



RUSSIAN MARITIME REGISTER OF SHIPPING

CIRCULAR LETTER

No. 313-66-1770c

dated 23.05.2022

Re:

amendments to the Rules for the Classification and Construction of Sea-Going Ships, 2022, ND No. 2-020101-152-E

Item(s) of supervision:

ships under construction

Entry-into-force date:

01.07.2022

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Appendices:

Appendix 1: information on amendments introduced by the Circular Letter

Appendix 2: text of amendments to Parts VI "Fire Protection" and VIII "Systems and Piping"

Director General

Konstantin G. Palnikov

Text of CL:

We hereby inform that in connection with entering into force of IACS Unified Requirements (UR) F45 (June 2021) and M74 (Rev.2 June 2021), the Rules for the Classification and Construction of Sea-Going Ships shall be amended as specified in the Appendices to the Circular Letter.

It is necessary to do the following:

1. Bring the content of the Circular Letter to the notice of the RS surveyors, interested organizations and persons in the area of the RS Branch Offices' activity.
 2. Apply the provisions of the Circular Letter during review and approval of the technical documentation on ships contracted for construction or conversion on or after 01.07.2022, in the absence of a contract, during review and approval of the technical documentation on ships requested for review on or after 01.07.2022.
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List of the amended and/or introduced paras/chapters/sections:

Part VI: para 2.1.5.10, Table 3.1.2.1, para 4.2.1.1.7, Table 5.1.2, para 5.1.25

Part VIII: Chapters 8.7 and 12.14

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**Information on amendments introduced by the Circular Letter
(for inclusion in the Revision History to the RS Publication)**

Nos.	Amended paras/chapters/ sections	Information on amendments	Number and date of the Circular Letter	Entry-into-force date
1	Part VI, para 2.1.5.10	New para has been introduced containing requirements for Ballast Water Management Rooms (BWMR)	313-66-1770c of 23.05.2022	01.07.2022
2	Part VI, Table 3.1.2.1	Item 10 has been supplemented with the requirements for BWMR containing equipment related to ozone-based BWMS. Table has been supplemented with Footnote 23	313-66-1770c of 23.05.2022	01.07.2022
3	Part VI, para 4.2.1.1.7	New para has been introduced containing requirements for fire detection and fire alarm system of BWMR	313-66-1770c of 23.05.2022	01.07.2022
4	Part VI, Table 5.1.2	New item 4.19 has been introduced containing requirement for necessity of fire extinguishers in BWMR. New item 15.5 has been introduced containing requirement for necessity of ozone detector on ships fitted with ozone-based BWMS. New item 18.2.4 has been introduced containing requirement for necessity of EEBD in BWMR. New item 20 has been introduced containing requirement for necessity of protection equipment for crew members who are engaged in the servicing, maintenance and repair of BWMS	313-66-1770c of 23.05.2022	01.07.2022
5	Part VI, para 5.1.25	New para has been introduced containing requirements for protection equipment for crew members who are engaged in the servicing, maintenance and repair of BWMS	313-66-1770c of 23.05.2022	01.07.2022
6	Part VIII, Chapter 8.7	Chapter has been supplemented with BWMS categorization. IACS UR M74 (Rev.2 June 2021) has been specified	313-66-1770c of 23.05.2022	01.07.2022
7	Part VIII, Chapter 12.14	New Chapter has been introduced containing requirements for the BWMR ventilation	313-66-1770c of 23.05.2022	01.07.2022

RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS, 2022,

ND No. 2-020101-152-E

PART VI. FIRE PROTECTION

2 STRUCTURAL FIRE PROTECTION

1 **New para 2.1.5.10** is introduced reading as follows:

"2.1.5.10 Ballast Water Management Rooms (BWMR) shall meet the following requirements:

.1 BWMR as specified in 8.7.2, Part VIII "Systems and Piping" shall be treated as follows for the purpose of applying the requirements of fire protection:

.1.1 machinery spaces of category A when BWMR contain oil-fired inert gas generators (i.e. BWMS categories 3*b* and 3*c* as according to Table 8.7.2, Part VIII "Systems and Piping");

.1.2 other machinery spaces of category (7) in compliance with 2.2.1.5.1, 2.3.3, 2.4.2, 2.5.3, of category (10) or (11) in compliance with 2.2.1.3 depending on the ship type when BWMR are fitted with other systems that are not given in 2.1.5.10.1.1;

.1.3 machinery spaces in compliance with 2.1.5.10.1.1 и 2.1.5.10.1.2 and storerooms in compliance with 2.1.5.10.2 in case where the storage of liquid or solid chemicals for BWMS is foreseen in BWMR;

.1.4 category (8) spaces in compliance with 2.4.2 in case when BWMR are located in the cargo area of a tanker in compliance with IACS UR M74 (Rev.2 June 2021) available on the IACS website www.iacs.org.uk;

.2 spaces where the storage of liquid or solid chemicals for BWMS is intended shall be categorized as:

.2.1 storerooms of category (5) in compliance with 2.2.1.5, 2.3.3 and 2.5.3 (service spaces (low risk)) having areas less than 4 m² and not having provisions for the storage of flammable liquids;

.2.2 storerooms of category (9) in compliance with 2.2.1.5, 2.3.3 and 2.5.3 (service spaces (high risk));

.2.3 storerooms of category (13) in compliance with 2.2.1.3;

.2.4 other spaces of category (14) in compliance with 2.2.1.3 in which flammable liquids are stowed;

.2.5 pump rooms of category (8) in compliance with 2.4.2;

.3 the ship's shell plating shall not form any boundary of the integral tanks storing chemical substances. Tanks containing chemicals shall be segregated from control stations, accommodation and service spaces, machinery spaces not related to the BWMS and from drinking water and stores for human consumption by means of a cofferdam, void space, cargo pump-room, empty tank, oil fuel storage tank, BWMR or other similar space. On-deck stowage of permanently attached deck tanks or installation of independent tanks in otherwise empty hold spaces shall be considered as satisfying the above requirements;

.4 for BWMS storing, introducing or generating chemicals, the BWMR and chemical substance storage rooms shall not be located in the accommodation area. Any ducts of the exhaust ventilation or other openings from these rooms shall be located not less than 3 m from entrances, air inlets and openings to accommodation spaces. This requirement is not applied in case the BWMR is located in the machinery space of category A.

The requirements of 2.1.5.10.3 and 2.1.5.10.4 may be reduced if the chemicals are neither toxic nor flammable. Herewith, the risk assessment of the used substances shall be carried out

based on data from the IMO reports issued during the basic and final approval procedures of the BWMS that make use of active substances (Procedure for Approval of Ballast Water Management Systems that Make Use of Active Substances (G9) adopted by IMO resolution MEPC.169(57)), and "safety hazard" as listed in Chapter 17 of the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code) for the used substances;

.5 ozone-based BWMS, i.e. categories 7a and 7b given in Table 8.7.2, Part VIII "Systems and Piping" shall be located in dedicated compartment, separated from any other space by gastight boundaries. Access to the BWMR from any other enclosed space shall be through airlock only that meets the requirements of 8.7.1.4, Part VIII "Systems and Piping".

Access to the specified BWMR may be provided through the machinery spaces of category A only when:

.5.1 access is provided through airlock only; or

.5.2 an alarm repeater is provided in the BWMR, which repeats any alarm activated in the machinery space of category A;

.6 a sign shall be affixed on the door of BWMR providing personnel with a warning that ozone may be present and with the necessary instructions to be followed before entering the room;

.7 BWMR containing equipment for BWMS of the following types shall be equipped with tested gastight and self-closing doors:

.7.1 BWMS storing, introducing or generating chemical substances;

.7.2 de-oxygenation based on inert gas generator;

.7.3 electrolysis;

.7.4 ozone injection.

Doors leading to the open deck need not to be self-closing.

The requirements may be reduced if BWMS does not generate hazardous gases specified in Table 8.7.2, Part VIII "Systems and Piping" and 2.3 of IACS UR M74 (Rev.2 June 2021) available on the IACS website www.iacs.org.uk;

.8 BWMR containing equipment related to ozone-based BWMS shall be provided with a fire extinguishing system suitable for machinery spaces of category A according to Table 3.1.2.1 and capable of manual release;

.9 where a fixed fire extinguishing system is provided in the BWMR, it shall be compatible with the BWMS and the chemical products that are used, produced or stored in the BWMR. Specific attention shall be paid to potential chemical reactions between the fire extinguishing medium and chemical products used for water treatment. Especially, water-based fire extinguishing systems shall be avoided in case of sulfuric acid storage.

In case a foam fire extinguishing system is installed in the BWMR, its efficiency shall not be impaired by chemicals used by the BWMS;

.10 automatic shutdown of the BWMS upon release of the fixed fire extinguishing system shall be arranged considering the need for cooldown necessary for safe shutdown of the equipment;

.11 where BWMS that includes air or O₂ storage is located in a room covered by a fixed gas fire extinguishing system, air or O₂ storage shall be taken into account for the gas capacity calculation, unless the discharge pipe from safety valves for air or O₂ storage are led directly to outside the room;

.12 there shall be at least one portable fire extinguisher that complies with the requirements of 5.1.9 and suitable for electrical fires in the BWMR containing UV-type BWMS."

3 FIRE-FIGHTING EQUIPMENT AND SYSTEMS

2 **Table 3.1.2.1. Item 10** is replaced by the following text:

Nos.	Description of spaces	Fixed fire extinguishing systems							
		Sprinkler	Pressure water spraying	Water screen	Drenching	Foam fire extinguishing	Carbon dioxide smothering	Dry powder	Aerosol
10	Machinery spaces of category A ^{2,14} , hangers and spaces where refueling and hanger facilities are located; spaces containing equipment for the fuel preparation specified in 9.7.2.5 of Part XVII "Distinguishing Marks and Descriptive Notations in the Class Notation Specifying Structural and Operational Particulars of Ships"; BWMR containing ozone-based BWMS ²³		+			+ ⁷	+		+

Table is, accordingly, supplemented with **Footnote 23** reading as follows:

²³ Refer to 2.1.5.10.8."

4 FIRE DETECTION AND ALARM SYSTEMS

3 **New para 4.2.1.1.7** is introduced reading as follows:

".7 BWMR containing inert gas generators or ozone generators. BWMR containing equipment related to ozone-based BWMS shall be maintained by separate sections of fire detectors that do not cover control stations, service and accommodation spaces."

5 FIRE-FIGHTING OUTFIT, SPARE PARTS AND TOOLS

4 **Table 5.1.2. New item 4.19** is introduced reading as follows:

Nos.	Description of items of outfit	Number of items of outfit to be available in each ship
1	2	3
4	Portable foam fire extinguishers, dry powder fire extinguishers and carbon dioxide fire extinguishers (refer to 5.1.9). The use of dry powder fire extinguishers is permitted in all spaces instead of foam and carbon dioxide fire extinguishers except for the spaces where the energized electrical and radio equipment is installed of over 1000 V	19 1 fire extinguisher for each BWMR. In BWMR containing UV-type BWMS, fire extinguisher shall be suitable for electrical fires (also refer to 2.1.5.10.12)

Item 15 is replaced by the following text:

Nos.	Description of items of outfit	Number of items of outfit to be available in each ship
1	2	3
15	Gas analyzers (refer to 5.1.22):	
1	for vapours of flammable liquids and exhaust gases;	In ships carrying motor vehicles with fuel oil (other than diesel oil) in their tanks and in ships with spaces specified in 1.5.4.3, 1.5.4.4.1 and 1.5.9 — 1
2	for vapours of flammable liquids;	In oil tankers and combination carriers — 2 (refer to 5.1.22) In oil tankers fitted with inert gas system — 2 portable gas analyzers capable to operate in the inert gas atmosphere in addition to the above
3	for oxygen content;	In oil tankers and combination carriers — 2 (refer to 5.1.22)
4	for oxygen content and gas detection	In ships carrying solid bulk cargoes which are liable to emit toxic or flammable gases or cause oxygen depletion in the cargo space — 1
5	for ozone	In ships fitted with ozone-based BWMS — 1 (refer to 5.1.25.5)

New item 18.2.4 is introduced reading as follows:

Nos.	Description of items of outfit	Number of items of outfit to be available in each ship
1	2	3
18	Emergency Escape Breathing Devices (EEBD) (refer to 5.1.23)	2.4 in BWMR, except for BWMS of category 1 according to Table 8.7.2, Part VIII "Systems and Piping", 1 pc. (refer to 5.1.25.6)

New item 20 is introduced reading as follows:

Nos.	Description of items of outfit	Number of items of outfit to be available in each ship
1	2	3
20	Set of protection equipment for the crew members who are engaged in the servicing, maintenance and repair of BWMS (refer to 5.1.25)	In ships fitted with BWMS storing, introducing or generating chemicals, at least 3 sets (refer to 5.1.25)

5 **New para 5.1.25** is introduced reading as follows:

"5.1.25 Sets of protection equipment for the crew members who are engaged in the servicing, maintenance and repair of BWMS storing, introducing or generating chemicals, as recommended by the product manufacturers shall meet the following requirements:

.1 set of protection equipment shall consist of large aprons, special gloves with long sleeves, suitable footwear, coveralls of chemical-resistant materials, and tight fitting goggles or face shields or both. The protective clothing and equipment shall cover all skin. This chemical-resistant equipment shall not be used for any other purposes;

.2 work clothes and protective equipment shall be kept in easily accessible places and in special lockers. Such equipment shall not be kept within accommodation spaces, with the exception of new, unused equipment and equipment which has not been used since undergoing a thorough cleaning process. Notwithstanding the above, storage rooms for such equipment may be located within accommodation spaces if adequately segregated from living spaces such as cabins, passageways, dining rooms, bathrooms, etc. by divisions of fire integrity specified in accordance with Tables 2.2.1.3-1, 2.2.1.3-2, 2.2.1.5-1, 2.2.1.5-2, 2.3.3-1, 2.3.3-2, 2.4.2-1, 2.4.2-2, 2.5.3-1, 2.5.3-2, 2.6.3-1, 2.6.3-2 depending on the ship purpose;

.3 decontamination showers and an eyewash marked with emergency equipment signs (EES) (EES003 and EES004 accordingly) in accordance with IMO resolution A.1116(30) shall be available in a convenient location in close proximity to the BWMS and the chemical store rooms;

.4 for the crew members engaged in the servicing, maintenance and repair of BWMS, a two-way portable radiotelephone apparatus shall be provided, in addition to those required by 5.1.15.3. This two-way radiotelephone apparatus shall be properly identified in order to avoid mix-up with the apparatus intended for other purposes.

Where the BWMS may release explosive gases, this two-way radiotelephone apparatus shall be of an explosion-proof type or intrinsically safe suitable for use in zone 1 hazardous areas as defined in IEC 60079.

This two-way radiotelephone apparatus is not required for maintenance of BWMS of category 1 according to Table 8.7.2, Part VIII "Systems and Piping";

.5 a personal ozone detector, calibrated as per the manufacturer's specifications, shall be provided for each person engaged in the servicing, maintenance and repair of BWMS utilizing ozone;

.6 BWMR shall be provided with Emergency Escape Breathing Devices (EEBD) complying with the requirements of 5.1.23. EEBD is not required for BWMR of category 1 according to Table 8.7.2, Part VIII "Systems and Piping".

Requirements of 5.1.25.1, 5.1.25.2, 5.1.25.3 may be reduced if the BWMS does not use or generate any toxic chemical substances. Herewith the risk assessment of the used substances shall be carried out based on data from the IMO reports issued during the basic and final approval procedures of the BWMS that make use of active substances (G9 Guidelines adopted by IMO resolution MEPC.169(57)), and "safety hazard" as listed in Chapter 17 of the IBC Code for the used substances."

PART VIII. SYSTEMS AND PIPING

8 BALLAST, HEEL AND TRIM SYSTEMS

6 Chapter 8.7 is replaced by the following text:

"8.7 BALLAST WATER TREATMENT SYSTEMS

8.7.1 The ballast system of all ships carrying ballast water shall meet the requirements of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention), 2004. The provisions of this Convention do not apply to ships that are not designed or constructed to carry ballast water. For the purpose of this Chapter, the following definitions have been introduced:

.1 Ballast Water Management System (BWMS) means any system which processes ballast water such that it meets or exceeds the Ballast Water Performance Standard in Regulation D-2 of the BWM Convention. The BWMS includes ballast water equipment, all associated piping arrangements as specified by the manufacturer, control and monitoring equipment and sampling facilities. Categorization of BWMS technologies is given in Table 8.7.2;

.2 Ballast Water Management Room (BWMR) is any space containing equipment belonging to the BWMS. A space containing remote controls for the BWMS only or a space dedicated to the storage of liquid or solid chemicals for BWMS shall not be considered as a BWMR. Structural fire protection of BWMR shall meet the requirements of 2.1.5.10, Part VI "Fire Protection";

.3 dangerous gas generated by the BWMS means any gas which may develop an atmosphere being hazardous to the crew and/or the ship due to flammability, explosivity, toxicity, asphyxiation, corrosivity or reactivity and for which due consideration of the hazards is required, e.g. hydrogen (H₂), hydrocarbon gas, oxygen (O₂), carbon dioxide (CO₂), carbon monoxide (CO), ozone (O₃), chlorine (Cl₂) and chlorine dioxide (ClO₂), etc.;

.4 airlock means a space enclosed by gastight steel bulkheads with two gastight doors spaced not more than 2,5 m apart. The doors shall be self-closing without any holding back arrangements. Air locks shall have mechanical ventilation and shall not be used for other purposes. An audible and visual alarm system to give a warning on both sides of the air lock shall be provided to indicate if more than one door is moved from the closed position. The air lock space shall be monitored for dangerous gas that may be generated by the BWMS.

8.7.2 If a ship carrying ballast water has a BWMS that complies with the requirements of Regulation D-2 of the BWM Convention and tested in accordance with the Code for Approval of Ballast Water Management Systems (BWMS Code) (refer to IMO resolution MEPC.300(72)), then such a ship may be assigned the distinguishing mark **BWM(T)**.

Categorization of BWMS technologies and required stages of sea water treatment when ballasting and deballasting for each BWMS category are given in Table 8.7.2.

Table 8.7.2

Categorization of BWMS technologies

BWMS's Technology category ¹ →		1	2	3a	3b	3c	4	5	6	7a	7b	8	
Characteristics ↓		In-line UV, or UV + Advanced Oxidation Technology (AOT) or UV + TiO ₂ or UV + Plasma	In-line flocculation	In-line membrane separation and de-oxygenation (injection of N ₂ from a N ₂ generator)	In-line de-oxygenation (injection of inert gas from inert gas generator)	In-tank de-oxygenation with inert gas generator	In-line full flow electrolysis	In-line side stream electrolysis (2)	In-line (stored) chemical injection	In-line side-stream ozone injection without gas/liquid separation tank and without Discharge treatment tank	In-line side-stream ozone injection with gas/liquid separation tank and without Discharge treatment tank	In-tank pasteurization and de-oxygenation with N ₂ generator	
Des-infection when ballasting	Making use of active substance		X			In-tank technology: No treatment when ballasting or de-ballasting	X	X	X	X	X		
	Full flow of ballast water is passing through the BWMS	X	X	X	X		X					X	
	Only a small part of ballast water is passing through the BWMS to generate the active substance							X					
After-treatment when de-ballasting	Full flow of ballast water is passing through the BWMS	X										X	
	Injection of neutralizer						X	X	X	X	X	X	
	Not required by the Type Approval Certificate issued by the Administration		X	X									
Examples of dangerous gas as defined in para 2.3 of UR M74			(1)	O ₂ N ₂	CO ₂ CO		H ₂ Cl ₂	H ₂ Cl ₂	(1)	O ₂ O ₃ N ₂		O ₂ N ₂	
<p>Notes: (1) To be investigated on a case-by-case basis based on the result of the IMO Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP/MEPC) report for basic and final approval in accordance with the Procedure for Approval of Ballast Water Management Systems that Make Use of Active Substances (G9) adopted by IMO resolution MEPC.169(57).</p> <p>(2) In-line side stream electrolysis may also be applied in-tank in circulation mode (no treatment when ballasting or de-ballasting).</p>													
<p>¹ Taking into consideration future developments of BWMS technologies, some additional technologies may be considered in this Table by identifying their characteristics in the same manner as for the above BWMS categories 1, 2, 3a, 3b, 3c, 4, 5, 6, 7a, 7b and 8.</p>													

8.7.3 If the ship does not have BWMS specified in 8.7.2, then the Ballast Water Management Plan on board a ship shall reflect the acceptable in this case methods of Ballast Water Management: delivery to reception facilities or taking on of ballast to reception facilities or discharge of ballast at the receiving place.

8.7.4 Ballast system on oil tankers with the descriptive notations **Oil tanker**, **Oil/bulk/ore carrier**, **Oil recovery ship**, **Oil/bulk carrier** or **Oil/ore carrier**, as well as on chemical tankers and gas carriers shall exclude the floating of ballast water through pipelines from hazardous areas, as well as spaces, tanks and rooms adjacent to cargo tanks to rooms and tanks located outside of hazardous areas.

8.7.5 In cases where operating principle of the BWMS involves the generation of a dangerous gas (e.g. hydrogen (H₂), hydrocarbon gas, ozone (O₃), chlorine (Cl₂), chlorine dioxide (ClO₂), etc.), the following requirements shall be satisfied:

.1 in enclosed spaces where dangerous gas could be present, the gas detection equipment for detecting gas leaks shall be fitted, and audible and visual alarms shall be activated both locally and at the BWMS control station in the event of leakage. The gas detection device shall be designed and tested in accordance with IEC 60079-29-1 or another acceptable recognized standard;

.2 the ventilation of a space where dangerous gas could be present shall lead to a safe area on open deck and meet the requirements of 12.14;

.3 the arrangements used for gas relieving shall be provided with monitoring means with independent shutdown. The open end of the gas-relieving device shall lead to a safe place on open deck.

8.7.6 The placement of the BWMS on board the ship and the routing of pipelines shall comply with IACS UR M74 (Rev.2 June 2021) available on the IACS website www.iacs.org.uk. Fire detection and fire alarm systems shall comply with the requirements of 4.2.1.1, Part VI "Fire Protection", and fire extinguishing system shall comply with the requirements of 2.1.5.10.8 — 2.1.5.10.11, Part VI "Fire Protection".

12 VENTILATION SYSTEM

7 **New Chapter 12.14** is introduced reading as follows:

"12.14 BWMR VENTILATION

12.14.1 The ventilation systems for enclosed spaces used as BWMR shall be independent of the ventilation systems serving any other spaces, if these rooms are used for the following:

storing, introducing or generating chemical substances;

de-oxygenation, including pasteurization and de-oxygenation by means of inert gas injection;

electrolysis;

ozone injection.

The requirements may be reduced if toxic chemical substances are not stored in the storerooms and if during operation of BWMS toxic gases cannot be generated. Herewith the risk assessment of the used substances shall be carried out based on data from the IMO reports issued during the basic and final approval procedures of the BWMS that make use of active substances (G9 Guidelines adopted by IMO resolution MEPC.169(57)), and "safety hazard" as listed in Chapter 17 of the IBC Code for the used substances.

As a rule, BWMS storing, introducing or generating chemical substances (including additives for BWMS) are categorized as follows:

in-line flocculation (category 2, Table 8.7.2);

in-line chemical injection (category 6, Table 8.7.2); and

BWMS technologies with injection of neutralizers (categories 4, 5, 6 and 7, Table 8.7.2).

12.14.2 The exhaust ventilation for BWMR containing a nitrogen generator shall be located in the lower part of the room in order to efficiently evacuate dangerous gases heavier than air.

12.14.3 The exhaust ventilation for BWMR containing electrolysis systems shall be located so as to be able to efficiently evacuate dangerous gases that could be generated during the electrolysis process. Due regard shall be paid to the expected quantity and density of such gases when designing the exhaust ventilation.

12.14.4 The following requirements apply to ventilation ducts serving BWMR for ozone-based BWMS:

the part of the ducts located outside of the BWMR shall be made of steel having a thickness of at least 3 mm for ducts with a free cross-sectional area of less than 0,075 m², at least 4 mm for ducts with a free cross-sectional area of between 0,075 m² and 0,45 m², and at least 5 mm for ducts with a free cross-sectional area of over 0,45 m²; as well as

the ducts shall be suitably supported and stiffened;

the outside openings of the ducts shall be fitted with protective screens of not more than 13 mm square mesh.

12.14.5 The ventilation system for BWMR containing ozone-based BWMS (category 7, Table 8.7.2) or ventilation system for hydrogen degas arrangement (categories 4, 5 and 6, Table 8.7.2) shall be interlocked with the BWMS such that:

in case of loss of ventilation (primary and secondary), a visual and audible alarm shall be triggered both inside and outside the BWMR and at a place where a responsible member of the crew is on duty. If the ventilation is not restored after a pre-set time, the BWMS shall then be automatically shut down. Any need for cooldown necessary for safe shutdown shall be considered in the shutdown sequence;

it shall not be possible to start the BWMS without the ventilation running.

For ventilation systems serving BWMR and containing or conveying a dangerous gas, relevant requirements of para 3.3, UR M74 (Rev.2 June 2021) available on the IACS website www.iacs.org.uk shall be satisfied.

12.14.6 The ventilation capacity shall be at least 30 air changes per hour where explosive or toxic gases may be generated during operation of the BWMS. The IMO reports issued during the basic and final approval procedures of the BWMS that make use of active substances (G9 Guidelines adopted by IMO resolution MEPC.169(57)), and "safety hazard" as listed in Chapter 17 of IBC Code shall be used to define the necessity of application of these requirements and as references for identifying those cases.

12.14.7 The ventilation capacity may be reduced as follows:

in-line flocculation — 6 air changes per hour;

de-oxygenation including pasteurization and de-oxygenation — 6 air changes per hour;

full-flow electrolysis — 6 air changes per hour;

side-stream electrolysis — 20 air changes per hour;

ozone injection — 20 air changes per hour;

chemical injection — 6 air changes per hour.

More stringent ventilation capacity requirements may arise from other regulations applicable for this ship, e.g. the IBC Code requirements for spaces located in the cargo area."