,5 times the design pressure at flooding as defined in 1.3.4.1, Part II "Hull" of the Rules for the Classification and Construction of Sea-Going Ships, and be not less than 0,1 MPa. The pressure shall be applied to the same side of the division as the fire test. There shall be no leakage during this test.

**2** The fire tested pipe penetration ~~or cable transit~~ shall continue to be tested for further 30 min with the test pressure. The quantity of water leakage shall not exceed a total of 1 litre.

The pressure test shall be carried out with the pipe section with plug ~~and cable section~~ used in the fire test still in place. However, any pipe insulation fitted for the purpose of the fire test may be removed before the pressure test.

The type approval shall be considered valid only for the tested pipe penetration considering its typology (e.g. thermoplastic and multilayer), pipe class, the maximum/minimum dimensions tested, and the type and fire rating of the division."

## 5 MACHINERY

### APPENDIX 8

#### PROCEDURE FOR SURVEY AND ISSUE OF DOCUMENTS OF ICE COMPONENTS

**Table 2.2.2. Footnote 7** is amended as follows:

<sup>7</sup> ~~No~~ Non-destructive examination means e.g. ultrasonic testing, crack detection by MPI or DP. When certain NDE method on the finished component is impractical (for example UT for items 12 and 13), the NDE method can be performed at earlier appropriate stages in the production of the component (refer to 1.2)."

### APPENDIX 9

#### PROCEDURE FOR SURVEY, TESTING, APPROVAL OF TURBOCHARGERS AND THEIR MATCHING ON ICE

##### 3. DESIGN REQUIREMENTS AND CORRESPONDING TYPE TESTING.

**Paras 3.2.4, 3.2.5 and 3.2.6** are amended as follows:

**3.2.4** Containment tests shall be performed at ~~working temperature~~ a temperature which is not lower than the maximum allowable temperature of the turbocharger to be specified by the manufacturer.

**3.2.5** Manufacturers shall determine whether cases more critical than those defined in 3.2.3. and 3.2.4 exist with respect to containment safety. Where such a case is identified, evidence of containment safety shall also be provided for that case.

**3.2.5~~6~~** A numerical analysis (simulation) such as Finite Element Method (FEM) of sufficient containment integrity of the casing based on calculations by means of a simulation model may be accepted in lieu of the practical containment test, provided that:

the numerical simulation model has been tested and its suitability/accuracy has been proven by direct comparison between calculation results and the practical containment test for a reference application (reference containment test). This test shall be performed at least once by the manufacturer for acceptance of the numerical simulation method in lieu of tests;

the corresponding numerical simulation for the containment is performed for the same speeds as specified for the containment test;

material properties for high-speed deformations shall be applied in the numeric simulation. The correlation between normal properties and the properties at the pertinent deformation speed shall be substantiated;

the design of the TC regarding geometry and kinematics shall be similar to the TC that was used for the reference containment test. ~~In general, totally new designs shall call for a new reference containment test.~~

**New para 3.2.7** is introduced after renumbered para 3.2.6:

"3.2.7 In cases where a totally new design is adopted for a turbocharger for which an application for type approval certification has been requested, new reference containment tests shall be performed. Totally new design means the principal differences between a new turbocharger and previous ones are related to geometry and kinematics. The turbochargers shall be regarded as having a totally new design if the structure and/or material of the turbocharger casings are changed, or any of, but not limited to, the following items are changed from the previous design:

maximum permissible exhaust gas temperature;  
number of bearings;  
number of turbine blades;  
number of turbine wheels and/or compressor wheels;  
direction of inlet air and/or exhaust gas (e.g., axial flow orientation, radial flow orientation);

or

type of the turbocharger drive (e.g., axial turbine type, radial turbine type, mixed flow turbine type)."

**Para 3.4.3** is amended as follows:

"**3.4.3** TC for the low, medium, and high-speed engines shall be subjected to at least 500 load cycles at the limits of operation. This test may be waived if the TC together with the engine is subjected to this kind of low cycle testing (refer to Appendix 6)."

**New Appendix 12** is introduced reading as follows:

*"APPENDIX 12*

**TYPE TESTING PROCEDURE FOR EXPLOSION RELIEF DEVICES  
FOR COMBUSTION AIR INLET AND EXHAUST GAS MANIFOLDS  
OF I.C. ENGINES USING GAS AS FUEL**

**1. SCOPE.**

**1.1** To specify testing procedure for explosion relief devices for combustion air inlet manifold and exhaust gas manifold of internal combustion engines using gas as fuel.

**2. DEFINITIONS.**

**2.1** Definitions addressing gas as fuel as given in Ch. 9.2, Part IX "Machinery" of the Rules for the Classification and Construction of Sea-Going Ships, apply.

Explosion relief device (ERD) means a device to protect a component against a determined overpressure in the event of a gas explosion. The device is fitted with a flame arrester and may be a valve, a rupture disc or other, as applicable.

### 3. DOCUMENTS.

**3.1** Prior to testing, the following documentation for the ERD shall be submitted for approval:

- .1 drawings (sectional drawings, details, assembly etc.);
- .2 specification data sheet including operating conditions and design limits such as:
  - .2.1 maximum permissible operating pressure, resulting from maximum charging air or exhaust gas back pressure;
  - .2.2 maximum permissible operating temperature, resulting from maximum charging air or exhaust gas temperature;
  - .2.3 static opening pressure, resulting from maximum charging air or exhaust gas back pressure;
  - .2.4 maximum explosion pressure, i.e. maximum pressure that the device can withstand
  - .2.5 geometric relief area;
- .3 product marking;
- .4 installation and operation manual;
- .5 test program;
- .6 specification of test vessel;

### 4. TESTS.

#### **4.1 Test specimens**

**4.1.1** The ERD used for the explosion test shall be selected from the manufacturer's production line by a representative of the Register:

- .1 as a finished certified component itself; or
- .2 on samples taken from earlier stages in the production of the component, when applicable.

**4.1.2** If necessary, an additional ERD may need to be selected for the demonstration of the opening pressure. The selected ERD has to be clearly marked.

**4.1.3** If applicable, the selected ERD shall be representative for the type range and operating conditions, for example:

- .1 kind of ERD (valve, rupture disc, etc.);
- .2 mounting orientation (vertical, horizontal);
- .3 design of ERD (e.g., spring design, sealing);
- .4 design of flame arrester;
- .5 ERD intended to be fitted to the air inlet or exhaust gas manifold of an engine having a turbocharger with characteristics as per the testing conditions in 4.3.2.

**4.1.4** The selection of the representative ERD is subject to approval by the Register.

#### **4.2 Demonstration of opening pressure**

**4.2.1** The ERD which has been selected shall be subjected to a pressure test at the manufacturer's works to demonstrate that the static opening pressure is kept within the manufacturer's specification and that the ERD is air tight at the maximum permissible operating pressure for at least 30 seconds

#### **4.3 Explosion test**

**4.3.1** Test facility.

**4.3.1.1** The test facilities shall be accredited to a national or international standard, e.g. ISO/IEC 17025:2017, and shall be acceptable to the Register.

**4.3.1.2** The test facilities shall be equipped so that they can perform and record explosion testing in accordance with this procedure.

**4.3.1.3** The test facilities shall have equipment for controlling and measuring a methane gas concentration within a test vessel to an accuracy of  $\pm 0.1\%$ .

**4.3.1.4** The test facilities shall be capable of effective point-located ignition of a methane/air mixture.

**4.3.1.5** The test facility arrangements shall be capable of measuring and recording the pressure changes throughout an explosion test at a frequency recognizing the speed of the events during an explosion (10 kHz or above).

**4.3.1.6** The explosion test (refer to 4.3.5) shall be documented by high speed (250 frames/s or above) video recording. The video recording shall be provided with a time stamp.

**4.3.2** Test vessel.

**4.3.2.1** The test vessel is a simplified model of the air inlet or exhaust gas manifold. The free area of the connected turbo charger (compressor or turbine wheel) shall be considered.

**4.3.2.2** The test vessel shall comply with the following requirements:

- .1 the shape of the test vessel shall correspond to a pipe with  $L/D \geq 10$ ;
- .2 the test vessel shall be equipped with a rupture disc at one front end to simulate the turbo charger. The relief area of the rupture disc shall be in relationship to the test vessel diameter based on turbocharger manufacturer data for an equivalent free area of compressor or turbine wheel. The opening pressure shall be  $\pm 10\%$  of the static opening pressure of the ERD);
- .3 the volume of the test vessel is to comply with the specific relief area of the ERD of  $700 \text{ cm}^2/\text{m}^3 \pm 15\%$ ;
- .4 the test vessel shall be provided with all necessary flanges and connection to mount the ERD in the intended position, to mount a rupture disc as turbo charger simulation, to connect the Methane-air mixture supply and the measurement equipment;
- .5 the ignition shall be made at the middle of the test vessel;
- .6 the test vessel shall be designed to verify a homogeneous air/methane mixture inside the vessel;
- .7 the test vessel shall have connections for measuring the pressure in the test vessel in at least two positions, one at the ERD and the other at the test vessel center;
- .8 the test vessel is to have a design pressure of not less than the maximum explosion pressure of a stoichiometric air/methane mixture at test conditions in 4.3.6.
- .9 the test vessel configuration is subject to approval by the Register.

**4.3.2.3** Typical test vessel configurations

**4.3.2.3.1** All test vessel configurations to be equipped with a rupture disc (1) (turbo charger simulation) at one front end. The ignition is in the center of the test vessel ( $\frac{1}{2}$ ). The pressure sensors are mounted at the valve flanges (p1) and at the test vessel center (p2). The measuring of the methane concentration to verify a homogeneous air/methane mixture can be performed at both ends of the test vessel, e.g. (c1) and (c2).

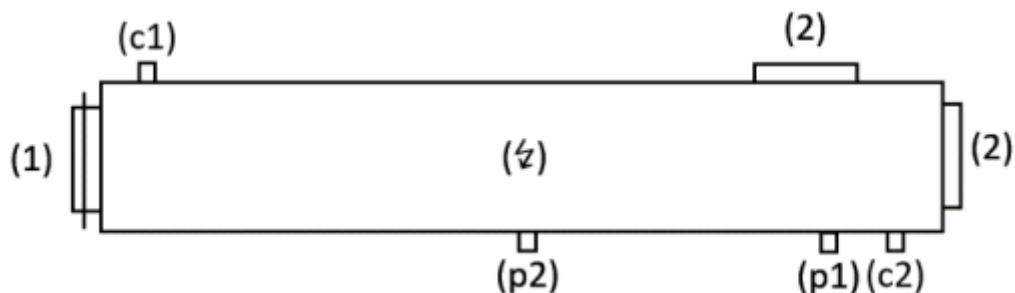


Fig. 4.3.2.3.1-1  
Configuration without ERD (flanges for ERDs closed (2))



Fig. 4.3.2.3.1-2  
2 Configuration with ERD (3) mounted at the front end of the test vessel

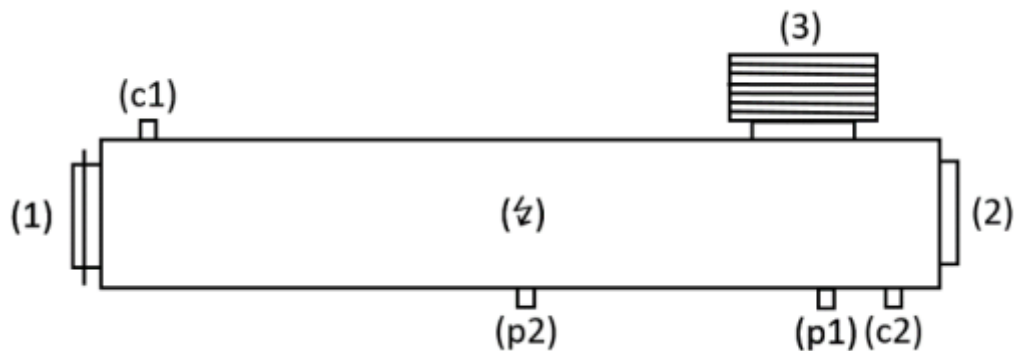


Fig. 4.3.2.3.1-3  
Configuration with ERD (3) mounted on top of the test vessel

#### 4.3.3 Explosion test process

4.3.3.1 The explosion testing shall be performed in two stages according to 4.3.4 and 4.3.5 for each ERD that is required to be approved as type tested.

4.3.3.2 The explosion testing shall be witnessed by a Register surveyor.

4.3.3.3 Calibration records for the instrumentation used to collect data shall be presented to, and reviewed by, the attending surveyor.

#### 4.3.4 Reference test – Explosion test without ERD

4.3.4.1 Two explosion tests are to be carried out in the test vessel without ERD. The test vessel configuration is shown in Fig. 4.3.2.3.1-1.

4.3.4.2 The aim of this test is to establish a reference pressure level in the test vessel which can be used for determination of the capability of a relief valve in terms of pressure relief.

#### 4.3.5 ERD test – Explosion test with ERD

4.3.5.1 Two explosion tests shall be carried out in the test vessel with the same ERD at the required position. If the ERD is a rupture disc with flame arrester, the rupture disc shall be replaced.

4.3.5.2 If shielding arrangements to deflect the emission of explosion combustion products at the ERD are intended, the ERD shall be tested with the shielding arrangements fitted. The test vessel configuration is shown in Fig. 4.3.2.3.1-2 or 4.3.2.3.1-3.

#### 4.3.6 Explosion test method

4.3.6.1 The test conditions shall comply with the intended use of the ERD, such as:

- .1 pipe diameter

- .2 operating pressure
- .3 operating temperature
- .4 installation orientation.

**4.3.6.2** All explosion tests are to be carried out using an air and methane mixture with a volumetric methane concentration of 9.5 % ± 0.5 %. A homogeneous air/methane mixture inside the test vessel shall be verified. The concentration of methane shall not differ by more than 0.5 %.

**4.3.6.3** The initial pressure in the test vessel shall be the specified maximum operating pressure of the ERD.

**4.3.6.4** The initial temperature in the test vessel shall be the specified maximum operating temperature of the ERD.

**4.3.6.5** If the initial pressure and/or initial temperature deviate from the design limits, the ERD manufacturer shall prove the acceptability of this deviation either using standards or generally applicable calculation methods.

**4.3.6.6** The ignition is to be made using an explosive charge of 50 — 100 Joule

**4.3.6.7** Successive explosion testing to establish an ERD functionality shall be carried out as quickly as possible during stable weather conditions.

**4.3.6.8** The pressure rise and decay during all explosion testing shall be recorded

**4.3.6.9** The effect of an ERD in terms of pressure relief following an explosion is ascertained from maximum pressure recorded at the center of the test vessel during the two stages. The pressure relief within the test vessel due to the installation of an ERD is the difference between average pressure of the two explosions of the reference test (refer to 4.3.4) and the average of the two explosions of the ERD test (refer to 4.3.5).

**4.3.6.10** For acceptance of correct functioning of the flame arrester, there shall be no indication of flame or combustion outside of the ERD during its testing (refer to 4.3.5). This shall be monitored by a high-speed video camera (refer to 4.3.1), for which ambient light conditions are to be considered to maximise the potential for flame/combustion detection. The use of a dark, ideally matt finish, background and an avoidance of direct light onto the video camera monitored area are recommended.

**4.3.6.11** After each ERD test (refer to 4.3.5), the external condition of the flame arrester to be examined for signs of damage and/or deformation that may affect the operation of the ERD.

#### **4.4 Check of ERD components**

After completing the explosion tests, the ERDs shall be dismantled and the condition of all components shall be ascertained and documented.

### **5. TEST REPORT.**

**5.1** A complete test report has to be submitted to the Register for:

- .1 the demonstration of opening pressure (refer to 4.2); and
- .2 the explosion test (refer to 4.3).

**5.2** The reports shall include respective information according to the requirements in 4, as applicable:

- .1 test specimens;
- .2 test facility, including measuring equipment and test vessel;
- .3 measuring results (pressures, temperatures, flame velocities, volumetric methane concentration, ambient conditions etc.);
- .4 video documentation of explosion tests;
- .5 photo documentation of ERD components.

## **6. ASSESSMENT.**

**6.1** To verify compliance with this requirement the assessment has to address the following:

- .1** Function and mechanical integrity of the ERD:
- .1.2** After dismantling of the ERD, the flame arrester shall not show signs of damage or any deformation that may affect the operation of the ERD.
- .1.3** If a valve is used any indication of valve sticking or uneven opening during the explosion that may affect subsequent operation of the valve has to be considered.
- .1.4** The mechanical integrity of the ERD is proven up to a maximum explosion pressure (as average of the two explosions) of the ERD tests in 4.3.5.
- .2** The functioning of the flame arresters is considered satisfactory if there is no indication of flame or combustion outside the ERD during the explosion tests.

## **7. APPROVAL.**

**7.1** The approval of an ERD is at the discretion of individual classification societies based on the appraisal of plans and particulars and the test report of type testing.

**7.2** The type approval is valid only for an ERD fitted to the air inlet or exhaust gas manifold of an engine having a turbocharger with compressor or turbine wheel characteristics corresponding to those required in 4.3.2 for the test vessel rupture disc in terms of free area."

## **10 ELECTRICAL EQUIPMENT**

### **10.1 GENERAL**

**New para 10.1.4** is introduced reading as follows:

"**10.1.4** If specific test descriptions of this Section refer to international standards, later versions (including revisions) of such standards are acceptable provided that their requirements are equivalent to the technical specifications of this Section."

### **10.6 ELECTRICAL TESTS**

**Paras 10.6.3.1 — 10.6.3.3** are amended as follows:

~~"**10.6.3.1** The check of the voltage level and field strength of radio interference generated by equipment, requested for before 1 July 2022 is carried out with use of devices with a quasi-peak detector specified in CISPR 16-1 and 16-2, GOST P 51319-99 in compliance with the procedure set forth in 12.6.14, Section 12.~~

The check of the voltage level and field strength of radio interference generated by equipment requested for on and after 1 July 2022 with use of devices with a quasi-peak detector specified in CISPR 16-1-2:2016 and 16-2-1:2017, GOST P 51319-99 in compliance with the procedure set forth in 12.6.14, Section 12.

The bandwidth of a radio interference meter shall be 200 Hz in the frequency range 0,01 to 0,15 MHz, 9 kHz in the frequency range 0,15 to 30 MHz, and 120 kHz in the frequency range 30 to 2000 MHz excepting the range 156 to 165 MHz where the bandwidth shall be 9 kHz.

**10.6.3.2** The following tolerable levels of radiated electromagnetic emission are set for the equipment installed on the open deck and navigation bridge.

An electromagnetic field at a distance of 3 m in the following frequency ranges shall be:

150 to 300 kHz – 80 to 52 dB  $\mu\text{V}/\text{m}$ ;

300 kHz to 30 MHz – 52 to 34 dB  $\mu\text{V}/\text{m}$ ;

30 MHz to 2000 MHz – 54 dB  $\mu\text{V}/\text{m}$ , but 24 dB  $\mu\text{V}/\text{m}$  for the frequency range 156 to 165 MHz.

The radiated emission field strength levels in supply and input-output circuits measured with use of the artificial mains network ~~requested for according to CISPR 16 before 1 July 2022, and requested for according to CISPR 16-2-3:2016 Db on and after 1 July 2022,~~ in the following frequency ranges shall be:

10 to 150 kHz – 96 to 50 dB  $\mu\text{V}/\text{m}$ ;

150 to 350 kHz – 60 to 50 dB  $\mu\text{V}/\text{m}$ ;

350 kHz to 30 MHz – 50 dB  $\mu\text{V}/\text{m}$ .

**10.6.3.3** The following tolerable levels of radiated electromagnetic emission are set for the equipment installed in the machinery and other enclosed spaces of a ship.

An electromagnetic field at a distance of 3 m in the following frequency ranges shall be:

150 kHz to 30 MHz – 80 to 50 dB  $\mu\text{V}/\text{m}$ ;

30 to 100 MHz – 60 to 54 dB  $\mu\text{V}/\text{m}$ ;

100 to 2000 MHz – 54 dB  $\mu\text{V}/\text{m}$ , but 24 dB  $\mu\text{V}/\text{m}$  for the frequency range 156 to 165 MHz.

The radiated emission field strength levels in supply and input-output circuits measured with use of the artificial mains network ~~according to CISPR 16-2, requested for before 1 July 2022, and according to CISPR 16-2-3:2016, requested for on and after 1 July 2022,~~ in the following frequency ranges shall be:

10 to 150 kHz – 120 to 69 dB  $\mu\text{V}/\text{m}$ ;

150 to 500 kHz – 79 dB  $\mu\text{V}/\text{m}$ ;

500 kHz to 30 MHz – 73 dB  $\mu\text{V}/\text{m}$ ."

## 12 AUTOMATION EQUIPMENT

### 12.2 GENERAL

**New Para 12.2.4** is introduced reading as follows:

"**12.2.4** If in the specific test descriptions of this Section there are references to international standards, the later versions (including revisions) of such standards are acceptable provided that their requirements are equivalent to the technical specifications of this Section."

### 12.6 DESCRIPTION OF TESTS AND CHECKS

**Para 12.6.5. The first and second paragraphs** are amended as follows:

"**12.6.5 Vibration tests.**

~~The tests requested for before 1 July 2022 shall be carried out in compliance with standard IEC 60068 2-6 (test F<sub>v</sub>).~~

The tests ~~requested for on and after 1 July 2022~~ shall be carried out in compliance with standard IEC 60068 2- 6:2007 (test F<sub>c</sub>)."

**Para 12.6.8. The first sentence** is amended as follows:

**"12.6.8 Tests for heat stability.**

The tests shall be carried out in compliance with standard IEC 60068-2-2:2007 (test B).".

**Para 12.6.10. The first and second paragraphs** are amended as follows:

**"12.6.10 Damp heat tests.**

~~The tests requested for before 1 July 2022 shall be carried out in compliance with standard IEC 60068-2-30 (test D<sub>b</sub>).~~

The tests requested for on and after 1 July 2022 shall be carried out in compliance with standard IEC 60068-2-30:2005 (test D<sub>b</sub>).".

**Para 12.6.11. The first and second paragraphs** are amended as follows:

**"12.6.11 Tests for exposure to salt mist (corrosion resistance).**

~~The tests requested for before 1 July 2022 shall be carried out in compliance with standard IEC 60068-2-52, test K<sub>b</sub> and D<sub>b</sub>.~~

The tests requested for on and after 1 July 2022 shall be carried out in compliance with standard IEC 60068-2-52:2017, test K<sub>b</sub>.".

**Para 12.6.14. The first and second paragraphs** are amended as follows:

**"12.6.14 Tests for the level of radiated electromagnetic emission.**

~~The tests requested for before 1 July 2022 shall be carried out in accordance with standards CISPR 16-2-3 and IEC 60945 for the frequency range of 156 — 165 MHz.~~

The tests requested for on and after 1 July 2022 shall be carried in accordance with standards CISPR 16-2-3:2016 and IEC 60945:2002 for the frequency range of 156 — 165 MHz.".

**Para 12.6.15.1** is amended as follows:

**"12.6.15.1 Tests for the level of radiated electromagnetic emission.**

These tests simulate effect of the interference generated, for example, by electronic consumers (thyristors, etc.) and introduced in the power supply circuits in the form of higher harmonic voltage components. These tests shall not be applied to the equipment supplied solely by accumulators.

The equipment shall remain operable (functioning criterion A) when additional test voltages are imposed on its supply voltage:

for the electrical equipment supplied by direct current:

frequency range: from 50 Hz to 10 kHz;

test voltage (effective value): 10 % of the nominal supply voltage;

test signal maximum power – 2 W;

for the electrical equipment supplied by alternating current:

the frequency range from the rated supply voltage frequency to the 200-th harmonic voltage;

test voltage (effective value): 10 % from the rated supply voltage frequency to the 15-th harmonic; reducing from 10 % to 1 % in the range from the 15-th to 100-th harmonic; 1 % in the range from the 100-th harmonic to 200-th harmonic;

test signal maximum power – 2 W, minimum value of test voltage effective value - 3 V. The specified value of test voltage may be reduced in case the maximum power exceeds.

**Para 12.6.15.2. The first and second paragraphs** are amended as follows:

**"12.6.15.2 Tests for resistance to conducted radio frequency interference.**

~~The tests requested for before 1 July 2022 shall be carried out in compliance with standard IEC 61000-4-6.~~

The tests requested for on and after 1 July 2022 shall be carried out in compliance with standard IEC 61000-4-6:2013."

**Para 12.6.15.3** is amended as follows:

**"12.6.15.3 Test for resistance to nanosecond pulse interference due to burst electrical fast transient in the AC and DC supply lines, signal, data and control circuits.**

~~The tests requested for before 1 July 2022 shall be carried out in compliance with standard IEC 61000-4-4).~~

The tests requested for on and after 1 July 2022 shall be carried out in compliance with standard IEC 61000-4-4:2012.

During these tests, the fast low-energy transient processes generated by the equipment the switching on of which is accompanied by sparking at contacts shall be simulated.

The equipment shall remain operable (operability criterion B) if pulse voltage with the following parameters is applied to the inlets of the supply sources:

pulse rise time: 5 ns (between 10 % and 90 % amplitude level);

duration of unit pulse: 50 ns (at 50 % value);

amplitude: 2kV – when applied to the supply circuits relative to the casing;

amplitude: 1 kV – when applied to the signal, control and communication supply circuits;

unit pulse recurrence frequency: 5 kHz or 100 kHz (pulse recurrence frequency 5 kHz is more applicable during the tests, nevertheless, frequency 100 kHz is more realistic. The equipment manufacturer shall define the recurrence frequency for the particular product);

pulse burst duration: 15 ms;

burst recurrence period: 300 ms;

duration: 5 min for each positive and negative pulse polarity.

For a.c. and d.c. power supply circuits, the tests using a capacitive coupling clamp are permitted if the coupling isolation method in accordance with 6.3 of IEC 61000-4-4:2012 is not possible (refer to 6.4.1 of IEC 61000-4-4:2012)."

**Para 12.6.15.3. The first and second paragraphs** are amended as follows:

**"12.6.15.3 Test for resistance to nanosecond pulse interference due to burst electrical fast transient in the AC supply lines, signal, data and control circuits.**

~~The tests requested for before 1 July 2022 shall be carried out in compliance with standard IEC 61000-4-4.~~

The tests requested for on and after 1 July 2022 shall be carried out in compliance with standard IEC 61000-4-4:2012."

**Para 12.6.15.4. The first and second paragraphs** are amended as follows:

**"12.6.15.4 Tests for resistance to microsecond pulse interference (Surge).**

~~The tests requested for before 1 July 2022 shall be carried out in compliance with standard IEC 61000-4-5.~~

The tests requested for on and after 1 July 2022 shall be carried out in compliance with standard IEC 61000-4-5:2017."

**Para 12.6.15.5. The first and second paragraphs** are amended as follows:

**"12.6.15.5 Tests for electrostatic discharge resistance.**

~~The tests requested for before 1 July 2022 shall be carried out in compliance with standard IEC 61000-4-2.~~

The tests requested for on and after 1 July 2022 shall be carried out in compliance with standard IEC 61000-4-2:2008."

**Para 12.6.15.6. The first and second paragraphs** are amended as follows:

**"12.6.15.6 Tests for resistance to electromagnetic field.**

~~The tests requested for before 1 July 2022 shall be carried out in compliance with standard IEC 61000-4-3.~~

The tests requested for on and after 1 July 2022 shall be carried out in compliance with standard IEC 61000-4-3:2020."

**Para 12.6.15.6** is amended as follows:

**"12.6.15.6 Tests for resistance to electromagnetic field.**

The tests shall be carried out in compliance with standard IEC 61000-4-3 or IEC 61000-4-3:2006+AMD1:2007+AMD2:2010.

The tests requested for on and after 1 July 2022 shall be carried out in compliance with standard IEC 61000-4-3:2020.

During these tests electromagnetic fields radiated by different transmitters are simulated as may occur when persons touch the appliance, e.g. shipboard fixed and portable VHF radio sets adjacent to the equipment operate on frequencies over 80 MHz.

The equipment shall remain operable (performance criterion A) at the following parameters of the electromagnetic field:

- frequency range: 80 MHz to 6 GHz;
- frequency sweep rate:  $\leq 1,5 \times 10^{-3}$  decade/s (or 1 % / 3 s);
- field strength: 10 V/m;
- modulation depth: 80 %;
- modulation frequency: 1000 Hz.

Note. When the modulation frequency of the input signal of the equipment being tested is 1000 Hz, the modulation frequency of the interference signal may be chosen to be 400 Hz.

If an equipment is intended to receive radio signals for the purpose of radio communication (e.g. wi-fi router, remote radio controller), then the immunity limits at its communication frequency do not apply."

**Para 12.6.16. The first sentence** is amended as follows:

**"12.6.16 Test for tolerable levels of radiated conductive interference**

The tests shall be carried out in compliance with standard CISPR 16-2-1:2017".

**Para 12.6.17. The first and second paragraphs** are amended as follows:

**"12.6.17 Flame retardant tests.**

~~The tests requested for before 1 July 2022 shall be carried out in compliance with IEC 60695-11-5.~~

The tests requested for on and after 1 July 2022 shall be carried out in compliance with standard IEC 60695-11-5:2017".

## **17 EQUIPMENT FOR THE PREVENTION OF POLLUTION FROM SHIPS**

*APPENDIX 1*

### **TEST SPECIFICATIONS FOR EQUIPMENT FOR THE PREVENTION OF POLLUTION**

**Section 7** is amended as follows:

"Specifications for Type Approval Tests of incinerators are set forth in IMO resolution MEPC.244(66) "2014 Standard Specification for Shipboard Incinerators", as amended by resolution MEPC.368(79)".

Russian Maritime Register of Shipping

**Rule Change Notice  
to the Rules for Technical Supervision during Construction of Ships  
and Manufacture of Materials and Products for Ships**

Endorsed: 24-87509

FAI "Russian Maritime Register of Shipping"  
7, Litera A, Millionnaya Ul.,  
191181, St. Petersburg, Russian Federation  
[www.rs-class.org/en/](http://www.rs-class.org/en/)