
Economic Commission for Europe**Inland Transport Committee**

17 January 2018

Working Party on the Transport of Dangerous Goods**Joint Meeting of Experts on the Regulations annexed to the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN)****Thirty-second session**

Geneva, 22-26 January 2017

Item 5 (b) of the provisional agenda

**Proposals for amendments to the Regulations annexed to ADN:
other proposals**

Comments on the English translation of the proposals of the informal working group on Explosion Protection on Tank Vessels (ECE/TRANS/WP.15/AC.2/2018/11)**Transmitted by the Government of the Netherlands****Introduction**

1. At its thirty-first session, the ADN Safety Committee discussed the proposals and translations of the proposals of the informal working group on Explosion Protection on Tank Vessels. Since then the Dutch delegation has compiled some editorial and linguistic comments.

Background on some of the comments

2. After consulting the chair of the informal working group the Dutch delegation came first of all to the conclusion that the term “explosion hazardous area” would be more suitable for the English language version of ADN replacing the term “explosion danger area”. The chair pointed out that this term is also used in the IEC and ATEX field.

3. Secondly the Dutch delegation would like to draw the attention of the Safety Committee to a small discrepancy between the definition of the classification of zones and the drawings of the classification of zones for tank vessels. In the definition, the third bullet of zone 1 specifies that zone 1 comprises “The deck in the cargo area over the entire width of the vessel to the outer cofferdam bulkheads”. In the drawings however zone 1 is drawn only to the inner cofferdam, as indicated with red circles in the drawings (page 24-26 of this document). The Dutch delegation considers the definition to be leading since this reflects the agreement in the informal working group. The drawing however could be amended and the Dutch delegation therefore asks the Safety Committee to take action as it deems appropriate.

4. Thirdly, the Safety Committee is requested to reconsider the proposal to delete 7.2.2.22 as the current valuable text does not re-appear anywhere else in the proposal. The current 7.2.2.22 prescribes “When substances for which a type C vessel is required in column (6) of Table C of Chapter 3.2 are carried, the high-velocity vent valves shall be set so that blowing-off does not normally occur while the vessel is under way”.

5. Lastly, the newly proposed definition of *Self-contained protection systems* has a remarkable overlap with the definition for *safety valves*. The Dutch delegation asks the other delegations whether they can clarify the difference between these two definitions.

Proposed amendments

~~The cancelled text is stricken through, the additional text is red and underlined.~~

Chapter 1.2

1.2.1 Delete the definitions of “Cargo area”, “Part of the cargo area below deck”, “Cargo area (main part above deck)” and “Cargo area (additional part above deck)”, including the figures. Add the following definition:

“Cargo area: ~~all~~ the whole of the following spaces on board tank vessels:

Space above deck: the space which is bounded:

- Athwart, by ships vertical planes corresponding to the side plating;
- Fore and aft, by vertical planes at the height of the outer cofferdam bulkheads/hold end bulkheads;
- Upwards, by a horizontal plane ~~2.503.00~~ 2.503.00 m above deck.

The boundary planes fore and aft are referred to as the ‘boundary planes of the cargo area’;”.

1.2.1 In the definition of “Steady burning”, replace “EN ISO 16852:2010” by “ISO 16852:2016¹⁾”. 1.2.1 In the definition of “Classification of zones”, replace “Classification of zones” by “Classification of explosion ~~danger-hazardous~~ hazardous areas”.

At the end of the definition, add: “See also classification of zones”.

1.2.1 In the definition of “Limited explosion risk electrical apparatus”:

- In the first sentence, replace the words “the required temperature class” by “200 °C”.
- Amend the final paragraph to read as follows: “or means an electrical apparatus with an enclosure protected against water jets (protection rating IP55 or higher) which during normal operation does not exhibit surface temperatures ~~of~~ above 200 °C.”.

1.2.1 In the definition of “Explosion ~~danger-hazardous~~ hazardous areas”, add the following sentence at the end: “Explosion ~~hazardous danger~~ hazardous areas are classified into zones by frequency of occurrence and duration of the presence of an explosive atmosphere. See also ‘Classification of explosion ~~hazardous danger~~ hazardous areas’, ‘Explosion protection’, ‘Classification of zones’ for tank vessels and ‘Protected area’ for dry cargo vessels.”.

1.2.1 Amend the definition of “Gas detection system” to read as follows:

“*Gas detection system*: a steady state monitoring system with direct-measuring sensors capable of detecting in time significant concentrations of flammable gases at concentrations below their lower explosion limit (LEL) and capable of activating the alarms when a limiting value is exceeded. It has to be calibrated at least for n-Hexane. The threshold level of the sensors shall be set at not more than 10 % of the LEL of n-Hexane.

It shall be certified according to IEC/EN⁴ 60079-29-1:201~~6~~⁴ and, with electronically driven systems, also according to EN 50271:201~~0~~⁴. If it is used in explosion ~~hazardous danger~~ hazardous areas, it shall also comply with the requirements for use in the zone concerned and evidence of such compliance (e.g., conformity assessment procedure according to Directive 2014/34/EC,² the IECEx System,⁵ ECE/TRADE/391³ or at least equivalent) shall be supplied;”.

¹⁾ Identical to EN ISO 16852 2016.

⁴ IEC/EN means: This standard is available as an IEC standard and as a European standard.

² Journal of the European Communities No. L 23 of 26 February 2014, p. 309.

⁵ <http://iecex.com/rules>.

³ A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations, 2011.

1.2.1 Amend the definition of “*Flammable gas detector*” to read as follows:

“*Gas detector*: a portable device allowing measurement of any significant concentration of flammable gases below the LEL and which clearly indicates the concentration of such gases. Gas detectors may be designed for measuring flammable gases only, but also for measuring both flammable gases and oxygen. This device shall be so designed that measurements are possible without the necessity of entering the spaces to be checked.

The detection level of the sensors is maximally 5 % of the LEL of the most critical substance in the vessel substance list or the cargo ~~as a maximum~~. The flammable gas detector shall be certified according to IEC/EN⁴ 60079-29-1:2011. If it is used in explosion ~~hazardous danger~~ areas, it shall also comply with the requirements for use in the zone concerned and evidence of such compliance (e.g., conformity assessment procedure according to Directive 2014/34/EC,² the IECEx System,⁵ ECE/TRADE/391³ or at least equivalent) shall be supplied;”.

1.2.1 In the definition of “*Opening pressure*”:

- In the first sentence, replace “Chapter 3.2, Table C” by “column (10) of Table C of Chapter 3.2”.
- In the first sentence, replace “high velocity vent valves” by “pressure relief valves/high-velocity vent valves”.
- In the first sentence, delete “a list of substances in”.

The first sentence of Opening pressure would read: “Opening pressure means the pressure referred to om column (10) of Table C of Chapter 3.2 at which the pressure relief valves/high-velocity vent valves open.”.

1.2.1 Amend the definition of “*Oxygen meter*” to read as follows:

“*Oxygen meter* means a ~~mobile-portable~~ device allowing measuring of any significant reduction of the oxygen content of the air. An oxygen meter may either be a device for measuring oxygen only or part of a combination device for measuring both flammable ~~gases~~ and oxygen. This device shall be so designed that measurements are possible without the necessity of entering the spaces to be checked. It shall be tested according to IEC/EN 50104:2010⁴.⁴ If it is used in explosion ~~hazardous danger~~ areas, it shall also comply with the requirements for use in the zone concerned and evidence of such compliance (e.g., conformity assessment procedure according to Directive 2014/34/EC,² the IECEx System,⁵ ECE/TRADE/391³ or at least equivalent) shall be supplied;”.

1.2.1 In the definition of “*Protective suit*”:

- Amend the third sentence to read as follows: “For protective suits, see, for example, ISO 13688:2013.”²”
- At the end, add the following sentence: “In case of dangers caused by electrostatic charging/discharging, see, for example, also European standard EN 1149-5:2008.”.

1.2.1 In the definition of “*Protective gloves*”:

- Amend the third sentence to read as follows: “For protective gloves, see for example European standards EN 374-1:201603, EN 374-2:2015 or EN 374-4:20134.”.

⁴ IEC/EN means: This standard is available as an IEC standard and as a European standard.

² Journal of the European Communities No. L 23 of 26 February 2014, p. 309.

⁵ <http://iecex.com/rules>.

³ A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations, 2011.

⁴ IEC/EN means: This standard is available as an IEC standard and as a European standard.

² Journal of the European Communities No. L 23 of 26 February 2014, p. 309.

⁵ <http://iecex.com/rules>.

³ A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations, 2011.

² Identical to EN ISO 16852:2010.

- At the end, add the following sentence: “In case of dangers caused by electrostatic charging/discharging: see also European standard EN 16350:2015.”.

1.2.1 Amend the definition of “*Types of protection*” to read as follows:

“*Types of protection*:

Electrical equipment (see IEC 60079-0:2014~~4~~ or at least equivalent);

EEEx (d): flameproof enclosure (IEC 60079-1:2014 or at least equivalent);

EEEx (e): increased safety (IEC 60079-7:2016~~5~~ or at least equivalent);

EEEx (ia) and EEEx (ib): intrinsic safety (IEC 60079-11:2012~~4~~ or at least equivalent);

EEEx (m): encapsulation (IEC 60079-18:2014~~09~~ or at least equivalent);

EEEx (p): pressurized apparatus (IEC 60079-2:2015~~4~~ or at least equivalent);

EEEx (q): powder filling (IEC 60079-5:2015~~07~~ or at least equivalent);

Non-electrical equipment (see ~~IEC EN 13463-1:2009~~NEN-EN-ISO 80079-36:2016 or at least equivalent);

EEEx (fr): flow restricting enclosure (EN 13463-2:2005 or at least equivalent);

EEEx (d): flameproof enclosure (EN 13463-3:2005 or at least equivalent);

EEEx (c): constructional safety (EN ~~13463-5:2011~~80079-37:2016 or at least equivalent);

EEEx (b): control of ignition source (EN 13463-6:2005 or at least equivalent);

EEEx (k): liquid immersion: (EN 13463-8:2003 or at least equivalent);”.

1.2.1 Insert the following new definitions in alphabetical order:

Compare Self-contained protection systems with Safety valves:

“*Self-contained protection systems* means all devices which are intended to halt incipient explosions immediately and/or to limit the effective range of an explosion and which are separately made available on the market for use as self-contained systems. This includes flame arresters, high velocity vent valves, deflagration safe vacuum valves and devices for the safe depressurization of cargo tanks capable of withstanding a deflagration (see also *Flame arrester, High velocity vent valve, Vacuum valve, Devices for the safe depressurization of cargo tanks and Deflagration*);”.

“*Safety valve* means a spring-loaded device which is activated automatically by pressure the purpose of which is to protect the cargo tank against unacceptable excess internal pressure (see also, *High velocity vent valve, Pressure-relief device and Vacuum valve*);”.

“*Explosion protection*: All of the requirements which have to be met and means which have to be taken to avoid damage caused by explosions.

This includes:

Organizational measures such as, for example:

- Determining explosion ~~hazardous danger~~ areas (classification of zones): in which an explosive atmosphere consisting of a mixture with air of flammable gases, vapours or sprays is likely to occur:
 - (a) continuously or for long periods or frequently (zone 0);
 - (b) occasionally in normal operation (zone 1); or
 - (c) exceptionally or only briefly (zone 2);

(see Directive 1999/92/EC⁶).

- Prevention of ignition sources (use of low-sparking hand-tools, no smoking, use of personal protective equipment including dissipative shoes, non-isolating gloves, etc.);
- Drafting of working instructions.

And technical requirements such as, for example:

- Use of installations and equipment proven to be appropriate for use in the different explosion ~~hazardous danger~~ areas;
- Use of self-contained protection systems;
- Monitoring of potentially explosive atmospheres by the use of gas detection systems and gas detectors;”.

“*Equipment* (see Directive 2014/34/EC²) means electrical or non-electrical machines, apparatus, fixed or mobile devices, control components and instrumentation thereof and detection or prevention systems which, separately or jointly, are intended for the generation, transfer, storage, measurement, control and conversion of energy and/or the processing of material and which are capable of causing an explosion through their own potential sources of ignition.

Equipment and ~~objects-articles~~ which are assigned a UN number and transported as cargo are not included;”.

“*Equipment intended for use in explosion ~~hazardous danger~~ areas* means electrical and non-electrical equipment where measures are taken to prevent the equipment’s own ignition sources becoming effective. Such equipment shall comply with the requirements for use within the respective zone. It shall be tested according to the type of protection and evidence of compliance with the applicable requirements (e.g., conformity assessment procedure according to Directive 2014/34/EC,² the IECEx-System,⁵ ECE/TRADE/391³ or at least equivalent) shall be supplied;”.

“*Equipment category* (see Directive 2014/34 EC²) means the classification of equipment to be used within explosion ~~hazardous danger~~ areas determining the requisite level of protection to be ensured.

Equipment category 1 comprises equipment designed to be capable of functioning in conformity with the operational parameters established by the manufacturer and ensuring a very high level of protection.

Equipment in this category is intended for use in areas in which explosive atmospheres caused by mixtures of air and gases, vapours or mists or by air/dust mixtures are present continuously, for long periods or frequently.

Equipment in this category must ensure the requisite level of protection, even in the event of rare incidents relating to equipment, and is characterized by means of protection such that:

- Either, in the event of failure of one means of protection, at least one independent second means provides the requisite level of protection; or
- Or the requisite level of protection is assured in the event of two faults occurring independently of each other.

Equipment of category 1 according to Directive 2014/34/EC² is marked as II 1 G. Such equipment corresponds to EPL⁷ ‘Ga’ according to IEC 60079-0.

⁶ *Journal of the European Communities No. L 23 of 28 January 2000, p. 57.*

² *Journal of the European Communities No. L 23 of 26 February 2014, p. 309.*

² *Journal of the European Communities No. L 23 of 26 February 2014, p. 309.*

⁵ <http://iecex.com/rules>.

³ *A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations, 2011.*

² *Journal of the European Communities No. L 23 of 26 February 2014, p. 309.*

Equipment of category 1 is suitable for use in zones 0, 1 and 2.

Equipment category 2 comprises equipment designed to be capable of functioning in conformity with the operational parameters established by the manufacturer and of ensuring a high level of protection.

Equipment in this category is intended for use in areas in which explosive atmospheres caused by mixtures of air and gases, vapours or mists or by air/dust mixtures are likely to occur occasionally.

The means of protection relating to equipment in this category ensure the requisite level of protection, even in the event of frequently occurring disturbances or equipment faults which normally have to be taken into account.

Equipment of category 2 according to Directive 2014/34/EC² is marked as II 2 G. Such equipment corresponds to EPL⁷ ‘Gb’ according to IEC 60079-0.

Equipment category 2 is suitable for use in zones 1 and 2.

Equipment category 3 comprises equipment designed to be capable of functioning in conformity with the operating parameters established by the manufacturer and ensuring a normal level of protection.

Equipment in this category is intended for use in areas in which explosive atmospheres caused by mixtures of air and gases, vapours or mists or by air/dust mixtures are unlikely to occur or, if they do occur, are likely to do so only infrequently and for a short period only.

Equipment in this category ensures the requisite level of protection during normal operation.

Equipment of category 3 according to Directive 2014/34/EC² is marked as II 3 G. Such equipment corresponds to EPL⁷ ‘Gc’ according to IEC 60079-0.

Equipment of category 3 is suitable for use in zone 2.”

“*Oxygen measuring system* means a steady-state monitoring device capable of detecting in time any significant reduction of oxygen content of the air and capable of activating the alarms in case the oxygen concentration reaches 19.5 % by volume.

This device shall be tested according to the European standard IEC/EN⁴ 50104:2010⁴. If it is used in explosion ~~hazardous danger~~-areas, it shall also comply with the requirements for use in the zone concerned and evidence of such compliance (e.g., conformity assessment procedure according to Directive 2014/34/EC,² the IECEx System,⁵ ECE/TRADE/391³ or at least equivalent) shall be supplied.

An oxygen measuring system may also be designed as part of a combination ~~device~~ measuring system for measuring both flammable gases and oxygen;”

“*Device for the safe depressurization of cargo tanks* means a manually operated or remote-operated device which is mounted in such a way as to allow the cargo tanks to be depressurized in ~~complete~~-safety. When the list of substances on the vessel according to 1.16.1.2.5 contains substances for which explosion protection is required in column (17) of Table C of Chapter 3.2, the device shall be deflagration safe and capable of withstanding steady burning for the most critical substance in the vessel substance list. The deflagration safety shall be tested according to international standard ISO 16852:2010¹ and evidence of

² *Journal of the European Communities No. L 23 of 26 February 2014, p. 309.*

⁷ *The letters EPL mean: Equipment Protection Level.*

² *Journal of the European Communities No. L 23 of 26 February 2014, p. 309.*

⁷ *The letters EPL mean: Equipment Protection Level.*

² *Journal of the European Communities No. L 23 of 26 February 2014, p. 309.*

⁷ *The letters EPL mean: Equipment Protection Level.*

⁴ *IEC/EN means: This standard is available as an IEC standard and as a European standard.*

² *Journal of the European Communities No. L 23 of 26 February 2014, p. 309.*

⁵ <http://iecex.com/rules>.

³ *A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations, 2011.*

¹ *Identical to EN ISO 16852:2016*

compliance with the applicable requirements (e.g., conformity assessment procedure according to Directive 2014/34/EC,² the IECEx System, ECE/TRADE/391³ or at least equivalent) shall be supplied. The deflagration safety may be ensured by an integrated flame arrester plate stack capable of withstanding steady burning or a flame arrester capable of withstanding steady burning (protection against deflagrations);”.

“Classification of zones: this classification (see diagram) applies to tank vessels when the list of substances on the vessel according to 1.16.1.2.5 contains substances for which explosion protection is required in column (17) of Table C of Chapter 3.2.

Zone 0 comprises:



- Inside all cargo tanks, tanks for residual products, receptacles for residual products and receptacles for slops, and pipings containing cargoes or cargo vapours, including their equipment, as well as pumps and compressors.

Zone 1 comprises:



- All spaces located below deck in the cargo area not part of zone 0.
- Closed spaces on deck within the cargo area.
- The deck in the cargo area over the entire width of the vessel to the outer cofferdam bulkheads.
- Up to a distance of at least 1.60 m to the “boundary planes of the cargo area”, the height above the deck is 2.50 m, but at least 1.50 m above the highest piping carrying cargoes or cargo vapours.

Adjacent (fore and aft) to the outermost cargo tank shots, the height is 0.25 m above deck.

If the ship is built with hold spaces or a cofferdam/part of a cofferdam is arranged as a service space, the adjacent height (fore and aft) to the “boundary plane of the cargo area” is 1.00 m above deck (see diagram).

- Every opening in zone 0 except the high velocity vent valves/safety valves of pressurized cargo tanks shall be surrounded by an ~~annulus~~ cylindrical zone 1 having at least a width of 2.50 m. With openings of which the diameter is less than 0.026 m (1”), the distance to the outer cofferdam bulkhead may be reduced to 0.50 m, provided it is ensured that such an opening is not opened to the atmosphere within this distance.

~~Adjacent (fore and aft) to the outermost cargo tank shots, the height is 0.25 m above deck.~~

~~If the ship is built with hold spaces or a cofferdam/part of a cofferdam is arranged as a service space, the adjacent height (fore and aft) to the “boundary plane of the cargo area” is 1.00 m above deck (see diagram).~~

- A cylindrical area surrounding the high velocity vent valve/safety valve of pressurized cargo tanks with a radius of 3.00 m up to a height of 4.00 m above the opening of the high velocity vent valve/safety valve of pressurized cargo tanks.
- Around ventilation inlets of service spaces fitted with a ventilation system located in the cargo area, a zone included in a portion of a sphere with a radius of 1.00 m.

Zone 2 comprises:



- On the deck in the cargo area, a zone extending 1.00 m upwards ~~and joining from~~ zone 1 longitudinally.
- On the fore deck and the aft deck, an area 7.50 m in length across the entire width of the vessel and adjacent to the “boundary plane of the cargo area”. Between the lateral side of the vessel and the protection wall, the length and height of this area

² Journal of the European Communities No. L 23 of 26 February 2014, p. 309.

³ A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations, 2011.

equals the dimensions of the lateral side of the protection wall. Elsewhere, the height in zone 2 is 0.50 m.

This area is not part of zone 2 if the protection wall extends from one side of the vessel to the other and there are no openings.

- An area of 3.00 m extending around zone 1 encompassing the high velocity vent valves/safety valves of pressure cargo tanks.
- Around the ventilation inlets of service spaces fitted with a ventilation system located in the cargo area, a zone included in a hemispherical shell with a radius of 1.00 m surrounding-extending around zone 1;”.

Chapter 1.4

1.4.2.2.1 (f) Amend to read as follows:

“(f) Ensure that, within the explosion hazardous danger-areas on board the vessel, only electrical and non-electrical installations and equipment that meet the requirements for use in the relevant zone are used;”.

1.4.3.3 (s) Replace “of the gas discharge pipe or the compensation pipe” by “of the compensation pipe/gas discharge pipeventing piping and vapour return piping”.

1.4.3.7.1 (i) Amend to read as follows:

“(i) Ascertain that, when a connection to the gas discharge pipeventing piping is required and when explosion protection is required according to column (17) of Table C of Chapter 3.2, there is a flame arrester in the gas-vapour return pipe to protect the vessel against detonations and flame-fronts from the landward side;”.

1.4.3.7.1 (j) Replace “of the gas discharge pipe or the gas return pipe” by “of the gas discharge pipe/gas return pipeventing piping and vapour return piping”.

Chapter 1.6

1.6.7.2.1.1 Add the following new transitional provisions:

“

| <i>Paragraphs</i> | <i>Subject</i> | <i>Time limit and comments</i> |
|-------------------|---|---|
| 7.1.4.53 | Lighting appliances in explosion <u>hazardous danger</u> -areas of zone 2 | N.R.M. From 1 January 2019 Renewal of the certificate of approval after 31 December 2024? ² |
| 1.2.1 | Oxygen measuring system Test according to EN 50104:2011, etc. | N.R.M. from 1 January 2019 Renewal of the certificate of approval after 31 December 2020? |
| 8.1.7.2 | Marking of installations and equipment to be used in explosion <u>hazardous danger</u> -areas as well as of self-contained protection systems | N.R.M. From 1 January 2019 Renewal of the certificate of approval after 31 December 2024 |

| <i>Paragraphs</i> | <i>Subject</i> | <i>Time limit and comments</i> |
|-------------------|---|---|
| 9.3.1.53.1 | Type and location of electrical installations and equipment intended to be used in explosion <u>hazardous</u> danger areas | N.R.M. from 1 January 2019 |
| 9.3.2.53.1 | | Renewal of certificate of approval after 31 December 2034 |
| 9.3.3.53.1 | Zone 0, Zone 1 | <p>Until that date, the following requirements are applicable:</p> <p>(a) In cargo tanks and piping for loading and unloading, only measuring, regulation and alarm devices of the EEx (ia) type of protection may be installed.</p> <p>(b) Electrical equipment on deck in the cargo area and the measuring, regulation and alarm apparatus, motors driving essential equipment such as ballast pumps in the cofferdams, double-hull spaces, double bottoms, hold spaces and service spaces below deck in the cargo area shall be checked and approved by the competent authority with respect to the safety of operation in an explosive atmosphere, for example, intrinsically safe apparatus, flameproof enclosure apparatus, apparatus protected by pressurization, powder filling apparatus, apparatus protected by encapsulation and increased safety apparatus.</p> <p>(c) In the cofferdams, double-hull spaces, double bottoms, hold spaces and service spaces below deck in the cargo area, the lighting appliances must have the “flame-proof enclosure” or “apparatus protected by pressurization” type of protection.</p> <p>(d) The control and protective equipment of the equipment referred to in (a), (b) and (c) above shall be located outside the cargo area if they are not intrinsically safe.</p> <p>For the selection of electrical equipment, the explosion groups and temperature classes assigned to the substances carried in the list of substances shall be taken into consideration (see columns (15) and (16) of Table C in 3.2).</p> <p>Until that date, the following requirements apply on board vessels in service whose keels were laid after 31 December 1977:</p> <p>Until that date, the following conditions shall be met during loading, unloading and gas freeing on board vessels having non-gastight wheelhouse openings (e.g. doors, windows, etc.) in the cargo area:</p> <p>(a) All electrical equipment to be used in the wheelhouse shall be of a limited explosion-risk type, i.e., it shall be so designed that there is no sparking and the temperature of its outer surface does not rise above 200 °C during normal operation, or it shall be of a type protected against water jets and designed in such a way that its surface temperature may not exceed 200 °C during normal operation.</p> <p>(b) Electrical equipment which does not meet the requirements of (a) above shall be marked in red and it shall be possible to switch it off by means of a central switch.</p> |
| 9.3.1.53.1 | Type and location of electrical installations and equipment intended to be used in explosion <u>hazardous</u> danger areas | N.R.M. from 1 January 2019 |
| 9.3.2.53.1 | | Renewal of the certificate of approval after 31 December 2034 |
| 9.3.3.53.1 | Zone 2 | |

Chapter 7.1

7.1.3.41 Amend the heading to read as follows: “Smoking, fire or naked light”.

7.1.3.41.1 Amend to read as follows:

“Smoking, including electronic cigarettes and other similar devices, fire and naked light are prohibited on board the vessel.

This prohibition shall be displayed on notice boards at appropriate places.

The prohibition does not apply in the accommodation or the wheelhouse, provided that their windows, doors, skylights and hatches are closed or the ventilation system is adjusted to guarantee an overpressure of at least 0.1 kPa.”.

7.1.3.51.2 [Amendment to the German text does not apply to the French and English text. ~~English text to be verified.~~]

7.1.3.51.4 Amend to read as follows:

“The electrical installations and equipment in the holds shall be kept switched off and protected against ~~unauthorized~~ unintentional connection.

This provision does not apply to permanently installed electrical cables passing through the holds, to movable electrical cables connecting containers stowed according to 7.1.4.4.4, or to electrical installations and equipment fulfilling the requirements for use in zone 1.”.

7.1.4.4.4 In the introductory sentence:

- Replace “The electrical equipment fitted to the outside of a closed container may be connected” by “The electrical installations and equipment fitted to the outside of a closed container may be connected”.
- Replace “9.1.0.56” by “9.1.0.53.5”.
- Replace “and be put into operation provided that:” by “or be put into operation provided that:”

7.1.4.4.4 (a) Amend to read as follows:

“(a) These electrical installations and equipment are appropriate at least for use in zone 1 and comply with the requirements for temperature class T4 and explosion group II B; or that”.

7.1.4.4.4 (b) Amend the text before the indents as follows: “(b) ~~These e~~Electrical installations and equipment ~~that~~ do not fulfil the requirements referred to in (a), but are sufficiently separated from other containers containing substances of:”.

- In the sentence after the indents, replace “of 2.4 m around the electrical equipment” by “of 2.40 m around the electrical installations and equipment”.

7.1.4.4.4 The sentence before “Examples of stowage and segregation of containers” is modified to read as follows:

“The requirements of subparagraphs (a) and (b) need not be complied with if containers with the electrical installations or equipment which do not meet the requirements for use in explosion hazardous danger—areas and the containers containing the above-mentioned substances are stowed in separate holds.”.

Chapter 7.2

7.2.2.19.3 Amend the paragraph after the colon to read as follows:

“... :1.16.1.1, 1.16.1.2, 1.16.1.3, 1.16.1.4, 7.2.2.5, 8.1.4, 8.1.5, 8.1.6.1, 8.1.6.3, 8.1.7, 8.3.5, 9.3.3.0.1, 9.3.3.0.3 (d), 9.3.3.0.5, 9.3.3.10.1, 9.3.3.10.2, 9.3.3.10.5, 9.3.3.12.4, 9.3.3.12.6, 9.3.3.16.1, 9.3.3.16.2, 9.3.3.17.1 ~~bisto~~, 9.3.3.17.4, 9.3.3.31.1 ~~bisto~~, 9.3.3.31.5, 9.3.3.32.2, 9.3.3.34.1, 9.3.3.34.2, 9.3.3.40.1, (however, ~~a-one~~ single fire or ballast pump is-shall be sufficient), 9.3.3.40.2, 9.3.3.41, 9.3.3.51, 9.3.3.52.1 to 9.3.3.52.8, 9.3.3.71 and 9.3.3.74.”.

7.2.2.22 ~~Delete and insert “(Deleted)”~~Do not delete.

7.2.3.41 Amend the heading to read as follows: “Smoking, fire or naked light”.

7.2.3.41.1 Amend to read as follows:

“Smoking, including electronic cigarettes and other similar devices, fire and naked light are prohibited on board the vessel.

This prohibition shall be displayed on notice boards at appropriate places.

The prohibition on smoking does not apply in the accommodation or the wheelhouse, provided that their windows, doors, skylights and hatches are closed or the ventilation system is adjusted to guarantee an overpressure of at least 0.1 kPa.”.

7.2.3.51.2 In the first sentence, replace “in the cargo area” by “in the explosion ~~hazardous danger~~ areas”.

[Amendment to the German text does not apply to the French text. English text to be verified.]

7.2.4.16.3 ~~Do not amend, or amend as follows: A~~after “loading and unloading piping”, insert “~~where appropriate~~if available,”.

7.2.4.25 Amend to read as follows: “Loading and unloading piping and ~~gas return~~venting piping”.

7.2.4.41 Amend the heading to read as follows: “Smoking, fire or naked light”.

~~At the end of the first sentence, add “and smoking is prohibited.”.~~
Amend the first sentence to read as follows: “During loading, unloading or gas-freeing operations fires, naked lights, and smoking are prohibited on board the vessel”.

Chapter 8.1

8.1.2.2 At the end, add the following new subparagraphs:

“(g) A plan indicating the boundaries of the zones and the location of the electrical and non-electrical equipment installed in the relevant zones intended for used in explosion ~~hazardous danger~~ areas;”.

8.1.2.3 Add the following new sub-paragraphs:

“(t) A plan approved by a recognized classification society indicating the boundaries of the zones and the location of the electrical and non-electrical equipment installed in the relevant zone intended to be used in explosion ~~hazardous danger~~ areas, as well as self-contained protection systems;

(v) A list of or general plan indicating the fixed installations and equipment installed outside the explosion ~~hazardous danger~~ areas that may be used during loading, unloading, gas-freeing, berthing or during a stay in the immediate vicinity of or within an onshore assigned zone, if not referred to in (r) and (u).

The documents listed in (r) to (v) shall bear the stamp of the competent authority issuing the certificate of approval.”.

8.1.5.2 Amend to read as follows:

“For operations carried out in explosion ~~hazardous danger~~ areas or during stay in the vicinity of or within a shoreside assigned zone only low-sparking hand-tools (e.g. chromium vanadium steel screwdrivers and wrenches) shall be used.”.

8.1.7 Add the following new paragraph:

“8.1.7.2 **Installations and equipment intended for use in explosion ~~hazardous danger~~ areas, “limited explosion risk” type equipment, installations and equipment complying with 9.3.1.51, 9.3.2.51 and 9.3.3.51 and autonomous protective systems.**

Such installations, equipment and autonomous protective systems and their compliance with the documents referred to in 8.1.2.2 (e) to (h) or 8.1.2.3 (r) to (v) in respect of the situation on board shall be inspected whenever the certificate of approval is renewed and, in addition, within the third year from the date of issue of the certificate of approval, by a person authorized for this purpose by the classification society that classified the vessel or by the competent authority. A certificate concerning this inspection shall be carried on board.

The marking on the installations and equipment intended for use in explosion ~~danger~~ hazardous areas showing that they are appropriate for use in explosion ~~danger~~ hazardous areas and marking on self-contained protection systems with their conditions of use should remain in place throughout the period of use on board.

The manufacturer's instruction on flame arresters or high-velocity vent valves/safety valves may require a more regular frequency of inspection."

8.1.7 Add the following new paragraph:

8.1.7.3 Repair of explosion-protected installations and equipment and autonomous protection systems

Repair of explosion-protected installations and equipment and autonomous protection systems is permitted only by an expert from a specialized company. Following repairs, a certificate must be issued attesting to their reusability in explosion ~~danger~~ hazardous areas. The certificate must be available on board."

8.3.2 Amend to read as follows:

"Portable lighting apparatus

On board, only portable lighting appliances with their own source of power are permitted in explosion ~~danger~~ hazardous areas and on deck.

In explosion ~~danger~~ hazardous areas, they shall meet at least the requirements for use in the relevant area."

8.3.4 Amend to read as follows:

"Prohibition on smoking, fire and naked light

Smoking, including of electronic cigarettes and similar devices, fire and naked light are prohibited on board. However, the provisions of ~~7.2.3.42.37.1.3.41.1~~ and ~~7.2.3.42.47.2.3.41.1~~ are applicable.

This prohibition shall be displayed on notice boards at appropriate places.

The prohibition does not apply in the accommodation or the wheelhouse, provided that their windows, doors, skylights and hatches are closed or the ventilation system is adjusted to guarantee an overpressure of at least 0.1 kPa."

8.6.1.3 and 8.6.1.4 Amend point 9 of the model to read as follows:

"9. Electrical and non-electrical installations and equipment for use in explosion ~~danger~~ hazardous areas:

- Temperature class
- Explosion group"

Chapter 9.1

9.1.0.12.3 Amend to read as follows:

(a) Ventilation shall be provided for the accommodation, wheelhouse and for service spaces;

(b) The ventilation system in such spaces shall meet the following requirements:

- (i) The air intakes of the ventilation system shall be located as far away as possible, and not less than 6.00 m from the protected area and not less than 2.00 m above the deck;
 - (ii) ~~Pressure-Overpressure~~ of at least 0.1 kPa (0.001 bar) may be maintained in the premises;
 - (iii) A breakdown alarm is integrated;
 - (iv) The ventilation system, including the breakdown alarm, shall be at least of the 'limited explosion risk' type;
 - (v) A gas detection system conforming to conditions 1. to 4. below is connected to the ventilation system:
 - 1. It is appropriate at least for use in zone 1, explosion group IIC and temperature class T6;
 - 2. It is equipped with sensors:
 - On the suction inlets of the ventilation systems; and
 - Directly below the top edge of the sill of the entrance doors;
 - 3. Its t90-time is lower than or equal to 4 s;
 - 4. Measurement shall be continuous;
 - (vi) In the service spaces, the ventilation system is linked to the emergency lighting, which shall be at least of the 'limited explosion risk' type;

This emergency lighting is not necessary if the lighting installations in the service spaces are of at least the 'limited explosion risk' type;
 - (vii) The suction of the ventilation system and installations and equipment that do not meet the requirements of 9.1.0.51 and 9.1.0.52.1 shall be shut down when a concentration equal to 20 % of the LEL of n-Hexane is reached;

The switching-off shall be indicated in the accommodation and wheelhouse by visual and audible signals;
 - (viii) In the event of failure of the ventilation system or of the gas detection installations in the accommodation, installations and equipment in the accommodation that do not comply with the requirements of 9.1.0.51 and 9.1.0.52.1 shall be switched off;

The switching-off shall be indicated in the accommodation, the wheelhouse and on the deck by visual and audible signals;
 - (ix) In the event of failure of the ventilation system or of the gas detection installations in the wheelhouse or the service spaces, installations and equipment in those spaces that do not comply with the requirements of 9.1.0.51 and 9.1.0.52.1 shall be switched off;

The switching-off shall be indicated in the wheelhouse and on the deck by visual and audible signals. The alarm must be relayed to the accommodation automatically if it has not been switched off;
 - (x) Any switching-off shall take place immediately and automatically and, if necessary, shall switch on the emergency lighting;

The automatic switch-off device is set so that no automatic switching-off may occur while the vessel is under way;
- (c) If there is no ventilation system or the ventilation system of a space does not comply with all the requirements set out in (b) above, any installations or equipment present in that space that may, if switched on, give rise to surface temperatures higher than those mentioned in 9.1.0.51 or that do not meet the requirements set out in 9.1.0.52.1 must be capable of being switched off.”.

9.1.0.53 Insert the following new paragraphs:

“9.1.0.53 Type and location of electrical and non-electrical installations and equipment intended for use in the protected area

9.1.0.53.1 It shall be possible to ~~isolate-switch off~~ the electrical installations and equipment in the protected area by means of centrally located isolation switches except where:

- In the holds, they are appropriate at least for use in zone 1, for temperature class T4 and explosion group II B; and
- In the protected area on the deck, they are of the limited explosion risk type.”.

The corresponding electrical circuits shall have control lamps to indicate whether or not the circuits are live.

The isolation switches shall be protected against unintended unauthorized operation. Submerged pumps installed or used in the holds shall be appropriate at least for use in zone 1, temperature class T4 and explosion group II B.

Chapter 9.3

9.3.~~1~~.8.3 and 9.3.3.8.3 Amend to read as follows:

“The proper functioning of the gas detection system referred to in 9.3.x.12.4 and 9.3.x.17.6 and of the oxygen measuring system according to 9.3.x.17.6 shall be checked according to 8.1.6.3.”.

9.3.2.8.3 Amend to read as follows:

“The proper functioning of the gas detection system referred to in 9.3.2.11.2, 9.3.~~2~~.12.4, and 9.3.~~2~~.17.6 and of the oxygen measuring system according to 9.3.~~2~~.17.6 shall be checked according to 8.1.6.3.”.

9.3.1.10.3 Amend to read as follows:

“9.3.1.10.3 When the list of substances on the vessel according to 1.16.1.2.5 will ~~contains~~ substances for which explosion protection is required in column (17) of table C of chapter 3.2, the use of installations and equipment that are not of at least the ‘limited explosion risk’ type is not permitted during loading and unloading operations in parts of the deck outside the cargo area, unless those parts are protected against the entry of gases and liquids by a gas- and liquid-tight protection wall. The wall must either extend from one side of the vessel to the other or surround the areas to protect in an U-shaped form. The wall must cover the whole width of the area to protect and at least 1.00 m in the direction opposite to the cargo area (see Classification of zones diagram). The height of the wall shall be at least 1.00 m above the adjacent cargo deck area in the cargo area. The outer wall and side walls of the accommodation can be considered as a protection wall if they do not include openings and if the dimensions are complied with.

A protection wall is not required where the distance between the areas to be protected and the safety valve, the shore connections of the piping for loading and unloading, and venting piping, the compressor on deck and the opening of the closest pressure tanks is at least 12.00 m.”.

9.3.2.10.3 and 9.3.3.10.3 Amend to read as follows:

“When the list of substances on the vessel according to 1.16.1.2.5 will ~~contains~~ substances for which explosion protection is required in column (17) of table C of chapter 3.2, the use of installations and equipment that are not of at least the ‘limited explosion risk’ type is not permitted during loading and unloading operations in parts of the deck outside the cargo area, unless those parts are protected against the penetration of gases and liquids by a gas- and liquid-tight protection wall. The wall must either extend over the full width of the vessel or surround the areas to be protected in an U-shaped form. The wall must cover the whole width of the area to be protected and at least 1.00 m in the direction opposite to the

cargo area (see Classification of zones diagram). The height of the wall shall be at least 1.00 m above the adjacent cargo deck area in the cargo area. The outer wall and side walls of the accommodation can be considered as a protection wall if they do not include openings and if the dimensions are complied with.

A protection wall is not required where the distance between the areas to be protected and the high velocity vent valve, the shore connections of the piping for loading and unloading, the compressor on deck and the opening of the closest pressure tanks is at least 12.00 m.”.

9.3.2.11.2 Add the following new paragraph (f) at the end:

“(f) When the list of substances on the vessel according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C of 3.2.3.2 and the recess is deeper than 0.50 m, it shall be provided with a permanent gas detection system which automatically indicates the presence of **explosive flammable** gases by means of direct-measuring sensors and actuates a visual and audible alarm when the gas concentration has reached 20 % of the lower explosion limit (LEL) of the cargo or 20 % of the LEL of n-Hexane, whichever is the more critical value. The sensors of this system shall be placed at suitable positions at the bottom of the recess.

Measurement shall be continuous;

Visual and audible alarms shall be installed in the wheelhouse and on deck and, when the alarm is actuated, the vessel loading and unloading system shall be shut down. Failure of the gas detection system shall be immediately signalled in the wheelhouse and on deck by means of visual and audible alarms.”.

9.3.x.12.4 Amend to read as follows:

“(a) Ventilation shall be provided for the accommodation, wheelhouse and service spaces.

(b) The ventilation system in such spaces shall meet the following requirements:

- (i) The air intakes shall be located as far away as possible, and not less than 6.00 m from the protected area and not less than 2.00 m above the deck;
- (ii) ~~Pressure-Overpressure~~ of at least 0.1 kPa (0.001 bar) may be maintained in the premises;
- (iii) A breakdown alarm is integrated;
- (iv) The ventilation system, including the breakdown alarm, shall be at least of the ‘limited explosion risk’ type;
- (v) A gas detection system conforming to conditions 1. to 4. below is connected to the ventilation system:
 1. It is appropriate at least for use in zone 1, explosion group IIC and temperature class T6;
 2. It is equipped with sensors;
 - On the suction inlets of the ventilation systems; and
 - Directly below the top edge of the sill of the entrance doors;
 3. Its t90 response time is lower than or equal to 4 s;
 4. Measurement shall be continuous;
- (vi) In the service spaces, the ventilation system is linked to the emergency lighting, which shall be at least of the ‘limited explosion risk’ type;

This emergency lighting is not necessary if the lighting installations in the service spaces are of at least the ‘limited explosion risk’ type;
- (vii) The suction of the ventilation system and installations and equipment that do not meet the requirements set out in 9.3.x.51 (a) and (b) and 9.3.x.52.1 must be shut down when a concentration of 20 % of LEL of n-Hexane is reached;

The switching-off shall be indicated in the accommodation and wheelhouse by visual and audible signals;

- (viii) In the event of failure of the ventilation system or the gas detection installations in the accommodation, installations and equipment in the accommodation that do not meet the requirements set out in 9.3.x.51 (a) and (b) and 9.3.x.52.1 must be stopped;

The failure shall be indicated in the accommodation, the wheelhouse and on the deck by visual and audible signals;

- (ix) In the event of failure of the ventilation system or the gas detection installations in the wheelhouse or service spaces, installations and equipment in those spaces that do not meet the requirements set out in 9.3.x.51 (a) and (b) and 9.3.x.52.1 must be shut down;

The failure shall be indicated in the wheelhouse and on the deck by visual and audible signals. The alarm must be relayed to the accommodation automatically if it has not been switched off;

- (x) Any switching-off shall take place immediately and automatically and, if necessary, shall activate the emergency lighting;

The automatic switch-off device is set so that no automatic switching-off may occur while the vessel is under way;

- (c) If there is no ventilation system or the ventilation system of a space does not comply with all the requirements set out in (b) above, any installations or equipment present in that space that may, if switched on, give rise to surface temperatures higher than those mentioned in 9.3.x.51 (a) and (b) or that do not meet the requirements set out in 9.3.x.52.1 must be capable of being switched off.”.

9.3.1.17.6 Amend to read as follows:

“A service space located within the cargo area below deck shall not be used as a cargo pump room for the vessel’s own gas discharging system, e.g. compressors or the compressor/heat exchanger/pump combination, except where:

- The cargo pump-room is separated from the engine room or from service spaces outside the cargo area by a cofferdam or a bulkhead with ‘A-60’ fire protection insulation according to SOLAS 74, Chapter II-2, Regulation 3, or by a service space or a hold space;
- The ‘A-60’ bulkhead required above does not include penetrations referred to in 9.3.1.17.5 (a);
- Ventilation exhaust outlets are located not less than 6.00 m from entrances and openings of the accommodation, wheelhouse and service spaces outside the cargo area;
- The access hatches and ventilation inlets can be closed from the outside;
- All piping for loading and unloading (at the suction side and the delivery side) are led through the deck above the pump-room. The necessary operation of the control devices in the pump-room, starting of pumps or compressors and control of the liquid flow rate shall be effected from the deck;
- The system is fully integrated in the gas and liquid piping system;
- The cargo pump room is provided with a permanent oxygen detection system which automatically indicates the amount of oxygen and which actuates a visual and audible alarm when the oxygen concentration has reached 19.5 % by volume. The sensors of this system shall be placed at suitable positions at the bottom and at a height of 2 m. Measurement shall be continuous and displayed near to the entrance. Audible and visual alarms shall be installed in the wheelhouse and in the cargo pump-room and, when the alarm is actuated, the loading and unloading system shall be shut down;

- Failure of the oxygen measuring system shall actuate a visual and audible alarm in the wheelhouse and on deck. The alarm must be relayed to the accommodation automatically if it has not been switched off;
- The ventilation system prescribed in 9.3.2.12.3 has a capacity sufficient to ensure not less than 30 changes of air per hour based on the total volume of the service space.

When the list of substances on the vessel according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C of Chapter 3.2, the cargo pump room shall also be provided with a permanent gas detection system which automatically indicates the presence of ~~explosive~~-flammable gases and actuates a visual and audible alarm when the gas concentration has reached 20 % of the LEL of the cargo or 20 % of the LEL of n-Hexane, whichever gives the more critical value.

The sensors of this gas detection system shall be placed at suitable positions at the bottom and directly below the deck.

Measurement shall be continuous and displayed near to the entrance.

Audible and visual alarms shall be installed in the wheelhouse and in the cargo pump-room and, when the alarm is actuated, the loading and unloading system shall be shut down.

Any failure of the gas detection system shall be immediately signalled in the wheelhouse and on deck by a visual and audible warning. The alarm must be relayed to the accommodation automatically if it has not been switched off.”.

9.3.2.17.6 and 9.3.3.17.6 Amend to read as follows:

“A service space located within the cargo area below deck shall not be used as a cargo pump-room for the loading and unloading system, except where:

- The cargo pump-room is separated from the engine room or from service spaces outside the cargo area by a cofferdam or a bulkhead with ‘A-60’ fire protection insulation according to SOLAS 74, Chapter II-2, Regulation 3, or by a service space or a hold space;
- The ‘A-60’ bulkhead required above does not include penetrations referred to in 9.3.x.17.5 (a);
- Ventilation exhaust outlets are located not less than 6.00 m from entrances and openings of the accommodation, wheelhouse and service spaces outside the cargo area;
- The access hatches and ventilation inlets can be closed from the outside;
- All piping for loading and unloading as well as that of stripping systems is provided with shut-off devices at the pump suction side in the cargo pump-room immediately at the bulkhead. The necessary operation of the control devices in the pump-room, starting of pumps and control of the liquid flow rate shall be effected from the deck;
- The bilge of the cargo pump-room is equipped with a gauging device for measuring the filling level which activates a visual and audible alarm in the wheelhouse when liquid is accumulating in the cargo pump-room bilge;
- The cargo pump room is provided with a permanent oxygen detection system which automatically indicates the amount of oxygen and which actuates a visual and audible alarm when the oxygen concentration has reached 19.5 % by volume. The sensors of this system shall be placed at suitable positions at the bottom and at a height of 2.00 m. Measurement shall be continuous and displayed near to the entrance. Audible and visual alarms shall be installed in the wheelhouse and in the cargo pump-room and, when the alarm is actuated, the loading and unloading system shall be shut down;

Failure of the oxygen measuring system shall activate a visual and audible alarm in the wheelhouse and on deck. The alarm must be relayed to the accommodation automatically if it has not been switched off;

- The ventilation system prescribed in 9.3.x.12.3 has a capacity sufficient to ensure not less than 30 changes of air per hour based on the total volume of the service space.

When the list of substances on the vessel according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C of Chapter 3.2, the cargo pump room shall also be provided with a permanent gas detection system which automatically indicates the presence of ~~explosive-flammable~~ gases and actuates a visual and audible alarm when the gas concentration has reached 20 % of the LEL of the cargo or 20 % of the LEL of n-Hexane, whichever gives the more critical value.

The sensors of this gas detection system shall be placed at suitable positions at the bottom and directly below the deck. Measurement shall be continuous and displayed near to the entrance.

Audible and visual alarms shall be installed in the wheelhouse and in the cargo pump-room and, when the alarm is actuated, the loading and unloading system shall be shut down.

Any failure of the gas detection system shall be immediately signalled in the wheelhouse and on deck by a visual and audible warning. The alarm must be relayed to the accommodation automatically if it has not been switched off.”

9.3.2.20.4 and 9.3.3.20.4 Amend to read as follows:

“When the list of substances on the vessel according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C of Chapter 3.2, the ventilation openings of cofferdams shall be fitted with a flame arrester capable of withstanding a deflagration. The flame arresters shall be chosen according to the explosion groups/subgroups of the substances ~~foreseen for~~~~listed in~~ the list of substances on the vessel (see column (16) of Table C of Chapter 3.2).”

9.3.2.21.1 (g) and 9.3.3.21.1 (g) Amend to read as follows:

“(g) A connection for a closed-type or partly closed-type sampling device, and/or at least one sampling opening as required in column (13) of Table C of Chapter 3.2;

When the list of substances on the vessel according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C of Chapter 3.2, the flame arrester plate stack capable of withstanding steady burning of the sampling opening shall be selected according to the explosion groups/subgroups of the substances ~~listed in~~~~foreseen for~~ the list of substances on the vessel (see column (16) of Table C of Chapter 3.2).”

9.3.2.22.4 Amend to read as follows:

“(a) Each cargo tank or group of cargo tanks connected to a common venting piping shall be fitted with:

- A connection for the safe return ashore of gases expelled during loading;
- A safe depressurization device for the cargo tanks, on which the position of the shut-off valve indicates clearly whether it is open or shut;
- Safety devices for preventing unacceptable overpressures or vacuums.

The opening pressure of the safety valves shall be permanently marked on the valves;

The setting of the pressure relief valves shall be such that during the transport operation they do not blow off until the maximum permissible working pressure of the cargo tanks is reached;

The gases shall be discharged upwards;

The outlets of the pressure relief valves shall be located not less than 1.00 m above the deck and at a distance of not less than 6.00 m from the openings of accommodation, the wheelhouse and the service spaces outside the cargo area.

No equipment shall be present in a circle of 1.00 m radius around the outlet of the pressure relief valve outlets. This area shall be marked as a danger zone;

- (b) When the list of substances on the vessel according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C of Chapter 3.2,
- At the connection to each cargo tank, the venting piping and the vacuum valve shall be equipped with a flame arrester capable of withstanding a detonation and
 - The safe depressurization device for cargo tanks shall be designed to withstand steady burning and a deflagration. The deflagration safety may also be ensured by an integrated flame arrester plate stack capable of withstanding steady burning or a flame arrester capable of withstanding steady burning.
- (c) When the list of substances on the vessel according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C in Chapter 3.2, or for which there is a T in column (3b) of Table C, the pressure relief valve shall be designed as a high velocity vent valve.
- (d) If a shut-off device is to be mounted between the venting piping and the cargo tank, it shall be placed between the cargo tank and the flame arrester, and each cargo tank shall be equipped with pressure relief valves.
- (e) The autonomous protection system mentioned in (b) and (c) shall be chosen according to the explosion groups/subgroups of the substances listed in foreseen for the list of substances on the vessel (see column (16) of Table C of Chapter 3.2). The outlets of the high-velocity vent valves shall be located not less than 2.00 m above the deck and at a distance of not less than 6.00 m from the openings of the accommodations, the wheelhouse and the service spaces outside the cargo area. This height may be reduced to 1.00 m when there is no equipment and no work is being carried out within a radius of 1.00 m around the pressure relief valve outlet. This area shall be marked as a danger zone.

If the high velocity vent valve, the vacuum valve, the flame arresters and the venting piping are required to be heatable, the devices concerned shall be suitable for the relevant temperature.”.

9.3.3.22.4 Amend to read as follows:

“Each cargo tank or group of cargo tanks connected to venting piping shall be fitted with:

Open Type N:

- Devices to prevent unacceptable overpressures or vacuums and constructed so as to prevent any accumulation of water and ~~its~~ penetration of water into the cargo tank.

Open Type N with flame arresters:

- Devices to prevent unacceptable overpressures or vacuums, equipped with flame arresters capable of withstanding steady burning and constructed so as to prevent any accumulation of water and ~~its~~ penetration of water into the cargo tank.

Closed Type N:

- (a) A connection for the safe return ashore of gases expelled during loading;
- (b) A safe depressurization device for the cargo tanks, on which the position of the shut-off valve indicates clearly whether it is open or shut;
- (c) Safety valves for preventing unacceptable overpressures or vacuums;
- The opening pressure of the safety valves shall be marked indelibly on the valves;
- (d) When the list of substances on the vessel according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C of Chapter 3.2;
- At the connection to each cargo tank, the venting piping shall be equipped with a flame arrester capable of withstanding a detonation;

- The vacuum valve and the safe depressurization device for cargo tanks shall be deflagration safe. The deflagration safety may also be ensured by a flame arrester; and

- The pressure relief device shall be designed as a high velocity vent valve, with the gases discharged upwards;

The setting of the pressure relief valves shall be such that during the transport operation they do not blow off until the maximum permissible working pressure of the cargo tanks is reached;

The autonomous protection systems shall be chosen according to the explosion groups/subgroups of the substances ~~listed in~~foreseen for the list of substances on the vessel (see column (16) of Table C of Chapter 3.2);

If the high velocity vent valve, the vacuum valve, the flame arresters and the venting piping are required to be heatable for transport, the safety devices concerned shall be suitable for the relevant temperature;

The opening pressure of the pressure relief valves, the vacuum valve and the high velocity vent valves shall be marked indelibly on the valves;

If a shut-off device is to be mounted between the venting piping and the cargo tank, it shall be placed between the cargo tank and the flame arrester, and each cargo tank shall be equipped with pressure relief valves;

- (e) The outlets of the pressure relief devices/high velocity vent valves shall be located not less than 2.00 m above the deck and at a distance of not less than 6.00 m from the openings of the accommodations, the wheelhouse and the service spaces outside the cargo area. This height may be reduced to 1.00 m when there is no equipment and no work is being carried out within a radius of 1.00 m around the pressure relief valve outlet. This area shall be marked as a danger zone.”.

9.3.2.26.2 Amend to read as follows:

“Tanks for residual products shall be equipped with:

- A level gauge;
- Connections, with stop valves, for pipes and hose assemblies;
- A pressure relief/vacuum valve;

The pressure relief valve shall be sized so that, during the transport operation, it does not open when in normal operation. This condition is met when the opening pressure of the valve meets the conditions required in column (10) of Table C of Chapter 3.2 for the substances to be carried.

When the list of substances on the vessel according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C of Chapter 3.2, the vacuum valve shall be designed so as to be capable of withstanding a deflagration. The deflagration safety may also be ensured by a flame arrester.

When the list of substances on the vessel according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C in Chapter 3.2, or for which there is a T in column (3b) of Table C, the pressure relief valve shall be designed as a high velocity vent valve.

The pressure relief valve shall be sized so that, during the transport operation, it does not open when in normal operation. This condition is met when the opening pressure of the valve meets the conditions required in column (10) of Table C of Chapter 3.2 for the substance to be carried.

The high velocity vent valve and the deflagration safe vacuum valve shall be chosen according to the explosion groups/subgroups of the substances ~~listed in~~foreseen for the list of substances on the vessel (see column (16) of Table C in Chapter 3.2).

The maximum permissible capacity is 30 m³.”.

9.3.3.26.2 Amend to read as follows:

“Tanks for residual products shall be equipped with:

In the case of an open system:

- An ullage opening;
- Connections, with stop valves, for pipes and hose assemblies;
- A device for ensuring pressure equilibrium.

In the case of an open system with flame arrester:

- An ullage opening;
- Connections, with stop valves, for pipes and hose assemblies;
- A device for ensuring pressure equilibrium, fitted with a flame arrester capable of withstanding steady burning.

In the case of a closed system:

- (a) A level indicator;
- Connections, with stop valves, for pipes and hose assemblies;
 - A vacuum valve and a pressure relief valve;

The pressure relief valve shall be sized so that, during the transport operation, it does not open when in normal operation. This condition is met when the opening pressure of the valve meets the conditions required in column (10) of Table C of Chapter 3.2 for the substance to be carried;

- (b) When the list of substances on the vessel according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C of Chapter 3.2, the pressure relief valve shall be a high velocity vent valve and the vacuum valve shall be deflagration safe. The deflagration safety may also be ensured by a flame arrester;

The high velocity vent valve and the deflagration safe vacuum valve shall be chosen according to the explosion groups/subgroups of the substances ~~listed in~~ foreseen for the list of substances on the vessel (see column (16) of Table C in Chapter 3.2).

The maximum permissible capacity is 30 m³.”.

9.3.2.28 “Amendment to the fourth sentence does not apply to the French and English text. ~~English text to be verified.~~”

9.3.1.51 and 9.3.2.51 Amend to read as follows:

“Surface temperatures of installations and equipment

- (a) Surface temperatures of electrical and non-electrical installations and equipment shall not exceed 200 °C.
- (b) Surface temperatures of the outer parts of engines and of their air inlets and exhaust ducts shall not exceed 200 °C;
- (c) When the list of substances on the vessel according to 1.16.1.2.5 will contains substances for which the temperature classes T4, T5 or T6 are indicated in column (15) of Table C of Chapter 3.2, the corresponding surface temperatures within the assigned zones shall not exceed 135 °C (T4), 100 °C (T5) or 85 °C (T6) respectively;
- (d) (a) and (b) do not apply if the following requirements are met (see also 7.2.3.51.4):
- (i) Accommodation, wheelhouse and service spaces where surface temperatures higher than those mentioned in (a) and (b) occur are equipped with a ventilation system according to 9.3.x.12.4 (b); or

- (ii) Installations and equipment which generate surface temperatures higher than those set out in (a) or (b), respectively, must be capable of being shut down. Such installations and equipment shall be marked in red.”.

9.3.3.51 Amend to read as follows:

“Surface temperatures of installations and equipment

- (a) Surface temperatures of electrical and non-electrical installations and equipment shall not exceed 200 °C;
- (b) Surface temperatures of the outer parts of engines and their air inlets and exhaust ducts shall not exceed 200 °C;
- (c) When the list of substances on the vessel according to 1.16.1.2.5 will contains substances for which the temperature classes T4, T5 or T6 are indicated in column (15) of Table C of Chapter 3.2, the corresponding surface temperatures within the assigned zones shall not exceed 135 °C (T4), 100 °C (T5) or 85 °C (T6), respectively;
- (d) (a) and (b) do not apply if the following requirements are met (see also 7.2.3.51.4):
 - (i) Accommodation, wheelhouse and service spaces where surface temperatures higher than those mentioned in (a) and (b) occur are equipped with a ventilation system according to 9.3.x.12.4 (b); or
 - (ii) Installations and equipment which generate surface temperatures higher than those set out in (a) or (b), respectively, must be capable of being shut down. Such installations and equipment shall be marked in red;
- (e) Open Type N vessels are only required to meet the requirements of (a), (b) and (d) if the vessel remains in the immediate vicinity of or within a shoreside assigned zone.”.

9.3.1.52.6, 9.3.2.52.6 and 9.3.3.52.6 Amend to read as follows:

“An electric generator which is permanently driven by an engine and which does not meet the requirements of 9.3.x.52.1 above, shall be fitted with a switch capable of shutting down ~~the excitation of~~ the generator. A notice board with the operating instructions shall be displayed near the switch.”.

9.3.1.53, 9.3.2.53 and 9.3.3.53, title Amend to read as follows:

“Type and location of electrical and non-electrical installations and equipment intended to be used in explosion hazardous danger-areas”

9.3.1.53.1, 9.3.2.53.1 and 9.3.3.53.1 Amend to read as follows:

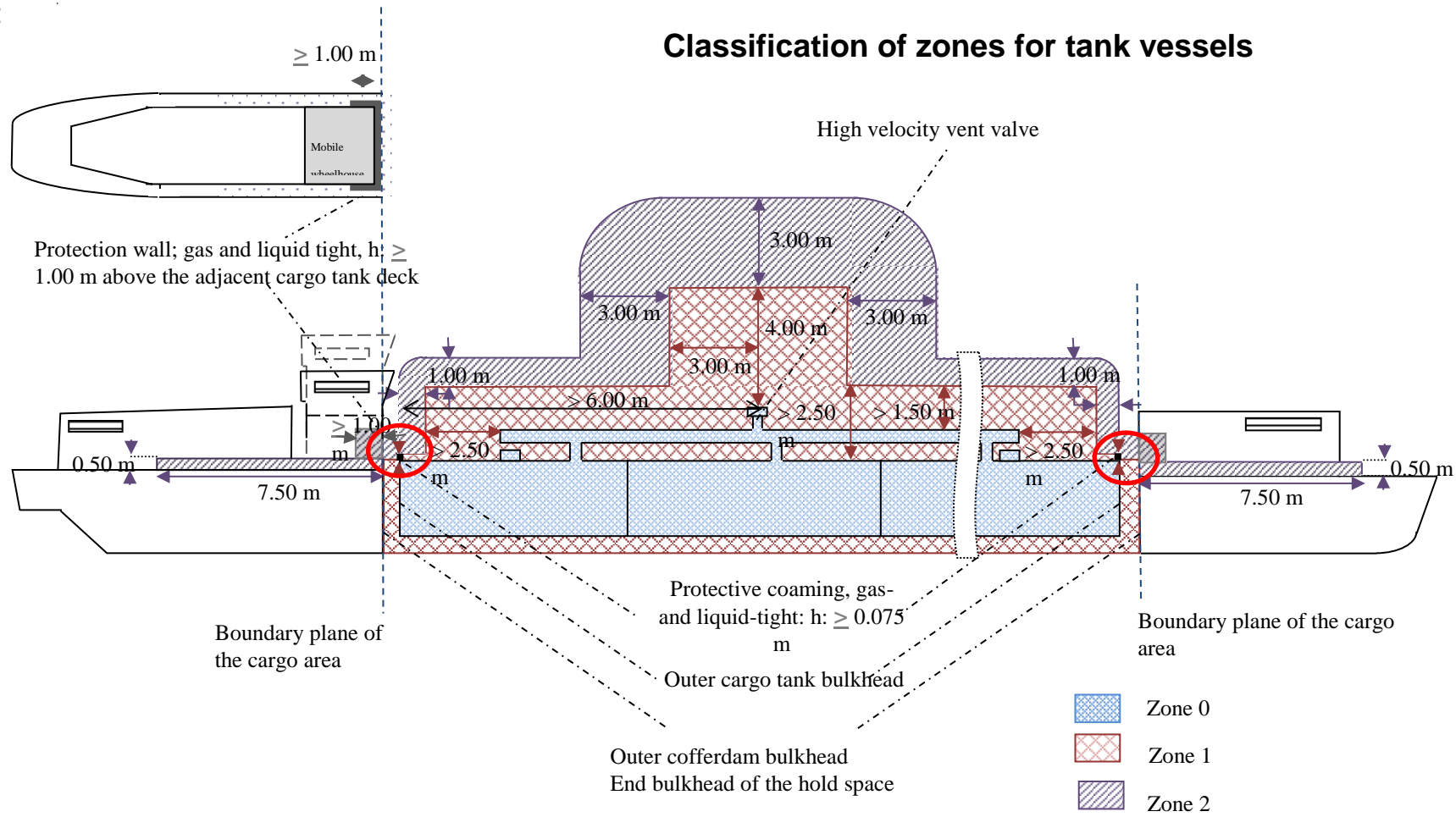
“On board vessels covered by the classification of zones as defined in 1.2.1, electrical and non-electrical installations and equipment used in explosion hazardous danger-areas shall meet at least the requirements for use in the area concerned.

They shall be selected on the basis of the explosion groups/subgroups and temperature classes to which the substances to be carried belong (see columns (15) and (16) of Table C of Chapter 3.2).




When the list of substances on the vessel according to 1.16.1.2.5 will contain substances for which temperature classes T4, T5 or T6 are indicated in column (15) of Table C of Chapter 3.2, the corresponding surface temperatures within the assigned zones shall not exceed 135 °C (T4), 100 °C (T5) or 85 °C (T6).

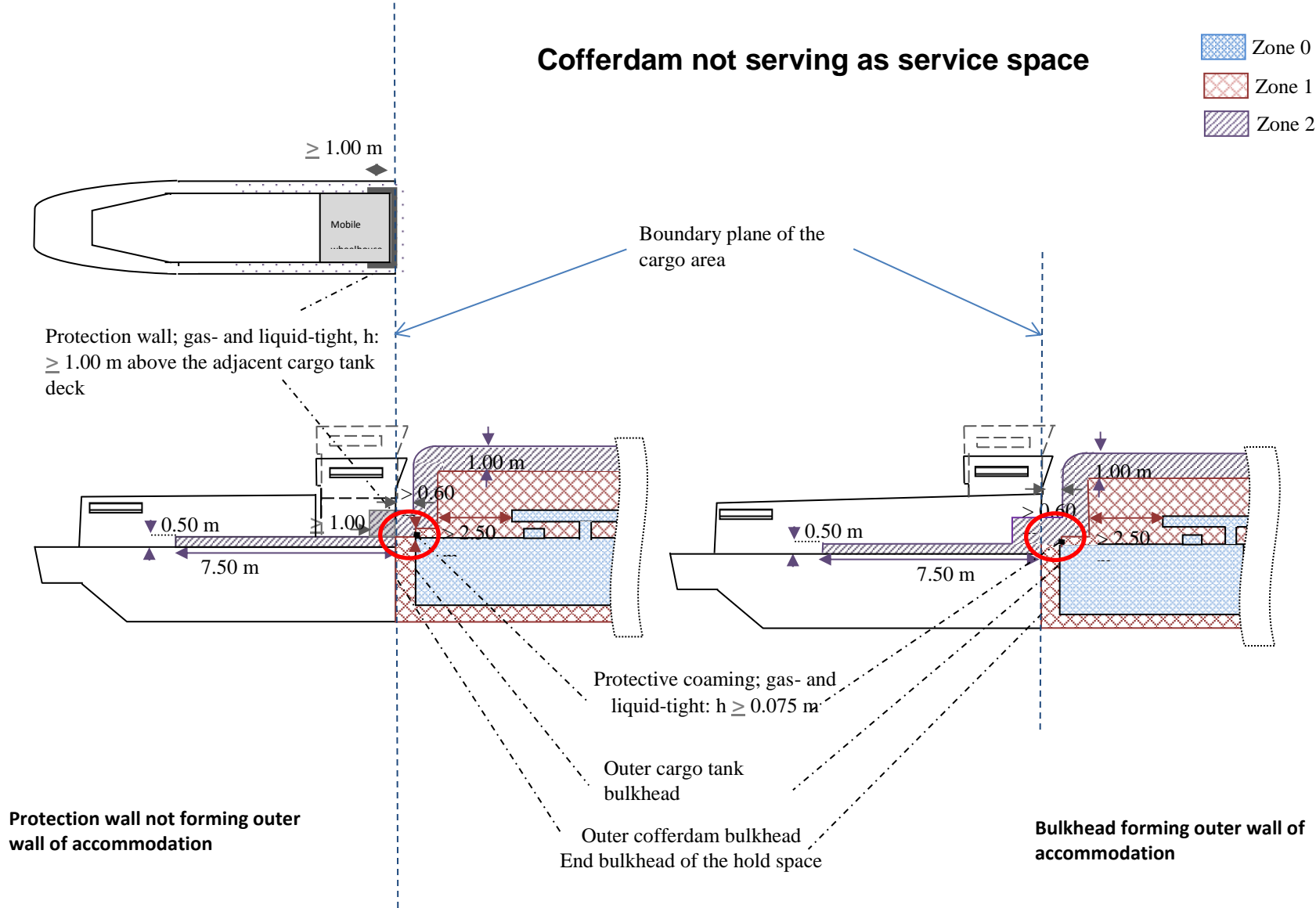
When the list of substances on the vessel according to 1.16.1.2.5 will contain substances for which temperature classes T1 or T2 are indicated in column (15) of Table C of Chapter 3.2, the corresponding surface temperatures within the assigned zones shall not exceed 200 °C.”.

Classification of zones for tank vessels






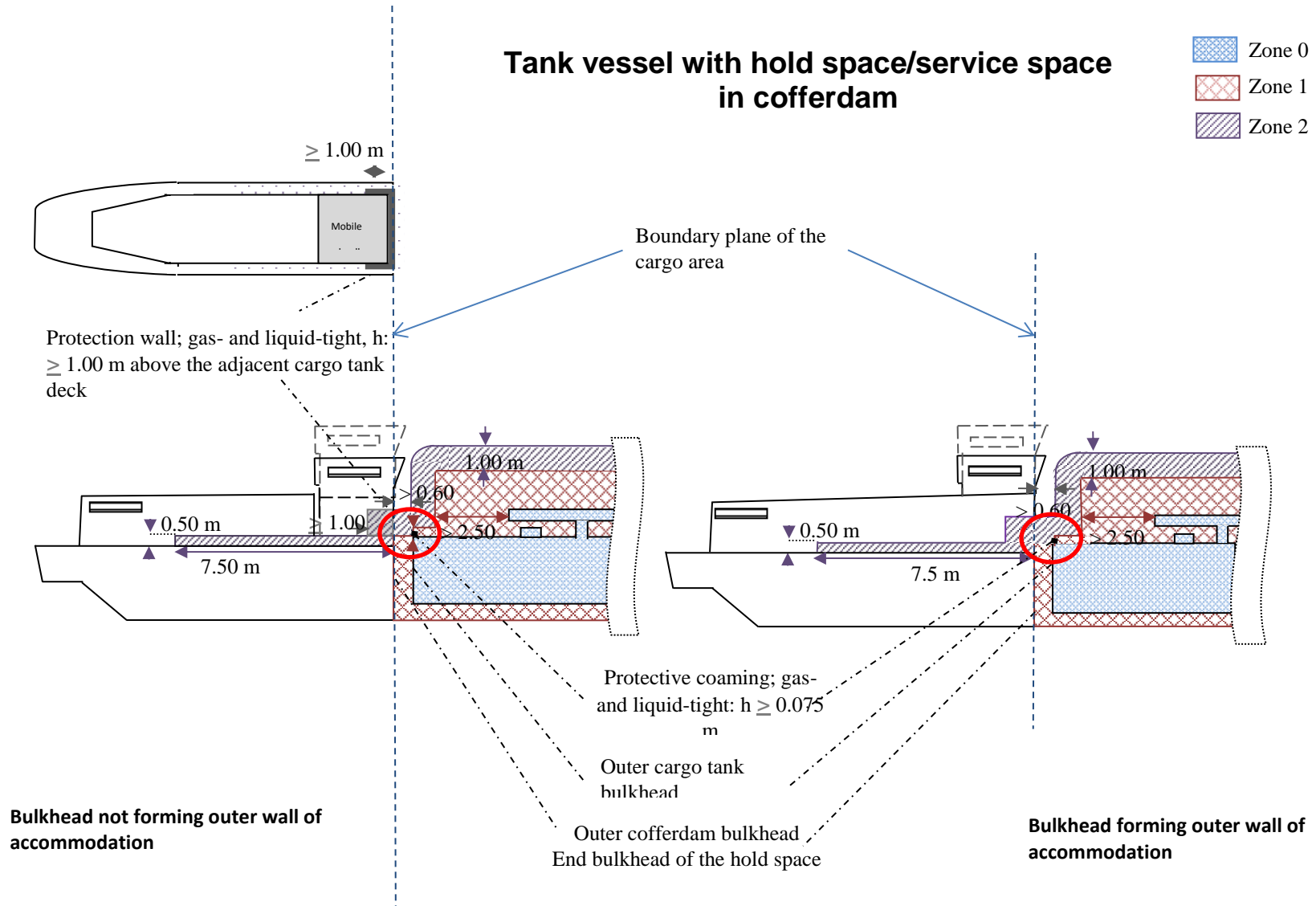
Cofferdam not serving as service space

-  Zone 0
-  Zone 1
-  Zone 2



Tank vessel with hold space/service space in cofferdam

-  Zone 0
-  Zone 1
-  Zone 2



Proposed editorial changes

In the definition of “*Receptacle for residual products*”, at the beginning of the first sentence, delete: “a tank,”. At the end, insert a new second sentence to read as follows:

“The receptacle shall be approved according to ADR, RID or the IMDG Code and authorized for the substance concerned. The maximum permissible capacity of an intermediate bulk container is 3.00 m³, and that of a tank-container or portable tank is 12.00 m³.”.

7.2.4.1.1 Amend the first indent to read as follows:

- residual cargo, washing water, cargo residues and slops contained in no more than six approved receptacles for residual products and receptacles for slops having a maximum total capacity of not more than 12.00 m³. The receptacles for residual products and the receptacles for slops shall be properly secured in the cargo area, be located at a minimum distance from the hull equal to one quarter of the vessel's breadth and comply with the provisions of 9.3.2.26.3 or 9.3.3.26.3 concerning them.”.
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