December 2023

Summary of amendments between ES-TRIN 2021/1 and 2023/1

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Additions and changes are highlighted in grey. Deletions are highlighted in blue.

1. *The table of contents is amended as follows:*

   a) *The note relating to Article 7.14 is added after the note relating to Article 7.13 as follows:*

   "*Article 7.14 Retractable wheelhouses*".

   b) *The note relating to Article 9.10 is added after the note relating to Article 9.09 as follows:*

   "Article 9.10 Repair of engines in service".

   c) *The note relating to Article 13.05 (concerns only the French version)*

   d) *The note relating to Chapter 30 is worded as follows:*

"Chapter 30	*SPECIAL PROVISIONS APPLICABLE TO CRAFT EQUIPPED WITH PROPULSION OR AUXILIARY SYSTEMS OPERATING ON FUELS WITH A FLASHPOINT EQUAL TO OR LOWER THAN 55°°C*
Article 30.00	*Definition*
Article 30.01	*Scope of application*
Article 30.02	*General*
Article 30.03	*Tasks of the inspection body and technical service, documentation*
Article 30.04	*Risk assessment*
Article 30.05	*Safety organisation*
Article 30.06	*Marking*
Article 30.07	*Independent propulsion*
Article 30.08	*Fire safety*
Article 30.09	*Electrical installations*
Article 30.10	*Control, monitoring and safety systems*
Article 30.11	*Testing"*

   e) *The note relating to Annex 8 is worded as follows:*

"ANNEX 8	*SUPPLEMENTARY PROVISIONS APPLICABLE TO CRAFT EQUIPPED WITH PROPULSION OR AUXILIARY SYSTEMS OPERATING ON FUELS WITH A FLASHPOINT EQUAL TO OR LOWER THAN 55 °C*
Section I	*Definitions*
Section II	*Fuel storage*
Section III	*Energy converters".*

f) The note relating to ESI-II-9 is worded as follows:

"*ESI-II-9 AUTHORISATION AND TEST PROCEDURE OF SPECIAL ANCHORS WITH REDUCED MASS".*

g) The note relating to ESI-II-12 (concerns only the French, German and Dutch versions)

2. Article 1.01 is amended as follows:

a) (3.7) to (3.9) is worded as follows:

"3.7 'accommodation': a space intended for the use of persons normally living on board, including galleys, ~~store rooms,~~ toilets and washing facilities, laundry facilities, passageways, but not the wheelhouse;

3.8 'passenger room': rooms on board intended for passengers and enclosed areas such as lounges, offices, shops, hairdressing salons, drying rooms, laundries, saunas, toilets, washrooms, ~~passageways,~~ connecting corridors and stairs not encapsulated by walls;

3.9 'control centre': a wheelhouse, an area which contains an emergency electrical power plant or parts thereof or an area with a centre permanently occupied by shipboard personnel or crew members, such as for fire alarm system, remote controls of doors or fire dampers;".

b) (3.17) is worded as follows (concerns only the French and Dutch versions)

c) (3.20) is worded as follows:

"3.20 'evacuation areas': ~~part of muster~~ areas of the vessel from which evacuation of persons can be carried out;".

d) (5.12) and (5.13) below are added after (5.11):

"5.12 'Retractable wheelhouse': a wheelhouse whose height is adjusted solely by lowering the upper mobile part while the wheelhouse floor remains in position, or in another related manner;

5.13 'Elevating wheelhouse': a wheelhouse whose height is adjusted by the movement of the entire wheelhouse. This type of wheelhouse can additionally have a retractable upper part;".

e) (6.2a) hereafter is added after (6.2):

"6.2a 'Unprotected opening' (or "open" type of opening): Openings which cannot be closed with at least weathertight means of closure should be considered as unprotected openings and, consequently, as down-flooding points. It also includes ventilation openings that have to remain open to supply air to the engine room or emergency generator room for the operation of the vessel;".

f) (7) is worded as follows:

"7. Signal lights, navigation and information equipment

7.1 'signal lights': light from navigation lights to indicate vessels;

7.2 'light signals': light used to supplement optical or acoustic signals;

7.3 'navigational radar installation': an electronic navigational aid for detecting and displaying the surroundings and traffic;

7.4 ~~'Inland ECDIS': a system used within the meaning of the current Inland ECDIS Standard for displaying electronic navigational charts for inland waters and associated information, that displays selected information from proprietary electronic navigational charts for inland waters and optionally information from other sensors of the craft;~~ (left void);

7.5 'Inland ECDIS equipment': equipment fitted aboard a vessel and used within the meaning of the current Inland ECDIS Standard. It can be operated in two different modes: information mode and navigation mode;

7.6 'information mode': use of Inland ECDIS equipment for information purposes only without radar overlay;

7.7 'navigation mode': use of Inland ECDIS equipment with radar overlay for navigating a craft;

7.8 'Inland AIS equipment': equipment fitted aboard a vessel and used within the meaning of the current VTT Standard;

7.9 'VTT Standard': 'Vessel Tracking and Tracing Standard for Inland Navigation' in accordance with the technical specifications defined by part II of the European Standard for River Information Services ES-RIS 2023/1[1];

7.10 'Inland ECDIS Standard': 'Electronic Chart Display and Information System Standard for Inland Navigation' in accordance with the technical specifications defined by part I of the European Standard for River Information Services ES-RIS 2023/1;

7.11 'Test Standard for Inland AIS': ~~the CESNI Standard~~ 'Test Standard Inland AIS' in accordance with the technical specifications defined by part III of the European Standard for River Information Services ES-RIS 2023/1;

7.12 'Test Standard for Inland ECDIS': 'Test Standard Inland ECDIS' in accordance with the technical specifications defined by part V of the European Standard for River Information Services ES-RIS 2023/1;".

3. Article 3.02(1) is amended as follows:

a) (b), last paragraph, is worded as follows:

"c = factor for the type of structure:

$c = 0{,}95$ for vessels with double bottom and double side with the hold's boundary located vertically in line with the coaming,

$c = 1{,}0$ for all other types of structure."

b) (c), first paragraph, is worded as follows:

"c) In longitudinally framed vessels with double bottom and double side, the minimum value calculated for the plate thickness in accordance with the formulae in (b) may be reduced to a calculated value certified by a recognised classification society for sufficient hull strength (longitudinal, lateral and local strength)."

[1] European Standard for River Information Services (ES-RIS 2023/1) ; CESNI Resolution 2022-II-XX dated XX XX XX.

4. Article 3.03(2), second sentence, is worded as follows:

"This requirement shall not apply to anchor gear.

Furthermore, this requirement shall not apply to

a) steering apparatus;

b) rudder-propeller, water-jet, and cycloidal-propeller installations; or

c) propulsion installations comparable to (b)

located aft of the aft-peak bulkhead. This also includes electric drives of these installations."

5. Article 3.03(3) (concerns only the Dutch version)

6. Article 7.02(3), first sentence, is worded as follows:

"3. The helmsman's field of unobstructed vision at his normal position shall be at least 240° of the horizon. The field of unobstructed vision shall be ~~and~~ at least 140° within the forward semicircle. […]"

7. Article 7.06(2) is worded as follows:

"2 Inland ECDIS equipment which can be operated in navigation mode shall be regarded as navigational radar installation. It shall meet the requirements of the Inland ECDIS Standard and the Test Standard for Inland ECDIS. The requirements of Annex 5 must be complied with."

8. Article 7.14 hereafter is added after Article 7.13:

"Article 7.14
Retractable wheelhouses

1. This article does not apply to:
   a) dismountable wheelhouses, and
   b) wheelhouses which do not make use of a mechanism (e.g. chains, pulleys, cables, etc.), whether they are moved by human, electric, hydraulic or pneumatic force.

2. A retractable wheelhouse and its appliances shall be designed in such a way that the safety of persons on board is not endangered.

3. Operations carried out from the wheelhouse shall not be hindered during lifting and lowering. It shall be possible to enter and leave the wheelhouse safely, whatever its position. The emergency exit may be an opening in the roof, provided that it complies with the dimensions in Article 14.06(2).

4. The lifting mechanism shall enable the wheelhouse to stop in all positions. If the possibility exists to lock the wheelhouse in a certain position, the lifting mechanism shall be automatically disabled when locking takes place. Releasing the locks shall be possible under all operating conditions.

5. The lifting mechanism shall be designed in such a way that exceeding the terminal positions is not possible.

6. Arrangements shall be provided to avoid uncontrolled lowering of the retractable wheelhouse. Appropriate protection features shall be installed to prevent the risk of injury which may result from lowering.
When deemed necessary, the inspection body may require the triggering of an optical or acoustic warning signal during lowering operations.

7. Hydraulic hoses are
   a) only permissible, if vibration absorption or freedom of movement of components makes their use inevitable;
   b) to be designed for at least the maximum service pressure;
   c) to be renewed at the latest every eight years.

8. Retractable wheelhouses and their appliances shall be inspected regularly, but at least once every twelve months, by a competent person. The safety of the installation is to be established by a visual check and a check on satisfactory operation."

9. Article 8.01, (4) hereafter is added after (3):

"4. By way of derogation from (3), craft may be equipped with propulsion or auxiliary systems operating on fuels with a flashpoint equal to or lower than 55 °C, if they fulfil the requirements of Chapter 30 and Annex 8 or are outside the scope of application of Chapter 30."

10. Article 8.05(6), last paragraph (concerns only the French version)

11. Article 8.05(7) is worded as follows:

"7. Directly at tank outlets the pipework for the distribution of liquid fuels shall be fitted with a quick-closing valve that can be operated from the deck, even when the rooms in question are closed.

If the operating device is concealed, the lid or cover shall not be lockable.

The operating device shall be marked in red. If the device is concealed it shall be marked with a symbol for the 'quick-closing valve on the tank in accordance with Figure 9 of Annex 4 with a side length of at least 10 cm.

The first subparagraph shall not apply to fuel tanks mounted directly on the engine."

12. Article 9.01(4) is worded as follows:

"4. The installation of replacement engines, as defined in Regulation (EU) 2016/1628, is prohibited. However, the repair of an existing engine is permitted in the circumstances referred to in Article 9.10."

13. Article 9.09 is amended as follows:

a) (1) is worded as follows:

"1. The ~~exhaust gas~~ after-treatment systems shall not impair the safe operation of the craft, including propulsion system and power supply, nor block the exhaust system."

b) (2) is worded as follows:

"2. When the ~~exhaust gas~~ after-treatment system of internal combustion engines, which ensure the main propulsion of a craft, is equipped with a bypassing device, the bypassing device must comply with the following conditions:

a) In the event of a failure of the ~~exhaust gas~~ after-treatment system, the activation of the bypassing device must allow the craft to continue to make steerageway under its own power.

b) In the event of activation of the bypassing device, the by-pass device control system shall trigger an acoustic and optical alarm signal in the wheelhouse.

c) A by-pass device control system shall record in nonvolatile computer memory all incidents of engine operation with use of the bypassing device. The information shall be readily available for the competent authorities."

c) (5) is worded as follows:

"5. The requirement of (1) shall be deemed to be fulfilled when the vessel is equipped with

a) a second independent propulsion system (even if that second system also includes an ~~exhaust gas~~ after-treatment system) allowing the craft to continue to make steerageway under its own power; or

b) an after-treatment system with a bypass device according to (2); or

c) for a vessel with only a single-engine propulsion system, an alarm system allowing warning of the malfunctioning of the after-treatment system, combined with possibility to override the automatic shutdown of the engine, to continue operation for at least 30 minutes in order to reach a safe berth."

14. Article 9.10 hereafter is added after Article 9.09:

"Article 9.10
Repair of engines in service

1. Engine repairs are permitted provided that:
   a) they are consistent with the type approval and existing engine parameter protocol;
   b) the identity of that repaired engine is traceable such that the original engine that was placed on the market and installed on the vessel can be identified.

   If the repairs result in the entire engine being replaced, the requirements of Article 9.01(2) shall apply. In particular, if a different identification number is assigned to the engine, it shall then be deemed to be a newly installed engine.

2. When carrying out maintenance or repair of an internal combustion engine with replacement of components, the person or company who carried out such maintenance or repair must provide a report which includes:
   a) date of maintenance or repair,
   b) description of maintenance or repair work done, including condition of engine before repair and reason for the repair,
   c) list of components which were replaced or used on the engine, with the specifications of these installed components which show that the engine still complies with the type-approval,
   d) confirmation of compliance with the engine manufacturer's instructions and the engine parameter protocol referred to in Article 9.05(1) after maintenance or repair,
   e) when appropriate, the information displayed on the identification plate of the engine pre-repair and post repair,
   f) when appropriate, supporting pictures."

15. Article 10.03, table, is amended as follows:

a) The last column, second row, is worded as follows:

"Lighting appliances, fire detectors and manual call points".

b) The comment (3) is worded as follows:

"(3) Certified safe type electrical equipment, for example installations
   a) allowed pursuant to the European Standards series EN 60079 in the version in force on 6 July 2017,
   b) lower minimum type of protection depending on design, e.g. certain types of fire detectors.

   If lighting devices, fire detectors or manual call points are used in accumulator and paint lockers, both conditions must be complied with."

16. Article 10.04(1), last sentence, is worded as follows:

"The classification and evaluation of areas at risk of explosion is to be conducted and documented in accordance with International Standards EN 60079-10-1 : 2020 and EN 60079-10-2 : 2015."

17. Article 10.11(17)(a)(ee) is worded as follows:

"ee) with one fixed fire-extinguishing installation for protecting objects in accordance with Article 13.06."

18. Article 10.15 is amended as follows:

a) (1)(a) is worded as follows:

"a) the provisions of European Standards series EN 60332 : 2020~~-1 and EN 603323 in the version in force on 6 July 2017~~ or".

b) (11) is worded as follows:

"11. When setting up cable harness penetrations, the fire protection properties of the partition must not be impaired. This shall be deemed to be met if the cables meet the provisions of the European Standard series EN 60332 : 2020~~-3 in the version in force on 6 July 2017~~ or one of the rules recognised as an equivalent by a Member State. If this is not the case, fire stop equipment must be provided in the penetrations for long cable harnesses (more than 6 m vertical and 14 m horizontal) if the cables are not completely enclosed by cable ducts."

19. Article 10.20(3) is amended as follows:

"3. The electromagnetic compatibility test shall be carried out on the basis of European Standards EN 61000-4-2 : 2009, EN 61000-4-3 : 2020, EN 61000-4-4 : 2012, at test degree number 3."

20. Article 13.01(1) is worded as follows:

"1. Vessels intended for the carriage of goods, apart from ship-borne lighters whose length L does not exceed 40 m, shall be equipped with bow anchors whose total mass P is obtained using the following formula:

$$P = k \cdot B \cdot T \; [kg]$$

where

k is a coefficient that takes account of the relationship between length L and beam B, and of the type of vessel:

$$k = c \sqrt{\frac{L}{8 \cdot B}}$$

for lighters, however, $k = c$ will be taken;

c is an empirical coefficient given in the following table:

Dead-weight tonnage [t]	Coefficient c
up to 50 inclusive	20
from 50 to 100 inclusive	25
from 100 to 200 inclusive	30
from 200 to 400 inclusive	45
from 400 to 650 inclusive	55
from 650 to 1000 inclusive	65
more than 1000	70

~~On vessels whose dead-weight tonnage is not greater than 400 t and which, owing to their design and intended purpose, are used only on predetermined short-haul sections, the inspection body may accept that only two-thirds of total mass P is required for the bow anchors."~~

21. Article 13.03(1), introductory sentence, is amended as follows:

"1. There shall be at least one portable fire extinguisher in accordance with the European Standards EN 3-7 : 2007 and EN 3-8 : 2021 at each of the following places:".

22. Article 13.05 is amended as follows:

a) Title (concerns only the French version)

b) (3) is worded as follows:

"3. Fire alarm system

The room to be protected shall be monitored by means of an appropriate fire alarm system. The fire alarm shall be noticeable in the wheelhouse, the accommodation spaces and the room to be protected."

c) (5)(c), first paragraph, is worded as follows:

"c) Triggering devices shall be so installed that they can be activated also in the event of a fire, and that the required quantity of extinguishing agent can still be provided in the space to be protected in the event of a fire or of damage caused by a fire or an explosion;".

d) (9)(d)(ff) (concerns only French, German and Dutch)

23. Article 13.06 is worded as follows:

“Article 13.06
Permanently installed firefighting systems for protecting objects

1. Permanently installed firefighting systems for protecting objects may be used to protect systems and equipment. In addition, rooms can also be protected with a firefighting system in accordance with this article, unless these rooms are subject to Articles 13.04 or 13.05 or are protected with firefighting systems in accordance with Articles 13.04 or 13.05.

   The effect of the firefighting systems must be aimed directly at the objects to be protected. The operating area of the firefighting systems can be restricted by structural measures.

   Firefighting systems for object protection can be already structurally integrated with the object in question.

   With regard to their supply of extinguishing agent, permanently installed firefighting systems for protecting objects shall be independent of systems referred to in Articles 13.04 and 13.05 as well as (5) of this Article.

2. The following requirements of Article 13.05 apply to permanently installed firefighting systems for protecting objects:

   a) (2) if the extinguishing agent used needs a restriction of the operating area by structural measures;

   b) (3) and (4);

   c) (5)(b) and (c), in addition to the provisions of (3) of this Article;

   d) (6) (a) to (e), and, at every entrance to a room or in the near vicinity of an enclosed object, a clearly visible appropriate notice on the fire extinguishing system for objects shall be put up;

   e) (7) to (13);

   f) (14) (b) to (g), where one energy source is sufficient, and (i) and (j);

   g) (15) (b) to (e).

   Firefighting systems for protecting objects are only to use extinguishing agents that are appropriate to extinguishing a fire on or in the object to be protected and which are listed in Article 13.05(1).

   The inspection body can authorise derogations in respect of the extinguishing agent for permanently installed firefighting systems for protecting objects that are based on a fire protection concept.

3. Permanently installed firefighting systems for protecting objects shall have the ability for manual triggering. Manual triggering shall be possible in the near vicinity of the protected object. They may be triggered automatically if the triggering signal is released by two fire detectors of different detection methods. The triggering shall occur without delay. If the fire-fighting system is intended for the protection of several objects, the triggering devices for each object have to be separate and clearly identified.

   The triggering of the fire extinguishing system must be indicated in the wheelhouse and at the entrance to the room in which the object to be protected is located. In the case of enclosed objects, the indication at the entrance to the room may be omitted if the indicator is attached to the object itself.

   For manual triggering, operating instructions in accordance with Article 13.05(5)(e) shall be posted up next to each triggering device, considering the location and nature of the object.

4. The type and location of permanently installed firefighting systems for protecting objects shall be entered in item 52 of the inland navigation vessel certificate.

5. The provisions of this Article do not apply to the water-spray systems in accordance with sections 9.3.1.28, 9.3.2.28 and 9.3.3.28 of the ADN."

24. Article 13.08(2) is worded as follows:

"2. A personal automatically inflatable life jacket shall be within reach of every person who is regularly on board a craft. Such life jackets shall conform to:

   a) the Regulation (EU) 2016/425[1] as amended; or

   b) the International Life-Saving Appliance (LSA) Code, sub-section 2.2.

   The requirements of (a) above shall be deemed to have been met when the life jacket satisfies the European Standards EN ISO 12402-2 : 2020, EN ISO 12402-3 : 2020, EN ISO 12402-4 : 2020.

   Non-inflatable lifejackets in accordance with (a) or (b) shall also be admissible for children."

25. Article 15.04(2)(e) is worded as follows:

"e) sufficient storage and working space as well as storage space for supplies."

1 Regulation (EU) 2016/425 of the European Parliament and of the Council of 9 March 2016 on individual protective equipment and abrogating Council Directive 89/686/EEC (OJ L81/51, 31.3.2016) or equivalent provisions of the Swiss Ordinance on the safety of personal protective equipment of 25 October 2017 (RS 930.115).

26. Article 19.01 is amended as follows:

a) (1) is worded as follows:

"1. The following provisions shall not apply:

a) Article 3.02(1)(b);

b) Article 4.01 and 4.02;

c) Article 8.08(2), second sentence, and (7);

d) Article 10.14(3), second sentence, for rated voltages of over 50 V;

e) Article 15.02(4)."

b) (2)(e) is worded as follows:

"e) liquefied gas ~~devices~~ installations according to Chapter 17."

c) (4) is worded as follows:

"4. On passenger vessels, areas shall be provided for use by persons with reduced mobility, according to the provisions of this Chapter.

The number of seats for persons with reduced mobility cannot be less than 1 % (rounded up to the nearest whole number) of the permitted number of passengers. In addition, the number of cabins for persons with reduced mobility cannot be less than

a) one for cabin vessels with sleeping berths for a maximum of 200 passengers

b) two for cabin vessels with sleeping berths for more than 200 passengers."

27. Article 19.02 is amended as follows:

a) (1a) hereafter is added after (1) as follows:

"1a. When materials other than steel, such as aluminium alloy or Fibre Reinforced Plastic composites, are being used for the construction of a passenger vessel, these materials shall

a) comply with the requirements of Article 3.02(2) and

b) have structural and integrity properties equivalent to steel, at the end of the applicable fire exposure according to the standard one-hour fire test.

Compliance for the construction material shall be established by an accredited test institution, in accordance with Article 19.11(1)(a) and (d), and may take into account the insulation provided."

b) (10)(d) is worded as follows:

"d) during the closure procedure an acoustic alarm shall automatically sound by the door; at least in areas intended for use by persons with reduced mobility, the alarm system must generate an optical and acoustic signal;".

c) (15) is worded as follows:

"15. Where double bottoms are fitted, their height shall be at least 0,60 m, and where double sides are fitted, their width shall be at least 0,60 m."

28. 19.03 is amended as follows:

a) (1) is worded as follows:

"1. The applicant shall prove by a calculation for the loading conditions as given in Article 19.03(2) that the intact stability of the vessel is appropriate. Proof of sufficient stability shall be approved by the inspection body. All calculations shall be carried out free to trim and sinkage. The basic values for the stability calculation – the vessel's lightweight and location of the centre of gravity – shall be determined

a) by means of a heeling test in accordance with Annex 1 of IMO Resolution MSC.267(85)[1] (including special considerations for passenger vessels of less than 24 m in length) or

b) by detailed mass and moment calculation. In the latter case the lightweight of the vessel shall be checked by means of a lightweight test with a tolerance limit of ± 5 % between the mass determined by calculation and the displacement determined by the draught readings. However, in case of doubt on the accuracy on the mass calculation, the Inspection body may require a heeling test in accordance with (a)."

1 MSC.267(85) adopted on 4 December 2008 – International Code on Intact Stability.

b) (2) is worded as follows:

"2. The intact stability shall be proven for the following standard loading conditions:

a) at the start of the voyage:
100 % passengers, 98 % fuel and fresh water, 10 % waste water;

b) during the voyage:
100 % passengers, 50 % fuel and fresh water, 50 % waste water;

c) at the end of the voyage:
100 % passengers, 10 % fuel and fresh water, 98 % waste water;

d) unladen vessel:
no passengers, 10 % fuel and fresh water, no waste water;

e) at the plane of maximum draught.

For all standard loading conditions, the ballast tanks shall be considered as either empty or full in accordance with normal operational conditions.

In addition, the requirement of section 3(d) shall be proved for the following loading condition:

100 % passengers, 50 % fuel and fresh water, 50 % waste water, all other liquid (including ballast) tanks are considered filled to 50 %."

c) (3) (e) (bb) is worded as follows:

"bb) in application of the heeling moment due to persons and turning according to sections 4 and 6."

d) In (3) (f) and (g) are deleted.

e) (6) is worded as follows:

"6. The moment due to centrifugal force, M_{dr}, caused by the turning of the vessel, shall be calculated as follows:

$$M_{dr} = c_{dr} \cdot C_B \cdot v^2 \cdot \frac{\Delta}{L_{WL}} \cdot \left(KG - \frac{T}{2}\right) [kNm]$$

where

C_{dr} = a coefficient of 0,45;

C_B = the block coefficient (if not known, taken as 1,0);

v = maximum speed of the vessel in [m/s];

The value must not exceed $v = 0{,}4\sqrt{gL}$;

Δ = the total weight of the vessel, inclusive of cargo, in t;

KG = distance between the centre of gravity and the keel line in [m];

g = acceleration due to gravity (9,81 ms^{-2}).

For passenger vessels with propulsion systems according to Article 6.06, M_{dr} shall be derived from full-scale or model tests or else from corresponding calculations.

If the passenger vessel is capable of achieving greater speeds than $v = 0{,}4\sqrt{gL}$, the turning stability for these higher speeds is to be additionally derived from full-scale model tests or else from corresponding calculations."

f) (9), first table is worded as follows:

"

	1-compartment status	2-compartment status
Extent of the side damage		
longitudinal l [m]	$0{,}10 \cdot L_{WL}$, however not less than 4,00 m	$0{,}05 \cdot L_{WL}$, however not less than 2,25 m
transverse b [m]	B/5	0,59
vertical h [m]	from vessel bottom to top without delimitation	
Extent of the bottom damage		
longitudinal l [m]	$0{,}10 \cdot L_{WL}$, however not less than 4,00 m	$0{,}05 \cdot L_{WL}$, however not less than 2,25 m
transverse b [m]	B/5	
vertical h [m]	0,59; pipework installed according to Article 19.02(13)(c), shall be deemed intact	

"

g) (9)(a) (concerns only the French version)

h) (9)(d), table (concerns only the French version)

i) (13)(a) is worded as follows:

"a) for the calculation of cross-flooding, IMO Resolution MSC.362(92)[1] shall be applied;".

29. Article 19.04 is worded as follows:

"Article 19.04
Safety clearance and freeboard

1. The safety clearance shall be at least equal to the sum of:
   a) the additional lateral immersion, which, measured on the outside plating, is resulting from the heeling angle due to persons, wind and turning according to Article 19.03(4), (5) and (6); and
   b) the residual safety clearance of at least 0,10 m.

   For vessels without a bulkhead deck, the safety clearance shall be at least 0,50 m.

2. The freeboard shall be at least equal to the sum of:
   a) the additional lateral immersion, which, measured on the outside plating, is resulting from the heeling angle due to persons, wind and turning according to Article 19.03(4), (5) and (6); and
   b) the residual freeboard of at least 0,20 m.

   However, the freeboard shall be at least 0,30 m.

3. The plane of maximum draught is to be set so as to ensure compliance with the safety clearance according to (1), and the freeboard according to (2) and Articles 19.02 and 19.03."

[1] MSC.362(92) adopted on 14 June 2013 - Revised Recommendation on a Standard Method for Evaluating Cross-Flooding Arrangements

30. Article 19.05 is amended as follows:

a) (2)(a) is worded as follows:

"a) number of passengers for whom the existence of a muster area according to Article 19.06(8), has been proven;".

b) (2)(c) is worded as follows:

"c) number of available sleeping berths for passengers on cabin vessels used for voyages including overnight stays."

c) (4) is worded as follows:

"4. The maximum permitted number of passengers shall be displayed on clearly legible and prominently positioned notices on board the vessel and on the safety plan mentioned in Article 19.13(2)."

31. Article 19.06 is amended as follows:

a) (3)(a) is worded as follows:

"a) Rooms or groups of rooms designed or arranged for 30 or more passengers or including sleeping berths for 12 or more passengers shall have at least two exits which are as far apart from one another as possible. On day trip vessels one of these two exits can be replaced by two emergency exits. Rooms, with the exception of cabins, and groups of rooms that have only one exit, shall have at least one emergency exit."

b) (3)(c) is worded as follows:

"c) Exits according to (a) and (b) shall be suitably arranged and shall have a clear width of at least 0,80 m and also a clear height of at least 2,00 m. For doors of ~~passenger~~ cabins and other small rooms, the clear width can be reduced to 0,70 m."

c) (3)(d) (concerns only the Dutch version)

d) (3)(f) (concerns only the French version)

e) (3)(g) is worded as follows:

"g) Exits of rooms intended for use by persons with reduced mobility shall have a clear width of at least 0,90 m. ~~Exits normally used for embarking and disembarking persons with reduced mobility shall have a clear width of at least 1,50 m.~~"

f) (4)(d) is worded as follows:

"d) For doors intended for use by persons with reduced mobility, there shall be from the direction from which the door opens, a minimum clearance of 0,60 m between the inner edge of the doorframe on the lock side and an adjacent perpendicular wall. As an alternative, doors with an automatic release by a push button are also acceptable. The power for this remote control should be available at all times."

g) (5)(a) is worded as follows:

"a) They shall have a clear width of at least 0,80 m. If they lead to rooms intended for more than 80 passengers, they shall comply with the provisions mentioned in (3)(d) and (e) regarding the width of the exits leading to connecting corridors."

h) (5)(d) (concerns only the Dutch version)

i) In (6), the first sentence is inserted before the introductory sentence as follows:

"6. Escape routes must be available. In addition to the provisions of (5), escape routes shall also comply with the following requirements:".

j) (6)(b) is worded as follows:

"b) The escape routes shall lead by the shortest route to muster areas according to (8)."

k) (8) is worded as follows:

"8. For all persons on board, there shall be muster and evacuation areas available which satisfy the following requirements:

a) The total area of the muster areas A_S shall correspond to at least the following value:

Day trip vessels: $A_S = 0{,}35 \cdot F_{max}\ [m^2]$

Cabin vessels: $A_S = 0{,}45 \cdot F_{max}\ [m^2]$

where

F_{max} = maximum permitted number of passengers on board.

b) Each individual muster area shall be

aa) larger than 10 m2 and

bb) appropriate for the number of passengers who will be guided to this muster area according to the evacuation procedure required in Article 19.13.

c) The muster and evacuation areas shall be clear of furniture, whether movable or fixed.

d) If movable furniture is located in a room in which muster or evacuation areas are defined, it shall be secured appropriately to avoid slipping.

e) If fixed seats or benches are located in a room in which muster areas are defined the corresponding number of persons need not be taken into account when calculating the total area of muster areas according to (a). However, the number of persons for whom fixed seats or benches in a certain room are taken into account must not exceed the number of persons for whom muster areas are available in this room.

f) Life-saving appliances shall be easily accessible from the muster or evacuation areas. In principle, the live saving appliances shall be stored nearby or within the muster or evacuation areas.

g) An evacuation area shall be provided on each side of the vessel. It shall be possible to evacuate people safely from these evacuation areas to shallow water, to the bank or to another craft, using either side of the vessel.

h) The muster and evacuation areas shall lie above the margin line.

i) The muster and evacuation areas are to be shown as such in the safety plan. The muster area shall be signposted on board the vessel.

j) The provisions of (d) and (e) shall also apply to free decks on which muster or evacuation areas are defined.

k) If collective life-saving appliances complying with Article 19.09(5), are available on board, the number of persons for whom such appliances are available may be disregarded when calculating the total surface area of the muster areas referred to in (a).

l) However, in all cases where reductions according to (e), (j) and (k) are applied, the total area according to (a) shall be sufficient for at least 50 % of the maximum permitted number of passengers.

m) The evacuation areas must be accessible from each muster area without passengers having to pass through areas or rooms having lower levels of safety regarding fire protection."

l) (9)(b) is worded as follows:

"b) They shall have a clear width of at least 0,80 m or, if they lead to connecting corridors or areas used by more than 80 passengers, the sum of the widths of all stairs intended for passengers and which shall be used by them in an emergency shall be at least 0,01 m per passenger."

m) (9)(c) is worded as follows:

"c) The clear width between handrails shall be of at least 1,00 m if the stairs provide the only means of access to a room intended for passengers.

The clear width between handrails shall not exceed 1,80 m. If necessary, additional intermediate handrails shall be installed. If additional intermediate handrails are installed, the requirements applicable to stairs shall be met on each side of the handrails."

n) (9)(e)(aa) is worded as follows:

"aa) the gradient of the stairs shall not exceed 33;".

o) (9)(e)(cc) is worded as follows:

"cc) the stairs shall be straight and parallel to the longitudinal axis of the vessel;".

p) In (9)(e), (dd) is deleted.

q) In (9)(e), the current (ee) becomes (dd).

r) (9)(e)(dd) is worded as follows:

"dd) the handrails of the stairs shall extend approximately 0,30 m beyond the top and bottom of the stairs without restricting passageways;".

s) In (9)(e), the current (ff) becomes (ee).

t) (10) is worded as follows:

"10. Parts of the deck intended for passengers, and which are not enclosed, shall be surrounded by a fixed bulwark or guard rail at least 1,00 m high or a railing according to the European Standard EN 711 : 2016, construction type PF, PG or PZ. Bulwarks and railings of decks intended for use by persons with reduced mobility shall be at least 1,10 m high."

u) (12) is worded as follows:

"12. Openings and equipment for embarking and disembarking shall comply with the following requirements:

a) They shall be equipped with devices to prevent falls overboard.

b) Openings shall have a clear width of at least 1,00 m.

c) Openings, used normally for the embarking or disembarking of persons with reduced mobility, shall have a clear width of at least 1,50 m. For the use of equipment to enable persons to be transferred such as gangways, fixed or mobile facilities must be available which close the distance between the inner edge of the exit opening and the outer edge of the equipment to enable persons to be transferred over its entire height in a child-proof manner.

d) If the openings and equipment for embarking or disembarking cannot be observed from the wheelhouse, appropriate optical or electronic means shall be provided.

e) Gangways shall be constructed in accordance with European Standard EN 14206 : 2003. By way of derogation from Article 13.02(3)(d), their length can be less than 4 m."

v) (13) (concerns only the French and Dutch versions)

w) (14) (concerns only the French and Dutch versions)

x) (17) is worded as follows:

"17. There shall be toilets available for passengers. At least one toilet shall be fitted for use by persons with reduced mobility according to a relevant standard or a regulation of a Member State and shall be accessible from areas intended for use by persons with reduced mobility.

This shall have been fulfilled if the toilet meets the following requirements:

a) The surface of the toilet is at least 1,50 m x 1,82 m;

b) At least 0,80 m of clearance shall be provided on at least one side of the toilet to facilitate accessibility for wheelchair users;

c) The height of the toilet seat is approximately 0,40 m;

d) Handgrips for persons with reduced mobility are fixed to the walls and attention given to ensuring that the fittings are quite stable and firmly attached;

e) The toilet-paper dispenser is within easy reach and can be used with one hand."

32. Article 19.08 is amended as follows:

a) (1) is worded as follows:

"1. Passenger vessels shall have an internal communication facility according to Article 7.08. It shall also be available in the service rooms and, where there is no direct communication from the steering position, in the areas for embarking and disembarking passengers as well as muster areas and evacuation areas as referred to in Article 19.06(8)."

b) (3)(b) is worded as follows:

"b) an alarm system enabling the vessel's command to alert passengers.

This alarm shall be clearly and unmistakably audible in all rooms accessible to passengers. It shall be capable of being triggered from the wheelhouse and from a location that is permanently occupied by the crew or shipboard personnel;".

c) (8) is worded as follows:

"8. Where CO2 bar-systems are situated in rooms below deck these rooms shall be fitted with an automatic ventilation system which turns itself on automatically when the door or hatch to the room is opened. The ventilation ducts shall run down to 0,05 m from the floor of this room. Ventilation systems for rooms where CO2 bar systems are situated shall be independent from other ventilation systems."

33. Article 19.09 is amended as follows:

a) (2) is worded as follows:

"2. In addition to the lifebuoys referred to in (1), individual life-saving equipment according to Article 13.08(2) shall be within reach for all shipboard personnel. For shipboard personal not responsible for undertaking duties according to the safety rota non-inflatable or semi-automatically inflatable lifejackets in accordance with (a) or (b) of Article 13.08(2) are allowed."

b) (4) is worded as follows:

"4. In addition to the life-saving equipment referred to in (1) and (2), individual life-saving equipment according to Article 13.08(2), shall be available for 100 % of the maximum permitted number of passengers. Non-inflatable or semi-automatically inflatable lifejackets in accordance with (a) or (b) of Article 13.08(2) are allowed."

34. Article 19.10 is amended as follows:

a) (3)(b) (concerns only the Dutch version)

b) (3)(i) is worded as follows:

"i) muster areas and evacuation areas referred to in Article 19.06(8);".

c) (4)(g) (concerns only French and German)

35. Article 19.11 is amended as follows:

a) (2) is worded as follows:

"2. Partitions

For determining the appropriate fire partition to be applied to boundaries between adjacent rooms or areas, such rooms or areas are classified according to their fire risk as shown in categories below. A non-exhaustive list of rooms or areas is given for each category. In case a new type of room or area is foreseen, it may be placed in the relevant fire risk category as found appropriate by the Inspection body. Where contents and use of a room or area leave a doubt regarding its classification for the purpose of this regulation, or where it is possible to assign two or more classifications to a room or area, it shall be treated as a room or area within the relevant category having the most stringent partition requirements.

a) between rooms shall be designed in accordance with the following tables:

aa) Table for partitions between rooms or areas, in which no pressurised water sprinkler systems according to Article 13.04 are installed.

Rooms / areas	Rooms / areas protected for functional need	Rooms of major fire risk	Rooms of high fire risk	Rooms of moderate fire risk	Rooms of low fire risk
Rooms / areas included in the category	Control centres Switchboard rooms Stairwells Muster areas Evacuation areas	Engine rooms Accumulator rooms	Galleys Stores rooms containing flammable liquids	Store rooms Rooms containing Sauna Laundries Electrical service rooms Rooms containing sprinkler pumps, their switches and the valves that are required in order for the system to be operated	Lounges Barber shops and beauty parlours Cabins Corridors Other machinery / technical spaces (e.g. sewage treatment, ventilation, steering gear room)
Rooms / areas protected for functional need	A0 / B0 [1), 7)]	A60	A60	A30	A30 / B15 [2)]
Rooms of major fire risk		A60 / A0 [4)]	A60	A60	A60
Rooms of high fire risk			A30 [7)]	A30 / B15 [6)]	A30
Rooms of moderate fire risk				A30 [3) 7)]	A30 [3)]
Rooms of low fire risk					B15

bb) Table for partitions between rooms or areas, in which pressurised water sprinkler systems according to Article 13.04 are installed (a pressured water sprinkler system is installed in the rooms on both sides of the partition).

Rooms / areas	Rooms / areas protected for functional need	Rooms of major fire risk	Rooms of high fire risk	Rooms of moderate fire risk	Rooms of low fire risk
Rooms / areas included in the category	Control centres Switchboard rooms Stairwells Muster areas Evacuation areas	Engine room Accumulator room	Galley Store rooms containing flammable liquids	Store rooms Rooms containing Sauna Laundry Electrical service rooms Rooms containing sprinkler pumps, their switches and the valves that are required in order for the system to be operated	Lounges Barber shops and beauty parlours Cabins Corridors Other machinery / technical spaces (e.g. sewage treatment, ventilation, steering gear room)
Rooms / areas protected for functional need	A0 / B0 [1), 7)]	A60	A30	A0 / A30 [5)]	A0 / A30 / B15 [2)]
Rooms of major fire risk		A60 / A0 [4)]	A60	A60	A60
Rooms of high fire risk			A30 [7)]	A30 / B15 [6)]	A30
Rooms of moderate fire risk				A0 [7)]	A0
Rooms of low fire risk					B0

1) Partitions between control centres and external muster areas shall correspond only to Type B0.
2) For rooms which are not protected by a spinkler system; partitions between rooms of low fire risk and external muster areas shall correspond to Type B15. In all other cases they shall comply with Type A30.
For rooms which are protected by a pressured water sprinkler system; partitions between rooms of low fire risk and internal muster areas shall correspond to Type A30, but external muster areas only to Type B15. In all other cases they shall comply with Type A0.
3) Partitions between rooms of accommodation or passenger rooms shall correspond only to Type A0.
4) Partitions between engine rooms shall comply with Type A0, except for rooms according to Articles 19.07 and 19.10(6), which shall comply with A60. In all other cases they shall comply with Type A60.
5) Partitions between rooms of moderate fire risk and muster areas shall correspond to Type A30.
6) No partition is required between galleys and adjacent food store rooms provided that outer perimeter of galleys including stores fullfills the requirements for galleys.
7) Where adjacent rooms have the same purpose, the partitions need not to comply with the requirements of this table (for example; the partition between two stores).”

b) (6) is worded as follows:

"6. None of the exposed surfaces, including paints, lacquers and other materials shall produce excessive amounts of smoke or toxic substances. This shall be proven in accordance with the Code for Fire Test Procedures (Annex 1, Part 2) or the appropriate regulations of one of the Member States."

c) (9)(c) is worded as follows:

"c) Self-closing doors which remain open in normal operation shall be such that they can be closed on the spot and from a location permanently occupied by shipboard personnel or crew members. Once a door has been remotely closed, it shall be possible to reopen and close it safely on the spot."

d) (11), last sentence, is worded as follows:

"The vertical partitions shall be smoke-tight ~~under normal operating conditions~~ and ~~shall be~~ continuous from deck to deck."

e) (13) is worded as follows:

"13. Stairs shall be made of steel or another equivalent material in terms of fire-resistance."

f) (16) is worded as follows:

"16. Galleys shall be fitted with ventilation systems. Stoves and similar cooking appliances shall be fitted with extractors. The air extraction ducts of the extractors shall satisfy the requirements according to (15) and, additionally, be fitted with manually operated fire dampers at the inlet openings."

g) (18) is worded as follows:

"18. Lounges not constantly supervised by shipboard personnel or crew members, galleys, engine rooms and other rooms presenting a fire risk shall be connected to an appropriate fire alarm system. The fire alarm and the fire detection zone shall be automatically displayed by an indicator device at a location permanently manned by shipboard personnel or crew members."

36. Article 19.13 is worded as follows:

"**Article 19.13**
Safety organisation

1. A safety rota shall be provided on board passenger vessels. The safety rota describes the duties of the crew and the shipboard personnel in the following eventualities:
   a) breakdown;
   b) fire on board;
   c) evacuation of passengers;
   d) person overboard.

   Specific safety measures for persons with reduced mobility shall be taken into consideration.

   The crew members and shipboard personnel designated in the safety rota should be assigned their various duties, depending on the posts they occupy. Special instructions shall ensure that, in the event of danger, all doors and openings in the watertight bulkheads referred to in Article 19.02 will be hermetically closed immediately.

2. A safety plan shall be provided on board passenger vessels, in which at least the following are clearly and precisely designated:
   a) areas intended for use by persons with reduced mobility;
   b) escape routes, emergency exits and muster and evacuation areas;
   c) life-saving equipment (including ship's boat) referred to in Article 19.09;
   d) fire extinguishers referred to in Article 19.12(1);
   e) fire extinguishing and pressurised sprinkler systems referred to in Article 19.12;
   f) hydrants and hoses referred to in Article 19.12(2) and (3);
   g) fire fighting pumps referred to in Article 19.12(2) and bilge pumps referred to in Article 8.08;
   h) alarm system referred to in Article 19.08(3)(a);
   i) alarm system referred to in Article 19.08(3)(b) and (c);
   j) bulkhead doors referred to in Article 19.02(5), and the position of their controls, as well as the other openings referred to in Article 19.02(9), (10) and (13), and Article 19.03(12);
   k) type A partitions referred to in Article 19.11(2) and partitions reffered to in Article 19.11(11), as well as doors in such partitions;
   l) automatic fire dampers, including the location of their controls, reffered to in Article 19.11(15)(d) and manually operated fire dampers referred to in Article 19.11(16);
   m) fire alarm system referred to in Article 19.11(18);
   n) emergency power plant referred to in Article 19.10(4);

o) ventilation system control units referred to in Article 19.11(15)(g);

p) electrical shore connections referred to in Article 10.08;

q) fuel line shut-offs referred to in Article 8.05(7);

r) liquefied gas installations referred to in Article 19.15(8);

s) public address systems referred to in Article 19.08(2);

t) radiotelephone equipment;

u) first-aid kits referred to in Article 19.08(9);

v) the automated external defibrillator referred to in Article 19.08(10);

w) self-contained breathing apparatus sets, as well as sets of equipment and smoke hoods referred to in Article 19.12(10);

x) fire blanket referred to in Article 19.12(1);

y) closing devices of ventilation air intake and extraction referred to in Article 19.11(15)(b);

z) smoke extraction system triggering devices referred to in Article 19.11(17)(g).

The symbols used in the safety plan shall be in accordance with the international standard ISO 17631 : 2002 or other recognized standards.

3. The safety rota according to (1) and the safety plan according to (2) shall:

a) be duly stamped by the inspection body,

b) be available at a location permanently manned by shipboard personnel or crew members, and

c) be permanently stored in a prominently marked weathertight enclosure outside the deckhouse for the assistance of shoreside fire-fighting personnel.

4. A simplified safety plan containing only the information referred to in (2)(a) to (d), (h), (u) and (v) shall be prominently displayed at an appropriate point on each deck and shall be posted up in each cabin. By derogation, the safety plan according to (2) can be used instead of the simplified safety plan.

5. A code of conduct for passengers shall be prominently displayed at an appropriate point on each deck and shall be posted up in each cabin.

This code of conduct shall include at least:

a) designation of emergencies:
   aa) fire;
   bb) flooding;
   cc) general hazard;
b) description of the various alarm signals;
c) instructions concerning the following:
   aa) escape routes;
   bb) what to do;
   cc) need to keep calm;
d) instructions concerning the following:
   aa) smoking;
   bb) use of fire and naked flame;
   cc) opening windows;
   dd) use of certain items of equipment.

These details shall be posted up in Dutch, English, French and German."

37. Article 19.14, (3) hereafter is added after (2):

"3. For passenger vessels that do not produce domestic waste water, the inspection body may waive the application of (1). This derogation shall be entered in item 52 of the inland navigation vessel certificate."

38. Article 19.15 is amended as follows:

a) (1), introductory sentence, is worded as follows:

"1. Passenger vessels authorised to carry up less than 50 passengers and with a length LWL of not more than 25 m shall prove adequate stability after damage according to Article 19.03(7 to 13) or, as an alternative, prove that they comply with the following criteria after flooding of each single compartment:".

b) After (1), (1a) is added as follows:

"1a. The inspection body may waive the application of Article 19.09(1) for passenger vessels in accordance with (1)."

c) (3) is worded as follows:

"3. By way of derogation from Article 19.03(9), passenger vessels with a length L of not more than 45 m and authorised to carry up to a maximum of 250 passengers do not need to have 2-compartment status.

In addition, by way of derogation from Article 19.03(9), passenger vessels with a length L_{WL} of not more than 25 m and authorised to carry up to a maximum of 150 passengers shall have 1-compartment status with the following dimensions of the side and bottom damage : $0{,}10 \cdot L_{WL}$, however not less than 2,00 m."

d) (9) is worded as follows:

"9. The following provisions shall not apply to passenger vessels with a length $L_{WL}$of not more than 25 m:

a) Article 19.04(1), last sentence;

b) Article 19.06(6)(c), for the galleys, as long as a second escape route is available;

c) Article 19.06(8)(b)(aa);

d) Article 19.07."

e) (10) is worded as follows:

"10. For cabin vessels with a length L of not more than 45 m, Article 19.12(10), shall not apply, provided smoke-hoods in a number corresponding to the number of sleeping berths are readily accessible in each cabin."

f) After (10), (11) and (12) are added as follows:

"11. For passenger vessels with a length L_{WL} of not more than 25 m, the fire extinguisher hoses according to Article 19.12(2)(b) can be shorter than 20 m in length, subject that any point of the vessel can be reached.

12. For day-trip vessels operating limited journeys of local interest or in harbour areas, the inspection body may waive the application of Article 19.06(17). However, the absence of toilets shall be entered in item 52 of the inland navigation vessel certificate. The journeys or areas for which the derogation is valid shall be specified in the inland navigation vessel certificate."

39. Article 21.02(2)(b) (concerns only the French version)

40. Article 26.01 is amended as follows:

a) (1) is worded as follows:

"1. Recreational craft shall meet the following requirements:

a) from Chapter 3:

Article 3.01, Article 3.02(1)(a) and (2), Article 3.03(1)(a) and (6), and Article 3.04(1);

b) from Chapter 5:

Article 5.01(1) and (3), Article 5.02, Article 5.03, Article 5.05 to Article 5.10;

c) from Chapter 6:

Article 6.01(1), and Article 6.08;

d) from Chapter 7:

Article 7.01(1) and (2), Article 7.02, Article 7.03(1) and (2), Article 7.04(1), Article 7.05(2),

Article 7.06(3) in case of recreational craft for which the applicable navigational authority regulations for certain areas of navigation in the Member States specify that they must be equipped with Inland AIS equipment,

Article 7.13;

e) from Chapter 8:

Article 8.01(1) and (2), Article 8.02(1) and (2), Article 8.03(1) and (3), Article 8.04, Article 8.05(1) to (5),

Article 8.05(6) or as an alternative with the technical requirements of Standard EN ISO 10088 : 2017,

Article 8.05(7) to (10) and (13), Article 8.06, Article 8.07, Article 8.08(1), (2), (5), (7) and (10), Article 8.09(1), and Article 8.10;

f) Chapter 9;

g) from Chapter 10:

Article 10.01(1), *mutatis mutandis*;

h) from Chapter 13:

Article 13.01(2), (3) and (5) to (14), Article 13.02(1)(a) to (c), and (3)(a) and (e) to (h),

Article 13.03(1)(a), (b) and (d) however, there shall be at least two fire extinguishers on board,

Article 13.03(2) to (6), Article 13.04, Article 13.05 and

Article 13.08 however non-inflatable lifejackets are also admissible for adults;

i) Chapter 16;

j) Chapter 17;

k) from Chapter 21:

Article 21.02(3), Article 21.04 and Article 21.07."

b) (2) is worded as follows:

"2. For recreational craft subject to Directive 2013/53/EU[1] (or previously Directive 94/25/EC), only the following requirements apply:

a) Article 6.08;

b) from Chapter 7:

Article 7.01(2), Article 7.02, Article 7.03(1),

Article 7.06(3) in case of recreational craft for which the applicable navigational authority regulations for certain areas of navigation in the Member States specify that they must be equipped with Inland AIS equipment, and

Article 7.13;

c) from Chapter 8:

Article 8.01(2), Article 8.02(1), Article 8.03(3), Article 8.05(5), and Article 8.08(2);

d) from Chapter 13:

Article 13.01(2), (3), (6) and (14), Article 13.02(1)(b) and (c), (3)(a) and (e) to (h), Article 13.03(1)(b) and (d),

Article 13.03 (2) to (6) as an alternative with the technical requirements of Standard ISO 9094 : 2015, and

Article 13.08, however

aa) non-inflatable lifejackets are also admissible for adults;

bb) the requirement for three lifebuoys under Article 13.08(1) may be reduced to two;

cc) horseshoe lifebuoys are permitted;

e) Chapter 16;

f) from Chapter 17:

aa) Article 17.12;

bb) Article 17.13; the testing after putting into service of the liquefied gas installation shall be carried out in accordance with the requirements of Directive 2013/53/EU, and an inspection attestation shall be submitted to the inspection body;

cc) Article 17.14 and Article 17.15; the liquefied gas installation shall be in accordance with the requirements of Directive 2013/53/EU;

dd) Chapter 17 entirely, if the liquefied gas installation is fitted after placing on the market of the recreational craft."

[1] Directive 2013/53/EU of the European Parliament and of the Council of 20 November 2013 on recreational craft and personal watercraft and repealing Directive 94/25/EC (OJ L 354, 28.12.2013).

41. Article 27.02(1)(e), first paragraph (concerns only the French version)

42. Article 28.03(4) is amended as follows:

a) (a) and (b) (concerns only the German and Dutch version)

b) (d), table (concerns only the French version)

43. Article 28.04 is amended as follows:

a) (2)(d) (concerns only the French version)

b) (3)(c) (concerns only the French version)

44. Article 29.02(2) is worded as follows:

"2. By way of derogation from Article 19.02(9), and Article 19.15(~~7~~6), all doors in watertight bulkheads shall be capable of being remotely controlled."

45. Article 29.10(1) is worded as follows:

"1. Corridors, rooms and accommodation accessible to the public and also galleys and engine rooms shall be connected to an appropriate fire alarm system. The fire alarm and the fire detection zone shall be automatically displayed by an indicator device at a location permanently manned by shipboard personnel or crew members."

46. Chapter 30 is worded as follows:

"CHAPTER 30
SPECIAL PROVISIONS APPLICABLE TO CRAFT EQUIPPED WITH PROPULSION OR AUXILIARY SYSTEMS OPERATING ON FUELS WITH A FLASHPOINT EQUAL TO OR LOWER THAN 55 °C

Article 30.00
Definition

For the purposes of this Chapter, the following definition shall apply:

"propulsion and auxiliary system": any system using fuel, including fuel tanks, tank connections, fuel preparation systems, piping, valves, energy converters (such as engines, turbines or fuel cells), control, monitoring and safety systems.

Article 30.01
Scope of application

1. This chapter applies to craft with propulsion or auxiliary systems operating on fuels with a flashpoint equal to or lower than 55 °C.

2. In addition to the requirements of this chapter, Annex 8 provides for those requirements that are specific for certain fuels.

3. The provisions of this Chapter shall not apply to auxiliary systems according to (1) with a cumulative reference power that is less than 20 kW.

Article 30.02
General

1. Craft according to Article 30.01(1) must comply with the mitigation measures identified by the risk assessment according to Article 30.04.

2. Unless otherwise specified in Annex 8 and if necessary, derogations to Articles 8.01(3) and 8.05(1), (6), (9), (11), (12) are permitted provided that the craft meets an equivalent level of safety.

   If the energy converter of the craft generates gaseous or particulate pollutants but does not fall in the scope of application of Chapter 9, the emissions of gaseous and particulate pollutants from the energy converter shall be equivalent or lower than those of the internal combustion engines referred to in Article 9.01(2). The inspection body may ask for a report which demonstrates its compliance to this requirement.

Article 30.03
Tasks of the inspection body and technical service, documentation

1. Propulsion and auxiliary systems of craft according to Article 30.01(1) shall be constructed and installed under the supervision of the inspection body.

2. For the purpose of discharging tasks pursuant to this chapter, the inspection body may employ a technical service. The technical services shall satisfy the European Standard EN ISO 17020 : 2012. The knowledge of the technical service shall cover at least the following areas:

   a) fuel system including tanks, heat exchangers, pipelines,

   b) strength (longitudinal and local) and stability of the craft,

   c) electrical installation and control, monitoring and safety systems,

   d) ventilation system,

   e) fire safety, and

   f) gas warning equipment.

   Manufacturers and distributors of propulsion or auxiliary systems, or parts of these systems, cannot be recognised as technical services.

   The supervision and testing according to Articles 30.03(1) and 30.11 may be performed by different technical services provided that all the expertise described above is taken into account in the process.

3. Before commissioning of a propulsion or auxiliary system according to Article 30.01(1), the following documents shall be submitted to the inspection body:

   a) a risk assessment according to Article 30.04,

   b) a description of the propulsion or auxiliary system,

   c) drawings of the propulsion or auxiliary system,

   d) a diagram of the pressure and temperature within the system,

   e) the operating manual according to 30.05(5),

   f) a safety rota according to Article 30.05(1), and

   g) a copy of the inspection certificate referred to in Article 30.11(4).

4. The technical documentation according to (3) shall enable an assessment of whether craft, propulsion and auxiliary systems and their components comply with the applicable rules, regulations, standards applied and principles regarding safety, availability, maintainability and reliability.

5. A copy of the documents according to (3) shall be kept on board.

Article 30.04
Risk assessment

1. A risk assessment shall be conducted to ensure that risks arising from the use of fuels with a flashpoint equal to or lower than 55 °C affecting people on board including passengers, the environment, the structural strength and the integrity of the craft, are addressed.

2. The risk assessment shall include at least:

   a) a hazard identification (HAZID), as described in ISO 31010 : 2019, to find, list and characterize hazards as well as to identify measures to eliminate or mitigate these hazards.

   b) the classification of hazardous areas on board, divided into zones 0, 1 and 2, according to Article 1.01(3.23).

   In the light of the outcome of the hazard identification (HAZID), the inspection body may request additional risk analysis (e.g. quantitative risk analysis or fire and explosion risk analysis).

3. As a minimum, the process of the hazard identification (HAZID) shall consider the following risks:

   a) hazards associated with physical layout,

   b) the mechanical damage to components,

   c) operational, maintenance, cargo-related and weather-related influences,

   d) electrical failures,

   e) unintended chemical reactions,

   f) release of toxic vapours,

   g) self-ignition of fuels,

   h) fire,

   i) explosion,

   j) temporary power outage (blackout),

   k) flooding of water in parts of the craft which may contain fuel or hazardous vapours,

   l) craft sinking.

4. As a minimum, the process of the hazard identification (HAZID) shall involve:

   a) a risk assessment facilitator,

   b) fuel related safety experts,

   c) craft and system designers,

   d) the shipyard or equivalent entity having an overview of the shipbuilding,

   e) the equipment suppliers,

   f) the future craft operator,

   g) a boatmaster.

   The inspection body must be permitted to attend as observer the risk assessment process.

5. The risk assessment shall ensure that risks are eliminated wherever possible. Risks which cannot be eliminated entirely are to be mitigated to an acceptable level in accordance with (6). Details of risks, and the measures by which they are mitigated, shall be documented to the satisfaction of the inspection body.

6. Craft according to Article 30.01(1) must fulfil the following requirements:

a) A single failure in parts of the craft which may contain fuel or hazardous vapours, such as engines, fuel tanks and associated piping, shall not lead to an unsafe situation.

b) The level of safety, reliability and dependability of the craft shall be at least equivalent to that of craft with main and auxiliary machinery using fuels having a flashpoint of more than 55 °C.

c) The probability and consequences of fuel-related hazards shall be minimised through system design. Failure of risk-reducing measures shall lead to measures mitigating the impact on safety.

d) Fuel supply, storage and bunkering arrangements shall be suitable to receive and contain fuel in the required state without leakage or venting under normal operating conditions.

e) A fire or explosion in parts of the craft which may contain fuel or hazardous vapours shall not:

aa) damage or disrupt the proper functioning of equipment/systems located in any space other than that in which the incident occurs;

bb) damage the craft in such a way that flooding of water below the main deck or any progressive flooding occurs;

cc) damage work areas or accommodation in such a way that persons who stay in such areas under normal operating conditions are injured or exposed to hot temperatures or toxic substances;

dd) injure persons as well as prevent persons' access to life-saving appliances or impede escape routes either by physical blockage, heat or toxic substances.

7. In agreement with the inspection body, the scope of the risk assessment can exclude concepts in whole or in part that have been previously subjected to a risk assessment, provided that:

a) there are no changes to the arrangements or design, location of the installation, mode of operation, type of fuels, use of surrounding spaces or to the number of persons exposed, and

b) mitigation measures taken as a result of previous risk assessments are included.

Article 30.05
Safety organisation

1. A safety rota shall be provided on board craft according to Article 30.01. The safety rota shall include safety instructions according to (2) and a safety plan according to (3) of the craft.

2. These safety instructions shall include information on at least the following measures:
   a) emergency shutdown of the system,
   b) measures in the event of accidental release of liquid or gaseous fuel, for instance during bunkering,
   c) measures in the event of fire or other incidents on board,
   d) measures in the event of collision,
   e) use of safety equipment,
   f) raising the alert, and
   g) evacuation.

3. The safety plan shall include information on at least the following areas and equipment:
   a) hazardous areas,
   b) escape routes, emergency exits and gastight rooms,
   c) life-saving equipment and ships' boats,
   d) fire extinguishers, fire-fighting systems and sprinkler systems,
   e) alarm systems,
   f) emergency circuit-breakers' controls,
   g) fire dampers,
   h) emergency power sources,
   i) ventilation system controls,
   j) controls for fuel supply lines, and
   k) safety equipment.

4. The safety rota shall:
   a) be duly stamped by the inspection body, and
   b) be prominently displayed at one or more appropriate points on board.

5. A detailed operating manual of the propulsion or auxiliary system shall be provided on board craft according to Article 30.01, and shall at minimum:
   a) contain practical explanations about bunkering system, fuel containment system, fuel piping system, fuel supply system, engine or energy converter room, ventilation system, leakage prevention and control, monitoring and safety system,
   b) describe the bunkering operations, especially valves operation, purging, inerting and gas freeing,
   c) describe the relevant method of electrical insulation during bunkering operations, and
   d) describe the details of risks identified in the risk assessment as referred to in Article 30.04 and the means by which they are mitigated.

Article 30.06
Marking

Service rooms and system components shall be appropriately marked so that it is clear for what fuels they are being used.

Article 30.07
Independent propulsion

In the event of an automatic shutdown of the propulsion system or parts of the propulsion system, the craft shall be able to make steerageway under its own power.

Article 30.08
Fire safety

1. Fire detection, protection and extinction measures appropriate to the hazards concerned shall be provided on board.

2. An appropriate fixed fire alarm system shall be provided for all rooms and spaces of the propulsion or auxiliary system where fire cannot be excluded.

3. An appropriate firefighting system shall be provided for all rooms and spaces of the propulsion or auxiliary system.

Article 30.09
Electrical installations

1. In accordance with Article 10.04, equipment for hazardous areas shall be of an appropriate type according to zones where such equipment is installed.

2. Electrical generation and distribution systems and associated control systems shall be designed such that a single failure will not result in the release of fuel.

3. The lighting system in hazardous areas shall be divided between at least two branch circuits. All switches and protective devices shall interrupt all poles and phases and shall be located in a non-hazardous area.

Article 30.10
Control, monitoring and safety systems

1. A propulsion or auxiliary system of craft according to Article 30.01(1) shall be fitted with its own control and monitoring system and its own safety system. These systems must be independent from each other. All elements of these systems shall be capable of being functionally tested.

2. Spaces in which the propulsion or auxiliary system is installed shall be equipped with permanently installed devices for gas detection and leakage monitoring. The number, type and redundancy of detectors in each space shall correspond to the size, layout and ventilation of the space. Permanently installed gas detectors shall be installed where gas may accumulate and in the ventilation outlets of these spaces.

3. Instrumentation devices shall be fitted to allow a local and a remote reading of essential parameters, where they are necessary to ensure a safe operation of the whole system including bunkering.

Article 30.11
Testing

1. Propulsion and auxiliary systems of craft according to Article 30.01(1) shall be inspected by the inspection body:

   a) before commissioning,

   b) after any modification or repair, and

   c) regularly, at least once a year.

   The relevant instructions of the manufacturers shall be taken into account in the process.

2. The inspections referred to in (1)(a) and (c), must at least cover:

   a) a check of conformity of the propulsion and auxiliary systems with the approved drawings and in the case of subsequent checks, whether alterations in the propulsion or auxiliary system were made,

   b) if necessary, a functional test of the propulsion and auxiliary systems for all operational possibilities,

   c) a visual check and a tightness check of all system components, in particular valves, pipelines, hoses, pistons, pumps and filters,

   d) a visual check of the electrical and electronic appliances of the installation, and

   e) a check of the control, monitoring, and safety systems.

3. The inspections referred to in (1)(b) shall include at least the parts of (2) which have been modified or repaired.

4. For each inspection according to (1), an inspection attestation shall be issued showing the date of inspection.”

47. The table in Article 32.02(2) is amended as follows:

a) The note relating to Article 7.06(1) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
7.06	(1)	Rate-of-turn indicators, which have received an approval before 1st January 1990	Rate-of-turn indicators, which have received an approval before 1st January 1990 and have been installed before 1st January 2000, may be maintained and used until renewal of the inland navigation vessel certificate after 1st January 2015, if there is a valid installation certificate pursuant to Directive 2006/87/EC[1] or Resolution CCNR 1989-II-35.	
		Radar navigation installations and rate-of-turn indicators which have received an approval after 1st January 1990	Radar navigation installations and rate-of-turn indicators which have received an approval on or after 1st January 1990, pursuant to the minimum requirements and test conditions for radar installations used for navigation on the Rhine, as well as the minimum requirements and test conditions for rate-of-turn indicators used for navigation on the Rhine, may continue to be installed then be used if there is a valid installation certificate pursuant to this Standard, Directive 2006/87/EC or Resolution CCNR 1989-II-35.	
		Radar navigation installations and rate-of-turn indicators which have received an approval after 31st December 2006	Radar navigation installations and rate-of-turn indicators which have received an approval on or after 31st December 2006, pursuant to the minimum requirements and test conditions of the Directive 2006/87/EC, may continue to be installed then be used if there is a valid installation certificate pursuant to this Standard or Directive 2006/87/EC.	
		Radar navigation installations and rate-of-turn indicators which have received an approval after 1st December 2009	Radar navigation installations and rate-of-turn indicators which have received an approval on or after 1st December 2009, pursuant to the minimum requirements and test conditions of the Resolution CCNR 2008-II-11 may continue to be installed then be used if there is a valid installation certificate pursuant to this Standard or Resolution CCNR 2008-II-11.	
		Navigational radar installations which have received an approval based on European standard 302 194-1 : 2006	Navigational radar installations which have received an approval based on European standard EN 302 194-1 : 2006 before 31 December 2023, may continue to be installed then be used if there is a valid installation certificate pursuant to this Standard.	

”

[1] Directive 2006/87/EC of the European Parliament and of the Council of 12 December 2006 laying down technical requirements for inland waterway vessels and repealing Council Directive 82/714/EEC (OJ L 389, 30.12.2006).

b) The note relating to Article 7.06(2) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
	(2)	Inland ECDIS equipment being operated in navigation mode	Inland ECDIS equipment with a type approval according to previous editions of the Inland ECDIS Standard and installed before the 1st January 2024 may continue to be used.	
			Inland ECDIS equipment with a type approval according to previous editions of the Inland ECDIS Standard may continue to be installed then be used, when the current edition of the presentation library and the feature catalogue as required by Inland ECDIS Standard has been implemented in the equipment	
		Inland ECDIS equipment being operated in navigation mode and which have received an approval based on European standard EN 302 194-1 : 2006	Inland ECDIS equipment which has received an approval based on European standard EN 302 194-1 : 2006 before 31 December 2023, may continue to be installed then be used if there is a valid installation certificate pursuant to this Standard.	

”

c) The note relating to Article 7.06(3) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
7.06	(3)	Inland AIS equipment	Inland AIS equipment with a type approval according to edition 1.0 and 1.01 of the Test Standard for Inland AIS and installed before the 1st December 2015 may continue to be used.	
			Inland AIS equipment with a type approval according to edition 2.0 of the Test Standard for Inland AIS and installed before the 1st January 2024 may continue to be used.	
			Inland AIS equipment with a type approval according to edition 2021/3.0 of the Test Standard for Inland AIS may continue to be installed then be used.	

”

d) The note relating to Article 7.14(2) to (8) is added after the note relating to Article 7.12 as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
7.14	(2) to (8)	Retractable wheelhouses	N.R.C.	

”

e) The note relating to Article 8.05(7), first sentence (concerns only the French version)

f) The note relating to Chapter 9 is worded as follows:

“

Article and paragraph			*Content*	*Deadline and comments*	
CHAPTER 9				Chapter 9 applies to engines with the following exceptions. a) Only Article 9.02 applies for engines which are already installed onboard and aa) non-type-approved or bb) for which no installation test had to be carried out. b) Without prejudice to (a), Article 9.10(2) only applies to repairs of engines carried out after 1 January 2024 including those carried out on an engine in service before this date. c) Without prejudice to (a), Article 9.01(2) does not apply for engines installed before 1 January 2020, if they comply with the provisions on type approval and installation in force on the installation date.	
~~9.01~~	~~(1) to (4)~~	~~General provisions~~	~~For engines complying with the type-approval and installation provisions in force at the date of installation: N.R.~~		
~~9.06~~		~~Installation test~~			

“

g) The note relating to Article 13.05 (concerns only the French version)

h) The note relating to Article 13.06 is added after the note relating to Article 13.05 as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
13.06		Permanently installed firefighting systems for protecting objects	N.R.C., at the latest on renewal of the inland navigation vessel certificate.	

“

i) The note relating to Article 19.01(4) 2nd and 3rd sentences is inserted after the note relating to Article 19.01(2)(e) as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
	(4) 2nd and 3rd sentences	Minimum number of seats and minimum number of cabins	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2064

”

j) The note relating to Article 19.02(10)(d), is inserted after the note relating to Article 19.02(10)(c) as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
	(10)(d)	Optical and acoustic signal	N.R.C., at the latest on renewal of the inland navigation vessel certificate.	

”

k) The note relating to Article 19.02(15) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
19.02	(15)	Height of double bottoms, width of double sides	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2045

“

l) The note relating to Article 19.03(1)(a) and 6, last sentence, is inserted after the note relating to Article 19.03(1) to (6) as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
	(1)(a)	Heeling test	N.R.C.: Heeling test not in accordance with Annex 1 of IMO Resolution MSC.267(85) are accepted.	
	(6) last sentence	Passenger vessel capable of achieving greater speeds than $v = 0{,}4\sqrt{gL}$	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2064

”

m) The note relating to Article 19.05(4), is added after the note relating to Article 19.05(2)(b) as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
	(4)	Number of passengers displayed on the safety plan	N.R.C., at the latest on renewal of the inland navigation vessel certificate.	

”

n) The note relating to Article 19.06(3)(a), is inserted after the note relating to Article 19.06(1), first sentence, as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
	(3)(a)	Two exits which are as far apart from one another as possible	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2064

”

o) The note relating to Article19.06(10)(b) second sentence, is deleted.

p) The notes relating to Article 19.06(11) and (12)(c) are inserted after the note relating to Article 19.06(10)(a), second sentence, as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
	(11)	Parts of the vessel not considered as part of the escape routes	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2064
	(12)(c) 1st sentence	Clear width of openings used normally for the embarking or disembarking of persons with reduced mobility	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2045
	(12)(c) 2nd sentence	Equipment to enable persons to be transferred	N.R.C., at the latest on renewal of the inland navigation vessel certificate.	

”

q) The note relating to Article 19.06(17) 2nd and 3rd sentences, is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
	(17) 2nd and 3rd sentences	Requirements for toilets fitted for use by persons with reduced mobility	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2064

”

r) The note relating to Article 19.07(2), column “deadline and comments”, (b), is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
			b) A firefighting system for object protection in accordance with Article 13.06, which can be triggered immediately without danger to people located in the engine room, is required for: - the enclosed combustion engines; - the enclosed generators; - the main switchboard.	

”

s) The note relating to Article 19.08(8), last sentence, is inserted after the note relating to Article 19.08(6) as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
	(8) last sentence	Independent ventilation system	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2044

”

t) The note relating to Article 19.13 is added after the note relating to Article 19.12 as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
19.13		Safety organisation	N.R.C., at the latest on renewal of the inland navigation vessel certificate.	

”

u) The note relating to Article 19.14(1) and (2) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
19.14	(1)	Equipment with waste water collection tanks or on-board sewage treatment plants	For cabin vessels with ~~no more than~~ 50 sleeping berths or less and for day-trip vessels: N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2030
	(2)	Requirements for waste water collection tanks	For cabin vessels with ~~no more than~~ 50 sleeping berths or less and for day-trip vessels with ~~no more than~~ 50 passengers or less: N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2030

”

v) The note relating to Chapter 30 and to Article 30.02(2) is added after the note relating to Article 26.01 as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
CHAPTER 30				
30.02	(2)	Gaseous or particulate pollutants of engines with low flash point fuels	For engines complying with the type-approval and installation provisions in force at the date of installation: N.R.C.	

”

48. The table in Article 32.05(5) is amended as follows:

a) The note relating to Article 7.06(1) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
7.06	(1)	Rate-of-turn indicators, which have received an approval before 1st January 1990	Rate-of-turn indicators, which have received an approval before 1st January 1990 and have been installed before 1st January 2000, may be maintained and used until renewal of the inland navigation vessel certificate after 1st January 2015, if there is a valid installation certificate pursuant to Directive 2006/87/EC[1] or Resolution CCNR 1989-II-35.		1.12.2009
		Radar navigation installations and rate-of-turn indicators which have received an approval after 1st January 1990	Radar navigation installations and rate-of-turn indicators which have received an approval on or after 1st January 1990, pursuant to the minimum requirements and test conditions for radar installations used for navigation on the Rhine, as well as the minimum requirements and test conditions for rate-of-turn indicators used for navigation on the Rhine, may continue to be installed then be used if there is a valid installation certificate pursuant to this Standard, Directive 2006/87/EC or Resolution CCNR 1989-II-35.		1.12.2009
		Radar navigation installations and rate-of-turn indicators which have received an approval after 31st December 2006	Radar navigation installations and rate-of-turn indicators which have received an approval on or after 31st December 2006, pursuant to the minimum requirements and test conditions of the Directive 2006/87/EC, may continue to be installed then be used if there is a valid installation certificate pursuant to this Standard or Directive 2006/87/EC.		7.10.2018
		Radar navigation installations and rate-of-turn indicators which have received an approval after 1st December 2009	Radar navigation installations and rate-of-turn indicators which have received an approval on or after 1st December 2009, pursuant to the minimum requirements and test conditions of the Resolution CCNR 2008-II-11 may continue to be installed then be used if there is a valid installation certificate pursuant to this Standard or Resolution CCNR 2008-II-11		7.10.2018
		Navigational radar installations which have received an approval based on European standard 302 194-1 : 2006.	Navigational radar installations which have received an approval based on European standard EN 302 194-1 : 2006 before 31 December 2023, may continue to be installed then be used if there is a valid installation certificate pursuant to this Standard.		1.1.2024

”

[1] Directive 2006/87/EC of the European Parliament and of the Council of 12 December 2006 laying down technical requirements for inland waterway vessels and repealing Council Directive 82/714/EEC (OJ L 389, 30.12.2006).

b) The note relating to Article 7.06(2) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
	(2)	Inland ECDIS equipment being operated in navigation mode	Inland ECDIS equipment with a type approval according to previous editions of the Inland ECDIS Standard and installed before the 1st January 2022 may continue to be used.		1.1.2022
			Inland ECDIS equipment with a type approval according to edition 2.4 of the Inland ECDIS Standard and installed before the 1st January 2024 may continue to be used.		1.1.2024
			Inland ECDIS equipment with a type approval according to previous editions of the Inland ECDIS Standard may continue to be installed then be used, when the current edition of the presentation library and the feature catalogue as required by Inland ECDIS Standard has been implemented in the equipment.		1.1.2022
		Inland ECDIS equipment being operated in navigation mode and which has received an approval based on European standard EN 302 194-1 : 2006	Inland ECDIS equipment which has received an approval based on European standard EN 302 194-1 : 2006 before 31 December 2023, may continue to be installed then be used if there is a valid installation certificate pursuant to this Standard.		1.1.2024

”

c) The note relating to Article 7.06(3) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
7.06	(3)	Inland AIS equipment	Inland AIS equipment with a type approval according to edition 1.0 and 1.01 of the Test Standard for Inland AIS and installed before the 1st December 2015 may continue to be used.		1.12.2013
			Inland AIS equipment with a type approval according to edition 2.0 of the Test Standard for Inland AIS and installed before the 1st January 2024 may continue to be used.		1.1.2022
			Inland AIS equipment with a type approval according to edition 2021/3.0 of the Test Standard for Inland AIS may continue to be installed then be used.		1.1.2024

“

d) The note relating to Article 7.14(2) to (8) is added after the note relating to Article 7.12 as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
7.14	(2) to (8)	Retractable wheelhouses	N.R.C		1.1.2024

”

e) The note relating to Article 8.05(7), first sentence (concerns only the French version)

f) The note relating to Chapter 9 is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
CHAPTER 9			Chapter 9 applies to engines with the following exceptions. a) Only Article 9.02 applies for engines which are already installed onboard and aa) non-type-approved or bb) for which no installation test had to be carried out. b) Without prejudice to (a), Article 9.10(2) only applies to repairs of engines carried out after 1 January 2024 including those carried out on an engine in service before this date. c) Without prejudice to (a), Article 9.01(2) does not apply for engines installed before 1 January 2020, if they comply with the provisions on type approval and installation in force on the installation date.		1.1.2024
~~9.01~~	~~(1) to (4)~~	~~General provisions~~	~~For engines complying with the type-approval and installation provisions in force at the date of installation: N.R.~~		
~~9.06~~		~~Installation test~~			

“

g) The note relating to Article 13.05 (concerns only the French version)

h) The note relating to Article 13.06 is added after the note relating to Article 13.05 as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
13.06		Permanently installed firefighting systems for protecting objects	N.R.C., at the latest on renewal of the inland navigation vessel certificate.		

“

i) The note relating to Article 19.01(4) 2nd and 3rd sentences, is inserted after the note relating to Article 19.01(2)(e) as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
	(4) 2nd and 3rd sentences	Minimum number of seats and minimum number of cabins	N.R.C., at the latest on renewal of the inland navigation vessel certificate after However, cabin vessel which have been laid down after 1.1.2006 must have a minimum of one cabin designed for persons with reduced mobility.	1.1.2064	1.1.2024

”

j) The note relating to Article 19.02(10)(d), is inserted after the note relating to Article 19.02(5), second sentence, as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
	(10)(d)	Optical and acoustic signal	N.R.C., at the latest on renewal of the inland navigation vessel certificate.		1.1.2024

”

k) The note relating to Article 19.02(15) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
19.02	(15)	Height of double bottoms, width of double sides	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2045	1.1.2006

“

l) The note relating to Article 19.03(1)(a) and 6, last sentence, is inserted after the note relating to Article 19.03(1) to (6) as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
	(1)(a)	Heeling test	N.R.C.: Heeling test not in accordance with Annex 1 of IMO Resolution MSC.267(85) are accepted.		1.1.2024
	(6) last sentence	passenger vessel capable of achieving greater speeds than $v = 0{,}4\sqrt{gL}$	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2064	1.1.2024

”

m) The note relating to Article 19.05(4), is added after the note relating to Article 19.05(2)(b) as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
	(4)	Number of passengers displayed on the safety plan	N.R.C., at the latest on renewal of the inland navigation vessel certificate.		1.1.2024

”

n) The note relating to Article 19.06(3)(a), is added after the note relating to Article 19.06(1), 2nd sentence, as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
	(3)(a)	Two exits which are as far apart from one another as possible	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2064	1.1.2024

”

o) The note relating to Article 19.06(8) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
	(8)	Requirements for muster areas	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2045	1.1.2006
			For vessels laid down after 1.1.2006, N.R.C., at the latest on renewal of the inland navigation vessel certificate.		1.1.2024

”

p) The note relating to Article 19.06(9)(b), (c), (e)(aa) and (cc), is inserted after the note relating to Article 19.06(9)(a),(b), (c), (e) and last sentence as follows:

““

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
	(9)(b)	Sum of the widths of all stairs	For vessels laid down after 1.1.2006, N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2045	1.1.2024 ~~2044~~
	(9)(c)	Handrails	For vessels laid down after 1.1.2006, N.R.C., at the latest on renewal of the inland navigation vessel certificate.		1.1.2024
	(9)(e)(aa)	Gradient of stairs	For vessels laid down after 1.1.2006, N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2064	1.1.2024
	(9)(e)(cc)	Stairs straight and parallel to the longitudinal axis of the vessel	For vessels laid down after 1.1.2006, N.R.C., at the latest on renewal of the inland navigation vessel certificate.		1.1.2024

”

q) The note relating to Article19.06(10)(b) second sentence, is deleted.

r) The note relating to Article 19.06(11) and (12)(c) is inserted after the note relating to Article 19.06(10)(a), 2nd sentence, as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
	(11)	Parts of the vessel not considered as part of the escape routes	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2064	1.1.2024
	(12)(c) 2nd sentence	Equipment to enable persons to be transferred	N.R.C., at the latest on renewal of the inland navigation vessel certificate.		1.1.2024

”

s) The note relating to Article 19.06(17) 2nd and 3rd sentences, is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
	(17) 2nd and 3rd sentences	Requirements for toilets fitted for use by persons with reduced mobility	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2064	1.1.2006

”

t) The note relating to Article 19.07(2), column “deadline and comments”, (b), is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
			b) A firefighting system for object protection in accordance with Article 13.06, which can be triggered immediately without danger to people located in the engine room, is required for: - the enclosed combustion engines; - the enclosed generators; - the main switchboard.		

“

u) The note relating to Article 19.08(8) last sentence is inserted after the note relating to Article 19.08(6) as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
	(8) last sentence	Independent ventilation system	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2044	1.1.2024

”

v) The note relating to Article 19.11(2) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
	(2)	Design of partitions	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2045	1.1.2006
			For electrical service rooms of vessels laid down after 1.1.2006, N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2044	1.1.2024

”

w) The note relating to Article 19.11(16) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
	(16)	Ventilation systems in galleys and stoves with extractors	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2045	1.1.2006
		Similar cooking appliances	For vessels laid down after 1.1.2006, N.R.C., at the latest on renewal of the inland navigation vessel certificate.		1.1.2024

”

x) The note relating to Article 19.13 is added after the note relating to Article 19.12 as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
19.13		Safety organisation	N.R.C., at the latest on renewal of the inland navigation vessel certificate.		1.1.2024

”

y) The note relating to Article 19.14(1) and (2) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
19.14	(1)	Equipment with waste water collection tanks or on-board sewage treatment plants	For cabin vessels with no more than 50 sleeping berths and for day-trip vessels: N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2030	1.1.2006
	(2)	Requirements for waste water collection tanks	For cabin vessels with no more than 50 sleeping berths and for day-trip vessels with no more than 50 passengers: N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2030	1.1.2006

”

z) The note relating to Chapter 30 and Article 30.02(2) is added after the note relating to Article 29.02 as follows:

“

Article and paragraph		*Content*	*Deadline and comments*		*Date of entry into force*
CHAPTER 30					
30.02	(2)	Gaseous or particulate pollutants of engines with low flash point fuels	For engines complying with the type-approval and installation provisions in force at the date of installation: N.R.C.		1.1.2024

”

49. The table in Article 33.02(2) is amended as follows:

a) The note relating to Article 7.06(1) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
7.06	(1)	Radar navigation installations and rate-of-turn indicators which have received an approval before 31st December 2012	Radar navigation installations and rate-of-turn indicators, which have been approved and installed pursuant to a Member State’s regulations before 31st December 2012 may continue to be maintained and used until the renewal of the inland navigation vessel certificate after. These systems must be entered in item 52 of the inland navigation vessel certificate.	31.12.2018
		Radar navigation installations and rate-of-turn indicators which have received an approval after 1st January 1990	Radar navigation installations and rate-of-turn indicators which have received an approval on or after 1st January 1990, pursuant to the minimum requirements and test conditions for radar installations used for navigation on the Rhine and the minimum requirements and test conditions for rate-of-turn indicators used for navigation on the Rhine, may continue to be installed then be used if there is a valid installation certificate pursuant to this Standard, Directive 2006/87/EC or Resolution CCNR 1989-II-35.	
		Radar navigation installations and rate-of-turn indicators which have received an approval after 31st December 2006	Radar navigation installations and rate-of-turn indicators which have received an approval on or after 31st December 2006, pursuant to the minimum requirements and test conditions of the Directive 2006/87/EC, may continue to be installed then be used if there is a valid installation certificate pursuant to this Standard or Directive 2006/87/EC.	
		Radar navigation installations and rate-of-turn indicators which have received an approval after 1st December 2009	Radar navigation installations and rate-of-turn indicators which have received an approval on or after 1st December 2009, pursuant to the minimum requirements and test conditions of the Resolution CCNR 2008-II-11, may continue to be installed then be used if there is a valid installation certificate pursuant to this Standard or Resolution CCNR 2008-II-11.	
		Navigational radar installations which have received an approval based on European standard 302 194-1 : 2006.	Navigational radar installations which have received an approval based on European standard EN 302 194-1 : 2006 before 31 December 2023, may continue to be installed then be used if there is a valid installation certificate pursuant to this Standard.	

”

b) The note relating to Article 7.06(2) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
	(2)	Inland ECDIS equipment being operated in navigation mode	Inland ECDIS equipment with a type approval according to previous editions of the Inland ECDIS Standard and installed before the 1st January 2024 may continue to be used.	
			Inland ECDIS equipment with a type approval according to previous editions of the Inland ECDIS Standard may continue to be installed then be used, when the current edition of the presentation library and the feature catalogue as required by Inland ECDIS Standard has been implemented in the equipment.	
		Inland ECDIS equipment being operated in navigation mode, and which has received an approval based on European standard EN 302 194-1 : 2006	Inland ECDIS equipment that has received an approval based on European standard EN 302 194-1 : 2006 before 31 December 2023, may continue to be installed then be used if there is a valid installation certificate pursuant to this Standard.	

”

c) The note relating to Article 7.06(3) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
7.06	(3)	Inland AIS equipment	N.R.C.	
			Inland AIS equipment with a type approval according to edition 2.0 of the Test Standard for Inland AIS and installed before the 1st January 2024 may continue to be used.	
			Inland AIS equipment with a type approval according to edition 2021/3.0 of the Test Standard for Inland AIS may continue to be installed then be used	

“

d) The note relating to Article 7.14(2) to (8) is added after the note relating to Article 7.12 as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
7.14	(2) to (8)	Retractable wheelhouses	N.R.C.	

“

e) The note relating to Article 8.05(7), first sentence (concerns only the French version)

f) The note relating to Article 8.10(2) is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
8.10	(2)	Noise generated by a vessel under way	N.R.C. In case of replacement or conversion, the vessels must satisfy the following conditions: the sound pressure level of the noise generated by a vessel under way ~~when stationary~~ does not exceed 75 dB(A) at a lateral distance of 25 m from the ship's side.	

“

f) The note relating to Chapter 9 is worded as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
CHAPTER 9			Chapter 9 applies to engines with the following exceptions. a) Only Article 9.02 applies for engines which are already installed onboard and aa) non-type-approved or bb) for which no installation test had to be carried out. b) Without prejudice to (a), Article 9.10(2) only applies to repairs of engines carried out after 1 January 2024 including those carried out on an engine in service before this date. c) Without prejudice to (a), Article 9.01(2) does not apply for engines installed before 1 January 2020, if they comply with the provisions on type approval and installation in force on the installation date.	
~~9.01~~	~~(1) to (4)~~	~~General provisions~~	~~For engines complying with the type-approval and installation provisions in force at the date of installation: N.R.~~	
~~9.06~~		~~Installation test~~		

“

g) The note relating to Article 13.05 (concerns only the French version)

h) The note relating to Article 13.06 is added after the note relating to Article 13.05 as follows:

““

Article and paragraph		*Content*	*Deadline and comments*	
13.06		Permanently installed firefighting systems for protecting objects	N.R.C., at the latest on renewal of the inland navigation vessel certificate.	

”

i) The note relating to Article 19.05(4) is added after the note relating to Article 19.01 as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
19.05	(4)	Number of passengers displayed on the safety plan	N.R.C., at the latest on renewal of the inland navigation vessel certificate.	

”

j) The note relating to Article 19.13 and 19.14 is added after the note relating to Article 19.11 as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
19.13		Safety organisation	N.R.C., at the latest on renewal of the inland navigation vessel certificate.	
19.14	(1) and (2)	Equipment with waste water collection tanks or on-board sewage treatment plants Requirements for waste water collection tanks	N.R.C., at the latest on renewal of the inland navigation vessel certificate after	1.1.2030

”

k) The note relating to Chapter 30 and Article 30.02(2) is added after the note relating to Article 29.02 as follows:

“

Article and paragraph		*Content*	*Deadline and comments*	
CHAPTER 30				
30.02	(2)	Gaseous or particulate pollutants of engines with low flash point fuels	For engines complying with the type-approval and installation provisions in force at the date of installation: N.R.C.	

”

50. Annex 2, (B)(3) (concerns only the French version)

51. Annex 3 is amended as follows:

a) Section I, item 23, is worded as follows:

“

23. Number of sleeping berths:

“

b) Section II, item 5, is worded as follows:

“

5. Length L/ L_{WL}*) ..... Number of passengers ..... Number of sleeping berths*) .....

”

52. In Annex 4, the note relating to Figure 9 (concerns only the French version)

53. Annex 5 is amended as follows:

a) Section I, Article 3(2), is worded as follows:

"2. Navigational radar installations shall also meet the requirements of the European Standard EN 303 676 : 2021~~EN 302 194-1 : 2006 Electromagnetic compatibility and Radio spectrum Matters (ERM); Navigational radar used on inland waterways: Part 1: Technical characteristics and methods of measurement~~."

b) Section II, Article 3.09 (concerns only the Dutch version)

c) Section II, Article 4.03(1), 1st and 2nd paragraph, is worded as follows:

"1. If the rate-of-turn indicator can be connected to slave indicators or similar equipment, the rate-of-turn indication shall remain usable as an analogue or digital electric signal. Digital interfaces must be constructed as per (2). ~~In addition, the rate-of-turn indicator may possess a digital interface in accordance with (2).~~

The analogue rate-of-turn signal shall continue to be indicated with galvanic earth insulation and the equivalent to an analogue voltage of 20 mV/°/min ± 5 % and a maximum internal resistance of 100 Ω."

d) Section II, Article 4.03(2), is worded as follows:

"2. A digital interface shall be designed pursuant to European Standards EN 61162-1 : 2016, EN 61162-2 : 1998 and EN 61162-3 : 2009."

e) Section IV, Article 2(3), first sentence, is worded as follows:

"The functionality of an internal or external MKD (minimum keyboard and display) must be accessible to the boatmaster."

f) Section IV, Article 2(7) is worded as follows:

"7. Prior to post-installation commissioning, in the event of the inland navigation vessel certificate being renewed or extended and any conversion of the vessel likely to affect the conditions in which this equipment operates, a competent authority or approved specialist firm must undertake an installation check and operating test.

54. Annex 8 is worded as follows:

"ANNEX 8
SUPPLEMENTARY PROVISIONS APPLICABLE TO CRAFT EQUIPPED WITH PROPULSION OR AUXILIARY SYSTEMS OPERATING ON FUELS WITH A FLASHPOINT EQUAL TO OR LOWER THAN 55 °C

Contents

Section I
Definitions

For the purposes of this Annex, the following definitions shall apply:

1.1 General

1.1.1 *Enclosed room*: any room within which, in the absence of forced ventilation, the ventilation will be limited, and any explosive atmosphere will not be dispersed naturally.

1.1.2 *Semi-enclosed room:* a room limited by decks or bulkheads in such a manner that the natural conditions of ventilation are notably different from those obtained on open deck.

1.1.3 *Pressure Relief Valve (PRV)*: a spring-loaded device which is activated automatically by pressure, the purpose of which is to protect the tank or piping against unacceptable excess internal pressure.

1.1.4 *ESD*: emergency shutdown, the immediate stopping of the energy converter and of all its processes as a reaction of the control system to deviations of the process parameters in order to avoid damage to the components and craft as well as hazards to people.

1.1.5 *Master gas fuel valve*: an automatic shut-off valve in gas supply lines to engines (respectively fuel cells space).

1.1.6 *Double block and bleed valve*: a set of two valves in series in a pipe and a third valve enabling the pressure release from the pipe between those two valves to a safe location. The arrangement may also consist of a two-way valve and a closing valve instead of three separate valves.

1.1.7 *Air lock*: a space enclosed by gastight steel bulkheads with two gastight doors, intended to separate a non-hazardous area from a hazardous area.

1.1.8 *Double wall piping*: piping with a double wall design for which the space between the walls is pressurised with inert gas and equipped to detect any leakage of one of the two walls.

1.1.9 *Maximum working pressure*: the maximum pressure that is acceptable in a fuel tank or piping during operation. This pressure equals the opening pressure of pressure relief valves or devices.

1.1.10 *Design pressure*: the pressure on the basis of which the fuel tank or piping has been designed and built.

1.1.11 *Ventilated ducting*: a gas pipe installed in a pipe or duct equipped with mechanical exhaust ventilation.

1.1.12 *Gas warning equipment*: warning equipment to protect people and property from hazardous gases and gas-air mixtures. It consists of gas detectors to identify gases, a control unit for processing the signals and a display/alarm unit for displaying the status and warning.

1.1.13 *Secondary barrier:* the enclosure surrounding of the elements containing fuel (or the fuel cell components), designed to prevent fuel from escaping into the surrounding areas in the case of a leaking component (primary barrier).

2. Liquefied natural gas (LNG)

1.2.1 *Liquefied natural gas (LNG)*: natural gas that has been liquefied by cooling it to a temperature of - 161 °C.

1.2.2 *LNG system:* all parts of the craft that may contain liquefied natural gas (LNG) or Natural Gas, such as engines, fuel tanks and bunkering piping.

1.2.3 *LNG bunkering system:* the arrangement for the bunkering of liquefied natural gas (LNG) on board (bunkering station and bunkering piping).

1.2.4 *Bunkering station:* the area on board where all equipment used for bunkering is located, such as manifolds, valves, survey instruments, safety equipment, monitoring station, tools, etc.

1.2.5 *LNG containment system:* the arrangement for the storage of liquefied natural gas (LNG) including tank connections.

1.2.6 *Gas supply system:* the arrangement, including the gas preparation system, gas supply lines and valves, to supply gas on board to all gas consuming equipment.

1.2.7 *Gas preparation system:* the unit used to convert liquefied natural gas (LNG) into Natural Gas, its accessories and its piping.

1.2.8 *Dual fuel engines*: engines using liquefied natural gas (LNG) combined with fuel with a flashpoint above 55 °C.

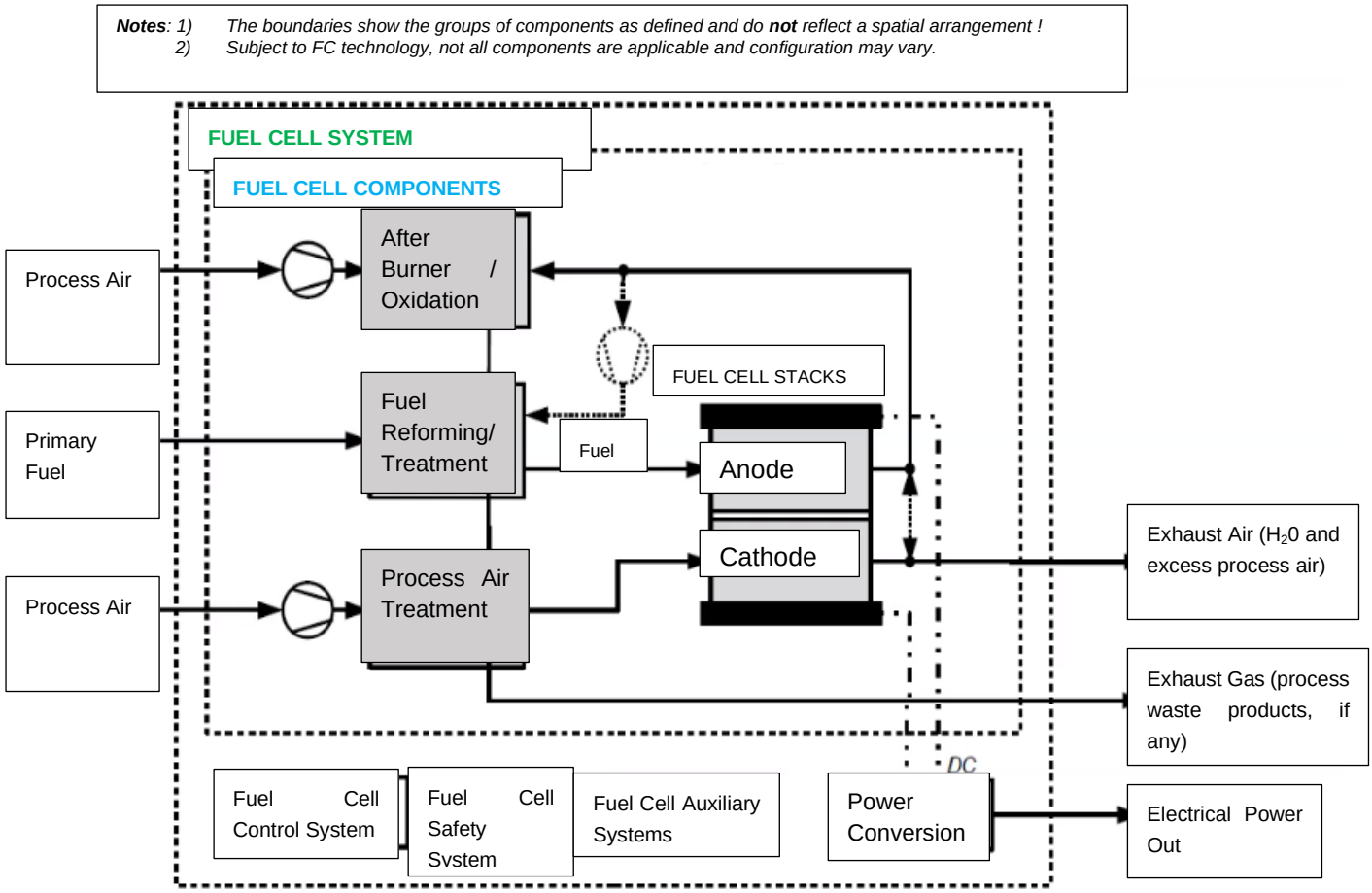
1.2.9 *System components*: all components of the installation that may contain liquefied natural gas (LNG) or Natural Gas (NG) (fuel tanks, pipelines, valves, hoses, pistons, pumps, filters, instrumentation, etc.).

3. Fuel cells

1.3.1 *Fuel cell system:* the system comprising the fuel cell components as well as other components and systems required to operate the fuel cells and to supply electrical power to the craft. This excludes the bunkering, storage and fuel supply systems.

1.3.2 *Fuel cell components:* all components of a fuel cell system which may contain fuel or hazardous vapours.

1.3.3 *Fuel cell space*: any enclosed space or enclosure containing a part or all fuel cell components.



1.3.4 *Fuel cell*: an energy converter in which, by oxidation, the chemical energy of the fuel is directly converted to electrical and thermal energy.

1.3.5 *Reformer*: a device to convert gaseous or liquid primary fuels to reformate that can be used in fuel cells.

1.3.6 *Primary fuel:* fuel supplied to a fuel cell system.

1.3.7 *Fuel*: primary fuel or reformate with which the fuel cell is fed to convert energy.

1.3.8 *Reformate*: a hydrogen-containing gas generated in the reformer from primary fuel.

1.3.9 *Buffer vessel*: a device forming part of the fuel cell system to temporarily hold fuel in order to secure the stable operation of the fuel cell system, in particular to balance the flow of fuel to a fuel cell.

Section II
Fuel storage

Chapter 1
LNG

2.1.1 LNG containment system

2.1.1.1 The LNG containment system shall be separated from engine rooms or other high fire risk areas.

2.1.1.2 LNG fuel tanks shall be located as close as possible to the longitudinal centreline of the craft.

2.1.1.3 The distance between the ship's wall of the craft and the LNG fuel tank shall not be less than 1,00 m. If LNG fuel tanks are located:

a) below deck, the craft shall have a double side and a double bottom at the location of the LNG fuel tanks. The width of the double sides and the height of the double bottom shall not be less than 0,60 m.

b) on open deck, the distance shall be at least B/5 from the vertical planes defined by the craft's sides.

2.1.1.4 The LNG fuel tank shall be an independent tank designed in accordance with the European Standards EN 13530 : 2002, EN 13458-2 : 2002 in combination with dynamic loads, or the IGC-Code (type C tank). The inspection body can accept other equivalent standards of one of the Member States.

2.1.1.5 Tank connections shall be mounted above the highest liquid level in the tanks. The inspection body can accept connections below the highest liquid level.

2.1.1.6 If tank connections are below the highest liquid level of the LNG fuel tanks, drip trays shall be placed below the tanks that meet the following requirements:

a) the capacity of the drip tray shall be sufficient to contain the volume which could escape in the event of a pipe connection failure;

b) the material of the drip tray shall be suitable stainless steel; and

c) the drip tray shall be sufficiently separated or insulated from the hull or deck structures, so that the hull or deck structures are not exposed to unacceptable cooling in case of leakage of LNG.

2.1.1.7 The LNG containment system shall be provided with a secondary barrier. No secondary barrier is required for the LNG containment systems where the probability for structural failures and leakages through the primary barrier is extremely low and can be neglected.

2.1.1.8 If the secondary barrier of the LNG containment system is part of the hull structure it may be a boundary of the tank room subject to necessary precautions against leakage of cryogenic liquid.

2.1.1.9 The location and construction of the LNG containment system and the other equipment on open deck shall assure sufficient ventilation. Accumulation of escaped NG shall be prevented.

2.1.1.10 If condensation and icing due to cold surfaces of LNG fuel tanks lead to safety or functional problems, appropriate preventive or remedial measures shall be taken.

2.1.1.11 Each LNG fuel tank is to be fitted with at least two pressure relief valves that can prevent an overpressure if one of the valves is closed off due to malfunctioning, leakage or maintenance.

2.1.1.12 If fuel release into the vacuum space of a vacuum insulated LNG fuel tank cannot be excluded, the vacuum space shall be protected by a suitable pressure relief valve. If LNG fuel tanks are located in enclosed or semi enclosed rooms, the pressure relief device shall be connected to a venting system.

2.1.1.13 The exhaust outlets of the pressure relief valves shall be located not less than 2,00 m above the deck at a distance of not less than 6,00 m from the accommodation, passenger areas and work stations, which are located outside the hold or the cargo area. This height may be reduced when within a radius of 1,00 m round the pressure relief valves outlet there is no equipment, no work is being carried out, signs indicate the area and appropriate measures to protect the deck are being taken.

2.1.1.14 It shall be possible to safely empty the LNG fuel tanks, even if the LNG system is shut down.

2.1.1.15 It shall be possible to purge gas and vent LNG fuel tanks including gas piping systems. It shall be possible to perform inerting with an inert gas (e.g. nitrogen or argon) prior to venting with dry air, to exclude an explosion hazardous atmosphere in LNG fuel tanks and gas piping.

2.1.1.16 LNG fuel tanks' pressure and temperature shall be maintained at all times within their design limits.

2.1.1.17 If the LNG system is switched off, the pressure in the LNG fuel tank, shall be maintained below the maximum working pressure of the LNG fuel tank for a period of 15 days. It shall be assumed that LNG fuel tank was filled at filling limits according to 2.1.8 and that the craft remains in idle condition.

2.1.1.18 LNG fuel tanks shall be electrically bonded to the craft's structure.

2.1.2 LNG and NG piping systems

2.1.2.1 LNG and NG piping through other engine rooms or non-hazardous enclosed areas of the craft shall be enclosed in double wall piping or ventilated ducting.

2.1.2.2 LNG and NG piping shall not be located less than

a) 1,00 m from the craft’s side, and

b) 0,60 m from the bottom.

2.1.2.3 All piping and all components which can be isolated with valves from the LNG system in a liquid full condition shall be provided with pressure relief valves.

2.1.2.4 Piping shall be electrically bonded to the craft's structure.

2.1.2.5 Low temperature piping shall be thermally isolated from the adjacent hull structure, where necessary. Protection against accidental contact shall be provided.

2.1.2.6 The design pressure of piping shall not be less than 150 % of the maximum working pressure. The maximum working pressure of piping inside rooms shall not exceed 1000 kPa. The design pressure of the outer pipe or duct of gas piping systems shall not be less than the design pressure of the inner gas pipe.

2.1.2.7 Gas piping in ESD protected engine rooms shall be located as far away as practicable from the electrical installations and tanks containing flammable liquids.

2.1.3 Drainage systems

2.1.3.1 Drainage systems for areas where LNG or NG can be present shall:

a) be independent and separate from the drainage system of areas where LNG and NG cannot be present, and

b) not lead to pumps in non-hazardous areas.

2.1.3.2 Where the LNG containment system does not require a secondary barrier, suitable drainage arrangements for the tank rooms that are not connected to the engine rooms shall be provided. Means of detecting any LNG leakage shall be provided.

2.1.3.3 Where the LNG containment system requires a secondary barrier, suitable drainage arrangements for dealing with any leakage of LNG into the inter-barrier spaces shall be provided. Means of detecting such a leakage shall be provided.

2.1.4 Drip trays

2.1.4.1 Suitable drip trays shall be fitted where leakage can cause damage to the craft's structure or where limitation of the area which is affected from a spill is necessary.

2.1.5 Arrangement of entrances and other openings

2.1.5.1 Entrances and other openings from a non-hazardous area to a hazardous area shall only be permitted to the extent necessary for operational reasons.

2.1.5.2 For entrances and openings to a non-hazardous area within 6,00 m from the LNG containment system, the gas preparation system or the outlet of a pressure relief valve, a suitable airlock shall be provided.

2.1.5.3 Air locks shall be mechanically ventilated at an overpressure relative to the adjacent hazardous area. Doors shall be of self-closing type.

2.1.5.4 Air locks shall be designed in a way that no gas can be released to non-hazardous areas in case of the most critical events in the hazardous spaces separated by the air lock. The events shall be evaluated in the risk assessment according to Article 30.04.

2.1.5.5 Air locks shall be free of obstacles, shall provide easy passage and shall not be used for other purposes.

2.1.5.6 An optical and acoustic alarm shall be given on both sides of the air lock, if more than one door is moved from the closed position or if gas is detected in the air lock.

2.1.6 Ventilation systems

2.1.6.1 The ventilators used for ventilation of hazardous spaces shall be of a certified safe type.

2.1.6.2 Electric motor driving ventilators shall comply with the required explosion protection in the area where it is installed.

2.1.6.3 An optical and acoustic alarm shall be triggered in the wheelhouse or at any other permanently manned location in the event of any loss of the required ventilating capacity.

2.1.6.4 Any ducting used for the ventilation of hazardous spaces shall be separate from that used for the ventilation of non-hazardous spaces.

2.1.6.5 Required ventilation systems shall have at least two ventilators with independent power supply, each of sufficient capacity, to avoid any gas accumulation.

2.1.6.6 Air for ventilation of hazardous spaces shall be taken from non-hazardous areas.

2.1.6.7 Air for ventilation of non-hazardous spaces shall be taken from non-hazardous areas which are located at least 1,50 m from the boundaries of any hazardous area.

2.1.6.8 Where the inlet duct passes through a hazardous space, the duct shall have overpressure relative to this space. Overpressure shall not be required if it is ensured that gases cannot leak into the duct.

Where the outlet duct from a hazardous space passes through a non-hazardous room, the duct shall have underpressure relative to this space. Underpressure shall not be required when structural measures on the duct ensure that gases cannot leak into the room.

2.1.6.9 Air outlets from hazardous spaces shall be located in an open area which has the same or lower risk of hazard than the ventilated space.

2.1.6.10 Air outlets from non-hazardous spaces shall be located outside hazardous spaces.

2.1.6.11 In enclosed rooms the ventilation exhaust ducts shall be located at the top of these rooms. Air inlets shall be located at the bottom.

2.1.7 LNG bunkering system

2.1.7.1 The LNG bunkering system shall be arranged in such a way that no gas is discharged into the atmosphere during filling of LNG fuel tanks.

2.1.7.2 The bunkering station and all valves used for bunkering shall be located on the open deck so that sufficient natural ventilation is provided.

2.1.7.3 The bunkering station shall be so positioned and arranged in such a way that any damage to the gas piping does not cause damage to the craft's LNG containment system.

2.1.7.4 Suitable means shall be provided to relieve the pressure and remove liquid contents from pump suctions and bunker piping.

2.1.7.5 Hoses used for the bunkering of LNG shall be:

a) compatible with LNG, in particular suitable for the LNG temperature, and

b) designed for a bursting pressure not less than five times the maximum pressure they can be subjected to during bunkering.

2.1.7.6 The bunkering manifold shall be designed to withstand normal mechanical loads during bunkering. The connections shall be of dry-disconnect type and equipped with appropriate additional safety dry break-away couplings.

2.1.7.7 It shall be possible to operate the master LNG bunkering valve during bunkering operations from a safe control station on the craft.

2.1.7.8 Bunkering piping shall be arranged for inerting and gas freeing.

2.1.7.9 All the components of the bunkering system shall be in accordance with European Standard EN 20519 : 2017 (5.3 to 5.7).

2.1.8 Filling limits of LNG fuel tanks

2.1.8.1 The level of LNG in the LNG fuel tank shall not exceed the filling limit of 95 % full at the reference temperature. The reference temperature means the temperature corresponding to the vapour pressure of the fuel at the opening pressure of the pressure relief valves.

2.1.8.2 A filling limit curve for LNG filling temperatures shall be prepared from the following formula:

$$LL = FL \cdot \rho_R / \rho_L$$

where:

LL = loading limit, maximum allowable liquid volume relative to the LNG fuel tank volume to which the tank may be loaded, expressed in per cent,

FL = filling limit expressed in per cent, here 95 %,

ρR = relative density of fuel at the reference temperature,

ρL = relative density of fuel at the loading temperature.

2.1.8.3 For craft exposed to significant wave heights or significant motion on account of operations, the filling limit curve shall be adapted accordingly, based on the risk assessment, according to Article 30.04.

2.1.9 Gas supply system

2.1.9.1 The gas supply system shall be so arranged that the consequences of any release of gas will be minimised, while providing safe access for operation and inspection.

2.1.9.2 The parts of the gas supply systems which are located outside the engine room or the fuel cell space shall be designed in a way that a failure of one barrier cannot lead to a leak from the system into the surrounding area causing immediate danger to the people on board, the environment or the craft.

2.1.9.3 LNG fuel tank inlets and outlets shall be provided with valves located as close to the tank as possible.

2.1.9.4 The gas supply system to each engine or several engines (shall be equipped with a master gas fuel valve. The valves shall be situated as close as practicable to the gas preparation system but, in any case, outside the engine room.

The gas supply system to each fuel cell space or several fuel cell spaces shall be equipped with a master gas fuel valve. The valves shall be situated as close as practicable to the gas preparation system but, in any case, outside the fuel cell space.

2.1.9.5 In the case of a propulsion and auxiliary system with an internal combustion engine, the master gas fuel valve shall be operable:

a) within and outside the engine room, and

b) from the wheelhouse.

2.1.9.6 In the case of a propulsion and auxiliary system with fuel cells, by analogy with Article 8.05(7), the master gas fuel valve shall be operable:

a) from the outside in the direct vicinity of the fuel cell space,

b) from the inside in case of fuel cell space referred to in (3.1.1.14.5), and

c) from the wheelhouse.

2.1.9.7 Any gas consuming equipment shall be provided with a set of double block and bleed valves to assure safe isolation of the fuel supply system. The two block valves shall be of the fail-to-close type, while the ventilation valve shall be fail-to-open type.

2.1.9.8 For multi-engine installations, where a separate master gas fuel valve is provided for each engine and for one-engine installations, the master gas fuel valve and the double block and bleed valve functions can be combined.

For installations with several fuel spaces, where a separate master gas fuel valve is provided for each fuel space and for a single fuel cell, the master gas fuel valve and the double block and bleed valve functions can be combined.

One shutdown valve of the double block and bleed valves shall also be manually operated.

2.1.10 Gas supply shut down

2.1.10.1 If the gas supply is not changed over to gasoil before stopping, the gas supply system from the master gas fuel valve to the engine and the exhaust system shall be purged in order to discharge any residual gas which may be present.

2.1.10.2 In case of a normal stop or an ESD, the gas supply system shall be shut off not later than the ignition source.

2.1.10.3 In the case of a propulsion and auxiliary system with an internal combustion engine, it shall not be possible to shut off the combustion ignition source without first or simultaneously closing the gas supply to the corresponding cylinder or to the complete engine.

2.1.10.4 In the case of a propulsion and auxiliary system with fuel cells, it shall not be possible to shut off the fuel cell system without first or simultaneously closing the gas supply.

2.1.11 Fire Safety

2.1.11.1 General

2.1.11.1.1 In addition to Article 30.08, the provisions of (2.1.11) apply.

2.1.11.1.2 A room or enclosure containing the gas preparation system or parts thereof shall be regarded as an engine room for fire protection purposes.

2.1.11.2 Fire alarm system

2.1.11.2.1 Smoke detectors alone are not sufficient for rapid detection of a fire.

2.1.11.2.2 The fire alarm system shall have the means to identify each fire detector or manual call point individually.

2.1.11.2.3 The gas safety system shall shut down the relevant parts of the gas supply system automatically upon fire detection in rooms containing gas installations.

2.1.11.3 Fire protection

2.1.11.3.1 Accommodation, passenger areas, engine rooms and escape routes shall be shielded with Type A60 partitions, where the distance is less than 3,00 m to LNG fuel tanks and bunkering stations located on deck.

2.1.11.3.2 The boundaries of LNG fuel tank rooms and ventilation ducts to such rooms below the bulkhead deck shall comply with Type A60. However, where the room is adjacent to tanks, voids, auxiliary engine rooms of little or no fire risk, sanitary and similar spaces, the insulation may comply with Type A0.

2.1.11.4 Fire prevention and cooling

2.1.11.4.1 A water spray system shall be installed for cooling and fire prevention to cover exposed parts of LNG fuel tank(s) located on open deck.

2.1.11.4.2 If the water spray system is part of the firefighting systems mentioned in Articles 13.04 or 13.05, the required fire pump capacity and working pressure shall be sufficient to ensure the operation of both the required numbers of hydrants and hoses and the water spray system simultaneously. The connection between water spray system and the firefighting systems mentioned in Articles 13.04 or 13.05 shall be provided through a screw-down non-return valve.

2.1.11.4.3 If firefighting systems mentioned in Articles 13.04 or 13.05 are installed onboard a craft where the LNG fuel tank is located on open deck, isolating valves shall be fitted in the firefighting systems in order to isolate damaged sections of the firefighting systems. Isolation of a section of firefighting systems shall not deprive the fire line ahead of the isolated section of water.

2.1.11.4.4 The water spray system shall also provide coverage for boundaries of the superstructures, unless the tank is located 3,00 m or more from the boundaries.

2.1.11.4.5 The water spray system shall be designed to cover all areas as specified above with an application rate of 10 l/min/m^2 for horizontal projected surfaces and 4 l/min/m^2 for vertical surfaces.

2.1.11.4.6 The water spray system shall be capable of being put into operation from the wheelhouse and from the deck.

2.1.11.4.7 The nozzles shall be arranged to ensure an effective distribution of water throughout the area being protected.

2.1.11.5 Fire extinguishing

2.1.11.5.1 In addition to the requirements of Article 13.03, two additional portable dry powder fire extinguishers of at least 12 kg capacity shall be located near the bunkering station. They shall be suitable for Class C fires.

2.1.12 Submerged gas pump motors

2.1.12.1 Submerged gas pump motors and their supply cables may be fitted in LNG containment systems. Arrangements shall be made to alarm in low liquid level and automatically shut down the motors in the event of low-low liquid level. The automatic shutdown may be accomplished by sensing low pump discharge pressure, low motor current, or low liquid level. This shutdown shall give an optical and acoustic alarm in the wheelhouse. Gas pump motors shall be capable of being isolated from their electrical supply during gas-freeing operations.

2.1.13 Control, Monitoring and Safety Systems

2.1.13.1 General

2.1.13.1.1 In addition to Article 30.10, the provisions of (2.1.13) apply.

2.1.13.1.2 The gas supply system shall be fitted with its own gas control and gas monitoring system and its own gas safety system. All elements of these systems shall be capable of being functionally tested.

2.1.13.1.3 The gas safety system shall shut down the gas supply system automatically, upon failure in systems essential for the safety, and upon fault conditions which may develop too fast for manual intervention.

2.1.13.2 LNG bunkering system and LNG containment system monitoring

2.1.13.2.1 Each LNG fuel tank shall be fitted with:

a) at least two liquid level indicators, which shall be arranged so that they can be maintained in an operational condition,

b) a pressure indicator capable of indicating throughout the operating pressure range and which is clearly marked with the maximum working pressure of the LNG fuel tank,

c) a high liquid level alarm operating independently of other liquid level indicators which shall give an optical and acoustic alarm when activated, and

d) an additional sensor operating independently of the high liquid level alarm which shall automatically actuate the master LNG bunkering valve in a manner that will both avoid excessive liquid pressure in the bunkering piping and prevent the tank from becoming liquid full.

2.1.13.2.2 Each pump discharge line and each liquid and vapour gas shore connection shall be provided with at least one local pressure indicator. In the pump discharge line, the indicator shall be placed between the pump and the first valve. The permissible maximum pressure or vacuum value shall be indicated on each indicator.

2.1.13.2.3 A high-pressure alarm shall be provided at the LNG containment system and at the pump. Where vacuum protection is required, a low-pressure alarm shall be provided.

2.1.13.2.4 Control of the bunkering shall be possible from a safe control station remote from the bunkering station. At this control station the LNG fuel tank pressure and level shall be monitored. Overfill alarm, high and low-pressure alarm and automatic shutdown shall be indicated at this control station.

2.1.13.2.5 If the ventilation in the ducting enclosing the bunkering lines stops, an optical and acoustic alarm shall be actuated at the control station.

2.1.13.2.6 If gas is detected in the ducting enclosing the bunkering piping an optical and acoustic alarm and emergency shutdown shall be actuated at the control station.

2.1.13.2.7 Appropriate and sufficient suitable protective clothing and equipment for bunkering operations shall be available on board according to operating manual.

2.1.13.3 Engine operation monitoring

2.1.13.3.1 Indicators shall be fitted in the wheelhouse and the engine room for:

a) operation of the engine in case of a gas-only engine, or

b) operation and mode of operation of the engine in the case of a dual fuel engine.

2.1.13.4 Gas warning equipment

2.1.13.4.1 Gas warning equipment shall be designed, installed and tested in accordance with a recognised Standard, such as European Standard EN 60079-29-1 : 2020.

2.1.13.4.2 Permanently installed gas detectors shall be fitted in:

a) tank connection areas including LNG fuel tanks, pipe connections and first valves,

b) ducts around gas piping,

c) engine rooms containing gas piping, gas equipment or gas consuming equipment,

d) the room containing the gas preparation system,

e) other enclosed rooms containing gas piping or other gas equipment without ducting,

f) other enclosed or semi-enclosed rooms where gas vapours may accumulate including inter-barrier spaces and tank rooms of independent LNG fuel tanks other than type C,

g) air locks, and

h) ventilation inlets to rooms in which gas vapours may accumulate.

2.1.13.4.3 By derogation to (2.1.13.4.2), permanently installed sensors which detect gas by difference of pressure can be used for inter-barrier spaces in double wall piping.

2.1.13.4.4 The number and redundancy of gas detectors in each room shall be considered taking size, layout and ventilation of the room into account.

2.1.13.4.5 Permanently installed gas detectors shall be located where gas may accumulate and in the ventilation outlets of these rooms.

2.1.13.4.6 An optical and acoustic alarm shall be activated before the gas concentration reaches 20 % of the lower explosive limit. The gas safety system shall be activated at 40 % of the lower explosive limit.

2.1.13.4.7 Optical and acoustic alarms from the gas warning equipment shall be actuated in the wheelhouse.

2.1.13.5 Safety functions of gas supply systems

2.1.13.5.1 If the gas supply system is shut off due to activation of an automatic valve, it shall not be opened until the reason for the disconnection is ascertained and the necessary actions taken. Instructions to this effect shall be placed in a prominent position at the control station for the shut-off valves in the gas supply lines.

2.1.13.5.2 If the gas supply system is shut off due to a gas leak, it shall not be opened until the leak has been found and the necessary actions have been taken. Instructions to this effect shall be placed in a prominent position in the engine room.

2.1.13.5.3 The gas supply system shall be arranged for manual remote emergency stop from the following locations as applicable:

a) wheelhouse,

b) control station of the bunkering station, or

c) any permanently manned location.

Chapter 2
Methanol

(left void)

Chapter 3
Hydrogen

(left void)

Section III
Energy converters

Chapter 1
Propulsion or auxiliary systems with fuel cells

3.1.1 Fuel cell spaces

3.1.1.1 The requirements of this Chapter shall apply to fuel cell spaces located either on deck or below deck.

3.1.1.2 Only components necessary for the operation of the fuel cell systems shall be permitted in fuel cell spaces.

3.1.1.3 Fuel cell components shall be surrounded by a secondary barrier. The boundary of a fuel cell space may act as a secondary barrier.

3.1.1.4 Fuel cell spaces shall be designed in such a way that their geometrical form ensures good air circulation or good distribution of inert gas, as to minimise the possibility of entrapping explosive mixture.

3.1.1.5 A permanently installed, continuously measuring gas detection system shall be in place in fuel cell spaces.

3.1.1.6 Fuel cell spaces containing fuel reformers shall also comply with the requirements for the relevant fuel storage in accordance with Annex 8, Section II.

3.1.1.7 Appropriate fire partition requirements of fuel cell spaces shall be established by the risk assessment in accordance with Article 30.04, with special consideration given to the installation location and fire load of the fuel cell space.

3.1.1.8 Fuel cell spaces shall not be located less than:

a) 1,00 m or B/5 from the craft’s side whichever is less, and

b) 0,60 m from the craft’s bottom.

The inspection body may allow shorter distances in the absence of hazardous areas, based on the risk assessment, according to Article 30.04.

3.1.1.9 One of the following concepts shall be applied to fuel cell spaces:

a) inerted fuel cell space,

b) explosion-protected fuel cell space, or

c) ventilated fuel cell space.

3.1.1.10 Requirements for inerted fuel cell spaces

3.1.1.10.1 Inerted fuel cell spaces are fuel cell spaces protected by inert gas. They shall be considered as non-hazardous areas.

3.1.1.10.2 The boundary of the fuel cell space that acts as secondary barrier shall be gastight. The design pressure of the boundary shall be suitable for the intended application.

3.1.1.10.3 During normal operation of the fuel cell system, the fuel cell space shall be inerted.

3.1.1.10.4 In the event of leakage of gas being detected or loss of inertion:

a) the fuel supply to the fuel cell space concerned, and

b) the fuel cell components in the fuel cell space concerned

shall be shut down automatically.

3.1.1.10.5 Gas tightness and integrity of the secondary barrier shall be permanently monitored by appropriate measures. In the event of leakage of inerted gas being detected in adjacent rooms where persons are present during normal operation, an optical and acoustic alarm shall be triggered

a) in the affected rooms and

b) in the wheelhouse or at any other permanently manned location.

In the event of failure of the gas tightness and integrity of the secondary barrier, the fuel supply to the fuel cell system shall be shut down automatically.

3.1.1.11 Requirements for explosion-protected fuel cell spaces

3.1.1.11.1 Explosion-protected fuel cell spaces shall be considered as hazardous areas (Zone 1).

3.1.1.11.2 In accordance with Article 10.04, only explosion-protected equipment (certified safety) is permitted. This shall be deemed to be fulfilled if the equipment meets the relevant provisions of the European Standard series EN 60079.

3.1.1.11.3 The function of the secondary barrier shall be achieved by mechanical ventilation ensuring permanent negative pressure relative to adjacent rooms.

3.1.1.11.4 The ventilation system shall:

a) guarantee a sufficient capacity of ventilation to ensure that the gross volume of air inside the fuel cell space is changed at least 30 times per hour, and

b) be independent of all other ventilation systems of the craft.

3.1.1.11.5 In the event of leakage of gas leading to a concentration above 20 % of the lower explosive limit (LEL), an optical and acoustic alarm shall be triggered in the wheelhouse or at any other permanently manned location.

3.1.1.11.6 In the event of leakage of gas leading to a concentration above 40 % of the LEL or the ventilation system fails,

a) the fuel supply to the fuel cell space concerned, and

b) the fuel cell components in the fuel cell space concerned

shall be shut down automatically.

3.1.1.12 Requirements for ventilated fuel cell spaces

3.1.1.12.1 The possible hazardous areas within the ventilated fuel cell spaces shall be classified in accordance with Article 10.04.

3.1.1.12.2 In accordance with Article 10.04, only equipment suitable for the hazardous areas as classified in (3.1.1.12.1) is permitted. This shall be deemed to be fulfilled if the equipment meets the relevant provisions of the European Standard series EN 60079.

3.1.1.12.3 The function of the secondary barrier shall be achieved by mechanical ventilation ensuring permanent negative pressure relative to adjacent rooms.

3.1.1.12.4 The ventilation system shall:

a) guarantee a sufficient capacity of ventilation to ensure that the gross volume of air inside the fuel cell space is changed at least at the rate which has been assumed for the hazardous area calculation referred to in (3.1.1.12.1). This shall be deemed to be fulfilled if the dilution is determined in accordance with Article 10.04(1), and

b) be independent of all other ventilation systems of the craft.

3.1.1.12.5 In the event of leakage of gas leading to a concentration above 20 % of the LEL, an optical and acoustic alarm shall be triggered in the wheelhouse or at any other permanently manned location.

3.1.1.12.6 In the event of leakage of gas leading to a concentration above 40 % of the LEL or the ventilation system fails:

a) the fuel supply to the fuel cell space concerned and

b) the fuel cell components in the fuel cell space concerned

shall be shut down automatically.

3.1.1.13 Specific requirements or derogations for fuel cell spaces on deck

3.1.1.13.1 For fuel cell spaces on deck, the inspection body may allow derogation from (3.1.1.3) and (3.1.1.12.3) provided that:

a) the fuel cell space is located on open deck with no directly adjacent rooms on the same deck;

b) the fuel cell space is naturally ventilated to ensure that the gross volume of air inside the fuel cell space is changed in accordance with (3.1.1.12.4);

c) the risk assessment according to Article 30.04 does not identify any contraindication.

3.1.1.14 Access to fuel cell spaces

3.1.1.14.1 Access to fuel cell spaces shall not be possible before the fuel cell components inside are safely shut down, isolated from the fuel supply system, drained of leakages and the inside atmosphere is confirmed gas-free.

It shall be possible to remotely operate and monitor from outside the fuel cell space all controls and all parameters required for safe operation of the fuel cell system and gas freeing of the fuel cell space.

3.1.1.14.2 The fuel cell space openings shall be equipped with an interlock preventing operation of the fuel cell system when the fuel cell space is open.

3.1.1.14.3 Doors to fuel cell spaces shall bear on the outside the symbol corresponding to Figure 1 in Annex 4 (“No entry for unauthorised persons”) as well as the fuel specific symbol in accordance with Article 30.06.

3.1.1.14.4 For the purpose of entering the inerted fuel cell spaces, it shall be possible that the inerted atmosphere in the fuel cell space is replaced by air that is safe to breathe. It shall be indicated outside the fuel cell space whether the air is safe to breathe.

3.1.1.14.5 The inspection body may allow derogation to (3.1.1.14.1), provided that:

a) the opening of the fuel cell space leads directly to open deck,

b) the opening of the fuel cell space is through an air lock, or

c) the fuel cell space is considered as non-hazardous in accordance with (3.1.1.12.1).

3.1.1.14.6 For safe maintenance, it shall be possible that the fuel cell components are:

a) isolated from the fuel supply system, and

b) drained and purged of fuel.

3.1.1.14.7 Fuel cell systems and their components shall be installed and fitted in such a way as to be adequately accessible for operation and maintenance and shall not endanger the persons assigned to those tasks.

3.1.2 Fuel Piping systems in the fuel cell spaces

3.1.2.1 The piping used for the supply of primary fuel shall comply with the respective requirements of Annex 8 Section II.

3.1.2.2 Fuel piping shall be protected against hazards arising from electrostatic charges.

3.1.2.3 The maximum working pressure for piping inside fuel cell spaces shall not exceed 1000 kPa (gauge value). The inspection body may allow higher working pressure, based on the risk assessment according to Article 30.04.

3.1.3 Reformer

3.1.3.1 The volume of fuel in the reformer shall be limited to the volume required for a stable continuous operation. Storage of fuel in the reformer shall not be permitted.

3.1.3.2 Reformer with a design pressure of more than 50 kPa shall comply with the requirements of Article 8.01(2).

3.1.3.3 Unintended accumulations of inflammable mixtures in burner systems and oxidation units of the reformer shall be avoided.

3.1.3.4 An automatic burner control system shall be installed to enable the safe start, operation and shutdown of the burner system of the reformer.

3.1.3.5 The complete combustion of the gases in the burner shall be monitored.

3.1.3.6 Surfaces likely to reach high temperatures shall be provided with insulation or protection against contact.

3.1.4 Buffer vessel

3.1.4.1 Fuel buffer vessels in fuel cell systems, if present, may only be used to provide process-related fuel and temporary reserves but not as an additional fuel storage.

3.1.4.2 The buffer vessels shall be arranged near the fuel cells and shall comply with the requirements of (3.1.2).

3.1.5 Fuel cell systems

3.1.5.1 Fuel cell systems shall be constructed and tested in accordance with the applicable standards of the International Standards series IEC 62282 or equivalent standards.

3.1.5.2 Materials used for the fuel cell systems shall be suitable for the intended application. This shall be deemed to be fulfilled when the materials comply with:

a) the International Standard IEC 62282-3-100 : 2019 or

b) an equivalent regulation or Standard recognised by one of the Member States.

3.1.6 Ventilation systems

3.1.6.1 The ventilators used for ventilation of hazardous areas shall be of a certified safe type.

3.1.6.2 Electric motor driving ventilators shall comply with the required explosion protection in the area where it is installed.

3.1.6.3 An optical and acoustic alarm shall be triggered in the wheelhouse or at any other permanently manned location in the event of any loss of the required ventilating capacity.

3.1.6.4 At least two ventilators shall be installed for the ventilation of hazardous areas to guarantee 100 % of the required ventilation capacity if one ventilator fails. The supply from the emergency power source shall also enable the ventilation system to provide 100% of the required ventilation capacity.

3.1.6.5 Air for ventilation shall be taken from non-hazardous areas.

3.1.6.6 The air intake from non-hazardous areas shall be located at least 1,50 m away from the boundaries of any hazardous area.

3.1.6.7 Where the inlet duct passes through a hazardous room, the duct shall have overpressure relative to this room. Overpressure shall not be required if it is ensured that gases will not leak into the duct.

3.1.6.8 Air outlets from hazardous areas shall be located in an open area which has the same or lower risk of hazard than the ventilated room.

3.1.6.9 Air outlets from non-hazardous areas shall be located outside hazardous areas.

3.1.6.10 Air inlets and outlets shall be located in appropriate positions, taking into account the characteristics of the fuel used.

3.1.7 Exhaust systems

3.1.7.1 The following provisions apply to systems for exhaust air and exhaust gas from fuel cell systems.

3.1.7.2 The exhaust systems of the fuel cell systems shall

a) not be connected to the exhaust pipes of systems other than fuel cell systems and

b) shall lead the gases to open air.

However, the exhaust pipes of the fuel cell systems may be combined with the fuel cell space ventilation at the ventilation outlet of the fuel cell space.

3.1.7.3 The exhaust systems shall be made of an appropriate material regarding its temperature limit, fire resistance, material strength and resistance to the action of condensate.

3.1.7.4 All suitable measures shall be taken to avoid ingress of exhaust air and exhaust gas into the various compartments of the craft.

3.1.7.5 Outlets of exhaust systems shall be designed in such a way that they cause no immediate danger to the people on board. They shall be located in appropriate positions, taking into account the characteristics of the exhaust air and exhaust gas.

3.1.7.6 The exhaust systems and their outlets are to be classified in accordance with Article 10.04. Only equipment suitable for the hazardous area as classified is permitted.

3.1.7.7 The exhaust systems shall be configured to keep accumulation of unoxidized gaseous fuel as low as possible.

3.1.7.8 Routing and isolation of the exhaust system shall take the accumulation of condensate into account.

3.1.7.9 Exhaust gas systems must allow safe condensate drainage.

3.1.7.10 If the exhaust systems are not provided by the fuel cell manufacturer, they must comply with the fuel cell manufacturer’s instructions.

3.1.8 Purging system

3.1.8.1 For fuel cell systems requiring purging for safe operation, especially before the start-up or after the shutdown of the fuel cell system, a suitable purging system that uses a medium specified by the fuel cell manufacturer shall be used.

3.1.9 Control, monitoring and safety systems

3.1.9.1 In addition to Article 30.10, the provisions of (3.1.9) apply.

3.1.9.2 Each fuel cell system shall be fitted with its own control and monitoring system and its own safety system. The safety system shall be designed to operate independently of the control and monitoring system. All elements of these systems shall be capable of being functionally tested.

Software for programmable electronic systems shall be developed in accordance with an acceptable quality management system considering all software lifecycle activities as design, development, supply and maintenance.

3.1.9.3 Sensors for the safety system shall be first routed to safety system and particular information may be also routed towards control and monitoring systems. Alarm sensors shall be directly routed to the monitoring system.

3.1.9.4 It shall be possible to manually shut down the fuel cell system from the following locations:

a) wheelhouse,

b) from the outside in the direct vicinity of the fuel cell space,

c) any permanently manned location.

The safety system shall be manually reset before the propulsion or auxiliary system can be restarted.

3.1.9.5 Suitable devices shall monitor chemical reactions in the reformer and in the fuel cells by means of temperature, pressure and voltage control.

Chapter 2
Propulsion or auxiliary systems with internal combustion engines using LNG as fuel

3.2.1 General

3.2.1.1 Requirements of Annex 8, Section II, 2.1.2 to 2.1.6, 2.1.9, 2.1.10, 2.1.11.1, 2.1.11.2, 2.1.13.1, 2.1.13.3, 2.1.13.4 and 2.1.13.5 also apply to propulsion or auxiliary systems with internal combustion engines using LNG as fuel.

3.2.1.2 For engine rooms one of the following concepts shall be applied:

a) gas safe engine room,

b) explosion safe engine room or

c) ESD protected engine room.

3.2.2 Requirements for gas safe engine rooms

3.2.2.1 Gas safe engine rooms shall be gas safe under all conditions (“inherently gas safe”). A single failure within the LNG system shall not lead to a leakage of gas into the engine room. All gas piping within engine room boundaries shall be enclosed in a gas tight enclosure, e.g. double wall piping or ventilated ducting.

3.2.2.2 In case one barrier fails, the gas supply to the relevant part of the LNG system shall be shut down automatically.

3.2.2.3 The ventilation system of ventilated ducting shall:

a) guarantee a sufficient capacity to ensure that the gross volume of air inside the ventilated ducting can be changed at least 30 times per hour;

b) be equipped to detect gas presence continuously in the space between inner and outer pipes; and

c) be independent of all other ventilation systems, in particular the ventilation system of the engine room.

3.2.2.4 A gas safe engine room shall be considered as a non-hazardous area, unless the risk assessment according to Article 30.04 demonstrates otherwise.

3.2.3 Requirements for explosion safe engine rooms

3.2.3.1 Arrangements in explosion safe engine rooms shall be such that the rooms are considered gas safe under normal conditions. A single failure within the LNG system shall not lead to a gas concentration over 20 % of the lower explosive limit (LEL) into the engine room.

3.2.3.2 In the event of gas being detected or the ventilation system failing, the gas supply to the relevant part of the LNG system shall be shut down automatically.

3.2.3.3 The ventilation system shall:

a) guarantee a sufficient capacity to maintain gas concentration below 20 % of the LEL in the engine room, and to ensure that the gross volume of air inside the engine room can be changed at least 30 times per hour; and

b) be independent of all other ventilation systems.

3.2.3.4 Under normal operation the engine room shall be permanently ventilated with at least 15 changes of the gross volume of air inside the engine room per hour.

3.2.3.5 Explosion safe engine rooms shall be designed to provide a geometrical shape that minimises the accumulation of gases or formation of gas pockets. A good air circulation shall be ensured.

3.2.3.6 An explosion safe engine room shall be considered as Zone 2, unless the risk assessment according to Article 30.04 demonstrates otherwise.

3.2.4 Requirements for the ESD protected engine rooms

3.2.4.1 Arrangements in ESD protected engine rooms shall be such that the rooms are considered gas safe under normal conditions, but under certain abnormal conditions may have the potential to become subject to gas hazards.

3.2.4.2 In the event of abnormal conditions involving gas hazards, emergency shutdown (ESD) of non-safe equipment (ignition sources) and gas machinery shall be automatically executed, while equipment or machinery in use or active during these conditions shall be of a certified safe type.

3.2.4.3 The ventilation system shall:

a) guarantee a sufficient capacity to ensure that the gross volume of air inside the engine room can be changed at least 30 times per hour,

b) be designed to handle the probable maximum leakage scenario due to technical failures, and

c) be independent of all other ventilation systems.

3.2.4.4 Under normal operation the engine room shall be permanently ventilated with at least 15 changes of the gross volume of air inside the engine room per hour.
If gas is detected in the engine room, the number of air changes shall automatically be increased to 30 changes per hour.

3.2.4.5 If the craft is equipped with more than one propulsion engine, these engines shall be located in at least two separate engine rooms. These engine rooms shall have no common partitions. However, common partitions may be accepted, if it can be documented that any consequences of a single failure will not affect both rooms.

3.2.4.6 Fixed gas warning equipment arranged to automatically shut down the gas supply to the engine room concerned and to disconnect all non-explosion protected equipment or installations shall be fitted.

3.2.4.7 ESD protected engine rooms shall be designed to provide a geometrical shape that minimises the accumulation of gases or formation of gas pockets. A good air circulation shall be ensured.

3.2.4.8 An ESD protected engine room shall be considered as Zone 1, unless the risk assessment according to Article 30.04 demonstrates otherwise.

3.2.5 Exhaust system

3.2.5.1 The exhaust system shall be configured to keep accumulation of unburned gaseous fuel as low as possible.

3.2.5.2 Unless designed with the strength to withstand the worst case of overpressure due to ignited gas leaks, engine components or systems that can contain an ignitable gas and air mixture, shall be fitted with suitable pressure relief devices.

3.2.5.3 A means shall be provided to monitor and detect incorrect operation of the ignition system, poor combustion or misfiring that may lead to unburned gaseous fuel in the exhaust system during operation.

3.2.5.4 If incorrect operation of the ignition system, poor combustion or misfiring is detected, the gas supply system shall be shut down automatically.

3.2.5.5 The exhaust pipes of gas or dual fuel engines shall not be connected to the exhaust pipes of other engines or systems.

3.2.5.6 In case of shut-off of the gas supply system in a dual fuel engine, the engine shall be capable of continuous operation on gasoil only without interruption.

Chapter 3
Propulsion or auxiliary systems with internal combustion engines using methanol as fuel

(left void)"

55. ESI-I-1 is amended as follows:

a) (23) is worded as follows:

"23. Number of passenger sleeping berths available ~~(including folding beds and similar)~~."

b) (26), last sentence (concerns only the French version)

c) (46) is worded as follows:

"46. As a general rule, continuous operation shall not be inserted if there is a lack of sleeping berths or if there are excessive noise levels."

56. ESI-I-2, table, under "Testing" is amended as follows:

a) The row relating to Instruction ESI-II-12 Section 3.1(a) and (b), is worded as follows:

"

Instruction ESI-II-12 Section 3.1(a) and (b)	Fire alarm system		Expert

"

b) The row relating to Instruction ESI-II-12 Section 3.1(c), is worded as follows:

"

Instruction ESI-II-12 Section 3.1 (c)	Fire alarm system	2 years	Expert or competent person

"

57. ESI-II-4 is amended as follows:

a) (4.2), 2nd paragraph (concerns only the French version)

b) Annex 2, the row before the note relating to the "Type" (concerns only the German version)

58. ESI-II-5 is amended as follows:

a) (3.2) is worded as follows:

"3.2 Air noise emitted from craft

Noise emissions from craft on inland waterways and in ports are determined by means of measurements in accordance with European Standard EN ISO 2922 : 2020, Sections 7 to 11. Doors and windows of engine rooms shall be closed during measurements."

b) (3a.2) is worded as follows:

"3a.2 Noise emitted by craft

The measurement of noise produced by craft on inland waterways and in ports shall be carried out in accordance with European Standard EN ISO 2922 : 2020, sections 7 to 11. Doors and windows of engine rooms shall be closed during measurements."

c) Appendix 1, title, is worded as follows:

"Appendix 1
Noise Measurement Report
- Craft which were laid down after 1 April 1976 -
- on board craft in accordance with International Standard ISO 2923 : 1996
***- air noise emitted from craft in accordance with European Standard EN ISO 2922 : 2020*)"**

d) Appendix 2, (1.2), first sentence, is worded as follows:

"1.2 Measurement of noise generated by craft (EN 2922 : 2020):"

*) Delete as appropriate

59. ESI-II-9 is worded as follows:

"ESI-II-9
AUTHORISATION AND TEST PROCEDURE OF SPECIAL ANCHORS WITH REDUCED MASS

(Article 13.01(1) to (4))

1. Chapter 1 — Authorisation procedure

1.1 Special anchors with reduced mass in accordance with Article 13.01(5) shall be authorised by the competent authorities. The competent authority determines the authorised reduction of anchor mass for special anchors in accordance with the procedure outlined below.

1.2 Authorisation as special anchor is only possible if the reduction of anchor mass established is at least 15 %.

1.3 Applications for the authorisation of a special anchor in accordance with (1.1) shall be submitted to the competent authority of a Member State. Ten copies of the following documents shall be forwarded with each application:

a) an outline of the dimensions and mass of the special anchor, giving the main dimensions and type designation for each available anchor size;

b) a braking force diagram for the reference anchor A (in accordance with (2.2)) and the special anchor B to be authorised which has been prepared and assessed by an institution designated by the competent authority.

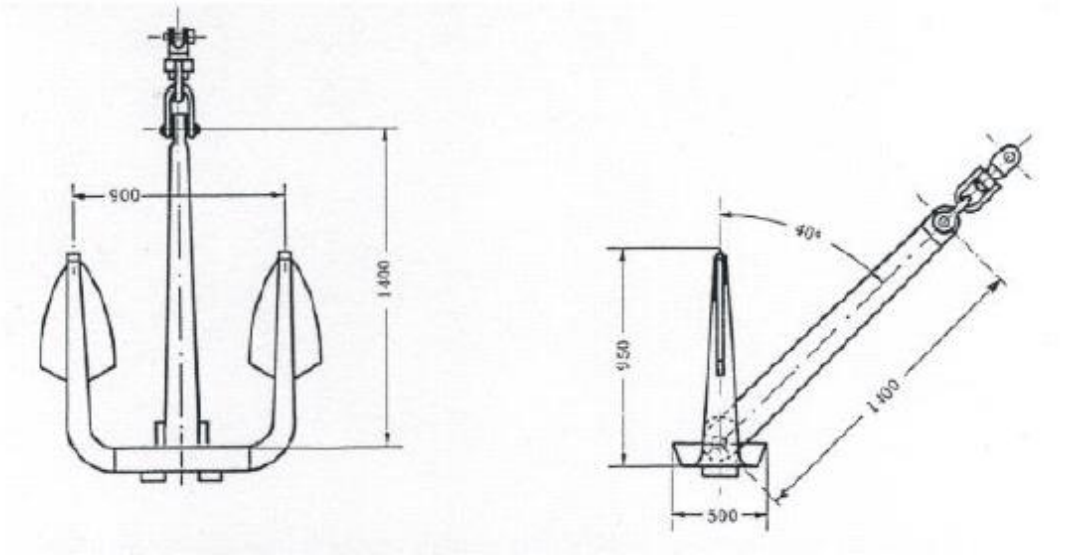
1.4 The competent authority notifies CESNI of any applications to reduce anchor mass which it considers to authorise after testing.

1.5 The list of special anchors with reduced mass is published on the CESNI website (https://listes.cesni.eu/).

2. Chapter 2 — Test Procedure

2.1 The braking force diagrams in accordance with (1.3) shall show the braking forces as a function of speed for the reference anchor A and the special anchor B to be authorised on the basis of tests in accordance with (2.2) to (2.5) below. Annex 1 shows one possible braking force test.

2.2 The reference anchor A used in the tests shall be a conventional folding stockless anchor corresponding to the sketch and details given below, with a mass of at least 400 kg.



A tolerance of ±5 % applies to the dimensions and mass given. However, the surface area of each fluke must be at least 0,15 m^2.

2.3 The mass of the special anchor B used in the tests shall not deviate by more than 10 % from the mass of the reference anchor A. If the tolerances are greater, the forces shall be recalculated proportional to mass.

2.4 Braking force diagrams shall give a linear representation of speed (v) in the range 0 to 5 km/h (speed over ground). To this end, three tests shall be carried out in an upstream direction for the reference anchor A and the special anchor B on an alternating basis over each of two stretches of river determined by the competent authority, one with coarse gravel and one with fine sand. On the River Rhine the stretch between 401-402 km can serve as a reference stretch for the coarse gravel tests and the stretch between 480-481 km for the fine sand tests.

2.5 For each test, the anchor being tested shall be towed with a steel wire cable whose length between the points of connection on the anchor and on the towing craft or device is 10 times the height of the connection point on the craft above the anchorage ground.

2.6 The percentage of reduction of anchor mass is calculated by the following formula:

$$= 75 \cdot \left(1 - 0{,}5 \ \frac{PB}{PA}\left(\frac{FA}{FB} + \frac{AA}{AB}\right)\right) \ [\%]$$

where

r = the percentage of reduction of anchor mass of special anchor B in relation to reference anchor A;

PA = the mass of reference anchor A;

PB = the mass of special anchor B;

FA = holding force of reference anchor A at v = 0,5 km/h;

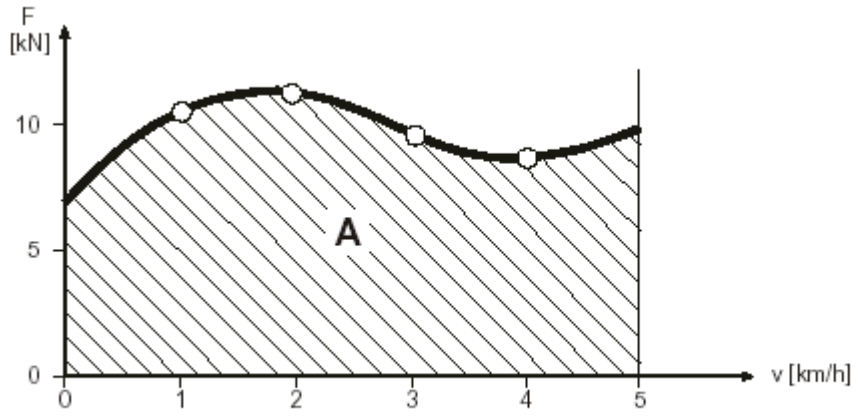
FB = holding force of special anchor B at v = 0,5 km/h;

AA = the surface area on the braking force diagram defined by

- the line parallel to the y-axis at v = 0
- the line parallel to the y-axis at v = 5 km/h
- the line parallel to the x-axis at holding force F = 0
- the braking force curve for reference anchor A;

AB = same definition as for AA except that the braking force curve for special anchor B is used.

Model breaking force diagram
(Determining the surface areas AA and AB)



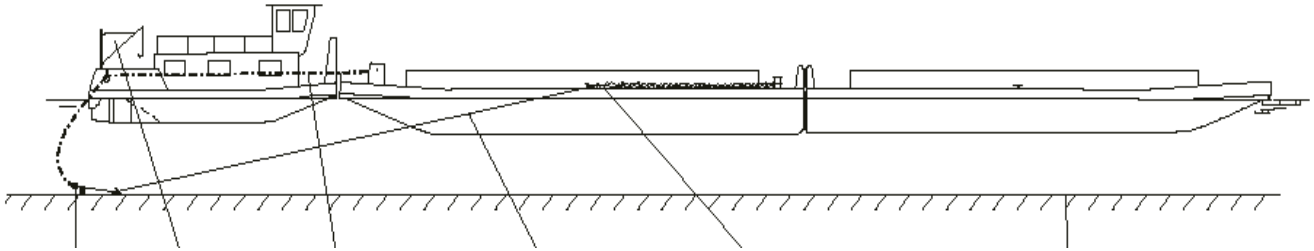
2.7 The acceptable percentage is the average of six values of r calculated in accordance with (2.6).

3. Chapter 3 - Anchors for recreational craft

3.1 For recreational craft, the inspection body may also authorise special anchors with reduced mass in accordance with the rules of a recognised classification society.

Annex 1 to instruction ESI-II-9
Example of an anchor test method with a single-file two-part pushed convoy

Pusher 2nd lighter 1st lighter



Anchor	Crane	Hawser	Tow line	Tensile force dynamometer	anchorage
500 kg	750 kg	12 mm ∅	24 mm ∅	20 t	sand / gravel

Towing speed: 0 → 5 km/h

Tow line inclination angle ≤ 1:10

“

60. The subtitle of ESI-II-11 is worded as follows:

"(Article 9.09(2)(a), (4)(a), (5)(a), Article 11.01(2), (4) and (6), Article 11.02(2), Article 11.03(4), Article 11.04(3), Article 11.08(1), Article 13.05(2)(a) Article 19.07(1) Article 28.04(1)(a), Article 30.07)".

61. ESI-II-12 is worded as follows:

"ESI-II-12
APPROPRIATE FIRE ALARM SYSTEM

(Article 13.05(3), Article 19.11(18), Article 29.10(1))

Fire alarm systems are considered to be appropriate if they meet the following provisions.

0. Components

0.1 Fire alarm systems consist of:

a) fire detectors, manual call points and other sensors,

b) fire alarm central,

c) fire alarm and indicator devices, including transmission devices where appropriate

as well as the external power supply.

0.2 The fire alarm system may be divided into one or more fire detection zones.

0.3 The fire alarm system may have one or more control and display panels.

0.4 The fire alarm central is the central control unit of the fire alarm system. It is used to receive the input signal from a detector, process the signal and generate an output signal to the fire alarm and indicator devices. The fire alarm central has one or more control and display panels.

0.5 A fire detection zone may have one or more manual call points or fire detectors.

0.6 Fire detectors, manual call points and other sensors are used to automatically detect or report a fire and send an appropriate signal to the fire alarm central.

Fire detectors automatically monitor their fire detection zone based on their type of corresponding parameters. They can be designed as

a) heat detectors,
b) smoke detectors,
c) ion detectors,
d) flame detectors,
e) pressure detectors,
f) combustion gas detector,
g) combination detectors (fire detectors combining two or more of the detectors listed in (a) to (f)).

Fire detectors which respond to other factors indicating the onset of a fire may be approved by the inspection body provided that they are no less sensitive than the fire detectors referred to under (a) to (g).

Manual call points are used for manual activation and can be designed with direct or indirect triggering (with or without actuation protection).

In addition, actuating devices of other monitoring systems (detectors not belonging to the fire alarm system) can be connected.

Fire detectors can be designed with or without individual identification.

0.7 Alarm devices are optical (e.g. flashing light) and acoustic (e.g. siren) signaling devices, which are activated upon the signal from the fire alarm central and announce the fire alarm.

0.8 Control and display panels and indicator devices are used to monitor, operate and provide information to operators (e.g. crew, on-board personnel, fire department).
Indicator devices make the information provided by the fire alarm system visible (e.g. by signal lamps, screen displays).

1. Construction requirements

1.1 General

1.1.1 Compulsory fire alarm systems shall be operational at all times.

1.1.2 Rooms and areas monitored by the fire alarm system must be equipped with fire detectors required in accordance with (2.2). Additional manual call points may be installed.

1.1.3 The system and its components shall be able to withstand voltage fluctuations and surges, changes in ambient temperature, vibrations, humidity, shocks, impacts and corrosion such as commonly occur on vessels.

1.2 Energy supply

1.2.1 Energy sources and electric circuits necessary for the operation of the fire alarm system shall be self monitoring. Any fault occurring shall activate an optical and acoustic failure signal on the fire alarm central which can be distinguished from a fire alarm signal.

1.2.2 The fire alarm system shall be supplied at least by two power sources, one of which shall be an emergency power system (i.e. emergency power source and emergency switchboard). There shall be two separate power-feeds solely for this purpose. These shall lead to an automatic switch in or near the fire alarm central. On motor vessels a separate emergency power supply is sufficient.

1.3 Fire detection system

1.3.1 Manual call points and fire detectors shall be grouped in fire detection zones.

1.3.2 Fire alarm systems shall not be used for any other purpose. By way of derogation the closing of the doors in accordance with Article 19.11(9) and similar functions may be triggered at the control panels of the fire alarm system and indicated on the control panels and indicator devices.

1.3.3 Fire alarm systems shall be designed in such a way that the first indicated fire alarm does not prevent fire alarms set off by other manual call points or automatic fire detectors.

1.4 Fire detection zones

1.4.1 Where the fire alarm system cannot remotely identify individually the manual call points or fire detectors, a fire detection zone shall not comprise more than one deck. This does not apply to a fire detection zone which comprises an encapsulated stairwell.

In order to avoid delays in detecting the origin of the fire, the number of enclosed spaces included in each fire detection zone shall be limited. There shall not be more than fifty enclosed rooms in one fire detection zone.

Where the fire alarm system can remotely identify individually the manual call points or fire detectors, the fire detection zones may comprise several decks and any number of enclosed rooms.

1.4.2 On passenger vessels which do not have a fire alarm system with remote identification of individual manual call points or fire detectors, a fire detection zone shall not comprise more than the area constituted in accordance with Article 19.11(11). The activation of a fire detector in an individual cabin in this fire detection zone shall set off an optical and acoustic signal in the passageway outside that cabin.

1.4.3 Galleys, engine rooms and boiler rooms shall constitute separate fire detection zones.

1.5 Fire detectors

1.5.1 Only heat, smoke or ion detectors shall be used as fire detectors. Other types may only be used as additional detectors.

1.5.2 Fire detectors shall be type-approved.

1.5.3 All fire detectors shall be designed in such a way that they can be tested to ensure that they are working properly and brought back into service without having to replace any components.

1.5.4 Smoke detectors shall be set so that they respond to a reduction in visibility per metre caused by smoke of more than 2 % to 12,5 %. Smoke detectors fitted in galleys, engine rooms and boiler rooms shall respond within sensitivity limits meeting the requirements of the inspection body, whereby under-sensitivity or over-sensitivity of the smoke detectors shall be avoided.

1.5.5 Heat detectors shall be set so that with temperature increase rates of less than 1 °C/min they respond at temperatures of between 54 °C and 78 °C.

With higher rates of temperature increase, the heat detector shall respond within temperature limits where under- or over-sensitivity of the heat detector is avoided.

1.5.6 With the agreement of the inspection body, the permissible operating temperature of heat detectors may be increased to 30 °C above the maximum temperature in the upper part of engine and boiler rooms.

1.5.7 The sensitivity of flame detectors shall be sufficient to detect flames against an illuminated background. Flame detectors shall also be equipped with a system for identifying false alarms.

1.6 Fire alarm central

1.6.1 Activation of a manual call point or fire detector shall set off an optical and acoustic fire alarm signal at the control and display panel and the indicator devices of the fire alarm central.

1.6.2 The control, panels and the indicator devices of the fire alarm central shall be at a location which is permanently manned by shipboard personnel. One control and display panel and indicator device shall be at the steering position.

1.6.3 The display pannels and indicator devices shall indicate at least the fire detection zone in which a manual call point or fire detector has been activated.

1.6.4 On or near each display pannel and indicator device there shall be clear information on the rooms monitored and the location of the fire detection zones.

2. Installation requirements

2.1 Manual call points or fire detectors shall be installed in such a manner as to ensure the best possible operation of the system. Locations in the vicinity of deck girders and ventilation shafts or other locations where air currents could adversely affect system operation and locations where impacts or mechanical damage are likely shall be avoided.

2.2 In general, fire detectors located on the ceiling shall be at least 0,5 metres away from bulkheads. The maximum distance between fire detectors and bulkheads shall conform to the following table:

Type of fire detector	Maximum floor surface area per fire detector	Maximum distance between fire detectors	Maximum distance of fire detectors from bulkheads
Heat	37 m^2	9 m	4,5 m
Smoke	74 m^2	11 m	5,5 m

The inspection body may stipulate or approve other distances on the basis of tests which prove the characteristics of the automatic fire detectors.
Other types of fire detectors must be installed according to the criteria specified by the manufacturer.

2.3 The routing of electric cables for the fire alarm system through engine rooms and boiler rooms or other high fire risk rooms is not permitted unless this is necessary for fire detection through manual call points or fire detectors or fire alarm device in those rooms or connection to the corresponding power supply.

3. Acceptance test

3.1 Fire alarm systems must be checked by an expert:

a) before being put into service for the first time,

b) before being put back into service after any major modification or repair,

c) regularly, at least every two years.

In the case of engine rooms and boiler rooms these checks shall be made under various machine operation conditions and under changing ventilation conditions. Tests as referred to in subsection (c) above may also be carried out by a competent person from a competent firm specialising in fire extinguishing systems.

3.2 An inspection certificate shall be issued, signed by the expert or competent person and showing the date of the inspection."

62. ESI-III-1(1) (concerns only the French version)

63. ESI-III-2 is amended as follows:

a) (1), last sentence, is worded as follows:

"The requirements of the Standard do not concern berthing locations and similar installations. These are subject to national provisions."

b) (3) is worded as follows:

*"***3. Article 19.01(4) — General provisions; Areas provided for use by persons with reduced mobility**

Areas provided for use by persons with reduced mobility range from, in the simplest case, the entrance area to the areas from which an evacuation will take place in an emergency. They shall include:

- a place where life-saving equipment is stowed or issued in an emergency,
- seats,
- a suitably-adapted toilet (see (10) of this instruction),
- connecting corridors, and
- a suitably-adapted cabin (for cabin vessels only).

The number of seats corresponds at least approximately to the number of persons with reduced mobility that — over a lengthy period — are most frequently onboard simultaneously. The number should be determined by the ship-owner on the basis of experience, as this is beyond the knowledge of the competent authority. The number of seats for persons with reduced mobility shall not be less than 1 % (rounded up to the nearest whole number) of the permitted number of passengers.

On cabin vessels consideration shall also be given to connecting corridors to passenger cabins used by persons with reduced mobility. The number of such cabins is to be determined by the ship-owner in the same way as the number of seats. The number of cabins for persons with reduced mobility cannot be less than

a) one for cabin vessels with sleeping berths for a maximum of 200 passengers,

b) two for cabin vessels with sleeping berths for more than 200 passengers.

With the exception of the width of doors, no requirements are imposed for the special arrangement of cabins. It is the responsibility of the owner to make any further necessary arrangements.”

64. ESI-III-4 (3)(3.2) (concerns only the French version)

65. ESI-III-7 (3) (concerns only the French version)

66. ESI-III-8 is worded as follows:

"ESI-III-8
RECREATIONAL CRAFT

(Article 26.01(2))

1. General

Recreational craft of up to 24 metres length, that are placed on the market, have to comply with the requirements of Directive 2013/53/EU. According to Article 7 in conjunction with Article 2 of Directive (EU) 2016/1629 (respectively Rhine Vessel Inspection Regulations), recreational craft having a length of 20 metres or more shall carry an inland navigation vessel certificate attesting the craft's compliance with the technical requirements of this Standard. Since double inspection or certification for certain equipment, arrangements and installations of newly built recreational craft which can result from certain provisions in Article 26.01 of Standard should be avoided, this Instruction gives information on those requirements listed in Article 26.01 that are already sufficiently covered under Directive 2013/53/EU.

2. Requirements in Article 26.01 which are already covered under Directive 2013/53/EU

For recreational craft subject to Directive 2013/53/EU the inspection body shall as regards to the issuance of the inland navigation vessel certificate (initial inspection) not require further inspection or certification except the requirements of Article 26.01(2)(a) to (f), provided that no modifications to the craft have been carried out since it has been placed to the market, and the Declaration of Conformity refers to the following harmonised Standards or their equivalence:

Article 8.08(2) :	EN ISO 15083 : 2018, (Bilge pumping)
Article 8.10 :	EN ISO 14509-1 : 2018 and
	EN ISO 14509-3 : 2018, (Noise emission)

Recreational craft subject to Directive 2013/53/EU, or previously Directive 94/25/EC, shall also comply with the technical requirements of Directive 2013/53/EU, respectively Directive 94/25/EC, in a permanent manner. If a recreational craft is subject to a periodic inspection, the inspection body may check whether the recreational craft is still in the technical condition that existed at the time of the initial inspection.

If the inspection body finds that the recreational craft no longer meets the technical requirements of the Directive 2013/53/EU (or previously Directive 94/25/EC), it may require that the compliance with these technical requirements is restored. Alternatively, the recreational craft may be inspected in accordance with the provisions of Article 26.01(1), in which case it may be considered to be in service, subject to the provisions applying the transitional provisions."

67. After ESI-III-10, ESI-III-11 is added as follows:

"ESI-III-11
MATERIALS COMPLYING WITH THE EQUIVALENT REGULATIONS INSTEAD OF THE CODE FOR FIRE TEST PROCEDURES

(Articles 1.01(6.4), (6.5) and 19.11(1), (2) and (6))

The European Standards series EN 13501 (meaning EN13501-1 to EN13501-6) and the European Standard EN 45545-2 are acceptable test methods for determining the non-flammability of materials, that a material is flame-retardant, or fire resistance, as alternative to the Code for Fire Test Procedures in accordance with Article 19.11(1) of ES-TRIN.

The recognition of other regulations of one of the Member States shall follow the same approach to achieve an acceptable safety level.

1. All inland vessels

1.1 Flame retardant (as defined in Article 1.01(6.5))

1.1.1 Products which have been tested according to **FTP Code Annex 1, Part 5** are deemed to comply with ES-TRIN (Article 19.11(1)(c)).

1.1.2 Products that have been tested according to European Standards **EN 13501-1** may be accepted depending on its classification and use.

Classification **B** *(or higher)* is considered acceptable.

Classification **C** *(or lower)* is not considered acceptable.

1.1.3 Products that have been tested according to European Standard **EN 45545-2** may be accepted depending on its classification and use.

Classification **HL2** or **HL3** for requirement R1 are considered equivalent

Classification **HL3** for requirement R10 (flooring) is considered equivalent.

1.2 Fumes or toxic gases in dangerous quantities

1.2.1 Products which have been tested according to **FTP Code Annex 1, Part 2, Appendix 1** are acceptable in accordance with ES-TRIN (Article 19.11(6)).

1.2.2 Products that have been tested according to European Standards series **EN 13501-1** may be accepted depending on its classification and use.

Classification **s1** may be applied on floorings.

Classification **s2** may be applied on any internal surface (other than floorings).

Classification **s3** is not acceptable.

1.2.3 Products that have been tested according to European Standard **EN 45545-2** may be accepted depending on its classification and use.
Classification **HL2** or **HL3** for requirement R1 are considered acceptable or equivalent.
Classification **HL3** for requirement R10 (flooring) is considered equivalent.

1.3 Non-combustible materials (as defined in Article 1.01(6.4))

1.3.1 Products which have been tested according to **FTP Code Annex 1, Part 1** are deemed to comply with ES-TRIN.

1.3.2 Products that have been tested according to European Standard **EN 13501-1** may be accepted depending on its classification and use.

Classification **A1** may be applied as non-combustible materials.

Classification **A2** can be described as 'limited combustibility' and may not be applied as non-combustible material.

Classification **B, C, D, E, F** can be described as 'combustible' and may not be applied as non-combustible material.

1.3.3 Products that have been listed in **European Commission decision 96/603/EC** (as amended) are acceptable without further testing.

1.4 Droplets

1.4.1 Materials for bulkhead, wall and ceiling linings and primary deck coverings shall not produce burning droplets during the test.

1.4.2 Products which have been tested according to **FTP Code Annex 1, Part 5** are deemed to comply with ES-TRIN.

1.4.3 Products that have been tested according to European Standard **EN 13501-1** may be accepted depending on its classification and use.

Classification **d0** is required for all fire protection materials.

Classification **d1 and d2** are not acceptable.

1.4.4 Products that have been tested according to European Standard **EN 45545-2** may be accepted depending on its classification and use.

Classification **HL2** or **HL3** for requirement R1 are considered acceptable.

2. Passenger vessels

2.1 Passenger vessels must comply with Article 19.11 which regards to fire protection.

2.2 Products which have been tested according to **FTP Code Annex 1, Part 3** are deemed to comply with ES-TRIN.

2.3 Materials which have been tested by an accredited test institution according to the European Standards **EN 13501-2** and **EN 13501-3** may be used on-board based on the following correlations.

FTP Code	EN 13501-2 and EN 13501-3
B0	E30
B15	combination of E30 and I15
A0	E60
A30	combination of E60 and I30
A60	combination of E60 and I60 (meaning EI60)

Remark 1: The integrity E is the ability of the material to withstand fire exposure on one side only, without the transmission of fire to unexposed side as a result of the passage of flames or hot gases. The classification for integrity (E) is acceptable based on the above table. Type A maintains integrity for 1 hour; on this basis, use of "the classification" E60 (i.e. 60 minutes) is accepted. Type B maintains integrity for 30 min; on this basis, use of "the classification" E30 (i.e. 30 minutes) is accepted.

Remark 2: The thermal insulation I is the ability of the material to withstand fire exposure on one side only, without the transmission of fire as a result of significant transfer of heat from the exposed side to the unexposed side. The classification for insulation (I) is equivalent to the specified period in which the required temperatures remain within the criteria (see Article 19.11(2)(b)(c)).

Remark 3: The above table indicates the minimum classification required under the European Standards series EN 13501. A higher combination of E and I classification is also acceptable."

68. ESI-IV-1(2.1.2) is worded as follows:

"2.1.2 It shall constitute a change in the type of craft if the safety requirements applying to the new type of craft are different from those for the old type of craft; this is so if special provisions of Chapters 19 to 25 and 27 to 30 of this Standard are applicable to the new type of craft which were not applicable to the old type of craft."

***