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

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Item 6 (b) of the provisional agenda

Standardization of Technical and Safety Requirements in Inland Navigation: Recommendations on Harmonized Europe-Wide Technical Requirements for Inland Navigation Vessels (Resolution No. 61, Revision 2)

Amendments to the Annex to Resolution No. 61 Based on the European Standard Laying Down Technical Requirements for Inland Navigation Vessels, Edition 2023

Note by the secretariat

Mandate

1. This document is submitted in line with the Proposed Programme Budget for 2023, part V, Regional cooperation for development, section 20, Economic Development in Europe, Programme 17, Economic Development in Europe (A/77/6 (Sect. 20), table 20.6).
2. At its sixty-sixth session, the Working Party on Inland Water Transport (SC.3) was informed about the adoption of the European Standard Laying Down Technical Requirements for Inland Navigation Vessels (ES-TRIN) edition 2023/1 by the European Committee for Standards in Inland Navigation (CESNI) on 13 October 2022 (ECE/TRANS/SC.3/217, paragraph 69). The new version of the standard will enter into force from 1 January 2024. SC.3 asked the secretariat to continue work on harmonizing the annex to resolution No. 61 with ES-TRIN.
3. The annex to this document contains a number of revised or newly introduced provisions of ES-TRIN edition 2023/1¹ that may be relevant for the annex to resolution No. 61 and can be used by the Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation as the basis for further work.

¹ https://www.cesni.eu/wp-content/uploads/2022/11/ES-TRIN23_signed_en.pdf.



Annex

Provisions of the European Standard Laying Down Technical Requirements for Inland Navigation Vessels Edition 2023 That May Be Relevant for the Annex to Resolution No. 61

I. Chapter 1 “General”

Article 1.01 Definitions

5. Steering system

...

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;

...

6. Properties of structural components and materials

...

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;

...

7. Signal lights, navigation and information equipment

...

7.4 (left void);

7.5 ‘Inland ECDIS² 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;

...

7.9 ‘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 2023/1³;

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;

² Note by the secretariat: Electronic Chart Display and Information System.

³ European Standard for River Information Services (ES-RIS 2023/1); CESNI Resolution 2022-II-12 dated 13 October 2022.

7.11 'Test Standard for Inland AIS': 'Test Standard Inland AIS' in accordance with the technical specifications defined by part VI 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.

II. Chapter 3 "Shipbuilding Requirements"

Article 3.03

Hull

...

2. No accommodation or installations needed for safety of the vessel and its operation may be located ahead of the plane of the collision bulkhead or aft of the aft-peak bulkhead.

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.

III. Chapter 5 "Wheelhouse"

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.

IV. Chapter 8 “Engine Design”

Article 8.01

General

...

4. 1. 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.

V. Chapter 9 “Emission of Gaseous and Particulate Pollutants from Internal Combustion Engines”

Article 9.09

Specific requirements concerning exhaust gas after treatment systems

...

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 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.

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.

VI. Chapter 10 "Electrical Equipment and Installations"

Article 10.03

Protection against access to hazardous parts, against solid foreign objects, against ingress of water

The type of minimum protection for parts of a permanent electrical installation shall be as set out in the following table:

<i>Location</i>	<i>Type of minimum protection in accordance with the European Standard EN 60529:2014</i>					
	<i>Generators</i>	<i>Motors</i>	<i>Transformers</i>	<i>Switchboards Distribution Switching devices</i>	<i>Installation fittings⁽⁴⁾</i>	<i>Lighting appliances, fire detectors and manual call points</i>
Service rooms, engine rooms and rooms of steering apparatus	IP 22	IP 22	IP 22 ⁽²⁾	IP 22 ^{(1) (2)}	IP 44	IP 22
Holds		IP 55	IP 55		IP 55	IP 55
Accumulator rooms and paint lockers						IP 44 and (EX) ⁽³⁾
Unroofed decks and open steering positions	IP 55	IP 55		IP 55	IP 55	IP 55
Enclosed wheelhouse	IP 55	IP 22	IP 22	IP 22	IP 22	IP 22
Accommodation, except sanitary and wet rooms				IP 22	IP 20	IP 20
Sanitary and wet rooms		IP 44	IP 44	IP 44	IP 55	IP 44

Type of minimum protection in accordance with the European Standard EN 60529:2014

	<i>Generators</i>	<i>Motors</i>	<i>Transformers</i>	<i>Switchboards Distribution Switching devices</i>	<i>Installation fittings⁽⁴⁾</i>	<i>Lighting appliances, fire detectors and manual call points</i>
<i>Location</i>						

Comments:

- (1) Where equipment release large amounts of heat: IP 12.
- (2) Where the type of protection is not ensured by the equipment itself, the equipment location shall meet the conditions indicated in the table.
- (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.

- (4) For installation fittings for currents of 125 A and greater: IP 66 (EN 60529:2014).

Article 10.11***Batteries, Accumulators and Their Charging Devices***

1. Rooms in which lithium-ion accumulators are stored shall comply with the following requirements:

- a) These rooms shall be protected against fire of one or several lithium-ion accumulators on the basis of a fire protection concept developed by an expert
 - aa) having regard to the other equipment located in the same room,
 - bb) having regard to instructions of the manufacturer of the lithium-ion accumulators,
 - cc) including provisions for alarm systems.

A fire protection concept may be dispensed with if the lithium-ion accumulators are stored in a fireproof enclosure, which is equipped

- dd) with at least one monitoring device (fire and thermal runaway) and
- ee) with one fixed fire-extinguishing installation for protecting objects in accordance with Article 13.06.

...

VII. Chapter 13 “Equipment”**Article 13.01*****Anchor equipment***

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:

$$P = k \times B \times T \text{ [kg]}$$

where

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

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

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

c is an empirical coefficient given in the following table:

<i>Deadweight tonnage, [t]</i>	<i>Coefficient c</i>
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 1 000 inclusive	65
more than 1 000	70

Passenger vessels and vessels not intended for the carriage of goods including pushers shall be equipped with bow anchors whose total mass P in kg is calculated according to the formula and the table stated above, using the water displacement in [m³] instead of the deadweight tonnage.

...

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 firefighting 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.

...

Article 13.08 ***Lifebuoys and lifejackets***

1. On board craft there shall be at least three lifebuoys:
 - in accordance with European Standard EN 14144:2003; or
 - in accordance with the 1974 International Convention for the Safety of Life at Sea (SOLAS 1974), Chapter III, Regulation 7.1, and the International Life-Saving Appliance (LSA) Code, sub-section 2.1.

They shall be ready for use and attached to the deck at appropriate points without being attached to their mounting. At least one lifebuoy shall be in the immediate vicinity of the wheelhouse and shall be equipped with a self-igniting, battery-powered light that will not be extinguished in water.

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) 2016/425⁴ 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.

⁴ 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).

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

3. Lifejackets shall be inspected in accordance with the manufacturer's instructions.

VIII. Chapter 26 “Special Provisions Applicable to Recreational Craft”

Article 26.01 *Application of Part II*

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.

2. For recreational craft subject to Directive 2013/53/EU⁵ (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.

IX. 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.

⁵ 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).

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 steerage way 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.
