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**AMENDMENT OF THE RECOMMENDATIONS ON TECHNICAL
REQUIREMENTS FOR INLAND NAVIGATION VESSELS
(ANNEX TO RESOLUTION NO. 17, REVISED)**

Transmitted by the Group of Volunteers

Note: Reproduced below is the text of amended chapters 9, 10A and X (new chapter) of the annex to resolution No. 17, revised, prepared by the Group of Volunteers. The text which is new or differs from the existing text of the annex is shown in bold characters. Editorial improvements suggested by the secretariat are shown in italics.

CHAPTER 9

LIQUIFIED GAS INSTALLATIONS FOR DOMESTIC PURPOSES

9-1 GENERAL

9-1.1 Every gas installation shall consist essentially of one or more gas receptacles, one or more pressure reducers, a distribution system and a number of gas-consuming appliances.

9-1.2 Such installations may be operated only with the gas mixture of which the customary name is propane.*

9-2 INSTALLATION

9-2.1 Gas installations shall, in all their parts, be suitable for the use of propane and **shall be built and installed in accordance with the state of the art.**¹

9-2.2 A gas installation may be used only for domestic purposes in spaces which comply with the requirements of the Administration.

9-2.3 There may be several separate gas installations on board. Accommodation areas separated by a cargo hold or a fixed tank shall not be supplied by the same installation.

9-2.4 Installations which are not permanently fixed may be used only if they meet the special requirements laid down by the Administration.

9-3 RECEPTACLES

9-3.1 Only receptacles with a capacity of between 5 and 35 kg shall be allowed. **In the case of passenger vessels, the basin Administration may approve the use of receptacles with a larger content.**²

9-3.2 The receptacles shall satisfy the requirements in force. They shall bear the official stamp certifying that they have passed the statutory tests.

9-4 LOCATION AND ARRANGEMENT OF THE SUPPLY UNIT

9-4.1 The supply unit shall be installed on deck in a special cupboard located outside the accommodation area in such a position that it does not interfere with movement on board. It shall not, however, be installed against the forward or after bulwark plating. The cupboard may be a wall cupboard set into the superstructure provided that it **is gastight and**³ can only be opened

* Gas mixture defined in ADN, annex A, marginal 6201, **2° F** [4° (b)], as mixture C.

¹ See the Regulations for the Inspection of Rhine Vessels (RVBR), article 14.02 (document TRANS/SC.3/WP.3/1998/5).

² See RVBR, article 14.03.1.

³ See RVBR, article 14.04.1.

from outside. It shall be so located that the pipes leading to the gas consumption points are as short as possible.

Each installation may have up to four receptacles in operation simultaneously, with or without the use of an automatic changeover valve. The number of receptacles on board, including spare receptacles, shall not exceed six per installation.

On passenger vessels having galleys or canteens for the passengers, up to six receptacles per installation may be in operation simultaneously, with or without the use of an automatic changeover valve. The number of receptacles on board such vessels, including spare receptacles, shall not exceed nine per installation.

The pressure reducer or, in the case of two-stage reduction, the first pressure reducer shall be fitted to the inside wall of the cupboard for the receptacles.

9-4.2 The supply unit shall be so installed that any leaking gas can escape from the cupboard without any risk that it may penetrate the vessel or come into contact with any possible source of ignition.

9-4.3 The cupboard shall be constructed of fire-resistant materials and shall be adequately ventilated by openings at the top and bottom. The receptacles shall be placed upright in the cupboard in such a way that they cannot overturn.

9-4.4 The cupboard shall be so constructed and situated that the temperature of the receptacles cannot exceed 50 °C.

9-4.5 **The words “liquefied gas” and “no smoking” symbol at least 100 mm in diameter shall be affixed to the outer wall of the cupboard.**⁴

9-5 SPARE AND EMPTY RECEPTACLES

9-5.1 Spare and empty receptacles which are not stored in the supply unit shall be stored outside the accommodation area and the wheelhouse in a cupboard constructed in accordance with the requirements of section 9-4, paragraphs 9-4.2 to 9-4.5.

9-6 PRESSURE REDUCERS

9-6.1 The gas-consuming appliances may be connected to the receptacles only through a distribution system fitted with one or more pressure reducers to bring the gas pressure down to the working pressure. The pressure may be reduced in one or two stages. All pressure reducers shall be set permanently at a pressure determined in accordance with section 9-7 below.

9-6.2 The final pressure reducer shall be either fitted with or followed by a device to protect the piping automatically against excess pressure in the event of a malfunction of the pressure reducer. Any gas which this protection device allows to escape shall be evacuated into the open air without any risk that it may penetrate the vessel or come into contact with any possible source of ignition; if necessary a special vent shall be fitted for this purpose.

⁴ See RVBR, article 14.04.5.

9-6.3 The safety devices and the vents shall be protected against ingress of water.

9-7 PRESSURE

9-7.1 The pressure at the outlet of the final pressure reducer shall not be more than 5 kPa above atmospheric pressure, with a tolerance of 10%.

9-7.2 In the case of two-stage reduction, the intermediate pressure shall not be more than 250 kPa above atmospheric pressure.

9-8 PIPING AND FLEXIBLE TUBES

9-8.1 The piping shall consist of fixed steel or copper tubing.

The pipes connected to the receptacles, however, shall consist of high pressure flexible tubing or spiral tubes suitable for the gas used. The gas consuming appliances may, if they are not installed as fixtures, be connected up by means of suitable flexible tubes not more than 1 m long.

9-8.2 The piping shall be able to withstand all influences to which it may be subjected under normal operating conditions on board, in particular corrosion and stresses, and its characteristics and layout shall be such that it ensures a satisfactory flow of gas at the appropriate pressure to the gas consuming appliances.

9-8.3 The piping shall include as few joints as possible. The piping and the joints shall be gastight and shall remain gastight despite any vibration or expansion to which they may be subjected.

9-8.4 The piping shall be readily accessible, properly fixed and protected at every point where it might be subjected to impact or friction, particularly where it passes through metal bulkheads or other metal partitions.

The entire outer surface of steel piping shall be treated against corrosion.

9-8.5 Flexible pipes and their joints shall be able to withstand any stresses which may occur under normal operating conditions on board. They shall be fitted without load and in such a way that they cannot be overheated and can be inspected throughout their length.

9-9 DISTRIBUTION SYSTEM

9-9.1 No part of a gas installation shall be situated in the machinery space.

9-9.2 It shall be possible to shut off the entire distribution system by means of a valve which is readily and quickly accessible.

9-9.3 Each gas-consuming appliance shall be supplied by a separate branch of the distribution system, and each such branch shall be controlled by a separate closing device.

9-9.4 The valves shall so far as possible be protected from the weather and against impact.

9-9.5 The ends of pipes intended for connection to gas-consuming appliances shall be closable by a flange or cap even if they are equipped with a shut-off valve.

9-9.6 **An inspection joint shall be fitted after each pressure reducer. It shall be ensured, using a closing device, that in pressure tests the pressure reducer is not exposed to the test pressure.**⁵

9-10 GAS-CONSUMING APPLIANCES AND THEIR INSTALLATION

9-10.1 The only consuming appliances that may be installed shall be those which have been approved by the Administration and which are equipped with devices that effectively prevent the escape of gas in case of extinction either of the burner or of the pilot flame.

9-10.2 Each appliance shall be so placed and connected as to avoid any risk that the connecting piping may be accidentally wrenched loose.

9-10.3 The installation of gas-consuming appliances in the wheelhouse shall be permitted only if the wheelhouse is so constructed that no leaking gas can escape into the lower parts of the vessel.

9-10.4 Gas-consuming appliances may be installed in sleeping rooms only if the combustion process does not depend on the ambient air.

9-10.5 Gas-consuming appliances in which the combustion process depends on the ambient air shall be installed only in rooms of sufficient size.

9-11 VENTILATION AND EVACUATION OF THE COMBUSTION GASES

9-11.1 **Heating and water-heating appliances and refrigerators shall be connected to a duct for evacuating combustion gases into the open air.**⁶

9-11.2 In spaces containing gas-consuming appliances in which the combustion process depends on the ambient air, the supply of fresh air and the evacuation of the combustion gases shall be ensured by means of apertures of adequate dimensions determined according to the capacity of the appliances, **with a clear section of at least 150 cm² per aperture.**⁷

9-11.3 The ventilation apertures shall not have any closing device and shall not lead into sleeping rooms.

9-11.4 The evacuation devices shall be such as to ensure reliable and effective evacuation of the combustion gases. They shall be fire-resistant and their effectiveness shall not be impaired by the room ventilators.

⁵ See RVBR, article 14.09.4.

⁶ See RVBR, article 14.10.3.

⁷ See RVBR, article 14.11.1.

9-12 INSTRUCTIONS FOR USE AND SAFETY

9-12.1 A notice containing instructions on the use of the installation shall be affixed on board in a suitable place. The notice shall bear, in particular, the following instructions:

"The valves of receptacles which are not connected to the distribution system shall be closed even if the receptacles are presumed to be empty."

"Flexible pipes shall be renewed as soon as their condition so requires."

"All receptacles shall be kept connected up unless the corresponding connecting pipes are closed by valves or sealed."

9-13 INSPECTION

9-13.1 Before a gas installation is put into service, after any modification or repair and at each renewal of the entry referred to in section 9-15 below, the whole of the installation shall be submitted to an expert recognized by the Administration for inspection. At the time of the inspection, the expert shall check whether the installation complies with the requirements of this chapter.

The expert shall submit a report to the competent authority of the Administration.

9-14 TESTS AND TRIALS

The completed installation shall be subjected to the following tests and trials:

9-14.1 Medium-pressure piping between the first pressure reducer and the valves upstream of the final pressure reducer:

- (i) Strength test, carried out with air, an inert gas or a liquid at a pressure prescribed by the Administration. This pressure shall not be less than 2 MPa above atmospheric pressure;
- (ii) Gastightness test, carried out with air or an inert gas at a pressure of 350 kPa above atmospheric pressure.

9-14.2 Piping at the working pressure between the single or final pressure reducer and the valves upstream of the gas-consuming appliances:

Gastightness test, carried out with air or an inert gas at a pressure of 100 kPa above atmospheric pressure.

9-14.3 Piping situated between the single or final pressure reducer and the controls of the gas-consuming appliance:

Gastightness test at a pressure of 20 kPa above atmospheric pressure.

9-14.4 In the tests referred to in paragraph 9-14.1 (ii), 9-14.2 and 9-14.3, the piping shall be considered gastight if, after sufficient time has elapsed for thermal balancing, no drop in the test pressure is noted during the following 10 minutes.

9-14.5 Receptacle connectors, piping and other fittings subjected to the pressure in the receptacles, and joint between the pressure reducer and the piping:

(i) Strength test, carried out with air, an inert gas or liquid at the pressure prescribed by the Administration but in any case not less than 2.5 MPa above atmospheric pressure;

(ii) Gastightness test, carried out with a foam-producing product at the working pressure.

9-14.6 All gas-consuming appliances shall, on being put into service, be tested at the working pressure to ensure that combustion is satisfactory with the controls in the different positions.

The safety devices shall be checked to ensure that they work properly.

9-14.7 After the test referred to in paragraph 9-14.6 above, trials shall be carried out with every gas-consuming appliance connected to a flue to check whether, after five minutes' operation at full capacity, with windows and doors closed and the ventilation devices in operation, any combustion gases are escaping through the damper.

If combustion gases are escaping otherwise than sporadically, the cause shall immediately be sought and eliminated. The appliance shall not be approved until all defects have been corrected.

9-15 ENTRY IN THE APPROPRIATE VESSEL'S PAPER

9-15.1 For every gas installation, the appropriate **vessel's** paper shall contain an entry stating that the installation complies with the requirements of this chapter.

9-15.2 This entry shall be made by **the competent authority of** the Administration following the inspection referred to in section 9-13 above.

9-15.3 The entry shall be valid for a period not exceeding three years and may be renewed only after another inspection has been carried out in accordance with section 9-13.

At the request of the owner of the vessel, accompanied by a statement of his reasons for making the request, the Administration may extend the validity of the entry by not more than **three** months without carrying out the inspection referred to in section 9-13 above. Such extension shall be granted in a written document which shall be kept on board the vessel. Such extension shall not affect the date of the next scheduled inspection.

CHAPTER 10 A
STEERING GEAR⁸

10A-0 DEFINITIONS⁹

10A-0.1 **Steering gear**: all the equipment *necessary* [required] for steering the vessel, such as to ensure the manoeuvrability laid down in chapter X.

10A-0.2 **Rudder**: the rudder or rudders, with shaft, including the rudder quadrant and the components connecting with the steering apparatus.

10A-0.3 **Steering apparatus**: the part of the steering gear which produces the movement of the rudder.

10A-0.4 **Drive unit**: the steering-apparatus control, between the power source and the steering apparatus.

10A-0.5 **Power source**: the power supply to the steering control and the steering apparatus produced by an on-board network, batteries or an internal combustion engine.

10A-0.6 **Steering control**: the component parts of and circuitry for the operation of a power-drive unit;

10A-0.7 **Steering apparatus control unit**: the control for the steering apparatus, its drive unit and its power source.

10A-0.8 **Manual drive**: a system whereby manual operation of the hand wheel, moves the rudder by means of a mechanical or hydraulic transmission, without any additional power source.

10A-0.9 **Manually-operated hydraulic drive**: a manual control actuating a hydraulic transmission.

10A-0.10 **Rate-of-turn regulator**: equipment which automatically produces and maintains a given rate of turn of the vessel in accordance with preselected values.

10A-1 GENERAL REQUIREMENTS

10A-1.1 *Vessels* [**Craft**] shall be equipped with steering gear **which ensures at least the manoeuvrability prescribed in chapter X.**

⁸ For new text shown in bold characters see the Regulations for the Inspection of Rhine Vessels (RVBR), chapter 6 (document TRANS/SC.3/WP.3/1998/5).

⁹ See RVBR, chapter 1, paras 65-74 (document TRANS/SC.3/WP.3/R/84/Rev.1).

10A-1.2 The steering gear shall be **so constituted** that the rudder **position** cannot change **unexpectedly**.

10A-1.3 The entire steering gear shall be designed for a permanent list up to 15 °, an angle of trim up to 5 ° and ambient temperatures **from - 20° C to + 40° C**.

10A-1.4 The component parts of the steering gear shall be **rugged enough always to be able** to withstand the **stresses** to which they may be subjected during normal operation. **No external forces applied to the rudder shall impair the operating capacity of the steering equipment and its controls.**

10A-1.5 **The steering gear shall comprise a power-driven unit if the forces required to activate the rudder require so.**

10A-1.6 The power-driven **unit** of the steering gear shall be **protected against** overload.

10A-1.7 **Shaft bushings shall be so designed as to prevent any leakage of water-polluting lubricants.**

10A-2 **STEERING APPARATUS CONTROL UNIT**

10A-2.1 **If the steering gear has a power-driven unit, in case of the failure or breakdown of the steering apparatus control unit, it shall be possible to bring a second unit or a manual drive into service within five seconds.**

10A-2.2 **If the second steering apparatus control unit or manual drive is not automatically brought into service, it shall be possible for the steersman¹⁰ to bring it into service simply and rapidly by means of a single manipulation.**

10A-2.3 **The second drive unit or manual drive shall ensure the manoeuvrability prescribed in Chapter X.**

10A-3 **HYDRAULIC DRIVE UNIT**

10A-3.1. **No consumer appliance may be connected to the hydraulic drive unit of the steering gear. [When there are two independent steering drive units, such a connection to one of them is, however, permissible if the consumers are connected to the return piping and may be cut off from the steering drive unit by means of an isolating device.]**

10A-3.2 **If there are two hydraulic drive units a hydraulic tank is required for each of them; double tanks, however, are permitted. The hydraulic tanks shall be equipped with an oil low level indicator with alarm.**

10A-3.3 **[The control does not require to be duplicated if it can be activated manually or by manual control from the wheelhouse.]**

¹⁰ Note by the secretariat: Since the term “steersman” is no longer used in the European Code for Inland Waterways (CEVNI) it is suggested to use the term “helmsman” (“homme de barre”) used in RVBR, article 6.02.2.

10A-3.4 **The dimensions, construction and arrangement of the piping shall ensure as far as possible that they will not be damaged by mechanical effects or fire.**

10A-3.5 **[In the case of hydraulic drive units, a separate piping system is not required for the second steering apparatus control unit if the independent operation of the two steering controls is guaranteed and if the piping system is able to withstand a pressure at least 1.5 times that of the maximum working pressure.]**

10A-3.6. **Hoses are only permitted when their use is indispensable to absorb vibrations and permit the freedom of movement of the constituent parts. They shall be rated according to the maximum working pressure.**

10A-4 **POWER SOURCE**

10A-4.1 **If the steering gear is equipped with two power-driven units it shall have two power sources.**

10A-4.2 **If the second power source for the power-driven unit is not permanently available while the vessel is under way, a buffer device is required. Its capacity shall be sufficient to provide power during the period needed for bringing the second power source into operation.**

10A-4.3 **In the case of electrical power sources no other consumers may be powered by the network supplying the steering gear.**

10A-5 **MANUAL DRIVE**

10A-5.1 **The hand wheel shall not be actuated by the power-driven unit.**

10A-5.2 **Regardless of rudder position hand wheel kickback must be prevented when *the [that]* manually-operated wheel is engaged automatically.**

10A-6 **RUDDER-PROPELLER, WATER-JET, CYCLOIDAL-PROPELLER, AND ACTIVE BOW-RUDDER SYSTEMS**

10A-6.1. **In the case of rudder-propeller, water-jet, cycloidal-propeller or active bow-rudder installations where the remote control of the modification of the direction of the drive is electric, hydraulic or pneumatic, there shall be two steering apparatus control units independent of each other, between the wheelhouse and the installation, and on analogy, meet the requirements of paragraphs 10A-1 to 10A-5.**

Such systems are not subject to this section if they are not *necessary [needed]* in order to achieve the manoeuvrability required by chapter X or if they are only needed for the stopping test.

10A-6.2 **Where there are several rudder-propeller, water-jet, cycloidal-propeller or bow-rudder systems that are independent of each other the second steering apparatus control unit is not necessary if the vessel retains the manoeuvrability required by chapter X if one of the units fails.**

10A-7 **INDICATORS AND MONITORING DEVICES**

10A-7.1 The rudder position shall be clearly displayed at the steering position. **If the rudder-position indicator is electrical it shall have its own power supply.**

10A-7.2 **There shall be at least the following indicators and monitoring devices at the steering position:**

- (a) **oil level in the hydraulic tanks in accordance with paragraph 10A-3.2, and working pressure of the hydraulic system;**
- (b) **failure of the electrical supply for the steering control;**
- (c) **failure of the electrical supply for the drive unit;**
- (d) **failure of the rate-of-turn regulator;**
- (e) **failure of the required buffer devices.**

10A-8 **RATE-OF-TURN REGULATORS**

10A-8.1 **The rate-of-turn regulators and their components shall meet the requirements laid down in paragraph 6 – 2.18.**

10A-8.2 **The proper functioning of the rate-of-turn regulator shall be displayed at the steering position by means of a green warning light.**

Any lack of or unacceptable variations in the supply voltage and an unacceptable fall in the speed of rotation of the gyroscope shall be monitored.

10A-8.3 **Where, in addition to the rate-of-turn regulator, there are other steering control systems, it shall be possible to distinguish clearly at the steering position which of these systems has been activated. It shall be possible to shift from one system to another immediately. The rate-of-turn regulator shall not cause any kickback in the steering systems.**

10A-8.4 **The electrical supply to the rate-of-turn regulator shall be independent of that for the other power consumers.**

10A-8.5 **The gyroscopes, detectors and rate-of-turn indicators used in the rate-of-turn regulators shall meet the minimum requirements and test conditions concerning rate-of-turn indicators for inland waterways as set by the competent authority.**

10A-9 **APPROVAL**

10A-9.1 **The compliance of the installed steering system shall be checked by an inspection body¹¹. It may, for this purpose, request the following documents:**

- (a) description of the steering gear;**
- (b) drawings and information on the steering apparatus control units;**
- (c) information concerning the steering apparatus;**
- (d) electrical wiring diagram;**
- (e) description of the rate-of-turn regulator;**
- (f) system-use instructions.**

10A-9.2 **Operation of the entire steering gear shall be checked by means of a navigation test. It shall be checked that a predetermined course can be reliably maintained by the rate-of-turn regulators and that bends can be negotiated safely.**

¹¹ Note by the secretariat: It is suggested to replace the term “inspection body” by the term “Competent authority on the inspection of vessels” used in the text of a newly-adopted resolution No. 42 on the Procedure and Rules for the Inspection of Inland Navigation Vessels (document TRANS/SC.3/1999/7, section 1**bis**-5).

CHAPTER X
MANOEUVRABILITY¹²

X-1 GENERAL

Vessels and convoys shall display adequate navigability and manoeuvrability.

Powered vessels and convoys shall meet the requirements set out in paragraphs X-2 - X-10.

X-2 NAVIGATION TESTS

X-2.1 Navigability and manoeuvrability shall be checked by means of navigation tests. The following, in particular, shall be examined in accordance with the requirements as set by the basin Administrations in the appendices to this chapter:

Speed	(paragraph X-6);
stopping capacity	(paragraph X-7);
capacity for going astern	(paragraph X-8);
capacity for changing course	(paragraph X-9);
turning capacity¹³	(paragraph X-10)

X-2.2 The competent authority of the basin Administration may dispense with all or part of the tests where compliance with the navigability and manoeuvrability requirements is proven in another manner.

X-3 TEST AREA

X-3.1 The navigation tests referred to in paragraph X-2 shall be carried out on areas of inland waterways that have been designated by the competent authority of the basin Administration.

X-3.2 Those test areas shall be situated on a stretch of running or still water that is if possible straight, at least 2 km long and sufficiently wide and is equipped with highly-distinctive marks for determining the position of the vessel.

X-3.3 It shall be possible for the competent authority of the basin Administration to plot the hydrological data such as depth of water, width of navigable channel and average speed of the current in the test area as a function of the water level.

¹² See RVBR, chapter 5 (document TRANS/SC.3/R.99).

¹³ The distinction has been made between the terms “turning capacity” and “turning against the current”.

X-4 LOADING OF VESSELS AND CONVOYS DURING NAVIGATION TESTS

During navigation tests vessels and convoys intended to carry goods shall be loaded in accordance with the requirements of the competent authority of the basin Administration.

X-5 USE OF ON-BOARD FACILITIES FOR NAVIGATION TEST

X-5.1 During the navigation test all of the equipment providing the manoeuvrability of the vessel which may be actuated from the wheelhouse may be used, apart from any anchor¹⁴.

[X-5.2 However, during the test involving turning into the current referred to in paragraph X-10, the anchors may be used.]¹⁵

X-6 SPEED

X-6.1 Vessels and convoys shall achieve at least the required speed in relation to the water according to the requirements of the basin Administration.

[X-6.2 The inspection body may grant exemptions to vessels and convoys operating solely in estuaries and ports.]¹⁶

X-7 STOPPING CAPACITY

X-7.1 Vessels and convoys shall be able to stop in good time and within the limits of the minimum required distance while remaining adequately manoeuvrable.

[X-7.2 For smaller vessels and convoys the basin Administration may replace stopping capacity tests by turning against the current.]¹⁷

X-8 CAPACITY FOR GOING ASTERN

X-8.1 Vessels and convoys are to have sufficient capacity for going astern which has to be checked during the tests.

X-8.2 Where the stopping manoeuvre required by paragraph X-7 is carried out in still water it shall be followed by a test while going astern.

¹⁴ To come back to later on.

¹⁵ To come back to later on.

¹⁶ Has to be dealt with in the general paragraph.

¹⁷ To come back to later on.

X-9 CAPACITY FOR CHANGING COURSE

Vessels and convoys shall be able to change course in good time. That capacity shall be proven by means of manoeuvres carried out within a test area as referred to in paragraph X-3.

X-10 TURNING CAPACITY

The turning capacity shall be tested in accordance with the requirements of the basin Administration.
