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INLAND TRANSPORT COMMITTEE

Working Party on Inland Water Transport

Working Party on the Standardization of
Technical and Safety Requirements in
Inland Navigation

(Twenty-third session, 19-21 March 2002,
agenda item 7)

**AMENDMENT OF THE RECOMMENDATIONS ON TECHNICAL
REQUIREMENTS FOR INLAND NAVIGATION VESSELS**

(annex to resolution No. 17, revised)

Addendum 1

Transmitted by the Central Commission for the Navigation of the Rhine (CCNR)

Note: CCNR adopted the amendments to article 10.03 of the Rhine Vessel Inspection Regulations (RVBR) concerning fire-fighting appliances which will enter into force on 1 April 2002. The secretariat reproduces below the text of amended article 10.03 of the RVBR received from CCNR for the information of the Working Party which may wish to consider if some amendments should not as a result be made to the text of chapter 12 of the annex to resolution No. 17, revised, which has already been provisionally adopted by the Working Party SC.3 as document TRANS/SC.3/2001/1/Add.1.

Article 10.03

Portable fire-extinguishers

1. A portable fire-extinguisher in accordance with European standard EN3:1996 shall be available in each of the following locations:
 - (a) in the wheelhouse;
 - (b) close to each means of access from the deck to the accommodation;
 - (c) close to each means of access to service premises that are not accessible from the accommodation, and which contain heating, cooking or refrigerating equipment using solid or liquid fuels;
 - (d) at each entrance to the engine room and boiler room;
 - (e) at an appropriate point in the engine rooms that is beneath the deck, where the total power output is more than 100 kW.
2. For the portable extinguishers required in paragraph 1, only dry powder extinguishers with a filling mass of not less than 6 kg or other portable extinguishers with an identical capacity may be used. They shall be suitable for fire categories A, B and C and for extinguishing a fire in an electrical installation of up to 1,000 V.
3. In addition, dry powder, water or foam extinguishers may be used, if suitable for at least the most likely category of fire in the premises in which they are intended to be used.
4. Portable fire-extinguishers in which the extinguishing agent is CO₂ may only be used for extinguishing fires in the galleys and in electrical installations. The filling mass of such extinguishers shall be 1 kg for a volume of 15 m³ in the spaces in which they are located and used.
5. Portable extinguishers shall be inspected at least once every two years. The person performing the inspection shall establish, sign and date a certificate of inspection.
6. If portable extinguishers are so installed as to be concealed from view, an “extinguisher” sign shall be posted on the wall concealing them, in accordance with sketch 3 in annex I, each side being not less than 10 cm in length.

Article 10.03 bis

**Permanently fixed fire-extinguishing installations in the
accommodation, wheelhouses and passenger spaces**

1. In the accommodation, wheelhouses and passenger spaces, only appropriate automatic pressurized water-spray installations are permitted as permanently fixed fire-extinguishing installations for the protection of spaces.
2. Installations shall only be mounted or modified by specialized companies.
3. Installations shall be manufactured in steel or other equivalent non-combustible material.
4. Installations shall be capable of diffusing a volume of water of not less than 5 l/m² over the surface of the largest space to be protected.
5. Installations diffusing a smaller quantity of water shall hold a type approval in accordance with IMO resolution A 800 or another standard recognized by the Central Commission for the Navigation of the Rhine. The type approval shall be issued by a recognized classification society or an accredited inspection body. The accredited inspection body shall comply with the European standards for the General Requirements for the competence of testing and calibration laboratories (EN ISO/IEC 17025:2000).
6. The installations shall be inspected by an expert
 - (a) before being brought into service;
 - (b) each time they are brought into service again after activation;
 - (c) after every modification or repair;
 - (d) regularly, at minimum intervals of at least every two years.

During the inspection referred to in paragraph 6, the expert shall be required to verify that the installations conform to the requirements of this chapter.

7. The inspection shall include as a minimum:
 - (a) an external inspection of the entire installation;
 - (b) an inspection to ensure that the safety installations and nozzles are in working order;
 - (c) an inspection of the pressurized tanks - pumps system.

8. The person who carries out the inspection shall establish, sign and date a certificate of inspection.
9. The number of existing installations shall be mentioned in the inspection certificate.
10. In order to ensure physical protection in the accommodation, wheelhouses and passenger spaces, the fire-extinguishing installations shall be permitted only on the basis of the recommendations of the Central Commission for the Navigation of the Rhine.

Article 10.03 ter

Permanently fixed installations in engine room, boiler rooms and pump rooms

1. Extinguishing agents

For the protection of spaces in engine rooms, boiler rooms and pump rooms, only permanently fixed fire-extinguishing installations are permitted which use the following extinguishing agents:

- (a) CO₂ (carbon dioxide);
- (b) HFC 227 ea (heptafluoropropane);
- (c) IG-541 (52% nitrogen, 40% argon, 8% carbon dioxide).

Other extinguishing agents are permitted only on the basis of the recommendations of the Central Commission for the Navigation of the Rhine.

2. Ventilation, air extraction

(a) The combustion air required by the combustion engines which ensure propulsion shall not come from spaces protected by permanently fixed fire-extinguishing installations. This requirement is not mandatory if the vessel has two independent main engine rooms with a gastight separation or if, in addition to the main engine room, there is a separate engine room equipped with a bow thruster capable of ensuring propulsion on its own in the event of a fire in the main engine room.

(b) All forced ventilation systems in the space to be protected shall be shut down automatically as soon as the fire-extinguishing installation is activated.

(c) All openings in the space to be protected which permit air to enter or gas to escape shall be fitted with devices enabling them to be closed rapidly. It shall be clear whether they are open or closed.

(d) Air escaping from the pressure-relief valves of the pressurized air tanks installed in the engine rooms shall be evacuated to the open air.

(e) Overpressure or negative pressure caused by the diffusion of the extinguishing agent shall not destroy the constituent elements of the space to be protected. It shall be possible to ensure the safe equalization of pressure.

(f) Protected spaces shall be provided with a means of extracting the extinguishing agent. If extraction devices are installed, it shall not be possible to start them up during extinguishing.

3. Fire alarm system

The space to be protected shall be monitored by an appropriate fire alarm system. The alarm signal shall be audible in the wheelhouse, the accommodation and the space to be protected.

4. Piping system

(a) The extinguishing agent shall be routed to and distributed in the space to be protected by means of a permanent piping system. Piping installed in the space to be protected and the reinforcements it incorporates shall be made of steel. This shall not apply to the connecting nozzles of tanks and compensators provided that the materials used have equivalent fire-retardant properties. Piping shall be protected against corrosion both internally and externally.

(b) The discharge nozzles shall be so arranged as to ensure the regular diffusion of the extinguishing agent.

5. Activating device

(a) Automatically activated fire-extinguishing installations are not permitted.

(b) It shall be possible to activate the fire-extinguishing installation from a suitable point located outside the space to be protected.

(c) Activating devices shall be installed in such a way that they can be activated in the event of a fire and so that the risk of their breakdown in the event of a fire or an explosion in the space to be protected is reduced as far as possible.

Installations which are not mechanically activated shall be supplied from two energy sources independent of each other. These energy sources shall be located outside the space to be protected. The control lines located in the space to be protected shall be so designed as to remain capable of operating in the event of a fire for a minimum of 30 minutes. The electrical installations are deemed to meet this requirement if they conform to the IEC 60331-21:1999 standard.

When the activation devices are so placed as not to be visible, the component concealing them shall carry the “Fire-fighting installation” symbol in accordance with sketch 6 in annex I, each side being not less than 10 cm in length, with the following text in red letters on a white ground:

“Feuerlöscheinrichtung

Installation d’extinction (Fire-extinguishing installation)

Brandblusinstallatie”.

(d) If the fire-extinguishing installation is intended to protect several spaces, it shall comprise a separate and clearly-marked activating device for each space.

(e) The instructions shall be posted alongside all activating devices in German, French and Dutch, and shall be clearly visible and indelible. The instructions shall include information concerning

(aa) the activation of the fire-extinguishing system;

(bb) the need to ensure that all persons have left the space to be protected;

(cc) the behaviour of the crew in the event of activation;

(dd) the behaviour of the crew in the event of the failure of the fire-extinguishing system to function properly.

(f) The instructions shall mention that prior to the activation of the fire-extinguishing system, combustion engines installed in the space and aspirating air from the space to be protected, shall be shut down.

6. Alarm device

(a) Permanently fixed fire-extinguishing installations shall be fitted with an audible and visual alarm device.

(b) The alarm device shall be set off automatically as soon as the fire-extinguishing installation is first activated. The alarm device shall function for an appropriate period of time before the extinguishing agent is released; it shall not be possible to turn it off.

(c) Alarm signals shall be clearly visible in the spaces to be protected and their access points and be clearly audible under operating conditions corresponding to the highest possible noise level. It shall be possible to distinguish them clearly from all other sound and visual signals in the space to be protected.

(d) Sound alarms shall also be clearly audible in adjoining spaces, with the communicating doors shut, and under operating conditions corresponding to the highest possible noise level.

(e) If the alarm device is not intrinsically protected against short circuits, broken wires and drops in voltage, it shall be possible to monitor its operation.

(f) A sign with the following text in red letters on a white ground shall be clearly posted at the entrance to any space the extinguishing agent may reach:

“Vorsicht, Feuerlöscheinrichtung!
Bei Ertönen des Warnsignals (Beschreibung des Signals) den Raum sofort verlassen!”

“Attention, installation d’extinction d’incendie!
Quitter immédiatement ce local au signal ... (description du signal)!”

“Let op, brandblusinstallatie!
Bij het in werking treden van het alarmsignaal (omschrijving van het signaal) deze ruimte onmiddellijk verlaten!”

(Warning, fire-extinguishing installation!
Leave this space immediately when the ... (description) alarm sounds!)

7. Pressurized tanks, fittings and piping

(a) Pressurized tanks, fittings and piping shall conform to the requirements of one of the Rhine river States or Belgium.

(b) Pressurized tanks shall be installed in accordance with the manufacturer's instructions.

(c) Pressurized tanks, fittings and piping shall not be installed in the accommodation.

(d) The temperature of storage cabinets and spaces for pressurized tanks shall not exceed 50° C.

(e) Storage cabinets or spaces on deck shall be securely stowed and shall have vents so placed that in the event of a pressurized tank not being gastight, the escaping gas cannot enter the interior of the vessel. Direct connections with other spaces are not permitted.

8. Quantity of extinguishing agent

If the quantity of extinguishing agent is intended for more than one space, the quantity of extinguishing agent available does not need to be greater than the quantity required for the largest of the spaces thus protected.

9. Installation, maintenance, monitoring and documents

(a) The mounting or modification of the installation shall only be performed by a company specialized in fire-extinguishing installations. The instructions (product data sheet, safety data sheet) provided by the manufacturer of the extinguishing agent or the installation shall be followed.

(b) The installation shall be inspected by an expert

(aa) before being brought into service;

(bb) each time it is brought into service again after activation;

(cc) after every modification or repair;

(dd) regularly, at minimum intervals of at least every two years.

(c) During the inspection, the expert is required to check that the installation conforms to the requirements of this chapter.

(d) The inspection includes, as a minimum:

(aa) an external inspection of the entire installation;

(bb) an inspection to ensure that the piping is leakproof;

(cc) an inspection to ensure that the control and activation systems are in good working order;

(dd) an inspection of the pressure and contents of tanks;

(ee) an inspection to ensure that the means of closing the space to be protected are leakproof;

(ff) an inspection of the fire alarm system;

(gg) an inspection of the alarm device.

(e) The person performing the inspection shall establish, sign and date a certificate of inspection.

(f) The number of permanently fixed fire-extinguishing installations shall be mentioned in the inspection certificate.

10. Fire-extinguishing installation operating with CO₂

In addition to the requirements contained in paragraphs 1 to 9, fire-extinguishing installations using CO₂ as an extinguishing agent shall conform to the following provisions:

(a) Tanks of CO₂ shall be placed in a gastight space or cabinet separated from other spaces. The doors of such storage spaces and cabinets shall open outwards; they shall be capable of being locked and shall carry on the outside the symbol "Warning: danger", in accordance with sketch 4 in annex I, not less than 5 cm high and "CO₂" in the same colours and the same size.

(b) Storage cabinets or spaces for CO₂ tanks located below deck shall only be accessible from the outside. These spaces shall have an artificial ventilation system with extractor hoods and shall be completely independent of the other ventilation systems on board.

(c) The level of filling of CO₂ tanks shall not exceed 0.75 kg/l. The volume of depressurized CO₂ shall be taken to be 0.56 m³/kg.

(d) The concentration of CO₂ in the space to be protected shall be not less than 40% of the gross volume of the space. This quantity shall be released within 120 seconds. It shall be possible to monitor whether the flooding operation is proceeding correctly.

(e) The opening of the tank valves and the control of the diffusing valve shall correspond to two different operations.

(f) The appropriate period of time mentioned in paragraph 6 (b) shall be not less than 20 seconds. A reliable installation shall ensure the timing of the diffusion of CO₂.

11. HFC-227 ea (heptafluoropropane)

In addition to the requirements of paragraphs 1 to 9, fire-extinguishing installations using HFC-227 ea as an extinguishing agent shall conform to the following provisions:

(a) Where there are several spaces with different gross volumes, each space shall be equipped with its own fire-extinguishing installation.

(b) Every tank containing HFC-227 ea placed in the space to be protected shall be fitted with a device to prevent overpressure. This device shall ensure that the contents of the tank are safely diffused in the space to be protected if the tank is subjected to fire, when the fire-extinguishing installation has not been brought into service.

(c) Every tank shall be fitted with a device permitting control of the gas pressure.

(d) The level of filling of tanks shall not exceed 1.15 kg/l. The specific volume of depressurized HFC-227 ea shall be taken to be 0.1374 m³/kg.

(e) The concentration of HFC-227 ea in the space to be protected shall be not less than 8% of the gross volume of the space. This quantity shall be released within 10 seconds.

(f) Tanks of HFC-227 ea shall be fitted with a pressure monitoring device which triggers an audible and visual alarm in the wheelhouse in the event of an unscheduled loss of propellant gas. Where there is no wheelhouse, the alarm shall be triggered outside the space to be protected.

(g) After discharge, the concentration in the space to be protected shall not exceed 10.5%.

(h) The fire-extinguishing installation shall not comprise aluminium parts.

12. IG-541 fire-extinguishing installations

In addition to the requirements of paragraphs 1 to 9, fire-extinguishing installations using IG-541 as an extinguishing agent shall conform to the following provisions:

(a) Where there are several spaces with different gross volumes, every space shall be equipped with its own fire-extinguishing installation.

(b) Every tank containing IG-541 placed in the space to be protected shall be fitted with a device to prevent overpressure. This device shall ensure that the contents of the tank are safely diffused in the space to be protected if the tank is subjected to fire, when the fire-extinguishing installation has not been brought into service.

(c) Each tank shall be fitted with a device for checking the contents.

(d) The filling pressure of the tanks shall not exceed 200 bar at a temperature of +15° C.

(e) The concentration of IG-541 in the space to be protected shall be not less than 44% and not more than 50% of the gross volume of the space. This quantity shall be released within 120 seconds.

13. Fire-extinguishing installation for physical protection

In order to ensure physical protection in the engine rooms, boiler rooms and pump rooms, fire-extinguishing installations are accepted solely on the basis of the recommendations of the Central Commission for the Navigation of the Rhine.

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