Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels[1]

Pursuant to section 1(2), sections 3-5, section 17(2) and (5), section 28 and section 32(8) of the act on safety at sea, cf. consolidated act no. 654 of 15 June 2010, and decree no. 882 of 25 August 2008 on the entry into force on Greenland of the act on safety at sea, in consultation with the Government of Greenland and by authority, the following provisions are laid down:

Section 1. This technical regulation shall apply to fishing vessels of 15 metres in length[2] and over as well as to fishing vessels with a scantling number of or above 100. This technical regulation shall also apply to persons or companies in Denmark carrying out conversions of fishing vessels.

Subsection 2. The scantling number shall be calculated by multiplying the length overall, which is the distance measured as a straight line from the foremost point of the stem to the sternmost point of the stern, by the greatest breadth as given in the fishing vessel's tonnage certificate.

Section 2. Detailed rules on the construction and equipment, etc. of fishing vessels have been printed as annexes to this technical regulation.

Subsection 2. The annexes, chapters of the annexes and attachments are as follows:

Annex 1	**Provisions on the construction and equipment, etc. of fishing vessels**
Chapter E I	General provisions, dated 15 December 2008.
Chapter E II	Construction, watertight integrity and equipment, dated 1 January 2003.
Chapter E III	Stability and associated seaworthiness, dated 14 December 2010.
Chapter E IV	Machinery and electrical installations in periodically unattended machinery spaces, dated 1 January 2003.
Chapter E V 1 2	Fire protection, fire detection, and fire extinction, dated 15 December 2008.
Chapter E VI A B C	Protection of the crew (occupational health and safety, etc.), dated 15 December 2008.
Chapter E VII 1 2	Life-saving appliances and arrangements, dated 15 December 2008.
Chapter E VIII	Emergency procedures, musters and drills, dated 1 February 1999.
Chapter E IX	Radiocommunications, dated 1 January 2005.
Chapter E X	Safety of navigation, dated 1 January 2005.
Chapter E XI	Regional and local provisions (Annex III of the Directive), dated 1 February 1999.
Chapter E XII	Accommodation, etc, dated 1 May 2007.

[1] This technical regulation contains provisions implementing Council Directive 97/70/EC setting up a harmonised safety regime for fishing vessels of 24 metres in length and over, Official Journal 1998 L 34, as amended by Commission Directive 99/19/EC, Official Journal 1999 L 83, by Commission Directive 2002/35/EC, Official Journal L 112, and Council Directive 93/103/EC concerning the minimum safety and health requirements for work on board fishing vessels, Official Journal 1993 L 307. A draft technical regulation has been notified in accordance with Directive 98/34/EC of the European Parliament and of the Council laying down a procedure for the provision of information in the field of technical standards and regulations, as amended most recently by Directive 98/48/EC.

[2] As defined in annex 1, chapter I, regulation 2(5).

(Chapters XIII-XX have been reserved for later use)

Chapter E XXI	Prevention of pollution by oil from vessels, dated 14 December 2010.

(Chapters XXII and XXIII have been reserved for later use)

Chapter E XXIV	Prevention of pollution by sewage from vessels, dated 14 December 2010.
Chapter E XXV	Prevention of pollution by garbage, dated 14 December 2010.
Chapter E XXVI	Prevention of air pollution from ships, dated 14 December 2010.
Attachment	Certificates, forms, and records of equipment, dated 1 February 1999.
E Annex 2	Council Directive 97/70/EC of 11 December 1997 setting up a harmonised safety regime for fishing vessels of 24 metres in length and over, dated 1 February 1999.
E Annex 3	Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977, dated 1 February 1999.
E Attachment 1	Annex 3, attachment 1, is identical to annex 1 and has, consequently, not been included here.
E Attachment 2	Torremolinos Protocol of 1993 relating to the Torremolinos Convention, Attachment 2, Resolutions from the conference, dated 1 February 1999.
E Attachment 3	Torremolinos Protocol of 1993 relating to the Torremolinos Convention, Attachment 3, Recommendations by the Conference, dated 1 February 1999.

Section 3. Equipment for fishing vessels specified in the annexes to this technical regulation may be replaced by equipment which has been conformity-marked in accordance with order no. 197 of 5 March 2010 on marine equipment.

Section 4. Companies or persons in Denmark carrying out conversions of Danish ships pursuant to chapter 1, regulation 5.3, shall report this to the Danish Maritime Authority.

Section 5. Contraventions of this technical regulation shall be punishable by fine or imprisonment for a term not exceeding one year.

Subsection 2. The penalty may be increased to imprisonment for a term not exceeding two years if

1) the violation has resulted in damage to life or health, or risk of such damage,
2) an injunction or order has previously been issued in connection with the same or equivalent situations, or
3) the violation has given or has been intended to give financial benefits to the transgressor or others.

Subsection 3. It shall be considered especially aggravating circumstances if the violation has resulted in damage to the life or health or risk of such damage to young persons below the age of 18, cf. subsection 2(1).

Subsection 4. If the financial benefit achieved is not confiscated, special consideration shall be given to the size of the achieved or intended financial benefit when determining the size of the fine, including supplementary fine.

Subsection 5. Companies etc. (legal personalities) may be liable to punishment according to the provisions of Chapter 5 of the penal code.

Section 6. If the contravention is covered by the decree on the entry into force of the act on safety at sea in Greenland, measures may be ordered in accordance with the penal code for Greenland.

Subsection 2. The conditions mentioned in section 5(2) and (3) shall be considered especially aggravating circumstances.

Subsection 3. If the financial benefit achieved is not confiscated, cf. section 116(1) of the penal code, special consideration shall be given to the size of the achieved or intended financial benefit when determining the size of the fine, including supplementary fine.

Subsection 4. If the contravener is a company, etc. (legal personalities), the legal personality as such may be liable to punishment by fine. If the contravener is the State, the Government of Greenland, a municipality, an inter-municipal enterprise covered by section 64 of the act of the Landsting (Greenland Parliament) on municipal councils and village councils, etc. or a village council, the relevant public authority shall be liable to punishment by fine.

Subsection 5. If the relevant party is not resident in Greenland, or their connection to Greenland society is otherwise so remote that the prerequisites for the application of the measures do not exist, proceedings may be instigated or the case sent for trial in Denmark.

Section 6. This technical regulation shall enter into force on 1 March 2011. Chapter XXVI shall enter into force on 1 January 2011.

The Danish Maritime Authority, 14 December 2010
Per Sønderstrup / Søren Enemark

Annex 1
Provisions on the construction and equipment, etc. of fishing vessels
Introduction

This set of regulations consists of a short technical regulation and three annexes.

The technical regulation contains the statutory basis, application, a list of the content of the annexes, penalty and entry into force provisions. The annexes have been divided into chapters.

Unless otherwise stipulated in each individual chapter, existing fishing vessels shall only comply with the structural requirements that applied to the vessel at its time of construction. Deviations from this provision may, however, be stipulated in rules issued later. Consequently, replaced booklets should not be discarded.

In Denmark and in Greenland, this technical regulation implements Council Directive 97/70/EC setting up a harmonised safety regime for fishing vessels of 24 metres in length and over, as amended by Commission Directive 2002/35/EC, as well as parts of Council Directive 93/103/EC concerning the minimum safety and health requirements for work on board fishing vessels.

In far most cases, it will suffice to read annex 1, which contains the technical provisions that apply to fishing vessels.

Annex 1 addresses constructors, yards and shipping companies, etc. and contains the following:

1) Chapters I-V and VII-IX contain provisions on the construction and equipment of fishing vessels and have been drawn up on the basis of attachment 1 to the Torremolinos Protocol of 1993 relating to the Torremolinos Convention, 1977, as amended by Council Directive 97/70/EC.
2) Chapter VI contains provisions drawn up on the basis of parts of Council Directive 93/103/EC concerning the minimum safety and health requirements for work on board fishing vessels.
3) Chapter X has been drawn up on the basis of SOLAS, chapter V, on safety of navigation.
4) Chapter XI and the attachment contain additional provisions for ships engaged in voyages in the northern part of Europe and have been drawn up on the basis of Council Directive 97/70/EC setting up a harmonised safety regime for fishing vessels of 24 metres in length and over.
5) Chapter XII contains provisions on accommodation and potable water systems and has been drawn up on the basis of the ILO convention on the accommodation in fishing vessels.
6) Chapters XXI, XXIV, XXV and XXVI contain provisions on pollution preventing measures and have been drawn up on the basis of the International Convention for the Prevention of Pollution from Ships (MARPOL).
7) Chapters XIII-XX, XXII and XXIII are not in use.

In annex 1, Danish regulations implementing or supplementing the international provisions have been printed in italics. In a few cases, the international provisions have been crossed out to make the deviation more clear. [Text originating from the Directive has been printed in brackets].

New regulations have been underlined.

Annex 2 is a reprint of Council Directive 97/70/EC of 11 December 1997 setting up a harmonised safety regime for fishing vessels of 24 metres in length and over. The Directive contains 5 annexes in the form of amendments and attachments to the 1993 Protocol to the Torremolinos Convention of 1977. The annexes to the Directive are found in annex 1 to the technical regulation.

Annex 3 is a reprint of the Torremolinos Protocol of 1993 relating to the Torremolinos Convention of 1977, including attachments 2 and 3.

1) Attachment 2 to the Protocol contains the Conference resolutions addressing governments.
2) Attachment 3 to the Protocol contains a number of important recommendations of a technical nature, some of which are made mandatory by annex 1 to the technical regulation.

Council Directive 96/98/EC of 20 December 1996 on marine equipment has been implemented in Denmark by the technical regulation on marine equipment. The Directive and consequently the technical regulation shall apply to equipment required by:

1) The International Convention for the Safety of Life at Sea (SOLAS).
2) The International Load Line Convention, 1966 (LL66).
3) The International Regulations for Preventing Collisions at Sea, 1972 (COLREG).
4) The International Convention for the Prevention of Pollution from Ships, 1973 (MARPOL).

The Conventions shall apply to fishing vessels only to a limited extent. They are covered by the 1993 Protocol to the Torremolinos Convention of 1977, which contains independent standards for equipment for fishing vessels. Where relevant, equipment for fishing vessels may, however, be replaced by equipment which has been EU conformity-marked.

Amended chapters

Technical regulation

Section 4 introduces a requirement for companies and persons in Denmark carrying out conversions of Danish fishing vessels to report this to the Danish Maritime Authority.

Chapter III – Stability and associated seaworthiness

A provision has been inserted stipulating that fishing vessels shall be fitted with a mark showing the maximum permissible operating draught.

Chapter XXI – Prevention of pollution by oil from vessels,

Editorial amendments have been inserted as a consequence of an amendment of the definition of oil residues (sludge).

Chapter XXIV – Prevention of pollution by sewage from vessels

Minor editorial amendments have been inserted in the chapter clarifying that sewage from animals is also covered by these provisions.

Chapter XXV – Prevention of pollution by garbage

Minor editorial amendments have been inserted in this chapter.

Chapter F XXVI – Prevention of air pollution from ships

The most extensive amendments in this chapter are stricter requirements on the discharge of SOx and NOx. These requirements become gradually stricter. The first new requirements for stricter SOx discharges enter into force on 1 July 2010 in the special emission control areas, while the first stricter requirements for NOx discharges will enter into force on 1 January 2011. The related IAPP certificates are also amended.

In addition, more lenient requirements have been introduced as regards the designation of the special emission control areas, which means that, in the future, more such areas are expected.

Furthermore, it should be added that the technical NOx Code (which does not form part of Notice B) has also been revised. The related EIAPP certificate has also been amended.

Notice E from the Danish Maritime Authority

The dates of the chapters in the versions from 1 February 1999

Date of signature	**15/12-98**	**24/9-01**	**27/12-02**	**8/12-04**	**1/5-05**	**20/9-06**	**24/4-07**	**15/12-08**	**14/12-10**
Annex 1									
E I	1/2-99	1/2-02	1/1-03					15/12-08	
E II	1/2-99		1/1-03						
E III	1/2-99		1/1-03						14/12-10
E IV	1/2-99		1/1-03						
E V[1)]	1/2-99		1/1-03					15/12-08	
E V[2)]	1/2-99		1/1-03						
E VI A	1/2-99		1/1-03			1/10-06		15/12-08	
E VI B			1/1-03						
E VI C			1/1-03						
E VII[1)]	1/2-99	1/2-02	1/1-03					15/12-08	
E VII[2)]	1/2-99		1/1-03						
E VIII	1/2-99								
E IX	1/2-99			1/1-05					
E X	1/2-99			1/1-05					
E XI	1/2-99	1/2-02							
E XII	1/2-99		1/1-03				1/5-07		
E XIII-XIX	Reserved for later use								
E XXI[3)]	1/2-99		1/1-03			1/10-06	1/5-07		14/12-10
E XXII-XXIII	Reserved for later use								
E XXIV	1/2-99		1/1-03	1/1-05					14/12-10
E XXV	1/2-99		1/1-03	1/1-05					14/12-10
E XXVI[4)]					1/5-05	1/10-06	1/5-07		14/12-10
Appendix	1/2-99								
Annex 1	1/2-99								
Annex 2	1/2-99								
Annex 3	1/2-99								
Appendix 1	Identical to Annex 1, appendix, and consequently not included here.								
Appendix 2	1/2-99								
Appendix 3	1/2-99								

1) Chapter given as E XX
2) Chapter given as E XXIV
3) The same as in Notices D and E
4) The same as in Notices B, D and E

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Chapter I
General provisions

Regulation 1 – Application

(1) *Each individual regulation stipulates to what extent the regulation shall apply to both new and existing fishing vessels.* Unless expressly provided otherwise, the provisions of this annex shall apply to new vessels, cf. regulation 2(1).

Regulation 1a – The application of recognised organisations (classification societies)

(1) *Where the Administration has not laid down national standards for an area within this set of regulations, new fishing vessels shall be designed, constructed and maintained in compliance with the structural, mechanical and electrical requirements of a recognised organisation. Such structural, mechanical and electrical requirements include, for example, scantlings, anchors, chains, anchor winches and towing-ropes, machinery, boiler arrangements, all other technical and electrical installations.*

(2) [The standards for the design, construction and maintenance of hull, main and auxiliary machinery, electrical and automatic plants of a fishing vessel shall be the rules in force at the date of its construction, specified for classification by a recognised organisation or used by an administration that is equivalent to an EU administration.]

(3) *Where it is prescribed by these regulations that fishing vessels shall comply with requirements to the satisfaction of the Administration, the fishing vessel shall, in each individual case, comply with the Administration's national standard or interpretation of the relevant provision. If these regulations do not contain any national standards for the area in question or if the Administration has not laid down*

any interpretation of the regulation concerned, the rules from a recognised organisation shall apply, if available.

(4) If the design or application of a fishing vessel deviates from the principles forming the basis of the making of this set of regulations, or if the number of persons working on board the vessel exceeds the crew responsible for the normal operation of the vessel, its ongoing maintenance, operation of machinery, catch of fish and meals provided, etc. by more than 12 persons, the construction, equipment and operation of the vessel shall account for this so that it is ensured that the vessel complies with the provisions of section 2 of the Act on Safety at Sea. In this connection, the Danish Maritime Authority may make the issuance of a trading permit to the vessel conditional upon the vessel complying in full or part with the regulations that apply to passenger ships.

Regulation 2 – Definitions

"Fishing vessel" means a vessel used for commercial catching of fish, whales, seals, walrus, shellfish or other living resources of the sea, including vessels equipped as fishing vessels that process their own catch or whose certificate of nationality is provided with a port number under the Ships' Registration Act.

(1) "New fishing vessel" is a vessel for which:

(a) on or after 1 January 1999 the building or major conversion contract is placed; or

(b) the building or major conversion contract has been placed before 1 January 1999, and which is delivered three years or more after that date; or

(c) in the absence of a building contract, on or after 1 January 1999:

(i) the keel is laid, or

(ii) construction identifiable with a specific vessel begins, or

(iii) assembly has commenced comprising at least 50 tonnes or 1% of the estimated mass of all structural material, whichever is less.

(1a) "Vessel constructed" is a fishing vessel for which:

(a) on or after the date stipulated, the building or major conversion contract is placed; or

(b) in the absence of a building contract, on the stipulated date:

(i) the keel is laid; or

(ii) construction identifiable with a specific vessel begins; or

(iii) assembly has commenced comprising at least 50 tonnes or 1% of the estimated mass of all structural material, whichever is less.

(2) "Existing vessel" is a fishing vessel, which is not a new vessel.

(2a) "All fishing vessels" means that both new and existing fishing vessels are covered by the relevant provision regardless of the date of construction.

(3) "Approved" means approved by the Administration.

(4) "Crew" means the skipper and all persons employed or engaged in any capacity on board a vessel on the business of that vessel.

(5) "The length (L)" shall be taken as 96% of the total length on a waterline at 85% of the least moulded depth measured from the keel line, or as the length from the foreside of the stem to the axis of the rudder stock on that waterline, if that be greater. In vessels designed with rake of keel the waterline on which this length is measured shall be parallel to the designed waterline.

(6) "The forward and after perpendiculars" shall be taken at the forward and after ends of the length (L). The forward perpendicular shall be coincident with the foreside of the stem on the waterline on which the length is measured.

(7) "The breadth (B)" is the maximum breadth of the vessel, measured amidships to the moulded line of the frame in a vessel with a metal shell and to the outer surface of the hull in a vessel with a shell of any other material.

(8) (a) "The moulded depth" is the vertical distance measured from the keel line to the top of the working deck beam at side.

(b) In vessels having rounded gunwales, the moulded depth shall be measured to the point of intersection of the moulded lines of the deck and side shell plating, the lines extending as though the gunwale were of angular design.

(c) Where the working deck is stepped and the raised part of the deck extends over the point at which the moulded depth is to be determined, the moulded depth shall be measured to a line of reference extending from the lower part of the deck along a line parallel with the raised part.

(9) "The depth (D)" is the moulded depth amidships.

(10) "Deepest operating waterline" is the waterline related to the maximum permissible operating draft.

(11) "Amidships" is the mid-length of L.

(12) "Midship section" is that section of the hull defined by the intersection of the moulded surface of the hull with a vertical plane perpendicular to the waterline and centreline planes passing through amidships.

(13) "Keel line" is the line parallel to the slope of keel passing amidships through:

(a) the top of the keel or line of intersection of the inside of shell plating with the keel where a bar keel extends above that line of a vessel with a metal shell; or

(b) the rabbet lower line of the keel of a vessel with a shell of wood or a composite vessel; or

(c) the intersection of a fair extension of the outside of the shell contour at the bottom with the centreline of a vessel with a shell of material other than wood and metal.

(14) "Baseline" is the horizontal line intersecting at amidships the keel line.

(15) "Working deck" is generally the lowest complete deck above the deepest operating waterline from which fishing is undertaken. In vessels fitted with two or more complete decks, the Administration may accept a lower deck as a working deck provided that that deck is situated above the deepest operating waterline.

(16) "Superstructure" is the decked structure on the working deck extending from side to side of the vessel or with the side plating not being inboard of the shell plating more than 0.04B.

(17) "Enclosed superstructure" is a superstructure with:

(a) enclosing bulkheads of efficient construction;

(b) access openings, if any, in those bulkheads fitted with permanently attached weathertight doors of a strength equivalent to the unpierced structure which can be operated from each side; and

(c) other openings in sides or ends of the superstructure fitted with efficient weathertight means of closing.

A bridge or poop shall not be regarded as enclosed unless access is provided for the crew to reach machinery and other working spaces inside those superstructures by alternative means which are available at all times when bulkhead openings are closed.

(18) "Superstructure deck" is that complete or partial deck forming the top of a superstructure, deckhouse or other erection situated at a height of not less than 1.8 m above the working deck. Where this height is less than 1.8 m, the top of such deckhouses or other erections shall be treated in the same way as the working deck.

(19) "Height of a superstructure or other erection" is the least vertical distance measured at side from the top of the deck beams of a superstructure or an erection to the top of the working deck beams.

(20) "Weathertight" means that in any sea conditions water will not penetrate into the vessel.

(21) "Watertight" means capable of preventing the passage of water through the structure in any direction under a head of water for which the surrounding structure is designed.

(22) "Collision bulkhead" is a watertight bulkhead up to the working deck in the forepart of the vessel which meets the following conditions:

(a) The bulkhead shall be located at a distance from the forward perpendicular:

(i) not less than 0.05L and not more than 0.08L for vessels of 45 m in length and over;

(ii) not less than 0.05 L and not more than 0.05 L plus 1.35 metres for vessels of less than 45 m in length, except as may be allowed by the Administration. [In vessels of more than 24 m in length, but of less than 45 m in length, built on or after 1 January 2003, the bulkhead shall be located at a distance from the forward perpendicular of not less than 0.05L and not more than 0.05L plus 1.35 m.]

(iii) in no case, less than 2.0 m; *with regard to ships of less than 24 m in length, however, not less than 1.0 m.*

(b) Where any part of the underwater body extends forward of the forward perpendicular, e.g. a bulbous bow, the distance stipulated in sub-paragraph (a) shall be measured from a point at mid-length of the extension forward of the forward perpendicular or from a point 0.015L forward of the forward perpendicular, whichever is less.

(c) The bulkhead may have steps or recesses provided they are within the limits prescribed in sub-paragraph (a).

(23) "The Organisation" means the International Maritime Organization (IMO).

(24) "The Administration" means the government of the state whose flag the vessel is entitled to fly. In case of Danish vessels, the Administration means the Danish Maritime Authority, unless provided otherwise.

(25) "A recognised organisation" means a classification society approved by the Danish Maritime Authority in accordance with the provisions of Council Directive 94/57/EC, as amended by Commission Directive 97/58/EC, carrying out obligations related to the assessment of ships' safety on behalf of the Danish Maritime Authority.

(26) "ISO" means the International Organisation for Standardization.[1]

Regulation 3 – Exemptions

(1) The Administration may exempt any vessel which embodies features of a novel kind from any of the requirements of chapters II, III, IV, V, VI and VII, the application of which might seriously impede research into the development of such features and their incorporation in vessels. Any such vessel shall, however, comply with safety requirements which, in the opinion of that Administration, are adequate for the service for which it is intended and are such as to ensure the overall safety of the vessel.

(2) Exemptions from the requirements of chapter IX are dealt with in regulation IX/3 and exemptions from chapter X are dealt with in regulation X/2.

(3) The Administration may exempt any vessel engaged solely in fishing near the coast of its country from any of the requirements of this annex if it considers that the application is unreasonable and

[1] *ISO standards are published by the Dansk Standard, Kollegievej 6, DK-2900 Charlottenlund, dansk.standard@ds.dk.*

impracticable in view of the distance of the vessel's operating area from its base port in its own country, the type of vessel, the weather conditions and the absence of general navigational hazards, provided that it complies with safety requirements which, in the opinion of that Administration, are adequate for the service for which it is intended and are such as to ensure the overall safety of the vessel.

(4) The Administration which allows any exemption under this regulation [for a fishing vessel covered by Council Directive 97/70/EC] shall communicate to the [Commission] particulars of the same to the extent necessary to confirm that the level of safety is adequately maintained and the [Commission shall hereafter act in accordance with the procedure of article 4 of Council Directive 97/70/EC.]

Regulation 4 – Equivalents

(1) Where the present regulations require that a particular fitting, material, appliance or apparatus, or type thereof, shall be fitted or carried in a vessel, or that any particular provision shall be made, *or specific requirements are made in relation to construction and design*, the Administration may allow any other fitting, material, appliance or apparatus, or type thereof, to be fitted or carried, or any other provision to be made in that vessel, *or that the vessel is constructed or designed in another way*, if it is satisfied by trial thereof or otherwise that such fitting, material, appliance or apparatus, or type thereof, or provision, *or construction and design,* is at least as effective as that required by the present regulations.

(2) Any Administration which so allows, in substitution, a fitting, material, appliance or apparatus, or type thereof, or provision [for a fishing vessel covered by Council Directive 97/70/EC], shall communicate to the [Commission] particulars thereof together with a report on any trials made and the] Commission shall hereafter act in accordance with the procedure of article 4 of Council Directive 97/70/EC.]

Regulation 5 – Repairs, alterations and modifications

(1) A vessel, which undergoes repairs, alterations, modifications and outfitting related thereto shall continue to comply with at least the requirements previously applicable to the vessel.

(2) Repairs, alterations and modifications of a major character and outfitting related thereto shall meet the requirements for a new vessel only to the extent of such repairs, alterations and modifications and in so far as the Administration deems reasonable and practicable.

(3) A vessel the main engine of which has been substituted or which has undergone major repairs, alterations or modifications, such as modifications involving changes to the registration measurements stipulated in the ship's tonnage certificate or major alterations of the ship's centre of gravity or of the ship's arrangement, shall, before being put into service, have drawn up new stability information and be subjected to a survey. A vessel undergoing a modification or conversion to the effect that the vessel is no longer covered by the limits of length in force so far shall, as far as the new part of the vessel and the operative and equipment requirements are concerned, comply with the requirements for a new vessel. To the extent that the Danish Maritime Authority finds it reasonable and practicable, the existing part of the vessel shall comply with the requirements that the vessel should have complied with if the original had had its new size when it was built.

Regulation 6 – Surveys[2]

(1) Every vessel shall be subject to the surveys specified below:

(a) An initial survey before the vessel is put into service or before the certificate required under regulation 7 is issued for the first time, which shall include a complete survey of its structure, stability, machinery, arrangements and material, including the outside of the vessel's hull and the inside and outside of the boilers and equipment in so far as the vessel is covered by this annex. This survey shall be such as to ensure that the arrangements, material, and scantlings of the structure, boilers, and other pressure vessels and their appurtenances, main and auxiliary machinery, electrical installations, radio installations including those used in life-saving appliances, fire protection, fire safety systems and appliances, life-saving appliances and arrangements, shipborne navigational equipment, nautical publications and other equipment fully comply with the requirements of this annex. The survey shall also be such as to ensure that the workmanship of all parts of the vessel and its equipment is in all respects satisfactory and that the vessel is provided with the lights, means of making sound signals and distress signals, required by this annex and the International Regulations for Preventing Collisions at Sea in force. Where pilot transfer arrangements are carried these shall also be surveyed to ensure that they are in a safe working condition and comply with the relevant requirements of the International Convention for the Safety of Life at Sea in force.

(b) Periodical surveys at intervals specified below:

(i) four years with regard to the structure, including the outside of the vessel's hull, and machinery of the vessel referred to in chapters II, III, IV, V and VI. *In ships with a length of less than 24 m this survey shall also include the ship's radio installations, including those used in life-saving appliances as mentioned in chapters VII and IX.* As provided for in regulation 11(1) the period may be extended for one year subject to the vessel being surveyed internally or externally as far as it is reasonable and practicable:

(ii) two years with regard to the equipment of the vessel referred to in chapters II, III, IV, V, VI, VII and X; and

(iii) one year with regard to the radio installations *in ships with a length of 24 m or more*, including those used in life-saving appliances referred to in chapters VII *and* IX.

Periodical surveys shall be such as to ensure that the appropriate items referred to in subparagraph (a) fully comply with the applicable requirements of this annex, that the equipment is in good working order and that the stability information is readily available on board.

When the duration of the certificate issued under regulation 7 or 8 is extended as specified in regulation 11(2) or (4), the intervals of the surveys may be extended correspondingly.

(c) In addition to the periodical survey required in subparagraph (b)(i), intermediate surveys with regard to the structure and machinery of the vessel [at intervals of two years plus/minus three months for vessels constructed of material other than wood and] at intervals specified by the Administration [for vessels constructed of wood]. The survey shall also be such as to ensure that alterations which would adversely affect the safety of the vessel or the crew have not been made.

(d) Periodical surveys, as specified in subparagraphs (b)(ii) and (iii), and intermediate surveys, as specified in subparagraph (c), shall be endorsed on the certificate referred to in regulation 7 or 8, as appropriate.

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[2] In addition to the inspections and surveys mentioned in this chapter, which refer to Commission Directive 97/70/EC and the Torremolinos Protocol, requirements for inspections and surveys and the issuance of certificates are found other places in these regulations.

(e) *Surveys prescribed by subparagraph (b)(i) may be carried out until three months before the survey date stipulated in the document of compliance. Surveys prescribed by subparagraphs (b)(ii) and (b)(iii) may be carried out within a period of three months before or after the survey date stipulated in the document of compliance.*

(f) *In case of a laid up fishing vessel, the Danish Maritime Authority may allow a prescribed survey to be fully or partly omitted for as long as the vessel remains laid up.*

(2) (a) The inspection and survey of vessels shall, so far as the enforcement of the provisions of the present regulations and the granting of exemptions therefrom are concerned, be carried out by officers of the Administration. The Administration may, however, entrust the inspections and surveys either to surveyors nominated for the purpose or to organizations recognized by it.

(b) An Administration nominating surveyors or recognizing organizations to conduct inspections and surveys as set forth in subparagraph (a) shall, as a minimum, empower any nominated surveyor or recognized organization:

(i) to require repairs to a vessel,

(ii) to carry out inspections and surveys if requested by the appropriate authorities of a port State.

The Administration shall notify the [Commission in accordance with article 4 of Council Directive 94/57/EC, as amended by European Parliament and Council Directive 2001/105/EC] of nominated surveyors or recognized organizations.

(c) When a nominated surveyor or recognized organization determines that the condition of the vessel or its equipment does not correspond substantially with the particulars of the certificate or is such that the vessel is not fit to proceed to sea without danger to the vessel, or persons on board, such surveyor or organization shall immediately ensure that corrective action is taken and shall in due course notify the Administration. If such corrective action is not taken the relevant certificate should be withdrawn and the Administration shall be notified immediately; and, if the vessel is in the port of another Party, the appropriate authorities of the port State shall also be notified immediately. When an officer of the Administration, a nominated surveyor or a recognized organization has notified the appropriate authorities of the port State, the Government of the port State concerned shall give such officer, surveyor or organization any necessary assistance to carry out their obligations under this regulation. When applicable, the Government of the port State concerned shall ensure that the vessel shall not sail until it can proceed to sea, or leave port for the purpose of proceeding to the appropriate repair yard, without danger to the vessel or persons on board.

(d) In every case, the Administration shall fully guarantee the completeness and efficiency of the inspection and survey, and shall undertake to ensure the necessary arrangements to satisfy this obligation.

(3) (a) The condition of the vessel and its equipment shall be maintained to conform with the provisions of the present regulations to ensure that the vessel in all respects will remain fit to proceed to sea without danger to the vessel or persons on board.

(b) After any survey of the vessel under this regulation has been completed, no change shall be made in the structural arrangements, machinery, equipment and other items covered by the survey, without sanction of the Administration.

(c) Whenever an accident occurs to a vessel or a defect is discovered, either of which affects the safety of the vessel or the efficiency or completeness of its life-saving appliances or other equipment, the skipper or owner of the vessel shall report at the earliest opportunity to the Administration, the nominated surveyor or recognized organization responsible for issuing the relevant certificate, who

shall cause investigations to be initiated to determine whether a survey, as required by this regulation, is necessary. If the vessel is in a port of another Party, the skipper or owner shall also report immediately to the appropriate authorities of the port State and the nominated surveyor or recognized organization shall ascertain that such a report has been made.

Regulation 7 – Issue or endorsement of certificates *for ships with a length of 24 m and over*

(1) (a) A Fishing Vessel [Certificate of Compliance] shall be issued after survey to a vessel which complies with the applicable requirements of this annex. [The Certificate shall be supplemented by a Record of Equipment.] *When a survey has been completed, a sailing permit shall also be issued.*

(b) When an exemption is granted to a vessel under, and in accordance with, the provisions of this Annex, an International Fishing Vessel Exemption Certificate shall be issued in addition to the certificate and [Record of Equipment] prescribed in subparagraph (a).

(2) The certificates referred to in paragraph (1) shall be issued or endorsed either by the Administration or by any person or organization duly authorized by the Administration. In every case, the Administration shall assume full responsibility for the issue of the certificates.

(3) Vessels covered by these provisions shall, after a concrete assessment by the Danish Maritime Authority, be provided with signs, notices, marking and marking-off to an extent appropriate for the size and area of operation of the individual vessel.

Regulation 7a – Issue or endorsement of certificates for ships with a length of less than 24 m

(1) For ships with a length of less than 24 m complying with the relevant requirements in this annex, a sailing permit shall be issued after a completed survey provided with spaces for inserting endorsement of periodical surveys, etc.

Regulation 7b – Survey book

(1) Fishing vessels covered by these provisions shall carry a survey book with an appendix. The survey book, which shall be issued by the Danish Maritime Authority, shall be kept in accordance with the instructions printed in the book and shall be carried on board.

(2) Exemptions and equivalents granted from the requirements of these regulations shall be entered in the ship's survey book or be kept in its appendix.

Regulation 8 – Issue and endorsement of certificates by another Party

(1) A Party may, at the request of another Party, cause a vessel to be surveyed and, if satisfied that the requirements of this annex are complied with, shall issue or authorize the issue of certificates to the vessel and, where appropriate, endorse or authorize the endorsement of the certificates of the vessel in accordance with the provisions of this annex.

(2) A copy of the certificate and a copy of the survey report shall be transmitted as soon as possible to the requesting Administration.

(3) A certificate so issued shall contain a statement to the effect that it has been issued at the request of the other Administration and shall have the same force and receive the same recognition as a certificate issued under regulation 7.

Regulation 9 – Form of certificates and record of equipment

The certificates and record of equipment shall be drawn up in the form corresponding to the model given in the appendix. If the language used is neither English nor French, the text shall include a translation into one of these languages unless the Administration deems it to be unnecessary, taking into account the area of operation of the vessel. *An example of the sailing permit for ships with a length of less than 24 m is not included the appendix.*

Regulation 10 – Availability of certificates

The certificates issued under regulation 7 or 8 shall be readily available on board for examination at all times.

Regulation 11 – Duration and validity of certificates and *sailing permits*

(1) [A Fishing Vessel Certificate of Compliance for vessels with a length of or above 24 m] *and a sailing permit for ships with a length of less than 24 m* shall be issued for a period of not more than four years and shall not be extended for more than one year subject to the periodical and intermediate surveys as required in regulation 6(1)(b) and (c), except as provided for in paragraphs (2), (3) and (4). An International Fishing Vessel Exemption Certificate shall not be valid for longer than the period of the [Fishing Vessel Certificate of Compliance]. *Where a survey has been carried out within the period mentioned in regulation 6(2), a new certificate and a new sailing permit may be issued with a validity from the date of issue to four years after the date of expiry of the certificate or the sailing permit that the new certificate or the new sailing permit replaces. Where a survey as prescribed by regulation 6(b)(1) has been carried out after the expiry of the certificate of compliance or the sailing permit, a new certificate of compliance or a new sailing permit may only under very special circumstances be issued for a period of more than four years from the date of expiry of the certificate of compliance or the sailing permit that it replaces.*

(2) If at the time when the validity of its certificate expires or ceases, a vessel is not in a port of the Party whose flag the vessel is entitled to fly, the validity of the certificate may be extended by that Party, but such extension shall be granted only for the purpose of allowing the vessel to complete its voyage to a port of that Party or to the port in which it is to be surveyed, and then only in cases where it appears proper and reasonable to do so

(3) No certificates shall be thus extended for a period longer than five months and a vessel to which such extension is granted shall not, on its arrival in a port of the Party whose flag the vessel is entitled to fly or the port in which it is to be surveyed, be entitled by virtue of such extension to leave such port without having obtained a new certificate.

(4) A certificate which has not been extended under the provisions of paragraph (2) may be extended by the Administration for a period of grace up to one month from the date of expiry stated on it.

(5) A certificate issued under regulation 7 or 8 shall cease to be valid in any of the following cases:

(a) if the relevant surveys are not completed within the periods specified in regulation 6;

(b) if the certificate is not endorsed in accordance with the present regulations;

(c) upon transfer of the vessel to the flag of another State. A new certificate shall only be issued when the Government issuing the new certificate is fully satisfied that the vessel is in compliance with the requirements of regulation 6(3)(a) and (b). In the case of a transfer between Parties, if requested within three months after the transfer has taken place, the Government of the State whose flag the vessel was formerly entitled to fly shall, as soon as possible, transmit to the Administration copies of the

certificates carried by the vessel before the transfer and, if available, copies of the relevant survey report.

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Chapter II
Construction, watertight integrity and equipment

Regulation 1 – Construction

(1) Strength and construction of hull, superstructures, deckhouses, machinery casings, companionways and any other structures and vessel's equipment shall be sufficient to withstand all foreseeable conditions of the intended service and shall be in accordance with the rules of a recognised organisation, *cf. chapter I, regulation 1A.*

The draught[1] *for the hull strength scantling, etc. shall be established as the "depth moulded" as defined in chapter I, regulation 2(8). In vessels with more decks, the Administration may approve a lower deck as the basis of the scantling maximum draught. Where a lower working deck does not extend over the entire length of the vessel, the scantling draught shall, however, be established as the upper complete deck.*

(2) The hull of vessels intended for operation in ice shall be strengthened in accordance with the anticipated conditions of navigation and area of operation *in accordance with the following guidelines:*

(a) All new fishing vessels engaged on voyages around Greenland shall be ice-strengthened.

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[1] *Since a minimum freeboard requirement is not made on fishing vessels, the Administration will, when approving the hull strength, etc., suppose that fishing vessels are in principle loaded to the upper complete deck and have a scantling draught at this deck.*

(b) *On fishing vessels built on or after 1 January 2003, this shall be in accordance with the ice class/strengthening of a recognised organisation that is at least equivalent to the ice class Ice-1B used by Det Norske Veritas or an equivalent ice class according to the intended use. A higher ice class should be considered if the vessel is intended to navigate in areas with strong ice flow or to fish in ice areas. The ice class/strengthening shall be determined in each individual case in cooperation between the Danish Maritime Authority and the recognised organisation of the vessel as well as the ship owner.*

(c) *Fishing vessels built on or after 1 August 1990 but before 1 January 2003 engaged on voyages around Greenland shall be ice-strengthened in accordance with the intended use of the vessel. On fishing vessels built of steel or equivalent material the hull structure, rudder, propeller, etc. shall, as a minimum, be strengthened in accordance with an ice class of a recognised organisation equivalent to ice class ICE-C of Det Norske Veritas or an equivalent ice class used by a recognised organisation. When determining the ice class/strengthening, account may in each individual case be taken of local geographic restrictions and ice conditions as well as any seasonal restrictions.*

(d) *Existing fishing vessels not originally built for voyages in Greenland waters, but later transferred to (changing service area) Greenland from another place in the national community, shall be ice-strengthened in accordance with the future use of the vessel as stipulated above in sub-paragraph (c).*

(3) Bulkheads, closing devices and closures of openings in these bulkheads, as well as methods for their testing, shall be in accordance with the requirements of the Administration. *All tanks, watertight bulkheads, water- and weathertight doors as well as rudders and propeller nozzles, etc. shall be pressure tested or tested for water or weather tightness in accordance with prevailing standards and practice by a recognised organisation.* Vessels constructed of material other than wood shall be fitted with a collision bulkhead and at least with watertight bulkheads bounding the main machinery space. Such bulkheads shall be extended up to the working deck. In vessels constructed of wood such bulkheads, which as far as practicable shall be watertight, shall also be fitted.

(4) Pipes piercing the collision bulkhead shall be fitted with suitable valves operable from above the working deck and the valve chest shall be secured at the collision bulkhead inside the forepeak. No door, manhole, ventilation duct or any other opening shall be fitted in the collision bulkhead below the working deck. *Where pipes, scuppers, electric cables, etc. are carried through watertight subdivision bulkheads, precautions shall be taken to ensure that the watertight integrity of the bulkheads is maintained. Valves not forming part of a pipe system may not be fitted in watertight subdivision bulkheads.*

(5) Where a long forward superstructure is fitted, the collision bulkhead shall be extended weathertight to the deck next above the working deck. The extension need not be fitted directly over the bulkhead below provided it is located within the limits given in regulation I/2(22) and the part of the deck which forms the step is made effectively weathertight.

(6) The number of openings in the collision bulkhead above the working deck shall be reduced to the minimum compatible with the design and normal operation of the vessel. Such openings shall be capable of being closed weathertight *and be hinged on the front side so that they open forward.*

(7) In vessels of 75 m in length and over, a watertight double bottom shall be fitted, as far as practicable, between the collision bulkhead and the afterpeak bulkhead.

Regulation 2 – Watertight Doors

(1) The number of openings in watertight bulkheads, as required by regulation 1(3), shall be reduced to the minimum compatible with the general arrangements and operational needs of the vessel; openings shall be fitted with watertight closing appliances complying with the rules of a recognised organisation. Watertight doors shall be of an equivalent strength to the adjacent unpierced structure.

(2) In vessels of less than 45 m in length, such doors may be of the hinged type, which shall be capable of being operated locally from each side of the door and shall normally be kept closed at sea. A notice shall be attached to the door on each side to state that the door shall be kept closed at sea.

(3) In vessels of 45 m in length and over, watertight doors shall be of the sliding type in:

(a) spaces where it is intended to open them at sea and if located with their sills below the deepest operating waterline, unless the Administration considers it to be impracticable or unnecessary taking into account the type and operation of the vessel.

Exemptions from this regulation allowed by a Member State shall be subject to the procedure of Article 4 of the Directive; and

(b) the lower part of a machinery space where there is access from it to a shaft tunnel.

Otherwise watertight doors may be of the hinged type.

(4) Sliding watertight doors shall be capable of being operated when the vessel is listed up to 15 either way.

(5) Sliding watertight doors whether manually operated or otherwise shall be capable of being operated locally from each side of the door; in vessels of 45 m in length and over these doors shall also be capable of being operated by remote control from an accessible position above the working deck except when the doors are fitted in crew accommodation spaces.

(6) Means shall be provided at remote operating positions to indicate when a sliding door is open or closed.

Regulation 3 – Hull Integrity

(1) External openings shall be capable of being closed so as to prevent water from entering the vessel. Deck openings which may be open during fishing operations shall normally be arranged near to the vessel's centreline. However, the Administration may approve different arrangements if satisfied that the safety of the vessel will not be impaired.

(2) Fish flaps on stern trawlers shall be power-operated and capable of being controlled from any position which provides an unobstructed view of the operation of the flaps.

Regulation 4 – Weathertight Doors

(1) All access openings in bulkheads of enclosed superstructures and other outer structures through which water could enter and endanger the vessel, shall be fitted with doors permanently attached to the bulkhead, framed and stiffened so that the whole structure is of equivalent strength to the unpierced structure, and weathertight when closed. The means for securing these doors weathertight shall consist of gaskets and clamping devices or other equivalent means and shall be permanently attached to the bulkhead or to the doors themselves, and shall be so arranged that they can be operated from each side of the bulkhead. The Administration may, without prejudice to the safety of the crew, permit the doors to be opened from one side only for freezer rooms, provided that a suitable alarm device is fitted to prevent persons being trapped in those rooms.

(2) The height above deck of sills in those doorways, in companionways, erections and machinery casings which give direct access to parts of the deck exposed to the weather and sea shall be at least 600 mm on the working deck and at least 300 mm on the superstructure deck. Where operating experience has shown justification and on approval of the Administration, these heights, except in the doorways giving direct access to machinery spaces, may be reduced to not less than 380 mm and 150 mm respectively.

Regulation 5 – Hatchways closed by wood covers

(1) The height above deck of hatchway coamings shall be at least 600 mm on exposed parts of the working deck and at least 300 mm on the superstructure deck.

(2) The finished thickness of wood hatchway covers shall include an allowance for abrasion due to rough handling. In any case, the finished thickness of these covers shall be at least 4 mm for each 100 mm of unsupported span subject to a minimum of 40 mm and the width of their bearing surfaces shall be at least 65 mm.

(3) Arrangements for securing wood hatchway covers weathertight shall be provided in accordance with the standards as given in regulations 14 and 15 of Annex I to the International Convention on Load Lines 1966.[2]

Regulation 6 – Hatchways closed by covers other than wood

(1) The height above deck of hatchway coamings shall be as specified in regulation 5(1). Where operating experience has shown justification, and on the approval by the Administration, the height of these coamings may be reduced, or the coamings omitted entirely, provided that the safety of vessels is not thereby impaired. In this case, the hatchway openings shall be kept as small as practicable and the covers be permanently attached by hinges or equivalent means and be capable of being rapidly closed and battened down, or by equally effective arrangements to the satisfaction of the Administration.

(2) For the purpose of strength calculations, it shall be assumed that hatchway covers are subjected to the weight of cargo intended to be carried on them or to the following static loads, whichever is the greater:

(a) 10.0 kN/m^2 for vessels of 24 m in length *and below*;

(b) 17.0 kN/m^2 for vessels of 100 m in length and over.

For intermediate lengths the load values shall be determined by linear interpolation. The Administration may reduce the loads to not less than 75% of the above values for covers to hatchways situated on the superstructure deck in a position abaft a point located 0.25L from the forward perpendicular.

(3) Where covers are made of mild steel, the maximum stress calculated according to paragraph (2) multiplied by 4.25 shall not exceed the minimum ultimate strength of the material. Under these loads the deflections shall not be more than 0.0028 times the span.

(4) Covers made of materials other than mild steel shall be at least of equivalent strength to those made of mild steel, and their construction shall be of sufficient stiffness ensuring weathertightness under the loads specified in paragraph (2).

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[2] The International Convention on Load Lines 1966, as established by the International Conference on Load Lines on 5 April 1966 and adopted by the International Maritime Organisation by its Resolution A.133(V) on 25 October 1967.

(5) Covers shall be fitted with clamping devices and gaskets sufficient to ensure weathertightness, or other equivalent arrangements to the satisfaction of the Administration.

Regulation 7 – Machinery space openings

(1) Machinery space openings shall be framed and enclosed by casings of a strength equivalent to the adjacent superstructure. External access openings therein shall be fitted with doors complying with the requirements of regulation 4.

(2) Openings other than access openings shall be fitted with covers of equivalent strength to the unpierced structure, permanently attached thereto and capable of being closed weathertight.

Regulation 8 – Other deck openings

(1) Where it is essential for fishing operations, flush deck scuttles of the screw, bayonet or equivalent type and manholes may be fitted provided these are capable of being closed watertight and such devices shall be permanently attached to the adjacent structure. Having regard to the size and disposition of the openings and the design of the closing devices, metal-to-metal closures may be fitted if the Administration is satisfied that they are effectively watertight.

(2) Openings other than hatchways, machinery space openings, manholes and flush scuttles in the working or superstructure deck shall be protected by enclosed structures fitted with weathertight doors or their equivalent. Companionways shall be situated as close as practicable to the centreline of the vessel.

If the freeboard and/or superstructure deck is penetrated by a fish and/or ice lift, such lifts shall be lined with a sleeve through the deck to a height of at least 900 mm above the working deck and the superstructure deck and be enclosed with a satisfactory seal around the lift. The sleeve shall be stiffened and be of the same scantling as hatchway coamings. Ice lifts shall be fitted with a reasonably tight, hinged flap at the top, the underside of which shall be located at least 1200 mm above deck.

Regulation 9 – Ventilators

(1) In vessels of 45 m in length and over, the height above deck of ventilator coamings, other than machinery space ventilator coamings, shall be at least 900 mm on the working deck and at least 760 mm on the superstructure deck. In vessels of less than 45 m in length, the height of these coamings shall be 760 mm and 450 mm respectively. The height above deck of machinery space ventilator openings necessary to continuously supply the machinery space and, on demand, immediately supply the generator room, in general shall be in compliance with regulation II/9(3). However, where due to the ship's size and arrangements this is not practicable, lesser heights, but in all cases not less than 900 mm above the working deck and the superstructure deck, may be accepted with the provision of weathertight closing appliances in accordance with regulation II/9(2) in combination with other suitable arrangements to ensure an uninterrupted adequate supply of ventilation to the spaces.

(2) Coamings of ventilators shall be of equivalent strength to the adjacent structure and capable of being closed weathertight by closing appliances permanently attached to the ventilator or adjacent structure. Where the coaming of any ventilator exceeds 900 mm in height it shall be specially supported.

(3) Closing appliances in vessels of 45 m in length and over need not be fitted to ventilators the coamings of which extend to more than 4.5 m above the working deck or more than 2.3 m above the superstructure deck unless specifically required by the Administration. In vessels of less than 45 m in length, closing appliances need not be fitted to ventilators the coamings of which extend to more than

3.4 m above the working deck or more than 1.7 m above the superstructure deck. If the Administration is satisfied that it is unlikely that water will enter the vessel through machinery space ventilators, closing appliances to such ventilators may be omitted.

Regulation 10 – Air pipes

(1) Where air pipes to tanks and void spaces below deck extend above the working or the superstructure decks, the exposed parts of the pipes shall be of strength equivalent to the adjacent structures and fitted with appropriate protection. Openings of air pipes shall be provided with means of closing, permanently attached to the pipe or adjacent structure.

(2) The height of air pipes above deck to the point where water may have access below shall be at least 760 mm on the working deck and at least 450 mm on the superstructure deck. The Administration may accept reduction of the height of an air pipe to avoid interference with the fishing operations.

Regulation 11 – Sounding devices

(1) Sounding devices, to the satisfaction of the Administration, shall be fitted:

(a) to the bilges of those compartments which are not readily accessible at all times during the voyage; and

(b) to all tanks and cofferdams.

(2) Where sounding pipes are fitted, their upper ends shall be extended to a readily accessible position and, where practicable, above the working deck. Their openings shall be provided with permanently attached means of closing. Sounding pipes which are not extended above the working deck shall be fitted with automatic self-closing devices.

Regulation 12 – Sidescuttles and windows

(1) Sidescuttles to spaces below the working deck and to spaces within the enclosed structures on that deck shall be fitted with hinged deadlights capable of being closed watertight. *Furthermore, at least two deadlights for each type of window of sufficient strength, however at least 5.0 mm steel plate or 7.5 mm aluminium plate, shall be provided for front windows on the other levels of the structure. However, a maximum of one such deadlight shall be provided for each window. It shall be easy and safe to fit the deadlights in front of damaged windows.*

(2) No sidescuttle shall be fitted in such a position that its sill is less than 500 mm above the deepest operating waterline.

(3) Sidescuttles fitted less than 1,000 mm above the deepest operating waterline shall be of the fixed type.

(4) Sidescuttles, together with their glasses and deadlights shall be of an approved construction.[3] Those prone to be damaged by fishing gear shall be suitably protected.

(5) Toughened safety glass or its equivalent shall be used for the wheelhouse windows.

(6) The Administration[4] may accept sidescuttles and windows without deadlights in side and aft bulkheads of deckhouses located on or above the working deck if satisfied that the safety of the vessel will not be impaired, taking into account the rules of recognised organisations based upon the relevant ISO standards.

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[3] *For example windows and sidescuttles, including materials and glass, complying with an internationally recognised standard such as the British Standard BS MA 24 "Ship side scuttles" and BS MA 25 "Ship's windows" or similar.*

[4] *This may be permitted only when the lower edge of the windows is above the waterline at the minimum angle of flooding; otherwise the lower edge shall be regarded as the point where flooding will occur.*

Regulation 13 – Inlets and discharges *as well as waste chutes*

(1) Discharges led through the shell either from spaces below the working deck or from within enclosed superstructures or deckhouses on the working deck fitted with doors complying with the requirements of regulation 4 shall be fitted with accessible means for preventing water from passing inboard. Normally each separate discharge shall have an automatic non-return valve with a positive means of closing it from an accessible position. Such a valve is not required if the Administration considers that the entry of water into the vessel through the opening is not likely to lead to dangerous flooding and that the thickness of the piping is sufficient. The means for operating the positive action valve shall be provided with an indicator showing whether the valve is open or closed. *This shall also apply to waste chutes penetrating the shell. The inside openings of a chute in spaces on the working deck shall be located as high as possible in consideration of the vessel's trim and deepest operating waterline, however at a minimum of 800 mm above the deepest operating waterline. The inside opening shall be provided with a weathertight filling hatch with gasket and clamping devices. The chute and the hatch shall have at least the same wall thickness as the plating or bulwark in which it is located, however a minimum of 10 mm. Any chute and hatch shall be approved by the Administration, which may make further requirements on the basis of the concrete construction.*

(2) In manned machinery spaces main and auxiliary sea inlets and discharges essential for the operation of machinery may be controlled locally. The controls shall be accessible and shall be provided with indicators showing whether the valves are open or closed.

(3) Fittings attached to the shell and the valves required by this regulation shall be of steel, bronze or other approved ductile material. All pipes between the shell and the valves shall be of steel, except that in spaces other than machinery spaces of vessels constructed of material other than steel the Administration may approve the use of other materials.

Regulation 14 – Freeing ports

(1) Where bulwarks on weather parts of the working deck form wells, the minimum freeing port area (A) in square metres on each side of the vessel for each well on the working deck shall be determined in relation to the length (l) and height of bulwark in the well as follows:

(a) $A = 0.07 \times l$
(l need not be taken as greater than 0.7L).

(b)(i) Where the bulwark is more than 1,200 mm in average height the required area shall be increased by 0.004 m^2 per metre of length of well for each 100 mm difference in height.

(ii) Where the bulwark is less than 900 mm in average height, the required area may be decreased by 0.004 m^2 per metre of length of well for each 100 mm difference in height.

(2) The freeing port area calculated according to paragraph (1) shall be increased where the Administration considers that the vessel’s sheer is not sufficient to ensure that the deck is rapidly and effectively freed of water.

(3) Subject to the approval of the Administration the minimum freeing port area for each well on the superstructure deck shall be not less than one half the area (A) given in paragraph (1).

(4) Freeing ports shall be so arranged along the length of bulwarks as to ensure that the deck is freed of water most rapidly and effectively. Lower edges of freeing ports shall be as near the deck as practicable.

(5) Poundboards and means for stowage of the fishing gear shall be arranged so that the effectiveness of freeing ports will not be impaired. Poundboards shall be so constructed that they can be locked in position when in use and shall not hamper the discharge of shipped water.

(6) Freeing ports over 300 mm in depth shall be fitted with bars spaced not more than 230 mm nor less than 150 mm apart or provided with other suitable protective arrangements. Freeing port covers, if fitted, shall be of approved construction. If devices are considered necessary for locking freeing port covers during fishing operations they shall be to the satisfaction of the Administration and easily operable from a readily accessible position.

(7) In vessels intended to operate in areas subject to icing, covers and protective arrangements for freeing ports shall be capable of being easily removed to restrict ice accretion. The size of openings and means provided for removal of these protective arrangements shall be to the satisfaction of the Administration.

Regulation 15 – Anchor and Mooring Equipment

(1) Anchor equipment designed for quick and safe operation shall be provided which shall consist of anchoring equipment, anchor chains or wire ropes, stoppers and a windlass or other arrangements for dropping and hoisting the anchor and for holding the vessel at anchor in all foreseeable service conditions. Vessels shall also be provided with adequate mooring equipment for safe mooring in all operating conditions. Anchor and mooring equipment shall be to the satisfaction of the Administration.[5] For fishing vessels, *with a length of or above 24 m,* built on or after 1 January 2003, anchor and mooring equipment shall be in accordance with the rules of a recognised organisation. *Cf. however subparagraph 8 for fishing vessels engaged on voyages around Greenland.*

(2) Anchor equipment, etc. in unclassified fishing vessels with an overall length of or above 15 m but below 24 m shall comply with the following provisions, the vessel's overall length being used as a parameter. Classified vessels may apply the same rules if this is acceptable to the vessel's classification society.

(3) The total anchor weight shall be determined in accordance with curve 1 in the graph below, the stipulated weight being based on traditional anchor types. The total anchor weight shall be distributed on two or more anchors, the largest one of which shall have at least a weight as stipulated in table/curve 2. Furthermore, it shall be possible to couple two or more anchors. If special anchors are being used ("High Holding Power Anchors"), which have been approved and provided with a certificate from a recognised organisation, the anchor weight may be decreased by up to 25%.

(4) If superstructures, deck houses, forecastle or shelters are completely or partially enclosed, have a breadth above B/4 and extend over the entire length of the fishing vessel, the anchor weight as stipulated in curves 1 and 2 shall in both cases be increased by 20% per level in addition to what is stipulated in accordance with subparagraph (3). If the superstructures, etc. are shorter than the overall length of the vessel, the anchor weight shall be increased proportionally hereto. If the fishing vessel is designated for "service around Greenland", the anchor weight as stipulated in tables or curves 1 and 2 shall in both cases be increased by 20% in addition to what is stipulated in subparagraphs (3) and (4).

(5) Anchors with a weight of and above 150 kg shall be fitted in hawseholes, skids or similar arrangement making it possible to drop the anchor immediately. If the weight of each of the two largest anchors is

less than 300 kg, it may be accepted that only one of the anchors is fitted in a hawsehole or similar arrangement. The anchor shall also be secured in the stowed position by means of a locking device.

(6) If a vessel has lost its anchors, and it is not immediately possible to re-acquire them, the Administration may, after having assessed the conditions applying to the vessel in question, permit otter boards with a least the same weight as being equivalent to one or more anchors with associated chain for a period of time. It is, however, a precondition that the vessel's kedge is always carried on board ready for use. Such a permit and its validity shall be recorded in the survey book.

(7) In general, fishing vessels shall be provided with two anchor chains, the length and dimension of each anchor chain being determined in accordance with table or curve 3 in the graph below. If superstructures, deck houses, forecastle or shelters are completely or partially enclosed, have a breadth above B/4 and extend over the entire length of the vessel, the length of each anchor chain shall be increased by 20% per level in addition to what is stipulated in table or curve 3 in the graph. If the superstructure, etc. is shorter than the overall length of the vessel, the length of the anchor chain shall be increased proportionally hereto. If the vessel is designated for "service around Greenland", the anchor chain shall be increased by 100% in addition to what is stipulated in table or curve 3 in the graph.

(8) Both anchor chains may, however, with the exception of anchor chains on vessels designated for "service around Greenland", be replaced by anchor wires with an ultimate strength in accordance with table/curve 4 in the table/graph below. On vessels designated for "service around Greenland", one of the anchor chains may be replaced by wire with an ultimate strength in accordance with table or curve 4 in the graph below.

(9) Trawl wire may be used as anchor wire if the wire has at least the same ultimate strength as stipulated in table or curve 4. It may be accepted that the trawl wire is carried through a gallows block. If the anchor chains are replaced by wire, its length shall be at least 2.5 times the required chain length. Between the anchor and the wire, there shall be a chain foreganger with a diameter as that of the anchor chain and a length of at least 12.5 m.

(10) Fishing vessels provided with anchor chain/wire as stipulated or with anchors of or above 150 kg shall be fitted with a windlass. This shall be fitted with a cable pulley or drum for each anchor arranged in a hawsehole or similar arrangement and a connection for the release of each cable pulley or drum. It may not be possible to carry the chains/wires forward to the hawsehole or similar arrangement without passing the cable pulleys or drums of the windlass.

(11) The windlass, its support and its brake shall be capable of absorbing a static tension of at least 45% of the ultimate strength of the anchor chain/wire without the occurrence of any lasting deformations and without the brake losing its hold. If a chain stopper/wire nippers, cf. subparagraph (10) has not been fitted, the above-mentioned factor shall be at least 80%. Furthermore, a chain stopper/wire nipper shall be fitted between the windlass and the hawsehole or similar for each anchor chain/wire capable of holding the vessel while at anchor. The chain stopper/wire nipper and its support shall be capable of absorbing a static tension of at least 80% of the ultimate strength of the anchor chain/wire without the occurrence of any lasting deformations and without the chain stopper/nipper losing its hold. If the trawl winch is fitted with cable pulleys, etc. as stipulated in subparagraph (10), such a winch may be used as a windlass.

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[5] See Annex II, "Recommended Practice for Anchor and Mooring Equipment of Code of Safety for Fishermen and Fishing Vessels", Part B.

(12) Fishing vessels which according to subparagraph (9) use their trawl wire as anchor wire may use their trawl winch as windlass if the trawl wire is wound on a capstan drum with a braking device. In case of such an arrangement, a cable pulley on the windlass for the chain foreganger will not be required.

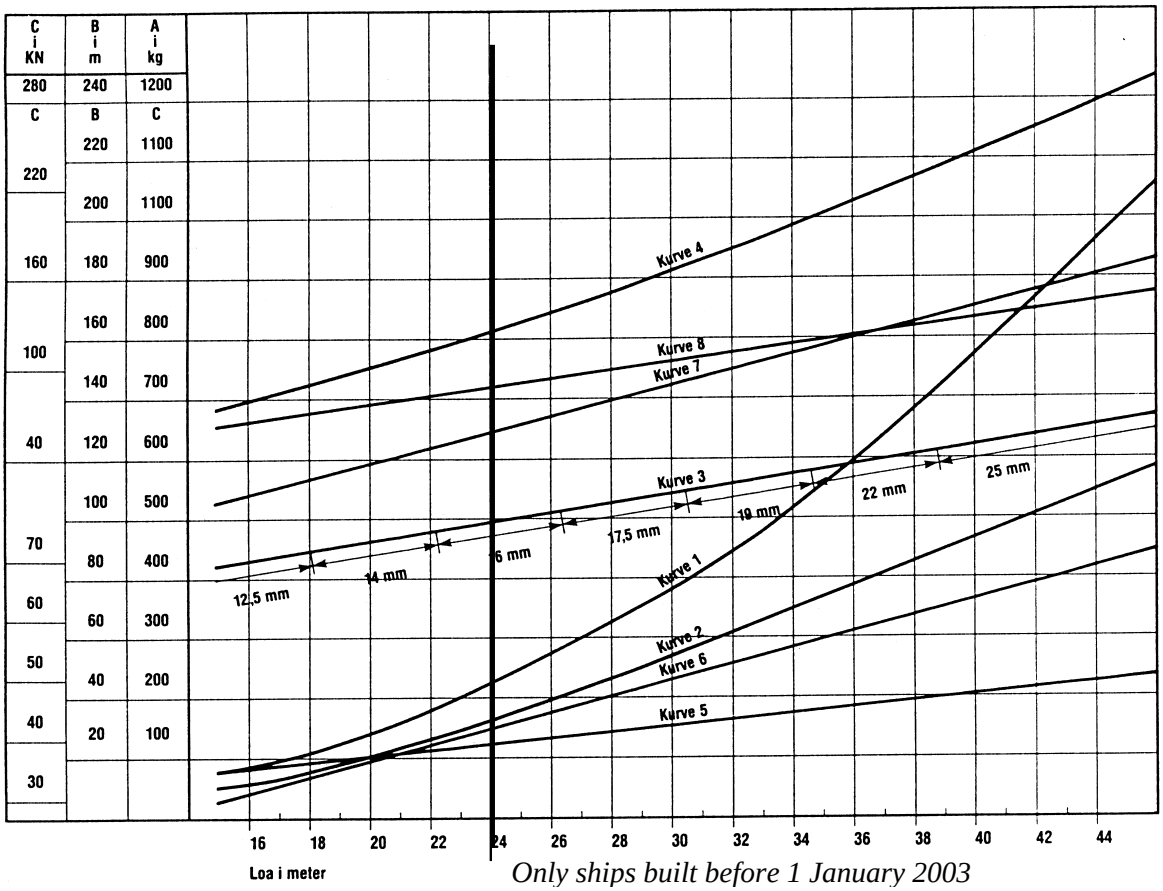
(13) The vessel shall be provided with at least four moorings, each of a length and ultimate strength in accordance with tables or curves 5 and 6 respectively in the graph below.

(14) The vessel shall be provided with at least one tow line with a length and ultimate strength in accordance with tables or curves 7 and 8 respectively in the graph below. It shall be located appropriately so that it is possible to make it ready for use at sea. The tow line may be replaced by one of the fishing vessel's trawl wires if this has at least a similar length and ultimate strength. If wire is used, a rope foreganger of at least 12.5 m with an ultimate strength as stipulated for the tow line shall also be provided.

(15) The vessel shall be provided with suitable cleats or bollards as well as hawseholes in order to be able to anchor and moor the vessel securely. The number of bollards, etc. shall be determined in each individual case dependent on the size and deck arrangement of the vessel. The number shall be sufficient to make it possible to fasten both the mooring line and spring on each its bollard in each side forward and abaft. At least three bollards shall be fitted forward, and at least two abaft. Cleats and bollards shall be of such a size that it is possible to accommodate at least four turns of the vessel's mooring lines or tow line below the horns of the cleat or the upper protruding edge of the bollard. The area where cleats and bollards are to be fastened shall be securely reinforced.

(16) The vessel shall be provided with an appropriately sized and appropriate number of hawseholes to ensure that anchor cables, moorings and tow lines, etc. are not chafed.

Curves may be replaced by tables!



Only ships built before 1 January 2003

Diagram – Anchor equipment, etc.

Curve 1: Total anchor weight in kg pursuant to column A

Curve 2: Minimum weight of largest anchor in kg pursuant to column A

Curve 3: Length of each chain in metres pursuant to column B

Curve 4: Ultimate strength of anchor wire in kN pursuant to column C

Curve 5: Length of each mooring line in metres pursuant to column B

Curve 6: Ultimate strength of mooring line in kN pursuant to column C

Curve 7: Length of tow line in metres pursuant to column B

Curve 8: Ultimate strength of tow line in kN pursuant to column C

According to regulation 15 (1), all fishing vessels with a length of or above 24 m, constructed on or after 1 January 2003, shall comply with the rules of anchor equipment issued by a recognized organisation.

Tables for anchor equipment on fishing vessels of a length of 15 to 24 m

Length overall	***Total anchor weight***	***Largest anchor***	***Anchor chain length***	***Chain dimension***		***Anchor wire length***	***Ultimate strength***
m	***kg***	***kg***	***m***	***Mm***	***''***	***m***	***kN***
15	*70*	*50*	*85*	*13 mm*	*1/2 "*	*213*	*70*
16	*88*	*64*	*87*	*13 mm*	*1/2 "*	*217*	*76*
17	*106*	*78*	*88*	*13 mm*	*1/2 "*	*221*	*83*
18	*124*	*92*	*90*	*14 mm*	*9/16 "*	*225*	*89*
19	*142*	*106*	*91*	*14 mm*	*9/16 "*	*229*	*96*
20	*160*	*120*	*93*	*14 mm*	*9/16 "*	*233*	*102*
21	*178*	*134*	*95*	*14 mm*	*9/16 "*	*237*	*108*
22	*196*	*148*	*96*	*14 mm*	*9/16 "*	*241*	*115*
23	*214*	*162*	*98*	*16 mm*	*5/8 "*	*245*	*121*
24	*230*	*176*	*99*	*16 mm*	*5/8 "*	*249*	*128*

In case of intermediate values for the vessel's length, interpolation shall be used for the table values.

Tow line and moorings for fishing vessels with a length of 15 to 24 m

Length of vessel (Loa)	***Length of tow line***	***Ultimate strength of tow line***	***Length of each mooring line***	***Ultimate strength of each mooring line***
m	***m***	***KN***	***m***	***kN***
15	*105*	*62*	*15*	*30*
16	*108*	*65*	*16*	*32*
17	*110*	*67*	*17*	*33*
18	*113*	*70*	*18*	*35*
19	*115*	*73*	*19*	*37*
20	*118*	*76*	*20*	*38*
21	*121*	*79*	*21*	*39*
22	*123*	*82*	*22*	*40*
23	*126*	*84*	*23*	*42*
24	*128*	*87*	*24*	*43*

In case of intermediate values for the vessel's length, interpolation shall be used for the table values.

Regulation 16 – Working decks within an enclosed superstructure

(1) Such decks shall be fitted with an efficient drainage system having an appropriate drainage capacity to dispose of washing water and fish guts. *The following shall be considered appropriate drainage capacity:*

(a) Drainage system (bilge pumping arrangement)

(1) An efficient drainage system for the freeing of working decks shall be used in cases where water may occur from deck washing, fish-processing or from the sea through openings that may be open during fishing operations.

(2) The bilge pumping arrangement shall consist of bilge wells, pumps, bilge mains, alarms and an emergency bilge pumping system.

(3) The arrangement shall be made as a separate system with one or more pumps in each bilge well.

(4) Bilge wells shall be fitted in the side or in places to which the water on deck has free access so that the deck is free of water under all conditions.

(5) Bilge wells shall be made of steel and shall have the same strength as the deck or the adjoining plating in which they have been fitted with an addition for corrosion of at least 1 mm. The minimum thickness shall be 10 mm.

(6) At least one bilge well shall be provided in each side of the afterside of the deck in accordance with the guidelines given in subparagraph 4.

(7) Vessels where the said deck is longer than 9 m shall be provided with an additional bilge well in each side of the foremost part of the deck, taking the sheer of the vessel into consideration when determining the placing of bilge wells. Bilge wells shall be placed as stipulated in subparagraph 4.

(8) On vessels where the deck is longer than 18 m, the number of bilge wells shall be assessed in each individual case, however at least three bilge wells shall be provided in each side.

(9) Each bilge well shall have a volume of at least 0.15 m^3. On vessels with a length below 24 m, this volume may, after a concrete assessment in each individual case, be reduced, however not to less than 0.06 m^3. The depth of bilge wells shall be at least 350 mm.

(10) A 300 mm high, movable grate shall be fitted above each bilge well. The effective area of the grate shall be at least ten times the inner cross-sectional area of the bilge main. The spacing between vertical bars may not exceed 50 mm, and where both vertical and horizontal bars are fitted, their spacing may not exceed 70 x 70 mm.

(11) Where it is possible to divide the working deck into smaller spaces without permanent openings by means of poundboards, the Danish Maritime Authority will, in each individual case, assess whether the number of bilge wells shall be increased or whether grates shall be fitted in the divisions for drainage to the required bilges.

(b) Pumps and capacity

(1) At least one pump per bilge well shall be provided. The bilge pump capacity Q in m^3/h in each bilge well shall not be less than:

The pumps in the aftmost bilge wells in the starboard and port sides:

Q_1 = 1.5 times the total capacity of general service pumps plus the total water capacity of the fish-processing operations on deck; (m^3/h); or

*Q_2 = 3*B*As (m3/h)*

where B = the vessel's breadth in m; and As = total area in m^2 of ports and hatches that may be open during fishing operations or the hauling in of the catch or fishing gear.

The largest value of Q shall be used.

Where two or three bilge wells are required in each side because of the length of the working deck, the capacity of the pumps in these may be calculated as Q/2 and Q/3 respectively if it is probable that no trim in the forward direction will occur during operation. However, the capacity of the aftmost bilge wells shall be at least equal to the determined Q.

(2) Each individual pump shall be of a type that withstands running "dry", shall be self-priming and may be an immersion pump. It shall be possible to start/re-start each individual pump both manually and automatically.

(3) A level alarm shall be installed in each side in the aftmost and foremost bilge wells. The alarm shall be activated when there is water on deck. The alarm shall form part of the vessel's alarm system in the wheelhouse, and both an acoustic and visual alarm shall be fitted on the working deck as well as in any engine control rooms at which points it shall be clear why the alarm sounds.

(4) A control station for each individual pump shall be provided on the working deck amidships with the lower edge located 1.50 m above deck. After a concrete assessment, the Administration may accept that the lower edge is located in a lower position.

(5) Ejectors may be used provided that a separate pump with a sufficient, continuous capacity has been fitted for the operation of all the ejectors connected or at least for all the ejectors that have been connected on one of the sides. A non-return valve capable of being shut-off shall be fitted on the suction side of each individual ejector.

(6) If immersion pumps are used, they shall be suitable for the purpose and provided with knives, grinders or similar arrangement such as a spiral wheel through which waste of a certain size may pass. The pump shall be secured so that persons cannot inadvertently touch the rotor. A sign with the following wording shall be posted at the pump:

"THE PUMP MAY NOT BE REPAIRED, DISMANTLED OR THE LIKE UNTIL THE POWER SUPPLY HAS BEEN SHUT OFF AND THE PUMP HAS BEEN SECURED AGAINST BEING RECONNECTED INADVERTENTLY. "

Danish wording:

"REPARATION, ADSKILLELSE ELLER LIGNENDE AF PUMPEN MÅ FØRST PÅBEGYNDES, NÅR DER ER AFBRUDT FOR ENERGITILFØRSLEN OG SIKRET MOD UTILSIGTET GENINDKOBLING."

(c) Bilge mains

(1) The pipe dimension of bilge mains shall be determined in accordance with the instructions of the pump manufacturer.

(2) The mains shall be made as seamless, solid steam pipes. Joints shall be made as welded or flange connections. The use of approved pipe couplings may be permitted outside machinery spaces and on pipes that are not carried through tanks.

(3) The discharge pipe of the pump shall end at least 1,300 mm above the working deck and as a minimum 800 mm above the deepest operating waterline in accordance with the stability information of the vessel. A non-return valve capable of being shut-off shall be fitted directly on the plating.

(c) Emergency bilge pumping

(1) The emergency bilge pumping system shall be capable of replacing the primary pump or pumps. No spare power supply for the pump or pumps is required.

(2) The emergency bilge pumping system can be connected to the vessel's main bilge pumping system in the machinery space if a filter and a valve separating the two systems is available. It shall be possible to operate this valve from deck.

(3) If the flow from a pump that fails to the other pumps is satisfactory, the emergency bilge pumping system may be a portable pump provided that it has an appropriate capacity and is suitable for the purpose (knives or filter).

(4) The pipe dimensions of the emergency bilge pumping system may not be less than that of the main bilge pumping system, the pipe layout shall be as straight as possible, and it may not be fitted with shut-off valves that cannot be operated from open deck.

(2) All openings necessary for fishing operations shall be provided with means for quick and efficient closure by one person.

(a) Hatchways leading directly to holds or cargo tanks shall be fitted in as high a position and as close to the centreline of the vessel as the operation of the vessel allows (cf. regulation 3). The hatchway shall be weathertight and the height of its coaming shall be as stipulated in regulation 6. The location of the

hatchway shall comply with regulation III/3 stipulating that progressive flooding may not occur at an angle of heel of 20º unless calculations can be made to the effect that the stability is sufficient for the hold to be flooded. Consideration shall be taken of free surfaces. When hauling in industrial fish for so-called environmental plants, the connection to the hatchway shall be watertight.

(b) Ports in the vessel's side for an enclosed working deck may be permitted only on the condition that the space is provided with a drainage system/bilge pumping arrangement as stipulated in regulation 16(1). The discharging capacity shall at least be relative to the area of the ports/hatchways. Their location shall comply with the provisions of regulation III/3 stipulating that progressive flooding may not occur at an angle of heel of 20º unless calculations can be made to the effect that the stability is sufficient for the working deck to be flooded. (This is rarely possible without a boundary bulkhead inside of the port). The number and size of ports in the vessel's side and in the stern shall (see also regulation 3) be limited to a minimum, and the height of sills shall not normally be less than 1,000 mm. The ports shall be weathertight, and together with their battening down and closing devices they shall have the same strength as the shell plating or bulwark into which they have been built. It shall be possible to keep them in the open position. It shall be possible for one man to close the hatchway or port weathertight in 20 seconds without using any tools. Emergency arrangements for closing such hatchways or ports in case of power supply failure shall be established. If hatchways or ports are provided with remote control from, for example, the wheelhouse, a light indicator as well as an acoustic alarm which sounds a warning during the opening and closing of hatchways and ports shall be provided. When hatchways or ports are being operated by means of remote control, it shall be possible to view them from the point of operation, either directly or by means of video surveillance. A sign with the following wording shall be affixed to the port:
"THE PORT MUST BE KEPT CLOSED WHEN IT IS NOT USED DURING FISHING OPERATIONS. WHEN THE PORT IS OPEN, IT MUST BE KEPT UNDER SURVEILLANCE AND IT MUST BE POSSIBLE TO CLOSE IT RAPIDLY."
Danish text:
"PORTEN SKAL VÆRE LUKKET, NÅR DEN IKKE ANVENDES UNDER FISKERI. NÅR PORTEN ER ÅBEN, SKAL DEN VÆRE UNDER OPSYN OG KUNNE LUKKES HURTIGT."

(3) Where the catch is brought on to such decks for handling or processing, the catch shall be placed in a pound. Such pounds shall comply with regulation 11 of chapter III. An efficient drainage system shall be fitted. Adequate protection against inadvertent influx of water to the working deck shall be provided.

(a) Where there is a hatch for the reception pound board/binge, it is a precondition that the pound board is of limited size and has watertight boundaries (bulkheads) against the working deck so that the stability criteria are met with the pound board full of a catch with a mass density of 1. Hatchways in the deck for the working deck below an enclosed superstructure shall meet the same requirements as a port in the side. The hatchway for the hauling in of the catch shall be placed in as high a position and as close to the centreline of the vessel as the operation of the vessel allows (cf. regulation 3). The hatchway for the hauling in of the catch on the exposed deck and the hatchway for the discharge to the enclosed working deck shall be weathertight. The hatchway for the hauling in of the catch shall be fitted with a holder for keeping it in the open position. It shall also be fitted with a stone grate for the sifting out of stones in the catch. Where the hatchway is operated hydraulically, the system shall be provided with an emergency stop valve. If the hatchway is flush with the deck, a grate shall be

provided to prevent people from falling through it. It shall be possible to close the hatchway for the discharge of the catch reasonably fast, and a sign with the following wording shall be affixed to it:
"THE HATCHWAY MUST BE OPENED ONLY WHEN THE HATCHWAY FOR THE HAULING IN OF THE CATCH IS CLOSED."
Danish wording:
"LUGEN MÅ KUN ÅBNES, NÅR LUGE FOR INDTAKLING ER LUKKET."

(4) At least two exits from such decks shall be provided. *See also the provisions of chapter VI, regulation 2.*

(5) The clear headroom in the working space shall at all points be not less than two metres.

(6) A fixed ventilation system providing at least six changes of air per hour shall be provided.

Regulation 17 – Draught marks

(1) All ships shall be provided with draught marks in decimetres on the stem and the stern on both sides.

(2) Such marks shall be placed as close as practicable to the perpendiculars.

Regulation 18 – Tanks for fish in refrigerated (RSW) or chilled (CSW) seawater

(1) If RSW or CSW tanks or similar tank systems are used, such tanks shall be provided with a separate, permanently fitted arrangement for the filling and emptying of seawater.

(2) If such tanks are to be used also for carrying dry cargo, the tanks shall be arranged with a bilge system and provided with adequate means to avoid ingress of water from the bilge system into the tanks.

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Chapter III
Stability and associated seaworthiness

Unless expressly provided otherwise, this chapter shall apply to new vessels as defined in chapter I, regulation 2(1).

Regulation 1 – General

Vessels shall be so designed and constructed that the requirements of this chapter will be satisfied in the operating conditions referred to in regulation 7. Calculations of the righting lever curves shall be carried out in accordance with the IMO Code on Intact Stability for All Types of Ships, IMO Resolution A.749(18), as amended by Resolution MSC.75(69). *Furthermore, reference is made to the latest guidance on the approval of stability issued by the Danish Maritime Authority*.

Regulation 2 – Stability criteria

(1) The following minimum stability criteria shall be met unless the Administration is satisfied that operating experience justifies departures therefrom. For fishing vessels *with a length of 24 m or above,* built on or after 1 January 2003, any departure from the required minimum stability criteria, allowed by a Member State, shall be subject to the procedure of Article 4 of the Directive.[1]

[1] The stability criteria for offshore supply vessels in paragraph 4.5.6.2.1 to 4.5.6.2.4 in the IMO Code on Intact Stability for All Types of Ships, Resolution A.749(18), as amended by Resolution MSC.75(69), may be considered as equivalent to the stability criteria in regulation 2(1)(a) to (c). This equivalence can only be applied for fishing vessels with a hull form which is similar to that of offshore supply vessels.

(a) the area under the righting lever curve (GZ curve) shall not be less than 0.055 m-rad up to 30 angle of heel and not less than 0.090 m-rad up to 40 or the angle of flooding θ_f if this angle is less than 40 . Additionally, the area under the righting lever curve (GZ curve) between the angles of heel of 30 and 40 or between 30 and θ_f, if this angle is less than 40 shall not be less than 0.030 m-rad. θ_f is the angle of heel at which openings in the hull, superstructure or deckhouses which cannot rapidly be closed weathertight commence to immerse. In applying this criterion, small openings through which progressive flooding cannot take place need not be considered as open;

(b) the righting lever GZ shall be at least 200 mm at an angle of heel equal to or greater than 30 . *For ships with a length of less than 24 m, this requirement for GZ may be reduced by 2x(24-L)%;*

(c) the maximum righting lever GZ_{max} shall occur at an angle of heel preferably exceeding 30 but not less than 25 ;

(d) the metacentric height GM shall not be less than 350 mm;

(2) Where arrangements other than bilge keels are provided to limit the angles of roll, the Administration shall be satisfied that the stability criteria given in paragraph (1) are maintained in all operating conditions.

(3) Where ballast is provided to ensure compliance with paragraph (1), its nature and arrangement shall be to the satisfaction of the Administration. In vessels built on or after 1 January 2003, with a length of less than 45 m, such ballast shall be permanent. Where ballast is permanent, it shall be solid and fixed securely in the vessel. The Administration may accept liquid ballast, stored in completely filled tanks which are not connected to any pumping system of the vessel. If liquid ballast is used as permanent ballast to ensure compliance with paragraph (1), details shall be included in the Certificate of Compliance and in the stability booklet. Permanent ballast shall not be removed from the ship or relocated without the approval of the Administration.

Regulation 3 – Flooding of fish-holds

The angle of heel at which progressive flooding of fish-holds could occur through hatches which remain open during fishing operations and which cannot rapidly be closed shall be at least 20 unless the stability criteria of regulation 2(1) can be satisfied with the respective fish-holds partially or completely flooded.

Regulation 4 – Particular fishing methods

(1) Vessels engaged in particular fishing methods where additional external forces are imposed on the vessel during fishing operations, shall meet the stability criteria of Regulation 2(1) increased, if necessary, to the satisfaction of the Administration.

(2) Vessels engaged in beam trawling shall comply with the following increased stability criteria:

(a) The metacentric height shall not be less than 500 mm;

(b) For new vessels engaged in beam trawling, built before 1 January 2003, with a maximum bollard pull of or above L^2 x 0.015 tonnes where the bollard pull is measured directly by means of a physical test at the maximum output of the main engine, the requirements for the area below the righting lever GZ and for the righting lever GZ in regulations 2(1)(a) and 2(1)(b) shall be multiplied by 1.2.

(c) For new vessels engaged in beam trawling, built on or after 1 January 2003, the requirements for the area below the righting lever GZ and for the righting lever GZ in regulations 2(1)(a) and 2(1)(b) shall be multiplied by:

1.2 , if $P \leq kL^2$

$1.2\ P/kL^2$, if $P > kL^2$

, where

$k = 0.6\ kW/m^2$, if $L \leq 35$ m

$k = 0.05\ kW/m^3\ L - 1.15\ kW/m^2$, if $35\ m < L < 37$ m

$k = 0.7\ kW/m^2$, if $L \geq 37$ m

L is the overall length according to the Tonnage Certificate expressed in metres.

P is the installed propulsion power expressed in kW.

(d) The above increased stability criteria for beam trawlers shall be met in the operating conditions mentioned in regulation 7(1) of this chapter. For this purpose the beams shall be assumed to be hoisted up to an angle of 45 degrees with the horizontal.

(3) New and existing vessels fishing with an arrangement that, in one turn, automatically moves the gear's point of attack to the side whereto the vessel turns or involves a risk hereof if the gear gets snagged shall comply with the following requirements:

(a) It shall be possible to release the gear quickly from the steering position.

(b) The gear's point of pull shall be placed as low as possible and never above the gunwale.

(c) Vessels built before 1 June 2002 shall comply with regulation 3(a) on 1 December 2002 at the latest and regulation 3(b) on 1 June 2003 at the latest.

Regulation 5 – Severe wind and rolling

Vessels *with a length of 24 m or above* shall be able to withstand the effect of severe wind and rolling in associated sea conditions taking account of the seasonal weather conditions, the sea states in which the vessel will operate, the type of vessel and its mode of operation. The relevant calculations shall be carried out in accordance with the IMO Code on Intact Stability for all Types of Ships, IMO Resolution A.749(18), as amended by Resolution MSC.75(69).

Regulation 6 – Water on deck

Vessels *with a length of 24 m or above* shall be able to withstand, to the satisfaction of the Administration, the effect of water on deck, taking account of the seasonal weather conditions, the sea states in which the vessel will operate, the type of vessel and its mode of operation.[2]

Regulation 7 – Operating conditions

(1) The number and type of operating conditions to be considered shall be to the satisfaction of the Administration and shall, include the following, as appropriate:[3]

(a) departure for the fishing grounds with full fuel, stores, ice, fishing gear, etc.;

(b) departure from the fishing grounds with full catch;

(c) arrival at home port with full catch and 10% stores, fuel, etc.; and

(d) arrival at home port with 10% stores, fuel, etc. *without* catch.

(2) In addition to the specific operating conditions given in paragraph (1) the Administration shall also be satisfied that the minimum stability criteria given in regulation 2 are met under all other actual operating conditions including those which produce the lowest values of the stability parameters contained in these criteria, *including light ship condition*. The Administration shall also be satisfied

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2 Recommendation 1 of attachment 3 to the Final Act of the Conference.

3 *Attention shall be drawn to the special provisions applying in northern regions stipulated in chapter XI.*

that those special conditions associated with a change in the vessel's mode or areas of operation which affect the stability considerations of this chapter are taken into account.

(3) Concerning the conditions referred to in paragraph (1), the calculations shall include the following:

(a) allowance for the weight of the wet fishing nets and tackle, etc. on the deck;

(b) allowance for ice accretion, if anticipated, in accordance with the provisions of regulation 8;

(c) homogeneous distribution of the catch, unless this is inconsistent with practice;

(d) catch on deck, if anticipated, in operating conditions referred to in paragraph (l)(b) and (c) and paragraph (2);

(e) water ballast if carried either in tanks which are especially provided for this purpose or in other tanks also equipped for carrying water ballast; and

(f) allowance for the free surface effect of liquids and, if applicable, catch carried.

Regulation 8 – Ice accretion

(1) For vessels operating in areas where ice accretion is likely to occur the following icing allowance shall be made in the stability calculations.[4] When applying this regulation, no modification of the icing allowance shall be allowed such as is stipulated at the discretion of the Administration by recommendation 2 in the footnote:

(a) 30 kg/m^2 on exposed weather decks and gangways;

(b) 7.5 kg/m^2 for projected lateral area of each side of the vessel above the water plane;

(c) the projected lateral area of discontinuous surfaces of rail, spars (except masts) and rigging of vessels having no sails and the projected lateral area of other small objects shall be computed by increasing the total projected area of continuous surfaces by 5% and the static moments of this area by 10%.

(2) Vessels intended for operation in areas where ice accretion is known to occur shall be:

(a) designed to minimize the accretion of ice; and

(b) equipped with such means for removing ice as the Administration may require.[5]

Regulation 9 – Inclining test

(1) Every vessel shall undergo an inclining test upon its completion and the actual displacement and position of the centre of gravity shall be determined for the light ship condition.[6]

(2) Where alterations are made to a vessel affecting its light ship condition and/or the position of the centre of gravity, the vessel shall, if the Administration considers this necessary taking into account the vessel's stability margins, be re-inclined and the stability information revised. However, if the lightweight variation exceeds 2% from the original lightweight and it cannot be demonstrated by calculation that the vessel continues to comply with the stability criteria, the vessel shall be re-inclined.

(3) The Administration may allow the inclining test of an individual vessel to be dispensed with provided basic stability data are available from the inclining test of a sister ship and it is shown to the satisfaction of the Administration that reliable stability information for the exempted vessel can be obtained from such basic data.

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4 Recommendation 2 of attachment 3 to the Final Act of the Conference. *Furthermore, attention shall be drawn to the special provisions applying in northern regions stipulated in chapter XI.*

5 *The Danish Maritime Authority requires that suitable wooden mallets for removing ice be carried on board in a number equivalent to that of the crew.*

6 *Cf. the most recent guidance on the approval of stability issued by the Danish Maritime Authority.*

(4) The inclining test and determination of conditions required by regulation III/9(1) shall be performed at least every 10 years.

Regulation 10 – Stability information

(1) Suitable stability information shall be supplied to enable the skipper to assess with ease and certainty the stability of the vessel under various operating conditions.[7] Such information shall include specific instructions to the skipper warning him of those operating conditions which could adversely affect either the stability or the trim of the vessel. A copy of the stability information shall be submitted to the Administration for approval.[8]

(2) For all fishing vessels covered by regulation 15, the stability information shall furthermore contain a diagram clearly showing the correct location of the marks indicating the operating waterline corresponding to the maximum permissible operating draught.

(3) The approved stability information shall be kept on board, readily accessible at all times and inspected at the periodical surveys of the vessel to ensure that it has been approved for the actual operating conditions.

(4) Where alterations are made to a vessel affecting its stability, revised stability calculations shall be prepared and submitted to the Administration for approval.[9] If the Administration decides that the stability information must be revised, the new information shall be supplied to the skipper and the superseded information removed.

Regulation 11 – Portable fish-hold divisions

The catch shall be properly secured against shifting which could cause dangerous trim or heel of the vessel. The scantlings of portable fish-hold divisions, if fitted, shall be to the satisfaction of the Administration.[10]

Regulation 12 – Bow height

The bow height shall be sufficient to prevent the excessive shipping of water.

(a) *For vessels of a length below 24 m as well as* for vessels of a length of 24 m or above operating in restricted areas not more than 10 miles from the coast, the minimum bow height shall be calculated in accordance with the *method of calculation contained in recommendation 4 of attachment 3 to the Final Act of the Torremolinos conference.*

(b) For vessels of a length of 24 m or above operating in areas more than 10 miles from the coast and where, during the fishing operation, the catch has to be stowed into the fish holds via hatchways, which are situated on an exposed working deck forward of the deckhouse or superstructure, the minimum bow height shall be calculated in accordance with the method of calculation contained in recommendation 4 of attachment 3 to the Final Act of the Torremolinos conference.

(c) For vessels of a length of 24 m or above operating in areas more than 10 miles from the coast and where the catch has to be stowed into the fish holds via a hatchway, which is

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7 Recommendation 3 of attachment 3 to the Final Act of the Conference. *Furthermore, reference is made to the most recent guidance on the approval of stability issued by the Danish Maritime Authority.*

8 IMO Resolution A.267(VIII). *Furthermore, reference is made to the most recent guidance on the approval of stability issued by the Danish Maritime Authority.*

9 IMO Resolution A.267(VIII). *Furthermore, reference is made to the most recent guidance on the approval of stability issued by the Danish Maritime Authority.*

10 IMO Resolution A.168(ES.IV), as amended by Resolution A.268(VIII).

situated on an exposed working deck, protected by a deckhouse or superstructure, the minimum bow height shall be in accordance with regulation 39 of Annex I to the International Load Line Convention, 1966, but shall not be less than 2,000 mm. In this respect the maximum permissible operating draught is to be regarded in place of the assigned summer freeboard.

Regulation 13 – Maximum permissible operating draught

A maximum permissible operating draught shall be approved by the Administration and shall be such that, in the associated operating condition, the stability criteria of this chapter and the requirements of chapters II and VI as appropriate are satisfied.

Regulation 14 – Subdivision and damage stability

Vessels of 100 m in length and over, where the total number of persons carried is 100 or more, shall be capable of remaining afloat with positive stability, after the flooding of any one compartment assumed damaged, having regard to the type of vessel, the intended service and area of operation. Calculations to be carried out in accordance with the guidance in recommendation 5 of attachment 3 to the Final Act of the Torremolinos Conference.

Regulation 15 – Marking of the maximum permissible operating draught

(1) This regulation shall apply to all fishing vessels subject to an initial survey on or after 1 March 2011 as well as to fishing vessels whose main dimensions are altered or whose lightweight or gross tonnage is increased by more than 10%. The regulation shall not apply to Greenland vessels.

(2) On each side of the ship, a mark shall be placed indicating the operating waterline corresponding to the maximum permissible operating draught.

(3) Each mark shall consist of a horizontal line 300 mm in length and 25 mm in breadth which is marked amidships so that its lower edge is in line with the maximum operating waterline.

(4) The marks shall be plainly visible and painted in white or yellow on a dark ground or in black on a light ground. They shall be welded, scribed or in any other way permanently affixed to the ship's sides.

(5) The ship shall always be loaded in accordance with the approved conditions of loading in accordance with the stability booklet.

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Chapter IV
Machinery and electrical installations in periodically unattended machinery spaces

Part A – General

Regulation 1 – Application

Unless provided otherwise, this chapter shall apply to new fishing vessels of *15* metres in length and over.

Regulation 2 – Definitions

(1) "Main steering gear" is the machinery, the steering gear power units, if any, and ancillary equipment and the means of applying torque to the rudder stock (e.g. tiller or quadrant) necessary for effecting movement of the rudder for the purpose of steering the vessel under normal service conditions.

(2) "Auxiliary means of activating the rudder" is the equipment which is provided for effecting movement of the rudder for the purpose of steering the vessel in the event of failure of the main steering gear.

(3) "Steering gear power unit" means in the case of:

(a) electric steering gear, an electric motor and its associated electrical equipment;

(b) electro-hydraulic steering gear, an electric motor and its associated electrical equipment and connected pump; and

(c) other hydraulic steering gear, a driving engine and connected pump.

(4) "Maximum ahead service speed" is the greatest speed which the vessel is designed to maintain in service at sea at its maximum permissible operating draught.

(5) "Maximum astern speed" is the speed which it is estimated the vessel can attain at the designed maximum astern power at its maximum permissible operating draught.

(6) "Fuel oil unit" is the equipment used for the preparation of fuel oil for delivery to an oil-fired boiler, or equipment used for the preparation of oil for delivery to an internal combustion engine, and includes any oil pressure pumps, filters and heaters dealing with oil at a pressure greater than 0.18 N/mm^2.

(7) "Normal operational and habitable conditions" means conditions under which the vessel as a whole, its machinery services, means of main and auxiliary propulsion, steering gear and associated equipment, aids to safe navigation and to limit the risks of fire and flooding, internal and external means of communicating and signalling, means of escape and winches for rescue boats, are in proper working order and the minimum comfortable conditions of habitability are satisfactory.

(8) "Dead ship condition" is the condition under which the main propulsion plant, boilers and auxiliaries are not in operation due to the absence of power.

(9) "Main switchboard" is a switchboard directly supplied by the main source of electrical power and intended to distribute electrical energy.

(10) "Periodically unattended machinery spaces" means those spaces containing main propulsion and associated machinery and all sources of main electrical supply which are not at all times manned under all operating conditions, including manoeuvring.

Regulation 3 – General

Machinery installations

(1) Main propulsion, control, steam pipe, fuel oil, compressed air, electrical and refrigeration systems; auxiliary machinery; boilers and other pressure vessels; piping and pumping arrangements; steering equipment and gears, shafts and couplings for power transmission shall be designed, constructed, tested, installed and serviced in accordance with the rules of a recognised organisation. This machinery and equipment, as well as lifting gear, winches, fish handling and fish processing equipment shall be protected so as to reduce to a minimum any danger to persons on board. Special attention shall be paid to moving parts, hot surfaces and other dangers.

(2) Machinery spaces shall be so designed as to provide safe and free access to all machinery and its controls as well as to any other parts which may require servicing. Such spaces shall be adequately ventilated.

(3) (a) Means shall be provided whereby the operational capability of the propulsion machinery can be sustained or restored even though one of the essential auxiliaries becomes inoperative. Special consideration shall be given to the functioning of:

(i) the arrangements which supply fuel oil pressure for main propulsion machinery;

(ii) the normal sources of lubricating oil pressure;

(iii) the hydraulic, pneumatic and electrical means for the control of main propulsion machinery including controllable pitch propellers;
(iv) the sources of water pressure for main propulsion cooling systems; and
(v) an air compressor and an air receiver for starting or control purposes,
provided that the Administration may, having regard to overall safety considerations, accept a partial reduction in capability in lieu of full normal operation.

(b) Means shall be provided whereby the machinery can be brought into operation from the dead ship condition without external aid.

(4) Main propulsion machinery and all auxiliary machinery essential to the propulsion and the safety of the vessel shall, as fitted, be capable of operating whether the vessel is upright or listed up to 15^{o} either way under static conditions and up to 22.5^{o} either way under dynamic conditions, i.e. when rolling either way and simultaneously pitching (inclined dynamically) up to 7.5^{o} by bow or stern. The Administration may permit deviation from these angles, taking into consideration the type, size and service conditions of the vessel.

(5) Special consideration shall be given to the design, construction and installation of propulsion machinery systems so that any mode of their vibrations shall not cause undue stresses in such machinery systems in the normal operating ranges.

Electrical installations

(6) The design and construction of electrical installations shall be such as to provide:

(a) the services necessary to maintain the vessel in normal operational and habitable conditions without having recourse to an emergency source of power;

(b) the services essential to safety when failure of the main source of electrical power occurs; and

(c) protection of the crew and vessel from electrical hazards.

(7) The Administration shall be satisfied that regulations 16 to 18 are uniformly implemented and applied in accordance with the rules of a recognised organisation.[1]

Periodically unattended machinery spaces

(8) Regulations 19 to 24 shall apply, in addition to regulations 3 to 18 and V/1 to V/44, to vessels with periodically unattended machinery spaces.

(9) Measures shall be taken to the satisfaction of the Administration to ensure that all equipment is functioning in a reliable manner in all operating conditions, including manoeuvring, and that arrangements in accordance with the rules of a recognised organisation are made for regular inspections and routine tests to ensure continuous reliable operation.

(10) Vessels shall be provided with documentary evidence, complying with the rules of a recognised organisation, of their fitness to operate with periodically unattended machinery spaces.

Part B – Machinery Installations

(See also regulation 3)

[1] See also the recommendation published by the International Electrotechnical Commission and, in particular, Publication 92, *Electrical Installations in ships.*

Regulation 4 – Machinery

(1) Main and auxiliary machinery essential for the propulsion and safety of the vessel shall be provided with effective means of control.

(2) Internal combustion engines of a cylinder diameter greater than 200 mm or a crankcase volume greater than 0.6 m^3 shall be provided with crankcase explosion relief valves of an approved type with sufficient relief area.

(3) Where main or auxiliary machinery including pressure vessels or any parts of such machinery are subject to internal pressure and may be subject to dangerous overpressure, means shall be provided, where applicable, which will protect against such excessive pressure.

(4) All gearing and every shaft and coupling used for transmission of power to machinery essential for the propulsion and safety of the vessel or the safety of persons on board shall be so designed and constructed that it will withstand the maximum working stresses to which it may be subjected in all service conditions. Due consideration shall be given to the type of engines by which it is driven or of which it forms part.

(5) Main propulsion machinery and, where applicable, auxiliary machinery shall be provided with automatic shut-off arrangements in the case of failures, such as lubricating oil supply failure, which could lead rapidly to damage, complete breakdown or explosion. An advance alarm shall also be provided so that warning is given before automatic shut-off but the Administration may permit provisions for overriding automatic shut-off devices. The Administration may also exempt vessels from the provisions of this paragraph, giving consideration to the type of vessel or its specific service.

Regulation 5 – Means of going astern

(1) Vessels shall have sufficient power for going astern to secure proper control of the vessel in all normal circumstances.

(2) The ability of the machinery to reverse the direction of thrust of the propeller in sufficient time and so to bring the vessel to rest within a reasonable distance from maximum ahead service speed shall be demonstrated at sea.

Regulation 6 – Steam boilers, feed systems and steam piping arrangements

(1) Every steam boiler and every unfired steam generator shall be provided with not less than two safety valves of adequate capacity. Provided that the Administration may, having regard to the output or any other features of a steam boiler or unfired steam generator, permit only one safety valve to be fitted if satisfied that adequate protection against overpressure is thereby provided in accordance with the rules of a recognised organisation.

(2) Every oil-fired steam boiler, which is intended to operate without manual supervision shall have safety arrangements, which shut off the fuel supply and give an alarm in the case of low water level, air supply failure or flame failure.

(3) The Administration shall give special consideration to steam boiler installations to ensure that feed systems, monitoring devices, and safety provisions are adequate in all respects to ensure the safety of boilers, steam pressure vessels and steam piping arrangements.

Regulation 7 – Communication between the wheelhouse and machinery space

Two separate means of communication between the wheelhouse and the machinery space shall be provided, one of which shall be an engine room telegraph, except that in vessels of less than 45

m in length, where the propulsion machinery is directly controlled from the wheelhouse, the Administration may accept means of communication other than an engine room telegraph. *In ships with a length of less than 24 m, but above 15 m, there shall be means of communication to the satisfaction of the Danish Maritime Authority.*

Regulation 8 – Wheelhouse control of propulsion machinery

(1) Where remote control of propulsion machinery is provided from the wheelhouse, the following shall apply:

(a) under all operating conditions, including manoeuvring, the speed, direction of thrust and, if applicable, the pitch of the propeller shall be fully controllable from the wheelhouse;

(b) the remote control referred to in sub-paragraph (a) shall be performed by means of a control device complying with the rules of a recognised organisation with, where necessary, means of preventing overload of the propulsion machinery;

(c) the main propulsion machinery shall be provided with an emergency stopping device in the wheelhouse and independent from the wheelhouse control system referred to in subparagraph (a);

(d) remote control of the propulsion machinery shall be possible only from one station at a time: at any control station interlocked control units may be permitted. There shall be at each station an indicator showing which station is in control of the propulsion machinery. The transfer of control between the wheelhouse and machinery spaces shall be possible only in the machinery space or control room. On vessels of less than 45 m in length the Administration may permit the control station in the machinery space to be an emergency station only, provided that the monitoring and control in the wheelhouse is adequate.

(e) indicators shall be fitted in the wheelhouse for:

(i) propeller speed and direction in the case of fixed propellers;

(ii) propeller speed and pitch position in the case of controllable pitch propellers; and

(iii) advance alarm as required in regulation 4(5);

(f) it shall be possible to control the propulsion machinery locally, even in the case of failure in any part of the remote control system;

(g) unless the Administration considers it impracticable the design of the remote control system shall be such that if it fails an alarm will be given and the pre-set speed and direction of thrust will be maintained until local control is in operation;

(h) special arrangements shall be provided to ensure that automatic starting shall not exhaust the starting possibilities. An alarm shall be provided to indicate low starting air pressure and shall be set at a level which will still permit main engine starting operations.

(2) Where the main propulsion and associated machinery including sources of main electrical supply are provided with various degrees of automatic or remote control and are under continuous manned supervision from a control room, the control room shall be so designed, equipped and installed that the machinery operation will be as safe and effective as if it were under direct supervision.

(3) In general, automatic starting, operational and control systems shall include means for manually overriding the automatic means, even in the case of failure of any part of the automatic and remote control system.

Regulation 9 – Air pressure systems

(1) Means shall be provided to prevent excess pressure in any part of compressed air systems and wherever water-jackets or casings of air compressors and coolers might be subjected to dangerous excess pressure due to leakage into them from air pressure parts. Suitable pressure-relief arrangements shall be provided.

(2) The main starting air arrangements for main propulsion internal combustion engines shall be adequately protected against the effects of backfiring and internal explosion in the starting air pipes.

(3) All discharge pipes from starting air compressors shall lead directly to the starting air receivers and all starting pipes from the air receivers to main or auxiliary engines shall be entirely separate from the compressor discharge pipe system.

(4) Provision shall be made to reduce to a minimum the entry of oil into the air pressure systems and to drain these systems.

Regulation 10 – Arrangements for fuel oil, lubricating oil and other flammable oils

(1) Fuel oil which has a flashpoint of less than 60^{o} C (closed cup test) as determined by an approved flashpoint apparatus shall not be used as fuel, except in emergency generators, in which case the flashpoint shall be not less than 43^{o} C. Provided that the Administration may permit the general use of fuel oil having a flashpoint of not less than 43^{o} C subject to such additional precautions as it may consider necessary and on condition that the temperature of the space in which such fuel is stored or used shall not rise to within 10^{o} C below the flashpoint of the fuel.

(2) Safe and efficient means of ascertaining the amount of fuel oil contained in any oil tank shall be provided. If sounding pipes are installed, their upper ends shall terminate in safe positions and shall be fitted with suitable means of closure. Gauges made of glass of substantial thickness and protected with a metal case may be used, provided that automatic closing valves are fitted. Other means of ascertaining the amount of fuel oil contained in any fuel oil tank may be permitted providing their failure or overfilling of the tanks will not permit release of fuel.

(3) Provision shall be made to prevent overpressure in any oil tank or in any part of the fuel oil system including the filling pipes. Relief valves and air or overflow pipes shall discharge to a position and in a manner, which is safe.

(4) Fuel oil pipes which, if damaged, would allow oil to escape from a storage, settling or daily service tank situated above the double bottom, shall be fitted with a cock or valve on the tank capable of being closed from a safe position outside the space concerned in the event of a fire arising in the space in which such tanks are situated. In the special case of deep tanks situated in any shaft or pipe tunnel or similar space, valves on the tank shall be fitted but control in the event of fire may be effected by means of an additional valve on the pipe or pipes outside the tunnel or similar space. If such additional valve is fitted in the machinery space it shall be capable of being operated outside this space.

(5) Pumps forming part of the fuel oil system shall be separate from any other system and the connections of any such pumps shall be provided with an efficient relief valve which shall be in closed circuit. Where fuel oil tanks are alternatively used as liquid ballast tanks, proper means shall be provided to isolate the fuel oil and ballast systems.

(6) No oil tank shall be situated where spillage or leakage therefrom can constitute a hazard by falling on heated surfaces. Precautions shall be taken to prevent any oil that may escape under pressure from any pump, filter or heater from coming into contact with heated surfaces.

(7) (a) Fuel oil pipes and their valves and fittings shall be of steel or other equivalent material, provided that a minimum of flexible pipes may be used. Such flexible pipes and end attachments shall be of adequate strength and shall be constructed of approved fire-resistant materials or have fire-resistant coatings in accordance with the rules of a recognised organisation. Fitting of those flexible pipes shall be in accordance with the IMO MSC. Circ. 647 "Guidelines to minimise leakages from flammable liquid systems".

(b) Where necessary, fuel oil and lubricating oil pipelines shall be screened or otherwise suitably protected to avoid, as far as practicable, oil spray or oil leakage on heated surfaces or into machinery air intakes. The number of joints in piping systems shall be kept to a minimum.

(8) As far as practicable, fuel oil tanks shall be part of the vessel's structure and shall be located outside machinery spaces of category A. Where fuel oil tanks, other than double bottom tanks, are necessarily located adjacent to or within machinery spaces of category A, at least one of their vertical sides shall be contiguous to the machinery space boundaries, and shall preferably have a common boundary with the double bottom tanks where fitted and the area of the tank boundary common with the machinery space shall be kept to a minimum. When such tanks are sited within the boundaries of machinery spaces of category A they shall not contain fuel oil having a flashpoint of less than 60 ^{o}C (closed cup test). In general, the use of free-standing fuel oil tanks shall be avoided in fire hazard areas, and particularly in machinery spaces of category A. When free-standing fuel oil tanks are permitted, they shall be placed in an oil-tight spill tray of ample size having a suitable drain pipe leading to a suitably sized spill oil tank.

(9) The ventilation of machinery spaces shall be sufficient under all normal conditions to prevent accumulation of oil vapour.

(10) The arrangements for the storage, distribution and use of oil employed in pressure lubrication systems shall be in accordance with the rules of a recognised organisation. Such arrangements in machinery spaces of category A and, wherever practicable, in other machinery spaces shall at least comply with the provisions of paragraphs (1), (3), (6) and (7) and in so far as necessary, in accordance with the rules of a recognised organisation, with paragraphs (2) and (4). This does not preclude the use of sight flow glasses in lubrication systems provided they are shown by test to have a suitable degree of fire resistance.

(11) The arrangements for the storage, distribution and use of flammable oils employed under pressure in power transmission systems other than oils referred to in paragraph (10) in control and activating systems and heating systems shall be in accordance with the rules of a recognised organisation. In locations where means of ignition are present such arrangements shall at least comply with the provisions of paragraphs (2) and (6) and with the provisions of paragraphs (3) and (7) in respect of strength and construction.

(12) Fuel oil, lubricating oil and other flammable oils shall not be carried in forepeak tanks.

Regulation 11 – Bilge pumping arrangements

(1) An efficient bilge pumping plant shall be provided which under all practical conditions shall be capable of pumping from and draining any watertight compartment which is neither a permanent oil tank nor a permanent water tank whether the vessel is upright or listed. Wing suctions shall be provided if necessary for that purpose. Arrangements shall be provided for easy flow of water to the suction pipes. Provided the Administration is satisfied that the safety of the vessel is not impaired the bilge pumping arrangements may be dispensed with in particular compartments.

(2) (a) At least two independently driven power bilge pumps shall be provided, one of which may be driven by the main engine. A ballast pump or other general service pump of sufficient capacity may be used as a power driven bilge pump.

(b) Power bilge pumps shall be capable of giving a speed of water of at least 2 m/s through the main bilge pipe, which shall have an internal diameter of at least:

$$d = 25 + 1.68\sqrt{L(B+D)}$$

where: d is the internal diameter in mm, and L, B and D are in m.

However, the actual internal diameter of the bilge main may be rounded off to the nearest standard size acceptable to the Administration.

(c) Each of the bilge pumps provided in accordance with this regulation shall be provided with a direct bilge suction, one of these suctions drawing from the port side of the machinery space and the other from the starboard side, except that in the case of a vessel of less than 75 m in length only one bilge pump need be provided with a direct bilge suction.

(d) No bilge suction shall have an inside diameter of less than 50 mm. The arrangement and sizing of the bilge system shall be such that the full rated capacity of the pump specified above can be applied to each of the watertight compartments located between the collision and afterpeak bulkheads.

(3) A bilge ejector in combination with an independently driven high pressure seawater pump may be installed as a substitute for one independently driven bilge pump required by paragraph (2)(a), provided this arrangement is to the satisfaction of the Administration.

(4) In vessels where fish handling or processing may cause quantities of water to accumulate in enclosed spaces, adequate drainage shall be provided.

(5) Bilge pipes shall not be led through fuel oil, ballast or double bottom tanks, unless these pipes are of heavy gauge steel construction.

(6) Bilge and ballast pumping systems shall be arranged so as to prevent water passing from the sea or from water ballast spaces into holds or into machinery spaces or from one watertight compartment to another. The bilge connection to any pump which draws from the sea or from water ballast spaces shall be fitted with either a non-return valve or a cock which cannot be opened simultaneously either to the bilges and to the sea or to the bilges and water ballast spaces. Valves in bilge distribution boxes shall be of a non-return type.

(7) Any bilge pipe piercing a collision bulkhead shall be fitted with a positive means of closing at the bulkhead with remote control from the working deck with an indicator showing the position of the valve provided that, if the valve is fitted on the after side of the bulkhead and is readily accessible under all service conditions, the remote control may be dispensed with.

Regulation 12 – Protection against noise

Measures shall be taken to reduce the effects of noise upon personnel in machinery spaces to levels as given in IMO resolution A.468(XII).

Regulation 13 – Steering gear

(1) Vessels shall be provided with a main steering gear and an auxiliary means of actuating the rudder in compliance with the rules of a recognised organisation. The main steering gear and the auxiliary means of actuating the rudder shall be arranged so that so far as is reasonable and practicable a single failure in one of them will not render the other one inoperative.

(2) Where the main steering gear comprises two or more identical power units an auxiliary steering gear need not be fitted if the main steering gear is capable of operating the rudder as required by paragraph (10) when any one of the units is out of operation. Each of the power units shall be operated from a separate circuit.

(3) The position of the rudder, if power operated, shall be indicated in the wheelhouse. The rudder angle indication for power-operated steering gear shall be independent of the steering gear control system.

(4) In the event of failure of any of the steering gear units an alarm shall be given in the wheelhouse.

(5) Indicators for running indication of the motors of electric and electrohydraulic steering gear shall be installed in the wheelhouse. Short circuit protection, an overload alarm and a no-voltage alarm shall be provided for these circuits and motors. Protection against excess current, if provided, shall be for not less than twice the full load current of the motor or circuit so protected, and shall be arranged to permit the passage of the appropriate starting currents.

(6) The main steering gear shall be of adequate strength and sufficient to steer the vessel at maximum service speed. The main steering gear and rudder stock shall be so designed that they will not be damaged at maximum speed astern or by manoeuvring during fishing operations.

(7) The main steering gear shall, with the vessel at its maximum permissible operating draught, be capable of putting the rudder over from 35^{o} on one side to 35^{o} on the other side with the vessel running ahead at maximum service speed. The rudder shall be capable of being put over from 35^{o} on either side to 30^{o} on the other side in not more than 28 s, under the same conditions. The main steering gear shall be operated by power where necessary to fulfil these requirements.

(8) The main steering gear power unit shall be arranged to start either by manual means in the wheelhouse or automatically when power is restored after a power failure.

(9) The auxiliary means for actuating the rudder shall be of adequate strength and sufficient to steer the vessel at navigable speed and capable of being brought speedily into action in an emergency.

(10) The auxiliary means for actuating the rudder shall be capable of putting the rudder over from 15^{o} on one side to 15^{o} on the other side in not more than 60 s with the vessel running at one-half of its maximum service speed ahead or 7 knots whichever is the greater. The auxiliary means for actuating the rudder shall be operated by power where necessary to fulfil these requirements. If this power source is electrical, the emergency source of electrical power shall be capable of serving the auxiliary means for activating the rudder for a period of at least 10 minutes.

(11) Electric or electrohydraulic steering gear in vessels of 75 m in length and over shall be served by at least two circuits fed from the main switchboard and these circuits shall be as widely separated as possible.

Regulation 14 – Engineers' alarm

In vessels of 75 m in length and over an engineers' alarm shall be provided to be operated from the engine control room or at the manoeuvring platform as appropriate, and shall be clearly audible in the engineers' accommodation, in *messrooms and in smoking lounges (public spaces) and on enclosed working decks*.

Regulation 15 – Refrigeration systems for the preservation of the catch

(1) Refrigeration systems shall be so designed, constructed, tested and installed as to take account of the safety of the system and also the emission of chlorofluorocarbons (CFCs) or any other ozone-depleting substances from the refrigerant held in quantities or concentrations which are hazardous to human health, and shall be to the satisfaction of the Administration.

(2) Refrigerants to be used in refrigeration systems shall be to the satisfaction of the Administration. However, methylchloride or CFCs whose ozone-depleting potential is higher than 5% of CFC-11 shall not be used as refrigerants.

(3) (a) Refrigerating installations shall be adequately protected against vibration, shock, expansion, shrinkage, etc. and shall be provided with an automatic safety control device to prevent a dangerous rise in temperature and pressure.

(b) Refrigeration systems in which toxic or flammable refrigerants are used shall be provided with drainage devices leading to a place where the refrigerant presents no danger to the vessels or to persons on board.

(4) (a) Any space containing refrigerating machinery including condensers and gas tanks utilizing toxic refrigerants shall be separated from any adjacent space by gastight bulkheads. Any space containing the refrigerating machinery including condensers and gas tanks shall be fitted with a leak detection system having an indicator outside the space adjacent to the entrance and shall be provided with an independent ventilation system and a water spray system.

(b) When such containment is not practicable, due to the size of the vessel, the refrigeration system may be installed in the machinery space provided that the quantity of refrigerant used will not cause danger to persons in the machinery space, should all the gas escape, and provided that an alarm is fitted to give warning of a dangerous concentration of gas should any leakage occur in the compartment.

(5) In refrigerating machinery spaces and refrigerating rooms, alarms shall be connected to the wheelhouse or control stations or escape exits to prevent persons being trapped. At least one exit from each such space shall be capable of being opened from the inside. Where practicable, exits from the spaces containing refrigerating machinery using toxic or flammable gas shall not lead directly into any accommodation spaces.

(6) Where any refrigerant harmful to persons is used in a refrigeration system, at least two sets of breathing apparatus shall be provided, one of which shall be placed in a position not likely to become inaccessible in the event of leakage of refrigerant. Breathing apparatus provided as part of the vessel's fire-fighting equipment may be considered as meeting all or part of this provision provided its location meets both purposes. Where self-contained breathing apparatus is used, spare cylinders shall be provided.

(7) Adequate guidance for the safe operation and emergency procedures for the refrigeration system shall be provided by suitable notices displayed on board the vessel.

(8) If the refrigerant R 717 (ammoniac), which is harmful to people, is used in these systems, the requirements in the rules of a recognised classification society and the provisions[2] below shall also apply from 1 January 2003.

(a) Pipes containing the refrigerant may not be carried through the accommodation, the wheelhouse and machinery spaces.

(b) If directly expanding refrigerants are installed in spaces where persons generally move about, such as factory decks, enclosed working decks, refrigerating rooms and fish holds, the following equipment shall be placed immediately outside all the usual means of access to such spaces:

(i) a water hose with a sprinkler head and constant water supply,

(ii) a decontamination shower,

(iii) two sets of gas masks with suitable, sealed filters placed in a cupboard with a transparent door, and

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2 *These provisions originate from DNV's rules.*

(iv) two eye-rinsing bottles.

Part C – Electrical Installations

(See also regulation 3)

Regulation 16 – Main source of electrical power

(1) (a) Where electrical power constitutes the only means of maintaining auxiliary services essential for the propulsion and the safety of the vessel, a main source of electrical power shall be provided which shall include at least two generating sets, one of which may be driven by the main engine. In accordance with the rules of a recognised organisation other arrangements having equivalent electrical capability may be accepted.

(b) The power of these sets shall be such as to ensure the functioning of the services referred to in regulation 3(6)(a), excluding the power required in fishing activities, processing and preservation of the catch, in the event of any one of these generating sets being stopped. However, in vessels of less than 45 metres in length, in the event of any one of the generating sets being stopped, it shall only be necessary to ensure the functioning of the services essential for propulsion and safety of the vessels.

(c) The arrangement of the vessel's main source of electrical power shall be such that the services referred to in regulation 3(6)(a) can be maintained regardless of the number of revolutions and direction of the main propelling engines or shafting.

(d) Where transformers constitute an essential part of the supply system required by this paragraph, the system shall be so arranged as to ensure continuity of the supply.

(2) (a) The arrangement of the main lighting system shall be such that a fire or other casualty in the space or spaces containing the main source of electrical power, including transformers, if any, will not render the emergency lighting system inoperative.

(b) The arrangement of the emergency lighting system shall be such that a fire or other casualty in the space or spaces containing the emergency source of electrical power, including transformers, if any, will not render the main lighting system inoperative.

(3) Navigation lighting, if solely electrical, shall be supplied through their own separate switchboard and adequate means for the monitoring of such lights shall be provided.

Regulation 17 – Emergency source of electrical power

(1) A self-contained emergency source of electrical power located *above the deepest operating waterline* outside the machinery spaces shall be provided and so arranged as to ensure its functioning in the event of fire, *flooding* or other causes of failure of the main electrical installations. Notwithstanding paragraph 2, for vessels of a length of 45 m and over, the emergency source of electrical power shall be capable of serving the installations listed in that regulation for a period of not less than eight hours.

(2) The emergency source of electrical power shall be capable, having regard to starting current and the transitory nature of certain loads, of serving simultaneously for a period of at least three hours:

(a) the VHF radio installation required by regulation IX/6(1)(a) and (b), and if applicable:

(i) the MF radio installation required by regulation IX/8(1)(a) and (b) and regulation IX/9(1)(b) and (c);

(ii) the ship earth station required by regulation IX/9(1)(a); and

(iii) the MF/HF radio installation required by regulation IX/9(2)(a) and (b) and regulation IX/10(1);

(b) internal communication equipment, fire detecting systems and signals which may be required in an emergency;

(c) the navigation lights if solely electrical and the emergency lights:

(i) of launching stations and overside of the vessel;

(ii) in all alleyways, stairways and exits;

(iii) in spaces containing machinery or the emergency source of power;

(iv) in control stations; and

(v) in fish handling and fish processing spaces; and

(d) the operation of the emergency fire pump, if any.

(3) The emergency source of electrical power may be either a generator or an accumulator battery.

(4) (a) Where the emergency source of electrical power is a generator, it shall be provided both with an independent fuel supply and with efficient starting arrangements to the satisfaction of the Administration. Unless a second independent means of starting the emergency generator is provided the single source of stored energy shall be protected to preclude its complete depletion by the automatic starting system.

(b) Where the emergency source of electrical power is an accumulator battery it shall be capable of carrying the emergency load without recharging whilst maintaining the voltage of the battery throughout the discharge period within plus or minus 12% of its nominal voltage. In the event of failure of the main power supply this accumulator battery shall be automatically connected to the emergency switchboard and shall immediately supply at least those services specified in paragraph (2)(b) and (c). The emergency switchboard shall be provided with an auxiliary switch allowing the battery to be connected manually, in case of failure of the automatic connection system.

(5) The emergency switchboard shall be installed as near as is practicable to the emergency source of power and shall be located in accordance with paragraph (1). Where the emergency source of power is a generator, the emergency switchboard shall be located in the same place unless the operation of the emergency switchboard would thereby be impaired.

(6) An accumulator battery fitted in accordance with this regulation, other than batteries fitted for the radio transmitter and receiver in vessels of less than 45 m in length, shall be installed in a well ventilated space which shall not be the space containing the emergency switchboard. An indicator shall be mounted in a suitable place on the main switchboard or in the machinery control room to indicate when the battery constituting the emergency source of power is being discharged. The emergency switchboard is to be supplied in normal operation from the main switchboard by an inter-connector feeder which is to be protected at the main switchboard against overload and short circuit. The arrangement at the emergency switchboard shall be such that in the event of failure of the main power supply an automatic connection of the emergency supply shall be provided. When the system is arranged for feedback operation, the inter-connector feeder shall also be protected at the emergency switchboard at least against short circuit.

(7) The emergency generator and its prime mover and any accumulator battery shall be so arranged as to ensure that they will function at full rated power when the vessel is upright and when rolling up to an angle of 22.5^{o} either way and simultaneously pitching 10^{o} by bow or stern, or is in any combination of angles within those limits.

(8) The emergency source of electrical power and automatic starting equipment shall be so constructed and arranged as to enable adequate testing to be carried out by the crew while the vessel is in operating condition.

Regulation 18 – Precautions against shock, fire and other hazards of electrical origin[3]

(1) (a) Exposed permanently fixed metal parts of electrical machines or equipment which are not intended to be "live", but which are liable under fault conditions to become "live" shall be earthed (grounded) unless:

(i) they are supplied at a voltage not exceeding 50 V direct current or 50 V, root mean square, between conductors; autotransformers shall not be used for the purpose of achieving this alternative current voltage; or

(ii) they are supplied at a voltage not exceeding 250 V by safety isolating transformers supplying one consuming device only; or

(iii) they are constructed in accordance with the principle of double insulation.

(b) Portable electrical equipment shall operate at a safe voltage, exposed metal parts of such equipment which are not intended to have a voltage but which may have such under fault conditions, shall be earthed. The Administration may require additional precautions for portable electric lamps, tools or similar apparatus for use in confined or exceptionally damp spaces where particular risks due to conductivity may exist.

(c) Electrical apparatus shall be so constructed and so installed that it shall not cause injury when handled or touched in the normal manner.

(2) Main and emergency switchboards shall be so arranged as to give easy access as may be needed to apparatus and equipment, without danger to attendants. The sides and backs and, where necessary, the fronts of switchboards, shall be suitably guarded. Exposed "live" parts having voltages to earth exceeding a voltage to be specified by the Administration shall not be installed on the front of such switchboards. There shall be non-conducting mats or gratings at the front and rear, where necessary.

(3) A hull return system of distribution may not be installed.

(4) (a) Where a distribution system, whether primary or secondary, for power, heating or lighting, with no connection to earth is used, a device capable of monitoring the insulation level to earth shall be provided.

(b) Where the distribution system is in accordance with subparagraph (a) and a voltage exceeding 50 V direct current or 50 V, root mean square, between conductors, is used, a device capable of continuously monitoring the insulation level to earth and of giving an audible or visual indication of abnormally low insulation values shall be provided.

(c) Distribution systems which are supplied at a voltage not exceeding 250 V direct current or 250 V, root mean square, between conductors and which are limited in extent, may comply with subparagraph (a), subject to the satisfaction of the Administration.

(5) (a) Except as permitted by the Administration in exceptional circumstances, all metal sheaths and armour of cables shall be electrically continuous and shall be earthed.

(b) All electrical cables shall be at least of a flame-retardant type and shall be so installed as not to impair their original flame-retarding properties. The Administration may permit the use of special types of cables when necessary for particular applications, such as radio frequency cables, which do not comply with the foregoing.

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[3] See regulation 23, "Precautions against shock, fire and other hazards of electrical origin", of the Recommendation concerning Regulations for Machinery and Electrical Installations of Passenger and Cargo Ships adopted by the Organization by resolution A.325(IX).

(c) Cables and wiring serving essential or emergency power, lighting, internal communications or signals shall as far as practicable be routed clear of galleys, machinery spaces of category A and other high fire risk areas and laundries, fish handling and fish processing spaces and other spaces where there is a high moisture content. Cables connecting fire pumps to the emergency switchboard shall be of a fire-resistant type where they pass through high fire risk areas. Where practicable all such cables should be run in such a manner as to preclude their being rendered unserviceable by heating of the bulkheads that may be caused by a fire in an adjacent space.

(d) Where cables which are installed in spaces where the risk of fire or explosion exists in the event of an electrical fault, special precautions against such risks shall be taken to the satisfaction of the Administration.

(e) Wiring shall be supported in such a manner as to avoid chafing or other damage.

(f) Terminations and joints in all conductors shall be made such that they retain the original electrical, mechanical, flame-retarding and, where necessary, fire-resisting properties of the cable.

(g) Cables installed in refrigerated compartments shall be suitable for low temperatures and high humidity.

(6) (a) Circuits shall be protected against short circuit. Circuits shall also be protected against overload, except in accordance with regulation 13 or where the Administration may exceptionally otherwise permit.

(b) The rating or appropriate setting of the overload protective device for each circuit shall be permanently indicated at the location of the protective device.

(7) Lighting fittings shall be arranged to prevent temperature rises which could damage the wiring and to prevent surrounding material from becoming excessively hot.

(8) Lighting or power circuits terminating in a space where the risk of fire or explosion exists shall be provided with isolating switches outside the space.

(9) (a) The housing of an accumulator battery shall be constructed and ventilated to the satisfaction of the Administration.

(b) Electrical and other equipment which may constitute a source of ignition of flammable vapours shall not be permitted in these compartments except as permitted in paragraph (10).

(c) An accumulator battery shall not be located in accommodation spaces unless installed in a hermetically sealed container.

(10) In spaces where flammable mixtures are liable to collect and in any compartment assigned principally to the containment of an accumulator battery, no electrical equipment shall be installed unless the Administration is satisfied that it is:

(a) essential for operational purposes;

(b) of a type which will not ignite the mixture concerned;

(c) appropriate to the space concerned; and

(d) appropriately certified for safe usage in the dusts, vapours or gases likely to be encountered.

(11) Lightning conductors shall be fitted to all wooden masts or topmasts. In vessels constructed of non-conductive materials the lightning conductors shall be connected by suitable conductors to a copper plate fixed to the vessel's hull well below the waterline.

Part D – Periodically Unattended Machinery Spaces

(See also regulation 3)

Regulation 19 – Fire safety

Fire prevention

(1) Special consideration shall be given to high pressure fuel oil pipes. Where practicable, leakages from such piping systems shall be collected in a suitable drain tank which shall be provided with a high level alarm.

(2) Where daily service fuel oil tanks are filled automatically or by remote control, means shall be provided to prevent overflow spillages. Similar consideration shall be given to other equipment which treats flammable liquids automatically, e.g. fuel oil purifiers, which whenever practicable shall be installed in a special space reserved for purifiers and their heaters.

(3) Where fuel oil daily service tanks or settling tanks are fitted with heating arrangements, a high temperature alarm shall be provided if the flashpoint of the fuel oil can be exceeded.

Fire detection

(4) An approved fire detection system based on a self-monitoring principle and including facilities for periodical testing shall be installed in machinery spaces.

(5) The detection system shall initiate both audible and visual alarm in the wheelhouse and in sufficient appropriate spaces to be heard and observed by persons on board, when the vessel is in harbour.

(6) The fire detection system shall be fed automatically from an emergency source of power if the main source of power fails.

(7) Internal combustion engines of 2,500 kW and over shall be provided with crankcase oil mist detectors or engine bearing temperature detectors or equivalent devices.

Fire fighting

(8) A fixed fire-extinguishing system shall be provided to the satisfaction of the Administration, which shall be in compliance with the requirements of regulations V/22 and V/40.

(9) In vessels of 75 m in length and over provision shall be made for immediate water delivery from the fire main system either by:

(a) remote starting arrangements of one of the main fire pumps in the wheelhouse and at the fire control station, if any; or

(b) permanent pressurization of the fire main system, due regard being paid to the possibility of freezing.[4]

(10) The Administration shall be satisfied with the maintenance of the fire integrity of the machinery spaces, the location and centralization of the fire-extinguishing system controls, the shut-down arrangements referred to in regulation 24, e.g. ventilation, fuel pumps, etc., and may require fire-extinguishing appliances and other fire-fighting equipment and breathing apparatus in addition to the relevant requirements of chapter V.

Regulation 20 – Protection against flooding

(1) Bilges in machinery spaces shall be provided with a high level alarm in such a way that the accumulation of liquids is detected at normal angles of trim and heel. The detection system shall initiate an audible and visual alarm in the places where continuous watch is maintained.

(2) The controls of any valve serving a sea inlet, a discharge below the waterline or a bilge injection system shall be so sited as to allow adequate time for operation in case of influx of water to the space.

Regulation 21 – Communications

In vessels of 75 m in length and over one of the two separate means of communication referred to in regulation 7 shall be a reliable vocal communication. An additional reliable means of vocal communication shall be provided between the wheelhouse and the engineers' accommodation, in *messrooms and in smoking lounges (public spaces) and on enclosed working decks*.

Regulation 22 – Alarm system

(1) An alarm system shall be provided which shall indicate any fault requiring attention.

(2) (a) The alarm system shall be capable of sounding an audible alarm in the machinery space and shall indicate visually each separate alarm function at a suitable position. However, in vessels of less than 45 metres in length the Administration may permit the system to be capable of sounding and indicating visually each separate function in the wheelhouse only.

(b) In vessels of 45 metres in length and over the alarm system shall have a connection to the engineers' cabins through a selector switch to ensure connection to one of those cabins and to the engineers' public rooms, if any. The Administration may permit alternative arrangements, which provide an equivalent measure of safety.

(c) In vessels of 45 metres in length and over an engineers' alarm and an alarm to the wheelhouse for persons on watch shall be activated if an alarm function has not received attention within a limited period as specified by the Administration.

(d) Audible and visual alarms shall be activated in the wheelhouse for any situation requiring action by the responsible person on watch or which should be brought to his attention.

(e) The alarm system shall as far as practicable be designed on the fail-safe principle.

(3) The alarm system shall be:

(a) continuously powered with automatic change-over to a stand-by power supply in case of loss of normal power; and

(b) activated by failure of the normal power supply.

(4) (a) The alarm system shall be able to indicate at the same time more than one fault and the acceptance of any alarm shall not inhibit another alarm.

(b) Acceptance at the position referred to in paragraph (2)(a) of any alarm condition shall be indicated at the positions where it was shown. Alarms shall be maintained until they are accepted and the visual indications shall remain until the fault has been corrected. All alarms shall automatically reset when the fault has been rectified.

Regulation 23 – Special requirements for machinery, boiler and electrical installations

(1) In vessels of 75 m in length and over the main source of electrical power shall be supplied as follows:

(a) where the electrical power can normally be supplied by one generator, there shall be provided suitable load shedding arrangements to ensure the integrity of supplies to services required for propulsion and steering. To cover the case of loss of the generator in operation, there shall be adequate provisions for automatic starting and connecting to the main switchboard of a stand-by generator of sufficient capacity to permit propulsion and steering and with automatic restarting of the essential auxiliaries including, where necessary, sequential operations. Means may be provided to the satisfaction of the

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[4] See the Guidance for Precautions Against Freezing of Fire Mains contained in recommendation 7 of attachment 3 to the Final Act of the Conference.

Administration for remote (manual) starting and connection of the stand-by generator to the main switchboard as well as means of repeated remote starting of essential auxiliaries; and

(b) if the electrical power is normally supplied by more than one generating set simultaneously, there shall be provisions, e.g. by load shedding, to ensure that in case of loss of one of these generating sets, the remaining ones are kept in operation without overload to permit propulsion and steering.

(2) Where required to be duplicated, other auxiliary machinery essential to propulsion shall be fitted with automatic change-over devices allowing transfer to a stand-by machine. An alarm shall be given on automatic change-over.

(3) Automatic control and alarm systems shall be provided as follows:

(a) the control system shall be such that through the necessary automatic arrangements the services needed for the operation of the main propulsion machinery and its auxiliaries are ensured;

(b) means shall be provided to keep the starting air pressure at the required level where internal combustion engines are used for main propulsion;

(c) an alarm system complying with regulation 22 shall be provided for all important pressures, temperatures, fluid levels, etc.; and

(d) where appropriate an adequate central position shall be arranged with the necessary alarm panels and instrumentation indicating any alarmed fault.

Regulation 24 – Safety system

A safety system shall be provided so that serious malfunction in machinery or boiler operations, which presents an immediate danger, shall initiate the automatic shut-down of that part of the plant and an alarm shall be given. Shut-down of the propulsion system shall not be automatically activated except in cases which could lead to serious damage, complete breakdown, or explosion. Where arrangements for overriding the shut-down of the main propelling machinery are fitted, these shall be such as to preclude inadvertent activation. Visual means shall be provided to show whether or not it has been activated.

Part E – Other technical installations

Regulation 25 – Hydraulic systems

(1) Hydraulically driven systems and the belonging pipe systems and equipment shall be designed and constructed so that they are suitable for their intended purpose. They shall be fitted and protected in such a way that they present least possible danger to persons on board, due consideration being taken of moving parts, hot surfaces and other elements of danger. The choice of components and the design of the system shall take account of what the installation will be exposed to. The transient variations in pressure (peak pressures) may not exceed the maximum nominal value of the components. The entire installation shall be designed such that noise and vibrations from the system is not transferred to the ship structure (structural noise).

(2) Where steel pipes are used as pressure pipes, they shall be made as seamless pipes. Electric-resistance welded pipes may be used only in specific cases upon special permission from the Danish Maritime Authority. The steel pipes shall satisfy the relevant recognised pipe standard taking into account the maximum pressure of the system. If flexible hoses are used, they shall be of a suitable, recognised, approved type, e.g. SAE/ISO and be fitted without any torsions or bendings. Hose couplings shall be of a suitable and recognised, approved type.

(3) *Pipe joints or joints between pipes and fittings shall be made using bolted flange joints, by welding or by means of sleeve fittings or another kind of circular cone type union joints with an O-ring. Flange joints and fittings shall be adjusted to the working pressure. Pipes in hydraulic systems shall be incompliance with D.V.S. no. 08004 and D.V.S. no. 08005. If they have been welded or hot-bent, they shall be cleaned with acid to metallic purity. Pipes on the discharge side of pumps shall be protected against overpressure greater than the calculated working pressure. When safety valves on the discharge side of the pump are used for such protection against overpressure, the design shall be such that the discharge side of the valve is led back to the suction side of the pump or another suitable place, usually a tank. The safety valves shall open if the working pressure increases by more than 10%. Pipes placed on the low pressure side of a pressure reducing valve shall be protected against overpressure by means of safety valves or the like when these pipes and the components connected to them are not designed for the pressure on the high pressure side of the pressure reducing valve. The flow capacity of the safety valves shall be such that the pressure in the pipes does not at any time exceed the working pressure by more than 10%. Engines shall be protected by means of shock valves as close to the engine as practicable.*

(4) *Pressure testing shall be carried out before a system/a component is put into operation under the surveillance of the approving authority.*

(a) *Pressure pipelines as well as various fittings shall be pressure tested at a minimum of 1.5 x the working pressure.*

(b) *Cylinders shall be pressure tested at a pressure Pe as a function of the working pressure P.*
Pe = 1.5 where P < 40 bar
Pe = 1.4 P + 4 where P $\geq$ 40 bar
The test pressure may not be below 4 bar.

(5) *The system pressure for winches, net drums, etc. may not, without special permission from the Danish Maritime Authority, exceed 250 bar continuously at the pump.*

(6) *Considering the maximum permissible noise limit values in the vessel, the flow speed in the pressure line of hydraulic systems may not exceed 3 m/s on factory decks and enclosed working decks and 4 m/s in all other places; however, a flow speed of up to 5 m/s may be permitted in systems such as bow propellers and mooring winches that are used for a short period. Due to the same considerations, the flow speed in suction pipes may not exceed 0.8 m/s.*

(7) *Pipe diagrams and calculations shall be submitted to the approving authority showing that the above requirements have been met.*

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Chapter E V
Fire protection, fire detection and fire extinction
(See also regulation IV/19)

Regulation 34b – Fixed fire-extinguishing systems in cargo spaces posing a high risk of fire
Regulation 35 – Fire pumps
Regulation 36 – Fire mains
Regulation 37 – Fire hydrants, fire hoses and nozzles
Regulation 38 – Portable fire extinguishers
Regulation 39 – Portable fire extinguishers in control stations and accommodation and service spaces
Regulation 40 – Fire-extinguishing appliances in machinery spaces
Regulation 41 – Fireman's outfits
Regulation 42 – Fire control plan
Regulation 43 – Ready availability of fire-extinguishing appliances
Regulation 44 – Acceptance of substitutes
Regulation 45 – Structural fire protection
Regulation 46 – Ventilation systems
Regulation 47 – Heating installations
Regulation 48 – Miscellaneous items
Regulation 49 – Storage of gas cylinders and dangerous materials
Regulation 50 – Means of escape
Regulation 51 – Automatic fire alarm systems
Regulation 51a – Fixed fire-extinguishing systems in cargo spaces posing a high risk of fire
Regulation 52 – Fire pumps – number, capacity and arrangement
Regulation 53 – Fire mains
Regulation 54 – Fire hydrants, fire hoses and nozzles
Regulation 55 – Fire-extinguishing appliances
Regulation 56 – Portable fire extinguishers
Regulation 57 – Fireman's outfit
Regulation 58 – Ready availability of fire-extinguishing appliances
Regulation 59 – Acceptance of substitutes

Unless expressly provided otherwise in each individual regulation or paragraph, this chapter shall apply to new fishing vessels as defined in chapter I, regulation 2(1).

Part A – General

Regulation 1 – General

One of the following methods of protection shall be adopted in accommodation and service spaces:

(a) Method IF – The construction of all internal divisional bulkheads of non-combustible "B" or "C" class divisions generally without the installation of a detection or sprinkler system in the accommodation and service spaces; or

(b) Method IIF – The fitting of an automatic sprinkler and fire alarm system for the detection and extinction of fire in all spaces in which fire might be expected to originate, generally with no restriction on the type of internal divisional bulkheads; or

(c) Method IIIF – The fitting of an automatic fire alarm and detection system in all spaces in which a fire might be expected to originate, generally with no restriction on the type of internal divisional bulkheads, except that in no case shall the area of any accommodation space or spaces bounded by an

"A" or "B" class division exceed 50 m^2. However, the Administration may increase this area for public spaces [up to 75 m^2.]

The requirements for the use of non-combustible materials in construction and insulation of the boundary bulkheads of machinery spaces, control stations, etc., and the protection of stairway enclosures and corridors shall be common to all three methods.

Regulation 2 – Definitions

(1) "Non-combustible material" means a material which neither burns nor gives off flammable vapours in sufficient quantity for self-ignition when heated to approximately 750 C, this being determined [in accordance with the IMO Fire Test Procedures Code (FTP)]. Any other material is a combustible material.

(2) ["A standard fire test" is one in which the specimens of the relevant bulkheads or decks are exposed in a test furnace to temperatures corresponding approximately to the standard temperature curve. The test methods shall be in accordance with the IMO FTP Code.]

(3) ""A" class divisions" are those divisions formed by bulkheads and decks which comply with the following:

(a) they shall be constructed of steel or other equivalent material;

(b) they shall be suitably stiffened;

(c) they shall be so constructed as to be capable of preventing the passage of smoke and flame to the end of the one-hour standard fire test; and

(d) they shall be insulated with approved non-combustible materials such that the average temperature of the unexposed side will not rise more than 139 C above the original temperature, nor will the temperature, at any one point, including any joint, rise more than 180 C above the original temperature, within the time listed below:

Class "A-60" 60 min
Class "A-30" 30 min
Class "A-15" 15 min
Class "A-0" 0 min

The Administration [shall] require a test of a prototype bulkhead or deck to ensure that it meets the above requirements for integrity and temperature rise [in accordance with the IMO FTP Code].

(4) ""B" class divisions" are those divisions formed by bulkheads, decks, ceilings or linings which comply with the following:

(a) they shall be so constructed as to be capable of preventing the passage of flame to the end of the first one-half hour of the standard fire test,

(b) they shall have an insulation value such that the average temperature of the unexposed side will not rise more than 139 C above the original temperature, nor will the temperature at any one point, including any joint, rise more than 225 C above the original temperature, within the time listed below:

Class "B-15" 15 min
Class "B-0" 0 min, and

(c) they shall be constructed of approved non-combustible materials and all materials entering into the construction and erection of "B" class divisions shall be non-combustible with the exception that combustible veneers may be permitted provided they meet the relevant requirements of this chapter.

The Administration [shall] require a test of a prototype division to ensure that it meets the above requirements for integrity and temperature rise [in accordance with the IMO FTP Code].

(5) ""C" class divisions" are those divisions constructed of approved non-combustible materials. They need meet no requirements relative to the passage of smoke and flame nor the limiting of temperature rise. Combustible veneers are permitted provided they meet other requirements of this chapter.

(6) ""F" class divisions" are those divisions formed by bulkheads, decks, ceilings or linings which comply with the following:

(a) they shall be so constructed as to be capable of preventing the passage of flame to the end of the first one-half hour of the standard fire test; and

(b) they shall have an insulation value such that the average temperature of the unexposed side will not rise more than 139 C above the original temperature, nor will the temperature at any one point, including any joint, rise more than 225 C above the original temperature, up to the end of the first one-half hour of the standard fire test.

The Administration [shall] require a test of a prototype division to ensure that it meets the above requirements for integrity and temperature rise [in accordance with the IMO FTP Test].

(7) "Continuous "B" class ceilings or linings" are those "B" class ceilings or linings which terminate only at an "A" or "B" class division.

(8) "Steel or other equivalent material" means steel or any material which, by itself or due to insulation provided, has structural and integrity properties equivalent to steel at the end of the applicable fire exposure to the standard fire test (e.g. aluminium alloy with appropriate insulation).

(9) "Low flame spread" means that the surface thus described *(e.g. veneers)* will adequately restrict the spread of flame, this being determined [in accordance with the IMO FTP Test].

(10) "Accommodation spaces" are those spaces used for public spaces, corridors, lavatories, cabins, offices, hospitals, cinemas, games and hobbies rooms, pantries containing no cooking appliances and similar spaces. *The accommodation also comprises stairway enclosures, stores rooms and bathrooms.*

(11) "Public spaces" are those portions of the accommodation spaces which are used for halls, dining rooms, lounges, and similar permanently enclosed spaces.

(12) "Service spaces" are those spaces used for galleys, pantries containing cooking appliances, lockers, *mail rooms and safe-deposit rooms* and store-rooms, workshops other than those forming part of the machinery spaces and similar spaces and trunks to such spaces.

(13) "Control stations" are those spaces in which the vessel's radio or main navigation equipment or the emergency source of power is located, or where the fire recording or fire control equipment is centralized.

(14) "Machinery spaces of category A" are those spaces *and trunks to such spaces* which contain internal combustion type machinery, used either:

(a) for main propulsion; or

(b) for other purposes where such machinery has in the aggregate a total power output of not less than [375 kilowatts].

(15) "Machinery spaces" are those machinery spaces of category A and all other spaces containing propulsion machinery, boilers, fuel oil units, steam and internal combustion engines, generators, major electrical machinery, oil filling stations, refrigerating, stabilizing, ventilating and air conditioning machinery and similar spaces, and trunks to such spaces.

Part B – Fire safety measures in vessels of 60 metres in length and above

Regulation 3 – Structure

(l) The hull, superstructure, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material except as otherwise specified in paragraph (4).

(2) The insulation of aluminium alloy components of "A" or "B" class divisions, except structures which, in the opinion of the Administration, are non-load bearing, shall be such that the temperature of the structural core does not rise more than 200 C above the ambient temperature at any time during the applicable fire exposure to the standard fire test.

(3) Special attention shall be given to the insulation of aluminium alloy components of columns, stanchions and other structural members required to support survival craft stowage, launching and embarkation areas, and "A" and "B" class divisions, to ensure:

(a) that for such members supporting survival craft areas and "A" class divisions the temperature rise limitation specified in paragraph (2) shall apply at the end of one hour; and

(b) that for such members required to support "B" class divisions, the temperature rise limitation specified in paragraph (2) shall apply at the end of one half-hour.

(4) Crowns and casings of machinery spaces of category A shall be of steel construction adequately insulated and any openings therein shall be suitably arranged and protected to prevent the spread of fire.

Regulation 4 – Bulkheads within the accommodation and service spaces

(1) Within the accommodation and service spaces, all bulkheads required to be "B" class divisions shall extend from deck to deck and to the shell or other boundaries, unless continuous "B" class ceilings or linings, or both, are fitted on both sides of the bulkheads in which case the bulkhead may terminate at the continuous ceiling or lining.

(2) Method IF. All bulkheads not required by this or other regulations of this part to be "A" or "B" class divisions shall be at least "C" class divisions.

(3) Method IIF. There shall be no restriction on the construction of bulkheads not required by this or other regulations of this part to be "A" or "B" class divisions except in individual cases where "C" class bulkheads are required in accordance with table l in regulation 7.

(4) Method IIIF. There shall be no restriction on the construction of bulkheads not required by this or other regulations of this part to be "A" or "B" class divisions. In no case shall the area of any accommodation space or spaces bounded by a continuous "A" or "B" class division exceed 50 m^2, except in individual cases where "C" class bulkheads are required in accordance with table l in regulation 7. However, the Administration may increase this area for public spaces [up to 75 m^2.]

Regulation 5 – Protection of stairways and lift trunks in accommodation spaces, service spaces and control stations

(1) Stairways which penetrate only a single deck shall be protected at least at one level by at least "B-0" class divisions and self-closing doors. Lifts which penetrate only a single deck shall be enclosed by "A-0" class divisions with steel doors at both levels. Stairways and lift trunks which penetrate more than a single deck shall be enclosed by at least "A-0" class divisions and protected by self-closing doors at all levels.

(2) All stairways shall be of steel frame construction except where the Administration permits the use of other equivalent material.

Regulation 6 – Doors in fire-resistant divisions

(1) Doors shall have resistance to fire as far as practicable, equivalent to the division in which they are fitted. Doors and doorframes in "A" class divisions shall be constructed of steel. Doors in "B" class divisions shall be non-combustible. Doors fitted in boundary bulkheads of machinery spaces of category A shall be self-closing and reasonably gastight. The Administration may permit the use of combustible materials in doors separating cabins from the individual interior sanitary accommodation, such as showers, if constructed according to Method IF.

(2) Doors required to be self-closing shall not be fitted with hold-back hooks. However, hold-back arrangements fitted with remote release fittings of the fail-safe type may be used.

(3) Ventilation openings may be permitted in and under the doors in corridor bulkheads except that such openings shall not be permitted in and under stairway enclosure doors. The openings shall be provided only in the lower half of a door. Where such opening is in or under a door the total net area of any such opening or openings shall not exceed 0.05 m^2. When such opening is cut in a door it shall be fitted with a grille made of non-combustible material.

(4) Watertight doors need not be insulated.[1]

Regulation 7 – Fire integrity of bulkheads and decks

(l) In addition to the specific provisions for fire integrity of bulkheads and decks required elsewhere in this part the minimum fire integrity of bulkheads and decks shall be as prescribed in table l and table 2 of this regulation.

(2) The following requirements shall govern application of the tables:

(a) tables l and 2 shall apply respectively to bulkheads and decks separating adjacent spaces; and

(b) for determining the appropriate fire integrity standards to be applied to divisions between adjacent spaces, such spaces are classified according to their fire risk as follows:

(i) Control stations (1)
Spaces containing emergency sources of power and lighting.
Wheelhouse and chartroom.
Spaces containing the vessel's radio equipment.
Fire-extinguishing rooms, fire-control rooms and fire-recording stations.
Control room for propulsion machinery when located outside the machinery space.
Spaces containing centralized fire alarm equipment.

(ii) Corridors (2)
Corridors and lobbies.

(iii) Accommodation spaces (3)
Spaces as defined in regulation 2(10) and (11) excluding corridors.

(iv) Stairways (4)
Interior stairways, lifts and escalators other than those wholly contained within the machinery spaces and enclosures thereto. In this connection, a stairway which is enclosed only at one level shall be regarded as part of the space from which it is not separated by a fire door.

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[1] *It is a question of watertight doors forming part of the vessel's watertight sub-division.*

(v) Service spaces of low fire risk (5)

Lockers and storerooms having areas of less than 2 m^2, drying rooms and laundries.

(vi) Machinery spaces of category A (6)

Spaces as defined in regulation 2(14).

(vii) Other machinery spaces (7)

Spaces as defined in regulation 2(15) including fishmeal processing spaces, but excluding machinery spaces of category A.

On fishing vessels built on or after 1 January 2003, also spaces containing shrimp cookers or similar, however within a maximum distance of 2 m when they form part of a factory deck or the like.

(viii) Cargo spaces (8)

All spaces used for cargo, including cargo oil tanks, and trunkways and hatchways to such spaces.

(ix) Service spaces of high fire risk (9)

Galleys, pantries containing cooking appliances, paint rooms, lamp rooms, lockers and store-rooms having areas of 2 m^2 or more, and workshops other than those forming part of the machinery spaces.

(x) Open decks (l0)

Open deck spaces and enclosed promenades, spaces for processing fish in the raw state, fish washing spaces and similar spaces containing no fire risk.

The air spaces outside superstructures and deckhouses.

The title of each category is intended to be typical rather than restrictive. The number in parenthesis following each category refers to the applicable column or row in the tables.

Table 1 Fire integrity of bulkheads separating adjacent spaces

Spaces	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Control stations (l)	A-0 e	A-0	A-60	A-0	A-15	A-60	A-15	A-60	A-60	*
Corridors (2)		C	B-0	B-0 A-0[c]	B-0	A-60	A-0	A-0	A-0	*
Accommodation spaces (3)			C [a,b]	B-0 A-0[c]	B-0	A-60	A-0	A-0	A-0	*
Stairways (4)				B-0 A-0[c]	B-0 A-0[c]	A-60	A-0	A-0	A-0	*
Service spaces of low fire risk					C	A-60	A-0	A-0	A-0	*
Machinery spaces of category A (6)						*	A-0	A-0	A-60	*
Other machinery spaces (7)							A-0[d]	A-0	A-0	*
Cargo spaces (8)								*	A-0	*
Service spaces of high fire risk (9)									A-0[d]	*
Open decks (10)										-

* Notes, see table 2.

Table 2 Fire integrity of decks separating adjacent spaces

Space above → Space below ↓	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Control stations (1)	A-0	A-0	A-0	A-0	A-0	A-60	A-0	A-0	A-0	*
Corridors (2)	A-0	*	*	A-0	*	A-60	A-0	A-0	A-0	*
Accommo-dation (3)	A-60	A-0	*	A-0	*	A-60	A-0	A-0	A-0	*
Stairways (4)	A-0	A-0	A-0	*	A-0	A-60	A-0	A-0	A-0	*
Service spaces of low fire risk (5)	A-15	A-0	A-0	A-0	*	A-60	A-0	A-0	A-0	*
Machinery spaces of category A (6)	A-60	A-60	A-60	A-60	A-60	*	A-60	A-30	A-60	*
Other machinery spaces (7)	A-15	A-0	A-0	A-0	A-0	A-0	*	A-0	A-0	*
Cargo spaces (8)	A-60	A-0	A-0	A-0	A-0	A-0	A-0	*	A-0	*
Service spaces of high fire risk (9)	A-60	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0[d]	*
Open decks (10)	*	*	*	*	*	*	*	*	*	-

Notes: To be applied to both tables 1 and 2, as appropriate.

(a) No special requirements are imposed upon these bulkheads in methods IIF and IIIF fire protection.

(b) In case of method IIIF "B" class bulkheads of "B-0" rating shall be provided between spaces or groups of spaces of 50 m2 and over in area.

(c) For clarification as to which applies see regulations 4 and 5.

(d) Where spaces are of the same numerical category and superscript d appears, a bulkhead or deck of the rating shown in the tables is only required when the adjacent spaces are for a different purpose, e.g. in category (9). A galley next to a galley does not require a bulkhead but a galley next to a paint room requires an "A-0" bulkhead.

(e) Bulkheads separating the wheelhouse, chartroom and radio room from each other may be "B-0" rating.

(f) Fire insulation need not be fitted if the machinery space in category (7), in the opinion of the Administration, has little or no fire risk.

(g) Where fish holds are insulated with polyurethane, styrophore foam or the like, such bulkheads and decks shall be insulated to "A-60" rating against machinery spaces of category A in fishing vessels built on or after 1 January 2003.

* Where an asterisk appears in the tables the division is required to be of steel or equivalent material but is not required to be of "A" class standard. [Where a deck is penetrated for the passage of electrical cables, pipes and vent ducts, such penetrations shall be made tight to prevent the passage of flame and smoke.]

(3) Continuous "B" class ceilings or linings, in association with the relevant decks or bulkheads, may be accepted as contributing, wholly or in part, to the required insulation and integrity of a division.

(4) Windows and skylights to machinery spaces shall be as follows:

(a) where skylights can be opened they shall be capable of being closed from outside the space. Skylights containing glass panels shall be fitted with external shutters of steel or other equivalent material permanently attached;

(b) glass or similar materials shall not be fitted in machinery space boundaries. This does not preclude the use of wire-reinforced glass for skylights and glass in control rooms within the machinery spaces; and

(c) in skylights referred to in sub-paragraph (a) wire-reinforced glass shall be used.

(5) External boundaries which are required by regulation 3(1) to be of steel or equivalent material may be pierced for the fitting of windows and sidescuttles provided that there is no requirement elsewhere in this part for such boundaries to have "A" class integrity. Similarly, in such boundaries, which are not required to have "A" class integrity, doors may be of materials to the satisfaction of the Administration.

Regulation 8 – Details of construction

(1) Method IF. In accommodation and service spaces and control stations all linings, draught stops, ceilings and their associated grounds shall be of non-combustible materials.

(2) Methods IIF and IIIF. In corridors and stairway enclosures serving accommodation and service spaces and control stations, ceilings, linings, draught stops and their associated grounds shall be of non-combustible materials.

(3) Methods IF, IIF and IIIF

(a) Except in cargo spaces or refrigerated compartments of service spaces insulating materials shall be non-combustible. Vapour barriers and adhesives used in conjunction with insulation, as well as the insulation of pipe fittings, for cold service systems need not be of non-combustible material, but they shall be kept to the minimum quantity practicable and their exposed surfaces shall have [low flame characteristics, this being determined in accordance with the IMO FTP Code]. In spaces where penetration of oil products is possible, the surface of insulation shall be impervious to oil or oil vapour.

(b) Where non-combustible bulkheads, linings and ceilings are fitted in accommodation and service spaces they may have a combustible veneer not exceeding 2.0 mm in thickness within any such space except corridors, stairway enclosures and control stations, where it shall not exceed 1.5 mm in thickness.

(c) Air spaces enclosed behind ceilings, panellings, or linings shall be divided by close-fitting draught stops spaced not more than 14 m apart. In the vertical direction, such spaces, including those behind linings of stairways, trunks, etc., shall be closed at each deck.

Regulation 9 – Ventilation systems

(1) (a) Ventilation ducts shall be of non-combustible material. Short ducts, however, not generally exceeding 2 m in length and with a cross section not exceeding 0.02 m^2 need not be non-combustible, subject to the following conditions:

(i) these ducts shall be of a material which has low flame spread characteristics. [For fishing vessels built on or after 1 January 2003, this shall be determined in accordance with the IMO FTP Code];

(ii) they may only be used at the end of the ventilation device; and

(iii) they shall not be situated less than 600 mm, measured along the duct, from an opening in an "A" or "B" class division including continuous "B" class ceilings.

(b) Where the ventilation ducts with a free cross-sectional area exceeding 0.02 m^2 pass through "A" class bulkheads or decks, the opening shall be lined with a steel sheet sleeve unless the ducts passing through the bulkheads or decks are of steel in the vicinity of passage through the deck or bulkhead and comply in that portion of the duct with the following:

(i) for ducts with a free cross-sectional area exceeding 0.02 m^2 the sleeves shall have a thickness of at least 3 mm and a length of at least 900 mm. When passing through bulkheads this length shall preferably be divided evenly on each side of the bulkhead. Ducts with a free cross-sectional area exceeding 0.02 m^2 shall be provided with fire insulation. The insulation shall have at least the same fire integrity as the bulkhead or deck through which the duct passes. Equivalent penetration protection may be provided to the satisfaction of the Administration; and

(ii) ducts with a free cross-sectional area exceeding 0.085 m^2 shall be fitted with fire dampers in addition to the requirements of subparagraph (b)(i). The fire damper shall operate automatically but shall also be capable of being closed manually from both sides of the bulkhead or deck. The damper shall be provided with an indicator which shows whether the damper is open or closed. Fire dampers are not required, however, where ducts pass through spaces surrounded by "A" class divisions, without serving those spaces, provided those ducts have the same fire integrity as the bulkheads which they penetrate.

(c) Ventilation ducts for machinery spaces of category A or galleys shall not in general pass through accommodation spaces, service spaces or control stations. Where the Administration permits this arrangement, the ducts shall be constructed of steel or equivalent material and so arranged as to preserve the integrity of the divisions.

(d) Ventilation ducts of accommodation spaces, service spaces or control stations shall not in general pass through machinery spaces of category A or through galleys. Where the Administration permits this arrangement the ducts shall be constructed of steel or equivalent material and so arranged as to preserve the integrity of the divisions.

(e) Where ventilation ducts with a free cross-sectional area exceeding 0.02 m^2 pass through "B" class bulkheads the openings shall be lined with steel sheet sleeves of at least 900 mm in length, unless the ducts are of steel for this length in way of the bulkheads. When passing through a "B" class bulkhead this length shall preferably be divided evenly on each side of the bulkhead.

(f) Such measures as are practicable shall be taken in respect of control stations outside machinery spaces in order to ensure that ventilation, visibility and freedom from smoke are maintained, so that in the event of fire the machinery and equipment contained therein may be supervised and continue to function effectively. Alternative and separate means of air supply shall be provided; air inlets of the two sources of supply shall be so disposed that the risk of both inlets drawing in smoke simultaneously is minimized. At the discretion of the Administration, such requirements need not apply to control stations situated on, and opening on to, an open deck, or where local closing arrangements are equally effective.

(g) Where they pass through accommodation spaces or spaces containing combustible materials, the exhaust ducts from galley ranges shall be constructed of "A" class divisions. Each exhaust duct shall be fitted with:

(i) a grease trap readily removable for cleaning;

(ii) a fire damper located in the *higher and* lower end of the duct *(the requirement for an additional fire damper in the higher end of the duct shall apply to fishing vessels built on or after 1 January 2003);*

(iii) arrangements, operable from within the galley, for shutting off the exhaust fan; and

(iv) fixed means for extinguishing a fire within the duct, except where the Administration considers such fittings impractical in a vessel of less than 75 m in length.

(2) The main inlets and outlets of all ventilation systems shall be capable of being closed from outside the spaces being ventilated. Power ventilation of accommodation spaces, service spaces, control stations and machinery spaces shall be capable of being stopped from an easily accessible position outside the space being served. This position should not be readily cut off in the event of a fire in the spaces served. The means provided for stopping the power ventilation of the machinery spaces shall be entirely separate from the means provided for stopping ventilation of other spaces.

(3) Means shall be provided for closing, from a safe position, the annular spaces around funnels.

(4) Ventilation systems serving machinery spaces shall be independent of systems serving other spaces.

(5) Store-rooms containing appreciable quantities of highly flammable products shall be provided with ventilation arrangements which are separate from other ventilation systems. Ventilation shall be arranged at high and low levels and the inlets and outlets of ventilators shall be positioned in safe areas and fitted with spark arresters.

Regulation 10 – Heating installations

(1) Electric radiators shall be fixed in position and so constructed as to reduce fire risks to a minimum. No such radiator shall be fitted with an element so exposed that clothing, curtains or other similar materials can be scorched or set on fire by heat from the element.

(2) Heating by means of open fires shall not be permitted. Heating stoves and other similar appliances shall be firmly secured and adequate protection and insulation against fire shall be provided beneath and around such appliances and in way of their uptakes. Uptakes of stoves which burn solid fuel shall be so arranged and designed as to minimize the possibility of becoming blocked by combustion products and shall have a ready means for cleaning. Dampers for limiting draughts in uptakes shall, when in the closed position, still leave an adequate area open. Spaces in which stoves are installed shall be provided with ventilators of sufficient area to provide adequate combustion-air for the stove. Such ventilators shall have no means of closure and their position shall be such that closing appliances in accordance with regulation II/9 are not required.

(3) Open flame gas appliances, except cooking stoves and water heaters, shall not be permitted. Spaces containing any such stoves or water heaters shall have adequate ventilation to remove fumes and possible gas leakage to a safe place. All pipes conveying gas from container to stove or water heater shall be of steel or other approved material. Automatic safety gas shut-off devices shall be fitted to operate on loss of pressure in the gas main pipe or flame failure on any appliance.

(4) Where gaseous fuel is used for domestic purposes, the arrangements, storage, distribution and use of the fuel shall be to the satisfaction of the Administration and in accordance with regulation V/12.

Regulation 11 – Miscellaneous items[2]

(1) All exposed surfaces in corridors and stairway enclosures and surfaces including grounds in concealed or inaccessible spaces in accommodation and service spaces and control stations shall have low flame-

[2] See the Guidance concerning the Use of Certain Plastic Materials contained in recommendation 7 of attachment 3 to the Final Act of the Conference.

spread characteristics, *which for fishing vessels built on or after 1 January 2003 shall be determined in accordance with the IMO FTP Code*.[3] Exposed surfaces of ceilings in accommodation and service spaces and control stations shall have low flame-spread characteristics, *which for fishing vessels built on or after 1 January 2003 shall be determined in accordance with the IMO FTP Code*.

(2) Paints, varnishes and other finishes used on exposed interior surfaces shall not be capable of producing excessive quantities of smoke or toxic gases or vapours, [to be determined in accordance with the IMO FTP Code.]

(3) Primary deck coverings within accommodation and service spaces and control stations, shall be of approved material which will not readily ignite or give rise to toxic or explosive hazards at elevated temperatures. *For fishing vessels built on or after 1 January 2003 this shall be determined in accordance with the IMO FTP Code.*[4]

(4) Where "A" or "B" class divisions are penetrated for the passage of electrical cables, pipes, trunks, ducts, etc., or for the fitting of ventilation terminals, lighting fixtures and similar devices, arrangements shall be made to ensure that the fire integrity of the divisions is not impaired.

(5) (a) In accommodation and service spaces and control stations, pipes penetrating "A" or "B" class divisions shall be of approved materials having regard to the temperature such divisions are required to withstand. Where the Administration permits the conveying of oil and combustible liquids through accommodation and service spaces, the pipes conveying oil or combustible liquids shall be of an approved material having regard to the fire risk.

(b) Materials readily rendered ineffective by heat shall not be used for overboard scuppers, sanitary discharges, and other outlets which are close to the waterline and where the failure of the material in the event of fire would give rise to danger of flooding.

(6) Cellulose-nitrate-based film shall not be used in cinematograph installations

(7) All waste receptacles other than those used in fish processing shall be constructed of non-combustible materials with no openings in the sides or bottom.

(8) Machinery driving fuel oil transfer pumps, fuel oil unit pumps and other similar fuel pumps shall be fitted with remote controls situated outside the space concerned so that they can be stopped in the event of a fire arising in the space in which they are located.

(9) Drip trays shall be fitted where necessary to prevent oil leaking into bilges.

(l0) Within compartments used for stowage of fish, combustible insulation shall be protected by close-fitting cladding.

Regulation 12 – Storage of gas cylinders and dangerous materials

(l) Cylinders for compressed, liquefied or dissolved gases shall be clearly marked by means of prescribed identifying colours, have a clearly legible identification of the name and chemical formula of their contents and be properly secured.

(2) Cylinders containing flammable or other dangerous gases and expended cylinders shall be stored, properly secured, on open decks and all valves, pressure regulators and pipes leading from such cylinders shall be protected against damage. Cylinders shall be protected against excessive variations

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[3] See the Guidelines on the Evaluation of Fire Hazard Properties of Materials adopted by the Organization by resolution A.166(ES.IV) and the Recommendation on Improved Fire Test Procedures for Surface Flammability of Bulkhead, Ceiling and Deck Finish Materials adopted by the Organization by resolution A.653(16).

[4] See the Recommendation on Fire Test Procedures for Ignitability of Primary Deck Coverings adopted by the Organization by resolution A.687(17).

in temperature, direct rays of the sun, and accumulation of snow. However, the Administration may permit such cylinders to be stored in compartments complying with the requirements of paragraphs (3) to (5).

(3) Spaces containing highly flammable liquids, such as volatile paints, paraffin, benzole, etc., and where permitted, liquefied gas, shall have direct access from open decks only. Pressure-adjusting devices and relief valves shall exhaust within the compartment. Where boundary bulkheads of such compartments adjoin other enclosed spaces they shall be gastight.

(4) Except as necessary for service within the space, electrical wiring and fittings shall not be permitted within compartments used for the storage of highly flammable liquids or liquefied gases. Where such electrical fittings are installed, they shall be to the satisfaction of the Administration for use in a flammable atmosphere. [In fishing vessels built on or after 1 January 2003, such fittings shall be of a certified safe type and comply with the relevant provisions of the International Standard IEC Publication 79 "Electrical apparatus for explosive gas atmospheres".] Sources of heat shall be kept clear of such spaces and "No smoking" and "No naked light" notices shall be displayed in a prominent position.

(5) Separate storage shall be provided for each type of compressed gas. Compartments used for the storage of such gases shall not be used for storage of other combustible products nor for tools or objects not part of the gas distribution system. However, the Administration may relax these requirements considering the characteristics, volume and intended use of such compressed gases.

Regulation 13 – Means of escape

(1) Stairways and ladders leading to and from all accommodation spaces and in spaces in which the crew is normally employed, other than machinery spaces, shall be so arranged as to provide ready means of escape to the open deck and thence to the survival craft. In particular in relation to these spaces:

(a) at all levels of accommodation at least two widely separated means of escape shall be provided which may include the normal means of access from each restricted space or group of spaces;

(b) (i) below the weather deck the main means of escape shall be a stairway and the second escape may be a trunk or a stairway; and

(ii) above the weather deck the means of escape shall be stairways or doors to an open deck or a combination thereof;

(c) exceptionally the Administration may permit only one means of escape, due regard being paid to the nature and location of spaces and to the number of persons who normally might be accommodated or employed there;

(d) a corridor or part of a corridor from which there is only one route of escape, shall not exceed 7 m in length; and

(e) the width and continuity of the means of escape shall be to the satisfaction of the Administration.
[In fishing vessels built on or after 1 January 2003, stairways and corridors used as means of escape shall be not less than 700 mm in clear width and shall have a handrail on at least one side. Doorways which give access to a stairway shall be not less than 700 mm in clear width.]

(2) Two means of escape shall be provided from every machinery space of category A by one of the following means:

(a) two sets of steel ladders as widely separated as possible leading to doors in the upper part of the space similarly separated and from which access is provided to the open deck. In general, one of these ladders shall provide continuous fire shelter from the lower part of the space to a safe position outside

the space. However, the Administration may not require such shelter if, due to special arrangements or dimensions of the machinery space, a safe escape route from the lower part of this space is provided. This shelter shall be of steel, insulated and be provided with a self-closing steel door at the lower end. [In fishing vessels built on or after 1 January 2003 this shelter shall be of steel, insulated to "A-60" class standard and be provided with a "A-60" class self-closing steel door at the lower end]; or

(b) one steel ladder leading to a door in the upper part of the space from which access is provided to the open deck and additionally, in the lower part of the space and in a position well separated from the ladder referred to, a steel door capable of being operated from each side and which provides access to a safe escape route from the lower part of the space to the open deck.

(3) From machinery spaces other than those of category A, escape routes shall be provided to the satisfaction of the Administration having regard to the nature and location of the space and whether persons are normally employed in that space.

(4) Lifts shall not be considered as forming one of the required means of escape.

Regulation 14 – Automatic sprinkler and fire alarm and fire detection systems (Method IIF)

(1) In vessels in which method IIF is adopted an automatic sprinkler and fire alarm system of an approved type and complying with the requirements of this regulation shall be installed. [Alternatively sprinkler and fire alarm systems not complying with this regulation may be accepted, provided that those systems comply with the requirements of IMO Resolution A.800(19), "Revised guidelines for approval of sprinkler systems equivalent to that referred to in SOLAS, regulation II-2/12".] All systems shall be so arranged as to protect accommodation spaces and service spaces except spaces which afford no substantial fire risks, such as void spaces and sanitary spaces.

(2) (a) The system shall be capable of immediate operation at all times and no action by the crew shall be necessary to set it in operation. It shall be of the wet pipe type but small exposed sections may be of the dry pipe type where in the opinion of the Administration this is a necessary precaution. Any parts of the system which may be subjected to freezing temperatures in service shall be suitably protected against freezing.[5] It shall be kept charged at the necessary pressure and shall have provision for a continuous supply of water as required in paragraph 6(b).

(b) Each section of sprinklers shall include means for giving a visible and audible alarm signal automatically at one or more indicating units whenever any sprinkler comes into operation. Such units shall indicate in which section served by the system, fire has occurred and shall be centralized in the wheelhouse and, in addition, visible and audible alarms from the unit shall be placed in a position other than in the wheelhouse, so as to ensure that the indication of fire is immediately received by the crew. Such an alarm system shall be so constructed as to indicate if any fault occurs in the system.

(3) (a) Sprinklers shall be grouped into separate sections, each of which shall contain not more than 200 sprinklers.

(b) Each section of sprinklers shall be capable of being isolated by one stop valve only. The stop valve in each section shall be readily accessible and its location shall be clearly and permanently indicated. Means shall be provided to prevent the operation of the stop valves by any unauthorized person.

(c) A gauge indicating the pressure in the system shall be provided at each section stop valve and at a central station.

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[5] See the Guidance for Precautions Against Freezing of Fire Mains contained in recommendation 6 of attachment 3 to the Final Act of the Conference.

(d) The sprinklers shall be resistant to corrosion. In accommodation and service spaces the sprinklers shall come into operation within the temperature range of 68 C and 79 C, except that in locations such as drying rooms, where high ambient temperatures might be expected, the operating temperature may be increased by not more than 30 C above the maximum deck head temperature.

(e) A list or plan shall be displayed at each indicating unit showing the spaces covered and the location of the zone in respect of each section. Suitable instructions for testing and maintenance shall be available.

(4) Sprinklers shall be placed in an overhead position and spaced in a suitable pattern to maintain an average application rate of not less than 5 $l/m^2/min$ over the nominal area covered by the sprinklers. Alternatively, the Administration may permit the use of sprinklers providing such quantity of water suitably distributed as has been shown to the satisfaction of the Administration to be not less effective.

(5) (a) A pressure tank having a volume equal to at least twice that of the charge of water specified in this subparagraph shall be provided. The tank shall contain a standing charge of fresh water, equivalent to the amount of water which would be discharged in one minute by the pump referred to in paragraph (6)(b), and the arrangements shall provide for maintaining such air pressure in the tank as to ensure that, where the standing charge of fresh water in the tank has been used, the pressure will be not less than the working pressure of the sprinkler, plus the pressure due to a head of water measured from the bottom of the tank to the highest sprinkler in the system. Suitable means of replenishing the air under pressure and of replenishing the fresh water charge in the tank shall be provided. A glass gauge shall be provided to indicate the correct level of the water in the tank.

(b) Means shall be provided to prevent the passage of seawater into the tank.

(6) (a) An independent power pump shall be provided solely for the purpose of continuing automatically the discharge of water from the sprinklers. The pump shall be brought into action automatically by the pressure drop in the system before the standing fresh water charge in the pressure tank is completely exhausted.

(b) The pump and the piping system shall be capable of maintaining the necessary pressure at the level of the highest sprinkler to ensure a continuous output of water sufficient for the simultaneous coverage of the maximum area separated by fire-resisting bulkheads of "A" and "B" class divisions or an area of 280 m^2 whichever is the less at the application rate specified in paragraph (4).

(c) The pump shall have fitted on the delivery side a test valve with a short open-ended discharge pipe. The effective area through the valve and pipe shall be adequate to permit the release of the required pump output while maintaining the pressure in the system specified in paragraph (5)(a).

(d) The sea inlet to the pump shall wherever possible be in the space containing the pump and shall be so arranged that when the vessel is afloat it will not be necessary to shut off the supply of seawater to the pump for any purpose other than the inspection or repair of the pump.

(7) The sprinkler pump and tank shall be situated in a position reasonably remote from any machinery space of category A and shall not be situated in any space required to be protected by the sprinkler system.

(8) (a) There shall not be less than two sources of power supply for the seawater pump and the automatic fire alarm and fire detection system. If the pump is electrically driven it shall be connected to the main source of electrical power, which shall be capable of being supplied by at least two generators.

(b) The feeders shall be arranged so as to avoid galleys, machinery spaces and other enclosed spaces of high fire risk except in so far as it is necessary to reach the appropriate switchboard. One of the sources of power supply for the fire alarm and fire detection system shall be an emergency source. Where one of the sources of power for the pump is an internal combustion-type engine it shall, in

addition to complying with the provisions of paragraph (7), be so situated that a fire in any protected space will not affect the air supply to that engine.

(9) The sprinkler system shall have a connection from the vessel's fire main by way of a lockable screw-down non-return valve at the connection which will prevent a backflow from the sprinkler system to the fire main.

(10) (a) A test valve shall be provided for testing the automatic alarm for each section of sprinklers by a discharge of water equivalent to the operation of one sprinkler. The test valve for each section shall be situated near the stop valve for that section.

(b) Means shall be provided for testing the automatic operation of the pump on reduction of pressure in the system.

(c) Switches shall be provided at one of the indicating positions referred to in paragraph (2)(b) which will enable the alarm and the indicators for each section of sprinklers to be tested.

(11) Spare sprinkler heads shall be provided for each section of sprinklers.

[Spare sprinkler heads shall include all types and ratings installed in the vessel and shall be provided as follows:

less than 100 sprinkler heads: 3 spare heads,

less than 300 sprinkler heads: 6 spare heads,

300 to 1,000 sprinkler heads: 12 spare heads.]

Regulation 15 – Automatic fire alarm and fire detection systems (Method IIIF)

(1) In vessels in which Method IIIF is adopted an automatic fire alarm and fire detection system of an approved type and complying with the requirements of this regulation shall be installed and so arranged as to detect the presence of fire in all accommodation spaces and service spaces except spaces which afford no substantial fire risk, such as void spaces and sanitary spaces.

(2) (a) The system shall be capable of immediate operation at all times and no action of the crew shall be necessary to set it in operation.

(b) Each section of detectors shall include means for giving a visible and audible alarm signal automatically at one or more indicating units whenever any detector comes into operation. Such units shall indicate in which section served by the system a fire has occurred and shall be centralized on the wheelhouse and such other positions as will ensure that any alarm from the system is immediately received by the crew. Additionally, arrangements shall be provided to ensure that an alarm is sounded on the deck on which the fire has been detected. Such an alarm and detection system shall be so constructed as to indicate if any fault occurs in the system.

(3) Detectors shall be grouped into separate sections, each covering not more than 50 rooms served by such a system and containing not more than 100 detectors. Detectors shall be zoned to indicate on which deck a fire has occurred.

(4) The system shall be operated by an abnormal air temperature, by an abnormal concentration of smoke or by other factors indicative of incipient fire in any one of the spaces to be protected. Systems which are sensitive to air temperature shall not operate at less than 54 C and shall operate at a temperature not greater than 78 C when the temperature increase to those levels is not more than l C per minute. At the discretion of the Administration the permissible temperature of operation may be increased to 30 C above the maximum deckhead temperature in drying rooms and similar places of a normally high ambient temperature. Systems which are sensitive to smoke concentration shall operate on the reduction of the intensity of a transmitted light beam by an amount to be determined by the

Administration. [On fishing vessels built on or after 1 January 2003, smoke detectors shall be certified to operate before the smoke density exceeds 12.5% obscuration per metre, but not until the smoke density exceeds 2% obscuration per metre.] Other equally effective methods of operation may be accepted at the discretion of the Administration. The detection system shall not be used for any purpose other than fire detection.

(5) The detectors may be arranged to operate the alarm by the opening or closing of contacts or by other appropriate methods. They shall be fitted in an overhead position and shall be suitably protected against impact and physical damage. They shall be suitable for use in a marine atmosphere. They shall be placed in an open position clear of beams and other objects likely to obstruct the flow of hot gases or smoke to the sensitive element. Detectors operated by the closing of contacts shall be of the sealed contact type and the circuit shall be continuously monitored to indicate fault conditions.

(6) At least one detector shall be installed in each space where detection facilities are required and there shall be not less than one detector for each 37 m^2 of deck area approximately. In large spaces the detectors shall be arranged in a regular pattern so that no detector is more than 9 m from another detector or more than 4.5 m from a bulkhead.

(7) There shall be not less than two sources of power supply for the electrical equipment used in the operation of the fire alarm and fire detection system, one of which shall be an emergency source. The supply shall be provided by separate feeders reserved solely for that purpose. Such feeders shall run to a change-over switch situated in the control station for the fire detection system. The wiring system shall be so arranged as to avoid galleys, machinery spaces and other enclosed spaces having a high fire risk except in so far as it is necessary to provide for fire detection in such spaces or to reach the appropriate switchboard.

(8) (a) A list or plan shall be displayed adjacent to each indicating unit showing the spaces covered and the location of the zone in respect of each system. Suitable instructions for testing and maintenance shall be available.

(b) Provision shall be made for testing the correct operation of the detectors and the indicating units by supplying means for applying hot air or smoke at detector positions.

(9) Spare detector heads shall be provided for each section of detectors to the satisfaction of the Administration.

Regulation 15a – Smoke detection system

In ships built on or after 1 January 2003, an automatic fire alarm and fire detection system with smoke detectors shall be installed in corridors, stairway enclosures and escape routes complying with the provisions of regulation 15.

Regulation 16 – Fixed fire-extinguishing arrangements in cargo spaces of high fire risk

(1) Cargo spaces of high fire risk shall be protected by a fixed gas fire-extinguishing system or by a fire-extinguishing system which gives equivalent protection, to the satisfaction of the Administration.

(2) Cargo spaces as well as other spaces temporarily used for storing large amounts of combustible packaging material and the like shall, as a minimum, be fitted with an open sprinkler system. (This regulation shall apply to new and existing vessels. For existing vessels, this requirement shall be met by 15 December 2010 at the latest.)

Regulation 17 – Fire pumps

(1) At least two fire pumps shall be provided.

(2) If a fire in any one compartment could put all the fire pumps out of action, there shall be an alternative means of providing water for fire fighting. In vessels of 75 m in length and over this alternative means shall be a fixed emergency fire pump independently driven. This emergency fire pump shall be capable of supplying two jets of water [at a minimum pressure of 0.25 N/mm^2.]

(3) (a) The fire pumps, other than the emergency pump, shall be capable of delivering for fire-fighting purposes a quantity of water at a minimum pressure of 0.25 N/mm^2, with a total capacity (Q) of at least:

$$[Q = \left(0.15\sqrt{L(B+D)} + 2.25\right)^2 \text{ m}^3/\text{ hour}]$$

where L, B and D are in metres.

However, the total required capacity of the fire pumps need not exceed l80 m^3/h.

(b) Each of the required fire pumps other than any emergency pump shall have a capacity not less than 40% of the total capacity of fire pumps required by subparagraph (a) and shall in any event be capable of delivering at least the jets of water required by regulation 19(2)(a). These fire pumps shall be capable of supplying the fire main systems under the required conditions. Where more than two pumps are installed the capacity of such additional pumps shall be to the satisfaction of the Administration.

(4) (a) Fire pumps shall be independently driven power pumps. Sanitary, ballast, bilge or general service pumps may be accepted as fire pumps, provided that they are not normally used for pumping oil and that, if they are subject to occasional duty for the transfer or pumping of fuel oil, suitable change-over arrangements are fitted.

(b) Relief valves shall be provided in conjunction with all fire pumps if the pumps are capable of developing a pressure exceeding the design pressure of the water service pipes, hydrants and hoses. These valves shall be so placed and adjusted as to prevent excessive pressure in any of the fire main systems.

(c) Emergency power-operated fire pumps shall be independently driven self-contained pumps either with their own diesel engine prime mover and fuel supply fitted in an accessible position outside the compartment which contains the main fire pumps, or be driven by a self-contained generator, which may be the emergency generator referred to in regulation IV/17, of sufficient capacity and which is positioned in a safe place outside the engine room and preferably above the working deck. The emergency fire pump shall be capable of operating for a period of at least 3 h.

(d) Emergency fire pumps, sea-suction valves and other necessary valves shall be operable from outside compartments containing main fire pumps in a position not likely to be cut off by a fire in those compartments.

Regulation 18 – Fire mains

(1) (a) Where more than one hydrant is required to provide the number of jets specified in regulation 19(2)(a) a fire main shall be provided.

(b) Fire mains shall have no connections other than those required for fire fighting, except for the purpose of washing the deck and anchor chains and operation of bilge ejectors, subject to the efficiency of the fire-fighting system being maintained.

(c) Where fire mains are not self-draining, suitable drain cocks shall be fitted where frost damage could be expected.[6]

(2) (a) The diameter of the fire main and water service pipes shall be sufficient for the effective distribution of the maximum required discharge from two fire pumps operating simultaneously or of 140 m^3/h, whichever is the less.

(b) With the two pumps simultaneously delivering through nozzles specified in regulation 19(5) the quantity of water specified in subparagraph (a), through any adjacent hydrants, the minimum pressure of 0.25 N/mm^2 shall be maintained at all hydrants.

Regulation 19 – Fire hydrants, fire hoses and nozzles

(1) (a) The number of fire hoses provided shall be equal to the number of fire hydrants arranged according to paragraph (2) and one spare hose. This number does not include any fire hoses required in any engine or boiler room. The Administration may increase the number of fire hoses required so as to ensure that hoses in sufficient number are available and accessible at all times, having regard to the size of the vessel.

(b) Fire hoses shall be of approved material and sufficient in length to project a jet of water to any of the spaces in which they may be required to be used. Their maximum length shall be 20 m. Every fire hose shall be provided with a nozzle and the necessary couplings. Fire hoses shall together with any necessary fittings and tools be kept ready for use in conspicuous positions near the water service hydrants or connections.

(2) (a) The number and position of the hydrants shall be such that at least two jets of water not emanating from the same hydrant, one of which shall be from a single length of fire hose, may reach any part of the vessel normally accessible to the crew while the vessel is being navigated.

(b) All required hydrants shall be fitted with fire hoses having dual purpose nozzles as required by paragraph (5). One hydrant shall be located near the entrance of the space to be protected.

(3) Materials readily rendered ineffective by heat shall not be used for fire mains and hydrants unless adequately protected. The pipes and hydrants shall be so placed that the fire hoses may be easily coupled to them. In vessels where deck cargo may be carried, the positions of the hydrants shall be such that they are always readily accessible and the pipes shall be arranged as far as practicable to avoid risk of damage by such cargo. Unless one fire hose and nozzle is provided for each hydrant, there shall be complete interchangeability of fire hose couplings and nozzles.

(4) A cock or valve shall be fitted to serve each fire hose so that any fire hose may be removed while the fire pumps are operating.

(5) (a) Standard nozzle sizes shall be 12 mm, 16 mm and 19 mm or as near thereto as possible. Larger diameter nozzles may be permitted at the discretion of the Administration.

(b) For accommodation and service spaces, a nozzle size greater than 12 mm need not be used.

(c) For machinery spaces and exterior locations, the nozzle size shall be such as to obtain the maximum discharge possible from two jets at the pressure specified in regulation 18(2)(b) from the smallest pump, provided that a nozzle size greater than 19 mm need not be used.

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[6] See the Guidance for Precautions Against Freezing of Fire Mains contained in recommendation 6 of attachment 3 to the Final Act of the Conference.

Regulation 20 – Portable fire extinguishers

(1) Portable fire extinguishers shall be of approved types. The capacity of required portable fluid extinguishers shall be not more than 13.5 l and not less than 9 l. Other extinguishers shall not be in excess of the equivalent portability of the 14 l fluid extinguisher and shall not be less than the fire-extinguishing equivalent of a 9 l fluid extinguisher. The Administration shall determine the equivalents of portable fire extinguishers.

(2) Spare charges shall be provided to the satisfaction of the Administration. [For fishing vessels built on or after 1 January 2003, the following shall apply:

1. For each type of fire extinguisher carried, capable of being recharged on board, 100% spare charges for the first 10 extinguishers shall be provided and 50% for the remaining extinguishers but not more than 60.
2. For fire extinguishers which cannot be recharged on board, at least 50% additional fire extinguishers of same type and capacity shall be provided in lieu of spare charges.
3. Instructions for recharging should be carried on board. Only refills approved for the fire extinguishers in question may be used for recharging.]

(3) Fire extinguishers containing an extinguishing medium which, in the opinion of the Administration, either by itself or under expected conditions of use, gives off toxic gases in such quantities as to endanger persons shall not be permitted.

(4) [Fire extinguishers shall be examined annually by a competent person, authorised by the Administration. Each extinguisher shall be provided with a sign indicating that it has been examined. All containers of permanently pressurised fire extinguishers and propellant bottles of non-pressurised extinguishers shall be hydraulic pressure tested every 10 years.]

(5) Normally, one of the portable fire extinguishers intended for use in any space shall be stowed near an entrance to that space.

Regulation 21 – Portable fire extinguishers in control stations and accommodation and service spaces

(1) At least five approved portable fire extinguishers shall be provided in control stations and accommodation and service spaces to the satisfaction of the Administration.

(2) Spare charges shall be provided to the satisfaction of the Administration.
[For fishing vessels built on or after 1 January 2003 the following shall apply:

1. For fire extinguishers, capable of being recharged on board, 100% spare charges for the first 10 extinguishers shall be provided and 50% for the remaining extinguishers but not more than 60.
2. For fire extinguishers which cannot be recharged on board at least 50% additional fire extinguishers of same type and capacity shall be provided in lieu of spare charges.
3. Instructions for recharging should be carried on board. Only refills approved for the fire extinguishers in question may be used for recharging.]

Regulation 22 – Fire-extinguishing appliances in machinery spaces

(1) (a) Spaces containing oil-fired boilers or fuel oil units *as well as machinery spaces of category A* shall be provided with one of the following fixed fire-extinguishing systems, to the satisfaction of the Administration:

(i) a pressure water-spraying installation;

(ii) a fire-smothering gas installation;

(iii) a fire-extinguishing installation using vapours from low toxicity vapourizing liquids; or

(iv) a fire-extinguishing installation using high expansion foam.

Where the engine and boiler rooms are not entirely separate, or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler rooms shall be considered as one compartment.

(b) New installations of halogenated hydrocarbon systems used as fire-extinguishing media shall be prohibited on new and existing vessels.

(c) Every boiler room shall be provided with at least one set of portable air-foam equipment to the satisfaction of the Administration.

(d) At least two approved portable extinguishers discharging foam or equivalent shall be provided in each firing space in each boiler room and each space in which a part of the fuel oil installation is situated. At least one approved foam-type extinguisher of at least 135 l capacity or equivalent shall be provided with hoses on reels suitable for reaching any part of the boiler room. The Administration may relax the requirements of this subparagraph, having regard to the size and nature of the space to be protected.

(e) In each firing space there shall be a receptacle containing sand, sawdust impregnated with soda or other approved dry material, in such quantity as may be required by the Administration. Alternatively an approved portable extinguisher may be provided.

(2) Spaces containing internal combustion machinery used either for main propulsion or for other purposes, when such machinery has a total power output of not less than 750 kW, shall be provided with the following arrangements:

(a) one of the fire-extinguishing systems required by paragraph (1)(a);

(b) at least one set of portable air-foam equipment to the satisfaction of the Administration; and

(c) in each such space, approved foam-type fire extinguishers each of at least 45 l capacity, or equivalent, sufficient in number to enable foam or its equivalent to be directed on to any part of the fuel and lubricating oil pressure systems, gearing and other fire hazards. In addition, there shall be provided a sufficient number of portable foam extinguishers or equivalent which shall be so located that an extinguisher is not more than 10 m walking distance from any point in the space; provided that there shall be at least two such extinguishers in each such space. For smaller spaces the Administration may relax these requirements.

(3) Spaces containing steam turbines or enclosed steam engines used either for main propulsion, or for other purposes, when such machinery has a total power output of not less than 750 kW shall be provided with the following arrangements:

(a) foam fire extinguishers each of at least 45 l capacity, or equivalent, sufficient in number to enable foam or its equivalent to be directed on to any part of the pressure lubrication system, on to any part of the casings enclosing pressure lubricated parts of the turbines, engines or associated gearing, and any other fire hazards. Provided that such extinguishers shall not be required if protection at least equivalent to that of this subparagraph is provided in such spaces by a fixed fire-extinguishing system fitted in compliance with paragraph (1)(a); and

(b) a sufficient number of portable foam extinguishers, or equivalent, which shall be so located that an extinguisher is not more than 10 m walking distance from any point in the space; provided that there shall be at least two such extinguishers in each such space, and such extinguishers shall not be required in addition to any provided in compliance with paragraph (2)(c).

(4) Where, in the opinion of the Administration, a fire hazard exists in any machinery space for which no specific provisions for fire-extinguishing appliances are prescribed in paragraphs (1), (2) and (3) there

shall be provided in, or adjacent to, that space a number of approved portable fire extinguishers or other means of fire extinction to the satisfaction of the Administration.

(5) Where fixed fire-extinguishing systems not required by this part are installed, such systems shall be to the satisfaction of the Administration.

(6) For any machinery space of category A to which access is provided at a low level from an adjacent shaft tunnel, there shall be provided in addition to any watertight door and on the side remote from that machinery space a light steel fire-screen door which shall be capable of being operated from each side of the door.

Regulation 23 – International shore connection

(1) At least one international shore connection, complying with paragraph (2), shall be provided.

(2) Standard dimensions of flanges for the international shore connection shall be in accordance with the following table:

Description	**Dimension**
Outside diameter	178 mm
Inner diameter	64 mm
Bolt circle diameter	132 mm
Slots in flange	4 holes 19 mm in diameter equidistantly placed on a bolt circle of the above diameter, slotted to the flange periphery
Flange thickness	14.5 mm minimum
Bolts and nuts	4 each of 16 mm in diameter and 50 mm in length

(3) This connection shall be constructed of material suitable for 1.0 N/mm^2 service pressure.

(4) The flange shall have a flat face on one side and the other shall have a coupling permanently attached thereto that will fit the vessel's hydrant and hose. The connection shall be kept aboard the vessel together with a gasket of any material suitable for 1.0 N/mm^2 service pressure together with four 16 mm bolts 50 mm in length and eight washers.

(5) Facilities shall be available enabling such a connection to be used on either side of the vessel.

Regulation 24 – Firefighter's outfits

(1) At least two firefighter's outfits shall be carried to the satisfaction of the Administration. [On fishing vessels built on or after 1 January 2003, the firefighter's outfits shall be in accordance with the IMO Fire Safety Systems Code, Chapter III, regulations 2.1, 2.1.1 and 2.1.2. Two spare charges shall be provided for each required breathing apparatus.]

(2) The fireman's outfits shall be stored so as to be easily accessible and ready for use and shall be stored in widely separated positions.

Regulation 25 – Fire control plan

There shall be a permanently exhibited fire control plan to the satisfaction of the Administration. [On fishing vessels built on or after 1 January 2003 the contents of such a plan shall be in accordance with IMO Resolution A.654(16) "Graphical symbols for fire control plans" and IMO Resolution A.756(18) "Guidelines on the information to be provided with fire control plans".]

Regulation 26 – Ready availability of fire-extinguishing appliances

Fire-extinguishing appliances shall be kept in good order and available for immediate use at all times.

Regulation 27 – Acceptance of substitutes

Where in this Part any special type of appliance, apparatus, extinguishing medium or arrangement is specified, any other type of appliance, etc., may be allowed, provided the Administration is satisfied that it is not less effective.

Part C – Fire safety measures in vessels of [24] metres in length and over but less than 60 metres

Regulation 28 – Structural fire protection

(1) The hull, superstructure, structural bulkheads, decks and deckhouses shall be constructed of non-combustible materials. The Administration may permit combustible construction provided the requirements of this regulation and the additional fire-extinguishing requirements of regulation 40(3) are complied with.

(2) (a) In vessels, the hull of which is constructed of non-combustible materials, the decks and bulkheads separating machinery spaces of category A from accommodation spaces, service spaces or control stations shall be constructed to "A-60" class standard where the machinery space of category A is not provided with a fixed fire-extinguishing system and to "A-30" class standard where such a system is fitted. Decks and bulkheads separating other machinery spaces from accommodation, service spaces and control stations shall be constructed to "A-0" class standard. Decks and bulkheads separating control stations from accommodation and service spaces shall be constructed to "A" class standard [in accordance with the tables 1 and 2 of regulation 7 of this chapter], except that the Administration may permit the fitting of "B-15" class divisions for separating such spaces as skipper's cabin from the wheelhouse, [where such spaces are considered to be a part of the wheelhouse.]

(b) In vessels, the hull of which is constructed of combustible materials, the decks and bulkheads separating machinery spaces from accommodation spaces, service spaces or control stations shall be constructed to "F" class or "B-15" class standard. In addition, machinery space boundaries shall as far as practicable prevent the passage of smoke. Decks and bulkheads separating other control stations from accommodation and service spaces shall be constructed to "F" class standard.

(3) (a) In vessels, the hull of which is constructed of non-combustible materials, bulkheads of corridors serving accommodation spaces, service spaces and control stations shall be of "B-15" class divisions.

(b) In vessels, the hull of which is constructed of combustible materials, bulkheads of corridors serving accommodation spaces, service spaces and control stations shall be of "F" class divisions.

(c) Any bulkhead required by subparagraph (a) or (b) shall extend from deck to deck unless a continuous ceiling of the same class as the bulkhead is fitted on both sides of the bulkhead, in which case the bulkhead may terminate at the continuous ceiling.

(4) Interior stairways serving accommodation spaces, service spaces or control stations shall be of steel or other equivalent material. Such stairways shall be within enclosures constructed of "F" class divisions in vessels the hull of which is constructed of combustible materials, or "B-15" class divisions in vessels the hull of which is constructed of non-combustible materials, provided that where a stairway penetrates only one deck it need be enclosed at one level only.

(5) Doors and other closures of openings in bulkheads and decks referred to in paragraphs (2) and (3), doors fitted to stairway enclosures referred to in paragraph (4) and doors fitted in engine and boiler casings, shall be as far as practicable equivalent in resisting fire to the divisions in which they are fitted. Doors to machinery spaces of category A shall be self-closing.

(6) Lift trunks which pass through the accommodation and service spaces shall be constructed of steel or equivalent material and shall be provided with means of closing which will permit control of draught and smoke.

(7) (a) In vessels, the hull of which is constructed of combustible materials, the boundary bulkheads and decks of spaces containing any emergency source of power and bulkheads and decks between galleys, paint rooms, lamp rooms or any store-rooms which contain appreciable quantities of highly flammable materials, and accommodation spaces, service spaces or control stations shall be constructed of "F" class or "B-15" class divisions.

(b) In vessels, the hull of which is constructed of non-combustible materials, the decks and bulkheads referred to in subparagraph (a) shall be of "A" class divisions insulated to the satisfaction of the Administration, having in mind the risk of fire, except that the Administration may accept "B-15" class divisions between galley and accommodation spaces, service spaces and control stations when the galley contains electrically heated furnaces, electrically heated hot water appliances or other electrically heated appliances only.

(c) Highly flammable products shall be carried in suitably sealed containers.

(8) Where bulkheads or decks required by paragraphs (2), (3), (5) or (7) to be of "A" class, "B" class or "F" class divisions, are penetrated for the passage of electrical cables, pipes, trunks, ducts, etc., arrangements shall be made to ensure that the fire integrity of the division is not impaired.

(9) Air spaces enclosed behind ceilings, panellings or linings in accommodation spaces, service spaces and control stations shall be divided by close-fitting draught stops spaced not more than 7 m apart.

(10) Windows and skylights to machinery spaces shall be as follows:

(a) where skylights can be opened they shall be capable of being closed from outside the space. Skylights containing glass panels shall be fitted with external shutters of steel or other equivalent material permanently attached.

(b) glass or similar materials shall not be fitted in machinery space boundaries. This does not preclude the use of wire-reinforced glass for skylights and glass in control rooms within the machinery spaces; and

(c) in skylights referred to in subparagraph (a) wire-reinforced glass shall be used.

(11) Insulating materials in accommodation spaces, service spaces except domestic refrigerating compartments, control stations and machinery spaces shall be non-combustible. The surface of insulation fitted on the internal boundaries of machinery spaces of category A shall be impervious to oil or oil vapours.

(12) Within compartments used for stowage of fish, combustible insulation shall be protected by close-fitting cladding.

(13) Notwithstanding the requirements of this regulation, the Administration may accept "A-0" class divisions in lieu of "B-15" or "F" class divisions, having regard to the amount of combustible materials used in adjacent spaces.

Regulation 29 – Ventilation systems

(1) Except as provided for in regulation 30(2), means shall be provided to stop fans and close main openings to ventilation systems from outside the spaces served.

(2) Means shall be provided for closing, from a safe position, the annular spaces around funnels.

(3) Ventilation openings may be permitted in and under the doors in corridor bulkheads except that such openings shall not be permitted in and under stairway enclosure doors. The openings shall be provided only in the lower half of a door. Where such opening is in or under a door the total net area of any

such opening or openings shall not exceed 0.05 m^2. When such opening is cut in a door it shall be fitted with a grille made of non-combustible material.

(4) Ventilation ducts for machinery spaces of category A or galleys shall not in general pass through accommodation spaces, service spaces or control stations. Where the Administration permits this arrangement, the ducts shall be constructed of steel or equivalent material and arranged to preserve the integrity of the divisions.

(5) Ventilation ducts of accommodation spaces, service spaces or control stations shall not in general pass through machinery spaces of category A or through galleys. Where the Administration permits this arrangement the ducts shall be constructed of steel or equivalent material and arranged to preserve the integrity of the divisions.

(6) Store-rooms containing appreciable quantities of highly flammable products shall be provided with ventilation arrangements which are separate from other ventilation systems. Ventilation shall be arranged at high and low levels and the inlets and outlets of ventilators shall be positioned in safe areas. Suitable wire mesh guards to arrest sparks shall be fitted over inlet and outlet ventilation openings.

(7) Ventilation systems serving machinery spaces shall be independent of systems serving other spaces.

(8) Where trunks or ducts serve spaces on both sides of "A" class bulkheads or decks, dampers shall be fitted so as to prevent the spread of fire and smoke between compartments. Manual dampers shall be operable from both sides of the bulkhead or the deck. Where the trunks or ducts with a free cross-sectional area exceeding 0.02 m^2 pass through "A" class bulkheads or decks, automatic self-closing dampers shall be fitted. Trunks serving compartments situated only on one side of such bulkheads shall comply with regulation 9(1)(b)

Regulation 30 – Heating installations

(1) Electric radiators shall be fixed in position and so constructed as to reduce fire risks to a minimum. No such radiator shall be fitted with an element so exposed that clothing, curtains or other similar materials can be scorched or set on fire by heat from the element.

(2) Heating by means of open fires shall not be permitted. Heating stoves and other similar appliances shall be firmly secured and adequate protection and insulation against fire shall be provided beneath and around such appliances and in way of their uptakes. Uptakes of stoves which burn solid fuel shall be so arranged and designed as to minimize the possibility of becoming blocked by combustion products and shall have a ready means for cleaning. Dampers for limiting draughts in uptakes shall, when in the closed position, still leave an adequate area open. Spaces in which stoves are installed shall be provided with ventilators of sufficient area to provide adequate combustion-air for the stove. Such ventilators shall have no means of closure and their position shall be such that no closing appliances in accordance with regulation II/9 are required.

(3) Open flame gas appliances, except cooking stoves and water heaters, shall not be permitted. Spaces containing any such stoves or water heaters shall have adequate ventilation to remove fumes and possible gas leakage to a safe place. All pipes conveying gas from container to stove or water heater shall be of steel or other approved material. Automatic safety gas shut-off devices shall be fitted to operate on loss of pressure in the gas main pipe or flame failure on any appliance.

Regulation 31 – Miscellaneous items[7]

(1) Exposed surfaces within accommodation spaces, service spaces, control stations, corridor and stairway enclosures and the concealed surfaces behind bulkheads, ceilings, panellings and linings in accommodation spaces, service spaces and control stations shall have low flame-spread characteristics, [as determined in accordance with the IMO Fire Test Procedures Code (FTP)].

(2) All exposed surfaces of glass reinforced plastic construction within accommodation and service spaces, control stations, machinery spaces of category A and other machinery spaces of similar fire risk shall have the final lay-up layer of approved resin having inherent fire-retardant properties or be coated with an approved fire-retardant paint or be protected by non-combustible materials.

(3) Paints, varnishes and other finishes used on exposed interior surfaces shall not be capable of producing excessive quantities of smoke or toxic gases or vapours. The Administration shall be satisfied that they are not of a nature to offer an undue fire hazard. [In fishing vessels built on or after 1 January 2003 this shall be determined in accordance with the IMO FTP Code.]

(4) Primary deck coverings within accommodation and service spaces and control stations shall be of approved material which will not readily ignite or give rise to toxic or explosive hazards at elevated temperatures.[8]

(5) (a) In accommodation and service spaces and control stations, pipes penetrating "A" or "B" class divisions shall be of approved materials having regard to the temperature that such divisions are required to withstand. Where the Administration permits the conveying of oil and combustible liquids through accommodation and service spaces, the pipes conveying oil or combustible liquids shall be of an approved material having regard to the fire risk.

(b) Materials readily rendered ineffective by heat shall not be used for overboard scuppers, sanitary discharges, and other outlets which are close to the waterline and where the failure of the material in the event of fire would give rise to danger of flooding.

(6) All waste receptacles other than those used in fish processing shall be constructed of non-combustible materials with no openings in the sides and bottom.

(7) Machinery driving fuel oil transfer pumps, fuel oil unit pumps and other similar fuel pumps shall be fitted with remote controls situated outside the space concerned so that they can be stopped in the event of a fire arising in the space in which they are located.

(8) Drip trays shall be fitted where necessary to prevent oil leaking into bilges.

Regulation 32 – Storage of gas cylinders and dangerous materials

(1) Cylinders for compressed, liquefied or dissolved gases shall be clearly marked by means of prescribed identifying colours, have a clearly legible identification of the name and chemical formula of their contents and shall be properly secured.

(2) Cylinders containing flammable or other dangerous gases and expended cylinders shall be stored, properly secured, on open decks and all valves, pressure regulators and pipes leading from such cylinders shall be protected against damage. Cylinders shall be protected against excessive variations in temperature, direct rays of the sun, and accumulation of snow. However, the Administration may permit such cylinders to be stored in compartments complying with the requirements of paragraphs (3) to (5).

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[7] See the Guidance concerning the Use of Certain Plastic Materials contained in recommendation 7 of attachment 3 to the Final Act of the Conference.

[8] See Guidelines IMO Resolution A.687(17).

(3) Spaces containing highly flammable liquids, such as volatile paints, paraffin, benzole, etc., and, where permitted, liquefied gas, shall have direct access from open decks only. Pressure-adjusting devices and relief valves shall exhaust within the compartment. Where boundary bulkheads of such compartments adjoin other enclosed spaces they shall be gastight.

(4) Except as necessary for service within the space, electrical wiring and fittings shall not be permitted within compartments used for the storage of highly flammable liquids or liquefied gases. Where such electrical fittings are installed, they shall be to the satisfaction of the Administration for use in a flammable atmosphere. [On fishing vessels built on or after 1 January 2003 they shall be of a certified safe type and comply with the relevant provisions of the International Standard IEC publication 79 (Electrical apparatus for explosive gas atmospheres).] Sources of heat shall be kept clear of such spaces and "No smoking" and "No naked light" notices shall be displayed in a prominent position.

(5) Separate storage shall be provided for each type of compressed gas. Compartments used for the storage of such gases shall not be used for storage of other combustible products nor for tools or objects not part of the gas distribution system. However, the Administration may relax these requirements considering the characteristics, volume and intended use of such compressed gases.

Regulation 33 – Means of escape

(1) Stairways and ladders leading to and from all accommodation spaces and in spaces in which the crew is normally employed, other than machinery spaces, shall be so arranged as to provide ready means of escape to the open deck and thence to the survival craft. In particular in relation to these spaces:

(a) at all levels of accommodation at least two widely separated means of escape shall be provided which may include the normal means of access from each restricted space or group of spaces;

(b)(i) below the weather deck the means of escape shall be a stairway and the second escape may be a trunk or a stairway; and

(ii) above the weather deck the means of escape shall be stairways or doors to an open deck or a combination thereof. Where it is not practicable to fit stairways or doors, one of these means of escape may be by means of adequately sized portholes or hatches protected where necessary against ice accretion;

(c) exceptionally the Administration may permit only one means of escape, due regard being paid to the nature and location of spaces and to the number of persons who normally might be accommodated or employed there;

(d) a corridor or part of a corridor from which there is only one route of escape shall preferably not exceed 2.5 m in length and in no case be greater than 5.0 m in length; and

(e) the width and continuity of the means of escape shall be to the satisfaction of the Administration.

(2) Two means of escape shall be provided from every machinery space of category A which shall be as widely separated as possible. Vertical escapes shall be by means of steel ladders. Where the size of the machinery spaces makes it impracticable, one of these means of escape may be omitted. In such cases special consideration shall be given to the remaining exit.

(3) Lifts shall not be considered as forming one of the required means of escape.

Regulation 34 – Automatic fire alarm and fire detection systems

Where the Administration has permitted under regulation 28(1) a combustible construction, or where otherwise appreciable amounts of combustible materials are used on the construction of accommodation spaces, service spaces and control stations, special consideration shall be given to the installation of an

automatic fire alarm and fire detection system in those spaces, having due regard to the size of those spaces, their arrangement and location relative to control stations as well as, where applicable, the flame-spread characteristics of the installed furniture.

Regulation 34a – Smoke detection system

In ships built on or after 1 January 2003, an automatic fire alarm and fire detection system with smoke detectors shall be installed in corridors, stairway enclosures and means of escape that comply with the provisions of regulation 15.

Regulation 34b – Fixed fire-extinguishing systems in cargo spaces posing a high risk of fire

(1) Cargo spaces posing a high risk of fire shall be protected by a fixed fire-extinguishing system using gases as extinguishants or by a fire-extinguishing system offering similar protection in accordance with the requirements of the Administration. (This regulation shall apply to new and existing vessels. For existing vessels, this requirement shall be met by 15 December 2010 at the latest.

(2) Cargo spaces as well as other spaces used temporarily for storing large amounts of combustible packaging material, etc. shall, as a minimum, be fitted with an open sprinkler system. (This regulation shall apply to new and existing vessels. For existing vessels, this requirement shall be met by 15 December 2010 at the latest).

Regulation 35 – Fire pumps

(1) The minimum number and type of fire pumps to be fitted shall be as follows:

(a) one power pump not dependent upon the main machinery for its motive power; or

(b) one power pump driven by main machinery provided that the propeller shafting can be readily disconnected or provided that a controllable pitch propeller is fitted, *and*

(c) one independently driven emergency fire pump shall be installed according to the provisions of paragraph (5). In vessels with a length below 45 m, the emergency fire pump may be a portable diesel-powered pump.

(2) Sanitary, bilge, ballast, general service or any other pumps may be used as fire pumps if they comply with the requirements of this chapter and do not affect the ability to cope with pumping of the bilges. Fire pumps shall be so connected that they cannot be used for pumping oil or other flammable liquids.

(3) Centrifugal pumps or other pumps connected to the fire main through which backflow could occur shall be fitted with nonreturn valves.

(4) Vessels not fitted with a power-operated emergency fire pump and without a fixed fire-extinguishing system in the machinery spaces shall be provided with additional fire-extinguishing means to the satisfaction of the Administration. *(This paragraph shall not apply to Danish ships).*

(5) Where fitted, emergency power-operated fire pumps shall be independently driven self-contained pumps either with their own prime mover and fuel supply fitted in an accessible position outside the compartment which contains the main fire pumps, or be driven by a self-contained generator which may be an emergency generator of sufficient capacity and which is positioned in a safe place outside the engine room and preferably above the working deck.

(6) For any emergency fire pump, where fitted, the pump, sea-suction valves and other necessary valves shall be operable from outside compartments containing main fire pumps in a position not likely to be cut off by a fire in those compartments.

(7) The total capacity (Q) of main power-operated fire pumps shall be at least:

$[Q = \left(0.15\sqrt{L(B+D)} + 2.25\right)^2 \text{ m}^3/\text{hour}]$

where L, B and D are in metres.

(8) Where two independent power-operated fire pumps are fitted, the capacity of each pump shall not be less than 40% of the quantity required by paragraph (7), [or 25 m^3/h, whichever is the greatest].

(9) When main power fire pumps are delivering the quantity of water required by paragraph (7) through the fire main, fire hoses and nozzles, the pressure maintained at any hydrant shall be not less than 0.25 N/mm^2.

(10) Where power-operated emergency fire pumps are delivering the maximum quantity of water through the jet required by regulation 37(1), the pressure maintained at any hydrant shall be to the satisfaction of the Administration.

Regulation 36 – Fire mains

(1) Where more than one hydrant is required to provide the number of jets required by regulation 37(1), a fire main shall be provided.

(2) Materials readily rendered ineffective by heat shall not be used for fire mains, unless adequately protected.

(3) Where fire pump delivery pressure can exceed the designed working pressure of fire mains, relief valves shall be fitted.

(4) Fire mains shall have no connections other than those required for fire fighting, except for the purpose of washing the deck and anchor chains or operation of bilge ejectors, subject to the efficiency of the fire-fighting system being maintained.

(5) Where fire mains are not self-draining, suitable drain cocks shall be fitted where frost damage may be expected.[9]

Regulation 37 – Fire hydrants, fire hoses and nozzles

(1) Fire hydrants shall be positioned so as to allow easy and quick connection of fire hoses and so that at least one jet can be directed into any part of the vessel which is normally accessible during navigation.

(2) The jet required in paragraph (1) shall be from a single length of fire hose.

(3) In addition to the requirements of paragraph (1), machinery spaces of category A shall be provided with at least one fire hydrant complete with fire hose and dual purpose nozzle. The fire hydrant shall be located outside the space and near the entrance.

(4) For every required fire hydrant there shall be one fire hose. At least one spare fire hose shall be provided in addition to this requirement.

(5) Single lengths of fire hose shall not exceed 20 m.

(6) Fire hoses shall be of an approved material. Each fire hose shall be provided with couplings and a dual purpose nozzle.

(7) Except where fire hoses are permanently attached to the fire main, the couplings of fire hoses and nozzles shall be completely interchangeable.

(8) The nozzles as required by paragraph (6) shall be appropriate to the delivery capacity of the fire pumps fitted, but in any case shall have a diameter of not less than 12 mm.

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[9] See the Guidance for Precautions against Freezing of Fire Mains contained in recommendation 6 of attachment 3 to the Final Act of the Conference.

Regulation 38 – Portable fire extinguishers

(1) Portable fire extinguishers shall be of approved types. The capacity of required portable fluid extinguishers shall be not more than 13.5 l and not less than 9 l. Other extinguishers shall not be in excess of the equivalent portability of the 14 l fluid extinguisher and shall not be less than the fire-extinguishing equivalent of a 9 l fluid extinguisher. The Administration shall determine the equivalents of fire extinguishers.

(2) Spare charges shall be provided to the satisfaction of the Administration.

[For fishing vessels built on or after 1 January 2003, the following shall apply:

1. Except in the cases mentioned under 2 (below) for each type of fire extinguishers carried, capable of being recharged on board, 100% spare charges for the first 10 extinguishers shall be provided and 50% for the remaining extinguishers, but not more than 60.
2. For fire extinguishers which cannot be recharged on board, at least 50% additional fire extinguishers of same type and capacity shall be provided in lieu of spare charges.
3. Instructions for recharging shall be carried on board. Only refills approved for the fire extinguishers in question may be used for recharging.]

(3) Fire extinguishers containing an extinguishing medium which, in the opinion of the Administration, either by itself or under expected conditions of use, gives off toxic gases in such quantities as to endanger persons shall not be permitted.

(4) Fire extinguishers shall be periodically examined and subjected to such tests as the Administration may require.

[For fishing vessels built on or after 1 January 2003, the following shall apply:

Fire extinguishers shall be examined annually by a competent person, authorised by the Administration. Each extinguisher shall be provided with a sign indicating that it has been examined. All containers of permanently pressurised fire extinguishers and propellant bottles of non-pressurised extinguishers shall be hydraulic pressure tested every 10 years.]

(5) Normally, one of the portable fire extinguishers intended for use in any space shall be stowed near an entrance to that space.

Regulation 39 – Portable fire extinguishers in control stations and accommodation and service spaces

(1) A sufficient number of approved portable fire extinguishers shall be provided in control stations and accommodation and service spaces to ensure that at least one extinguisher of a suitable type is readily available for use in any part of such spaces. The total number of extinguishers in these spaces, however, shall not be less than three.

(2) Spare charges shall be provided to the satisfaction of the Administration.

[For fishing vessels built on or after 1 January 2003, the following shall apply:

1. Except in the cases mentioned under 2 (below) for each type of fire extinguisher carried, capable of being recharged on board, 100% spare charges for the first 10 extinguishers shall be provided and 50% for the remaining extinguishers but not more than 60.
2. For fire extinguishers which cannot be recharged on board, at least 50% additional spare fire extinguishers of same type and capacity shall be provided.
3. Instructions for recharging should be carried on board. Only refills approved for the extinguishers in question may be used for recharging.]

Regulation 40 – Fire-extinguishing appliances in machinery spaces

(1) (a) Spaces containing oil-fired boilers, fuel oil units, *internal combustion propulsion machinery* or internal combustion machinery having a total power output of not less than [375 kilowatts] shall be provided with one of the following fixed fire extinguishing systems, to the satisfaction of the Administration:

(i) a pressure water-spraying installation;

(ii) a fire-smothering gas installation;

(iii) a fire-extinguishing installation using vapours from low toxicity vapourizing liquids; or

(iv) a fire-extinguishing installation using high expansion foam.

(b) New installations of halogenated hydrocarbon systems used as fire-extinguishing media shall be prohibited on new and existing vessels.

(c) Where the engine and boiler rooms are not entirely separated from each other or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler rooms shall be considered as one compartment.

(2) Installations listed in paragraph (1)(a) shall be controlled from readily accessible positions outside such spaces not likely to be cut off by a fire in the protected space. Arrangements shall be made to ensure the supply of power and water necessary for the operation of the system in the event of fire in the protected space.

(3) Vessels which are constructed mainly or wholly of wood or fibre reinforced plastic and fitted with oil-fired boilers or internal combustion machinery which are decked in way of the machinery space with such material, shall be provided with one of the extinguishing systems referred to in paragraph (1).

(4) In all machinery spaces of category A at least two portable extinguishers shall be provided, of a type suitable for extinguishing fires involving fuel oil. Where such spaces contain machinery, which has a total power output of not less than 250 kilowatts, at least three such extinguishers shall be provided. One of the extinguishers shall be stowed near the entrance to the space.

(5) Vessels having machinery spaces not protected by a fixed fire extinguishing system shall be provided with at least a 45 l foam extinguisher or its equivalent, suitable for fighting oil fires. Where the size of the machinery spaces makes this provision impracticable, the Administration may accept an additional number of portable fire extinguishers.

Regulation 41 – Fireman's outfits

The number of fireman's outfits and their location shall be to the satisfaction of the Administration. [For fishing vessels built on or after 1 January 2003 with a length of 45 m and over at least two fireman's outfits shall be carried and stored in readily accessible and widely separated positions, which are not likely to be cut off in the event of fire. The fireman's outfits shall be in accordance with the IMO Fire Safety Systems Code, Chapter III, regulations 2.1, 2.1.1 and 2.1.2. At least two spare charges shall be provided for each required breathing apparatus.]

Regulation 42 – Fire control plan

There shall be a permanently exhibited fire control plan to the satisfaction of the Administration. [In fishing vessels built on or after 1 January 2003, the contents of such a plan shall be in accordance with IMO Resolution A.654(16) "Graphical symbols for fire control plans" and IMO Resolution A.756(18) "Guidelines on the information to be provided with fire control plans". In vessels with a length of less than 45 m, the Administration may dispense with this requirement], *but only in extraordinary circumstances.*

Regulation 43 – Ready availability of fire-extinguishing appliances

Fire-extinguishing appliances shall be kept in good order and available for immediate use at all times.

Regulation 44 – Acceptance of substitutes

Where in this part any special type of appliance, apparatus, extinguishing medium or arrangement is specified, any other type of appliance, etc., may be allowed provided the Administration is satisfied that it is not less effective.

Part D – Fire protection in ships with a length below 24 metres

Regulation 45 – Structural fire protection

(1) If steel decks or steel bulkheads in accommodation spaces form the top or side of a fuel oil tank, they shall be coated with a non-combustible material of minimum 40 mm thickness. Manholes or other openings to fuel oil tanks may not be fitted in accommodation spaces.

(2) External bulkheads, decks and ship's sides restricting accommodation spaces shall be insulated with at least 100 mm approved, non-combustible insulation. In steel vessels, bulkheads between accommodation spaces and machinery or fish holds shall be made of steel or equivalent. In wooden vessels, they may be constructed of two layers of wood with two intermediate layers of felt or similar or of 60 mm wood with an insulation plate cladding. The surface of insulation fitted on the internal boundaries of machinery spaces of category A and in spaces into which oil products may drain shall be impervious to oil or oil vapours.

(3) All insulation in accommodation spaces and the wheelhouse shall be made of non-combustible materials. Combustible insulation fitted in spaces used for the storage or processing of fish shall be protected by a tight, non-combustible cladding.

(4) All exposed surfaces in corridors or stairway enclosures and surfaces of bulkheads and ceilings in all accommodation and service spaces and control stations and exposed surfaces in enclosed or inaccessible spaces (behind bulkheads, ceilings, panellings and linings) in accommodation and service spaces and control stations shall have low flame-spread characteristics, this being determined in accordance with the IMO FTP Code.

(5) All exposed surfaces of glass reinforced plastic construction within accommodation and service spaces, control stations, machinery spaces of category A and other machinery spaces of similar fire risk shall have the final lay-up layer of approved resin having inherent fire-retardant properties or be coated with an approved fire-retardant paint or be protected by non-combustible materials.

(6) Where a door has been fitted between accommodation spaces and machinery spaces, it shall be of the self-closing type.

(7) A door may be permitted between the galley and the mess room provided that it is made of fire-retardant material; the same shall apply to a service hatch.

(8) Primary deck coverings within accommodation and service spaces and control stations shall be of approved material which will not readily ignite or give rise to toxic or explosive hazards at elevated temperatures. On fishing vessels built on or after 1 January 2003, this shall be determined in accordance with the IMO FTP Code.

(9) In accommodation and service spaces and control stations, pipes penetrating "A" or "B" class divisions shall be of approved materials having regard to the temperature that such divisions are

required to withstand. Where the Danish Maritime Authority permits the conveying of oil and combustible liquids through accommodation and service spaces, the pipes conveying oil or combustible liquids shall be of an approved material having regard to the fire risk.

(10) Materials, such as plastic or similar, which are readily rendered ineffective by heat shall not be used for overboard scuppers, sanitary discharges, and other outlets which are close to the waterline and where the failure of the material in the event of fire would give rise to danger of flooding.

Regulation 46 – Ventilation systems

(1) Except as provided for in regulation 47, means shall be provided to stop the fans and close main openings to ventilation systems from outside the spaces served.

(2) Ventilation openings may be permitted in and under the doors in corridor bulkheads except that such openings shall not be permitted in and under stairway enclosure doors. The openings shall be provided only in the lower half of a door. Where such opening is in or under a door the total net area of any such opening or openings shall not exceed 0.05 m^2. When such opening is cut in a door it shall be fitted with a grille made of non-combustible material.

(3) Ventilation ducts for machinery spaces of category A or galleys shall not in general pass through accommodation spaces, service spaces or control stations. Where the Administration permits this arrangement, the ducts shall be constructed of steel or equivalent material and arranged to preserve the integrity of the divisions.

(4) Ventilation ducts of accommodation spaces, service spaces or control stations shall not in general pass through machinery spaces of category A or through galleys. Where the Administration permits this arrangement the ducts shall be constructed of steel or equivalent material and arranged to preserve the integrity of the divisions.

(5) Store-rooms containing appreciable quantities of highly flammable products shall be provided with ventilation arrangements which are separate from other ventilation systems. Ventilation shall be arranged at high and low levels and the inlets and outlets of ventilators shall be positioned in safe areas. Suitable wire mesh guards to arrest sparks shall be fitted over inlet and outlet ventilation openings.

(6) Ventilation systems serving machinery spaces shall be independent of systems serving other spaces.

Regulation 47 – Heating installations

(1) Electric radiators shall be fixed in position and so constructed as to reduce fire risks to a minimum. No such radiator shall be fitted with an element so exposed that clothing, curtains or other similar materials can be scorched or set on fire by heat from the element.

(2) Heating stoves and other similar appliances shall be firmly secured and adequate protection and insulation against fire shall be provided beneath and around such appliances and in way of their uptakes. Uptakes of stoves which burn solid fuel shall be so arranged and designed as to minimize the possibility of becoming blocked by combustion products and shall have a ready means for cleaning. Dampers for limiting draughts in uptakes shall, when in the closed position, still leave an adequate area open. Spaces in which stoves are installed shall be provided with ventilators of sufficient area to provide adequate combustion-air for the stove.

(3) Open flame gas appliances, except cooking stoves and water heaters, shall not be permitted. Spaces containing any such stoves or water heaters shall have adequate ventilation to remove fumes and possible gas leakage to a safe place. All pipes conveying gas from container to stove or water heater

shall be of steel or other approved material. Automatic safety gas shut-off devices shall be fitted to operate on loss of pressure in the gas main pipe or flame failure on any appliance.

Regulation 48 – Miscellaneous items

(1) Paints, varnishes and other finishes used on exposed interior surfaces shall not be capable of producing excessive quantities of smoke or toxic gases or vapours, this being determined in accordance with the IMO FTP Code.

(2) All waste receptacles other than those used in fish processing shall be constructed of non-combustible materials with no openings in the sides and bottom.

(3) Machinery driving fuel oil transfer pumps, fuel oil unit pumps and other similar fuel pumps shall be fitted with remote controls situated outside the space concerned so that they can be stopped in the event of a fire arising in the space in which they are located.

(4) Drip trays shall be fitted where necessary to prevent oil leaking into bilges.

Regulation 49 – Storage of gas cylinders and dangerous materials

(1) Cylinders for compressed, liquefied or dissolved gases shall be clearly marked by means of prescribed identifying colours, have a clearly legible identification of the name and chemical formula of their contents and shall be properly secured.

(2) Cylinders containing flammable or other dangerous gases and expended cylinders shall be stored, properly secured, on open decks and all valves, pressure regulators and pipes leading from such cylinders shall be protected against damage. Cylinders shall be protected against excessive variations in temperature, direct rays of the sun, and accumulation of snow. However, the Danish Maritime Authority may permit such cylinders to be stored in compartments complying with the requirements of paragraphs (3) to (5).

(3) Spaces containing highly flammable liquids, such as volatile paints, paraffin, benzole, etc., and, where permitted, liquefied gas, shall have direct access from open decks only. Pressure-adjusting devices and relief valves shall exhaust within the compartment. Where boundary bulkheads of such compartments adjoin other enclosed spaces they shall be gastight.

(4) Except as necessary for service within the space, electrical wiring and fittings shall not be permitted within compartments used for the storage of highly flammable liquids or liquefied gases. Where such electrical fittings are installed, they shall meet the requirements of the Danish Maritime Authority for use in a flammable atmosphere. On fishing vessels built on or after 1 January 2003 they shall be of a certified safe type and comply with the relevant provisions of the International Standard IEC publication 79 (Electrical apparatus for explosive gas atmospheres). Sources of heat shall be kept clear of such spaces and "No smoking" and "No naked light" notices shall be displayed in a prominent position.

(5) Separate storage shall be provided for each type of compressed gas. Compartments used for the storage of such gases shall not be used for storage of other combustible products nor for tools or objects not part of the gas distribution system. However, the Danish Maritime Authority may relax these requirements considering the characteristics, volume and intended use of such compressed gases.

Regulation 50 – Means of escape

(1) Stairways and ladders leading to and from all accommodation spaces and in spaces in which the crew is normally employed shall be so arranged as to provide ready means of escape to the open deck and thence to the survival craft.

(2) Two means of escape shall be provided from every machinery space of category A which shall be as widely separated as possible. Vertical escapes shall be by means of steel ladders. Where the size of the machinery spaces makes it impracticable, one of these means of escape may be omitted. In such cases special consideration shall be given to the remaining exit.

(3) At all levels of accommodation at least two widely separated means of escape shall be provided from each large space or group of spaces.

(4) Below the weather deck the main means of escape shall be a stairway and the second means of escape may be an emergency means of escape. Above the weather deck the means of escape shall be stairways or doors to an open deck or a combination thereof.

(5) Exceptionally the Danish Maritime Authority may permit only one route of escape, due regard being paid to the location and length of spaces and to the number of persons who normally might be accommodated or employed there. The width and continuity of the means of escape shall be approved.

(6) Lifts shall not be considered as forming one of the required means of escape.

Regulation 51 – Automatic fire alarm systems

In fishing vessels built on or after 1 January 2003 made as a combustible construction, or where otherwise appreciable amounts of combustible materials are used on the construction of accommodation spaces, service spaces and control stations, special consideration shall be given to the installation of an automatic fire alarm system in those spaces, having due regard to the size of those spaces, their arrangement and location relative to control stations as well as, where applicable, the flame-spread characteristics of the installed furniture.

Regulation 51a – Fixed fire-extinguishing systems in cargo spaces posing a high risk of fire

(1) Cargo spaces posing a high risk of fire shall be protected by a fixed fire-extinguishing system using gases as extinguishants or by a fire-extinguishing system offering similar protection in accordance with the requirements of the Administration. (This regulation shall apply to new and existing vessels. For existing vessels, this requirement shall be met by 15 December 2010 at the latest.

(2) Cargo spaces as well as other spaces used temporarily for storing large amounts of combustible packaging material, etc. shall, as a minimum, be fitted with an open sprinkler system. (This regulation shall apply to new and existing vessels. For existing vessels, this requirement shall be met by 15 December 2010 at the latest).

Regulation 52 – Fire pumps – number, capacity and arrangement

(1) Fishing vessels shall be provided with at least one mechanically driven fire pump. Depending on the service area, the Danish Maritime Authority may, however, require an emergency fire pump.[10]

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[10] *An emergency fire pump will, among others, be required within the service areas the North Sea and the English Channel comprising service in the Channel east of the line Star Point-cape de la Hague, service around the Orkney islands, the Shetland islands, the Faroe islands and the Faroe Bank and/or service around Greenland until 100 nautical miles from the nearest coast.*

(2) Where requirements for the maximum permitted suction height can be met, the emergency pump may consist of a portable diesel-powered pump with independent fuel oil supply for three hours' operation. The tools needed for the starting, suction, coupling of hoses, etc. shall be located in the vicinity of the pump. Pumps requiring priming shall be fitted with a funnel and a shut-off valve.

(3) Sanitary, ballast and general service pumps may be approved as fire pumps provided that they are not normally used for pumping oil, and that, if they are occasionally used for pumping oil, suitable switch-over devices are provided so that the pumps cannot, even accidentally, be activated to suck from tanks which may be used for substances other than ballast water and/or from the ship's bilge system and simultaneously provide pressure to the ship's fire main. Safety devices based on dimming of certain pipelines by using blind flanges cannot be approved.

(4) When the pumps are used as fire pumps, they may only be able to supply the fire main.

(5) The prescribed fire pumps may be constituted by more pumps provided that they are able to function satisfactorily in parallel and maintain the given capacity under the conditions mentioned in paragraph (6).

(6) The prescribed fire pump shall be capable of maintaining a pressure of at least 0.25 N/mm^2 at the fire hydrants with the two hydrants located farthest away from the pump operating, each with a single length of hose with a 12 mm jet.

(7) Portable pumps shall be capable of maintaining a pressure at the hydrant of at least 0.25 N/mm^2 at the capacity mentioned in paragraph (8).

(8) The total capacity (Q) of each of the prescribed fire pumps shall at least be in accordance with the calculation method below, however not less than 16 m^3/hour.

$$Q = \left(0.15\sqrt{L\,(B+D)} + 2.25\right)^2 \text{ m}^3/\text{ hour}$$

where L, B and D are in metres.

However, the total capacity of each fire pump need not exceed 30m^3/hour.

(9) Fire pumps, including portable emergency fire pumps, may not be located or stored in front of the forepeak bulkhead.

(10) The sea-suction valves of fire pumps and other necessary valves shall be located so that a fire in any other place than in the space where the pump is located will not prevent the use of the pump.

(11) The total suction height of a pump may not exceed 4.5 m (suction height + pipe resistance) in all conditions of trim and heel that the ship must be supposed to encounter during navigation.

(12) All fixed fire pumps shall be fitted with a non-return valve on the outlet side.

(13) If the fire pumps are capable of developing a pressure exceeding the maximum permissible working pressure of the pipelines, fire hydrants and fire hoses, the pumps shall be fitted with safety valves to prevent harmful overpressure.

Regulation 53 – Fire mains

(1) The vessel shall be provided with fire mains to ensure an effective distribution of the prescribed amount of water.

(2) The maximum pressure at a fire hydrant may not exceed the pressure at which the effective handling of a fire hose can be proved.

(3) Fire hoses shall be made of steel or any other material that is not easily rendered ineffective by heat.

(4) Fire hoses shall be laid so as to minimize the risk of mechanical damage to the pipes.

(5) Where there is a risk of frost damage, precautions shall have been made to avoid such damage.

Regulation 54 – Fire hydrants, fire hoses and nozzles

(1) Fire hydrants shall be positioned so as to allow easy and quick connection of fire hoses and so that at least one jet can be directed into any part of the vessel which is normally accessible during navigation.

(2) The jet required in paragraph (1) shall be from a single length of fire hose.

(3) In addition to the requirements of paragraph (1), machinery spaces of category A shall be provided with one fire hydrant located outside the space and near the entrance.

(4) For every required fire hydrant there shall be one fire hose. At least one spare fire hose shall be provided in addition to this requirement.

(5) Single lengths of fire hose shall not exceed 20 m.

(6) Fire hoses shall be of an approved material. Each fire hose shall be provided with couplings and a dual purpose nozzle.

(7) Except where fire hoses are permanently attached to the fire main, the couplings of fire hoses and nozzles shall be completely interchangeable.

(8) The nozzles as required by paragraph (6) shall be appropriate to the delivery capacity of the fire pumps fitted, but in any case shall have a diameter of not less than 12 mm.

Regulation 55 – Fire-extinguishing appliances

(1) Vessels shall be provided with suitable installations and equipment for the detection and fighting of fire.

(2) Spaces containing internal combustion propulsion machinery, internal combustion machinery with a total power output of 375 kW and more, oil-fired boilers, including central heating boilers, incinerators and fuel oil aggregates, shall be provided with one of the following fixed fire extinguishing systems, to the satisfaction of the Danish Maritime Authority:

(i) a pressure water-spraying installation;

(ii) a fire-smothering gas installation;

(iii) a fire-extinguishing installation using high expansion foam.

New installations of halogenated hydrocarbon systems used as fire-extinguishing media shall be prohibited on new and existing vessels.

Where the engine and boiler rooms are not entirely separated from each other or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler rooms shall be considered as one compartment.

(3) Installations listed in paragraph (1) shall be controlled from readily accessible positions outside such spaces not likely to be cut off by a fire in the protected space. Arrangements shall be made to ensure the supply of power and water necessary for the operation of the system in the event of fire in the protected space.

(4) Holds with a high fire risk shall be protected by a fixed CO_2 fire-extinguishing system and be provided with a fixed fire detection system.

(5) It is not generally permitted to carry dangerous goods covered by the IMO International Maritime Dangerous Goods Code (the IMDG Code). This provision shall not apply to the ship's stores and equipment.

Regulation 56 – Portable fire extinguishers

(1) All fire extinguishers shall be of an approved type and construction. Fire extinguishers containing an extinguishing medium which, in the opinion of the Danish Maritime Authority, either by itself or under expected conditions of use, gives off toxic gases in such quantities as to endanger the persons on board shall not be permitted. The capacity of required portable fluid extinguishers shall be not more than 13.5 l and not less than 9 l. Other extinguishers shall not be in excess of the equivalent portability of the 13.5 l fluid extinguisher and shall not be less than the fire-extinguishing equivalent of a 9 l fluid extinguisher. The fluid extinguishers may be replaced by other approved fire extinguishers and the following equivalents may be used:

Water-foam in a 1:1 ratio, litre:litre

Foam-multipowder in a 2:1 ratio, litre:kg

CO2-multipowder in a 1:1 ratio, kg:kg

(2) Approved, portable fire extinguishers shall be provided at appropriate places in and/or at control stations and accommodation and services spaces. At least three such fire extinguishers shall be provided; this does not include fire extinguishers required for machinery spaces. In vessels with no more than two spaces, the number may be reduced.

(3) In all machinery spaces of category A at least two portable fire extinguishers shall be provided (1 of 12 kg and 1 of 5 kg), of a type suitable for extinguishing fires involving fuel oil. Where such spaces contain machinery which has a total power output of not less than 250 kilowatts at least three such extinguishers shall be provided. The largest of these extinguishers shall be stowed near the entrance to the space.

(4) For fishing vessels built on or after 1 January 2003, the following shall apply:

(a) Except for what is mentioned in subparagraph (b), for each type of fire extinguisher carried, capable of being recharged on board, 50% spare charges.

(b) For fire extinguishers which cannot be recharged on board, at least 50% additional fire extinguishers of same type and capacity shall be provided in lieu of spare charges.

(c) Instructions for recharging shall be carried on board. Only refills approved for the fire extinguishers in question may be used for recharging.

(5) Fire extinguishers shall be periodically examined and subjected to such tests as the Administration may require.

(6) For fishing vessels built on or after 1 January 2003, the following shall apply: Fire extinguishers shall be examined annually by a competent person, authorised by the Administration. Each extinguisher shall be provided with a sign indicating that it has been examined. All containers of permanently pressurised fire extinguishers and propellant bottles of non-pressurised extinguishers shall be hydraulic pressure tested every 10 years.

Regulation 57 – Fireman's outfit

(1) In special cases, the Danish Maritime Authority may require fireman's outfits complying with the provisions of regulation 41.

Regulation 58 – Ready availability of fire-extinguishing appliances

Fire-extinguishing appliances shall be kept in good and functional order and continuously be in use or available for immediate use at all times when the ship is in service. Fire pumps, including any emergency fire pump, shall be tested every month.

Regulation 59 – Acceptance of substitutes

Where in this part any special type of appliance, apparatus, extinguishing medium or arrangement is specified, any other appliance, etc., may be allowed provided the Danish Maritime Authority is satisfied that it is not less effective.

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Chapter VI
Protection of the crew (occupational health and safety, etc.)

Unless expressly provided otherwise, the provisions of this chapter shall apply to both new and existing vessels.

Part A – General

On all fishing vessels, all work stations and areas where persons move about on board shall be arranged so that the work can be carried out safely and without any risk to health. This shall include ensuring that the provisions of this chapter are observed. This chapter contains supplementary provisions to the rules of Notice A from the Danish Maritime Authority, technical regulation on occupational health on board ships, in force at any time.

Regulation 1 – General protection measures

(1) A lifeline system shall be designed to be effective for all needs and the necessary wires, ropes, shackles, eye bolts and cleats shall be provided.

(2) Deck openings provided with coamings or sills of less than 600 mm in height shall be provided with guards, such as hinged or portable railings or nettings *of a height of at least 1 metre*. The Administration may exempt small openings such as fish scuttles from compliance with these requirements.

(3) Skylights, or other similar openings shall be fitted with protective bars not more than 350 mm apart. The Administration may exempt small openings from compliance with this requirement.

(4) The surface of all decks shall be so designed or treated as to minimize the possibility of personnel slipping. In particular, decks of working areas, such as in machinery spaces, in galleys, at winches, *around net and seine drums,* and where fish is handled as well as at the foot and head of ladders an in front of doors, shall be provided with *particularly effective* anti-skid surfaces.[1]

(5) When work is carried out or the crew move about in areas with an increased risk of falling over board, suitable safety measures shall be taken, such as the use of lifelines, working jackets, life-jackets or other suitable equipment. The work may not be carried out if fully satisfactory surveillance has not been established.

(6) Where work cannot be planned and arranged in a way that takes full account of conditions of safety and health, the work may be carried out only if personal life-saving appliances are used, cf. Notice A from the Danish Maritime Authority on occupational health on board ships in force at any time.

Regulation 2 – Deck openings

(1) Hinged covers of hatchways, manholes and other openings shall be protected against accidental closing *by means of a self-locking device*. In particular, heavy covers on escape hatches shall be equipped with counterweights, and so constructed as to be capable of being opened from each side of the cover.

(2) Dimensions of access hatches shall not be less than 600 mm by 600 mm or 600 mm diameter. *As regards access to fish holds, see furthermore the provisions of regulation 6.*

(3) Where practicable, hand-holds shall be provided above the level of the deck over escape openings.

Regulation 3 – Bulwarks, rails and guards

(1) Efficient bulwarks or guard rails shall be fitted on all exposed parts of the working deck and on superstructure decks if they are working platforms. The height of bulwarks or guard rails above deck shall be at least 1 m. Where this height would interfere with the normal operation of the vessel, a lesser height may be approved by the Administration. *On existing vessels, a height of at least 750 mm may, however, be accepted if it is considered appropriate.*

(2) The minimum vertical distance from the deepest operating waterline to the lowest point of the top of the bulwark, or to the edge of the working deck if guard rails are fitted shall ensure adequate protection of the crew from water shipped on deck, taking into account the sea states and the weather conditions in which the vessel may operate, the areas of operation, type of vessel and its method of fishing and shall be to the satisfaction of the Administration. [In vessels of a length above 24 m built after 1 January 2003, the freeboard measured amidships from the edge of the working deck from which fishing is undertaken, shall not be less than 300 mm or not less than the freeboard corresponding with the maximum permissible draught], *in accordance with the vessel's approved stability information*. [For vessels with sheltered working decks, which are so arranged that water will

[1] *Wooden decks without anti-skid covering shall not be regarded as satisfying the requirements for anti-skid surfaces.*

not enter the sheltered working spaces no minimum freeboard other than the one corresponding with the maximum permissible draught is required.]

(3) Clearance below the lowest course of guard rails shall not exceed 230 mm. Other courses shall not be more than 380 mm apart, and the distance between stanchions shall not be more than 1.5 m. In a vessel with rounded gunwales, guard rail supports shall be placed on the flat of the deck. Rails shall be free from sharp points, edges and corners and shall be of adequate strength.

(4) Means to the satisfaction of the Administration, such as guard rails, lifelines, gangways or underdeck passages, shall be provided to protect the crew in moving between accommodation, machinery and other working spaces. Storm rails shall be fitted as necessary to the outside of all deckhouses and casings to secure safety of passage or work for the crew.

(5) Stern trawlers shall be provided with suitable protection such as doors, gates or nets at the top of the stern ramp at the same height as the adjacent bulwark or guard rails. When such protection is not in position a chain or other means of protection shall be provided across the ramp.

(6) For other trawlers, the aft bulwarks may be omitted provided that the vertical distance from the deepest operating waterline to the edge of the working deck is at least 1800 mm and offers adequate protection of the crew from water shipped on deck, that there is a continuous gunwale from the starboard to the port side at a maximum height of 1000 mm, and that the other safety measures are in each individual case to the satisfaction of the Administration. Such safety measures shall not be limited to, but may consist of, for example, the distance from the net hauling equipment to the gunwale being at least 1000 mm; the width of the hole in the bulwark being minimized as much as possible through the insertion of moveable bars with a mutual distance of maximum 400 mm or pound boards of sufficient strength to resist the sea; an edge with a height of at least 50 mm being provided in the hole against the vessel's side or the like, or herringbones (flat bars with a length of at least 5 mm with an angle of 45 degrees to the side astern) being welded on covering at least 500 mm from the vessel's side astern against the net hauling equipment; the deck between drums and gunwale being extraordinarily non-skid. When gear is not being launched or hauled in through the hole, three chains or wires shall be placed from the port side to the starboard side with solid fastenings in the side as well as where there is a fixed bulwark amidships. The clearance below the lower chain or wire may not exceed 230 mm, and the distance between the other chains or wire may not exceed 380 mm. An approved working jacket or a working suit with an approved means of buoyancy shall be used when work is being carried out in the area. Such arrangements shall be approved beforehand by the Administration. Such an approval beforehand, which shall be in writing, shall be kept in the appendix to the vessel's survey book.

(7) If gratings are used at the gunwale, the distance between the surface of the grating and the top of the gunwale shall be at least 600 mm.

Regulation 4 – Stairways and ladders

(1) For the safety of the crew, stairways and ladders of adequate size and strength with handrails and non-slip treads shall be provided. [On fishing vessels built after 1 January 2003, such stairways and ladders shall be constructed in accordance with the relevant ISO standards.]

Regulation 5 – Visibility

(1) From the wheelhouse it shall be possible to view all workplaces on the weather deck. Where it is necessary to ensure such visibility, the wheelhouse shall be provided with windows to the floor. The

wheelhouse shall be positioned at a height such that visibility is not prevented or restricted by equipment, etc. installed on deck. On existing vessels, visibility shall be provided from the vessel's manoeuvring platform of the places on the vessel where the crew is engaged in launching and hauling in fishing gear and bringing the catch on board.

(2) Where it is not possible for technical reasons to ensure full visibility from the vessel's manoeuvring platform, cf. regulation 5.1, a video surveillance system shall be installed suitable for maritime use and with the camera and the monitor located in a place approved by the Administration.

(3) Where it is not possible to establish proper visual and audible communication between the workplace and the bridge, a suitable and reliable communication system shall be established.

(4) Operating handles for winches and other machinery, e.g. net hauling equipment, shall be placed so that the person operating the winches has sufficient room. From the manoeuvring platform (operating point) the operator shall have full visibility of the working area for the winch and machinery in question.

(5) Where it is not possible to have direct visibility of such working areas, it may be accepted in certain cases to use indirect visibility obtained by means of a video surveillance system suitable for maritime use and with the camera and monitor located in a place approved by the Administration.

Regulation 6 – Access to fish holds

(1) Passage between decks shall be via fixed ladders. If the ladders are required to be removable, they shall be provided with fittings so that they are safe and stable when in place.

(2) Hatchways – where the force required to open hatch covers is 160 N or more – shall be provided with a device helping to open the hatchway. It shall be possible to secure all hatchways in the open position.

(3) In fish holds, there shall be a ladder or fixed steps all the way down to the bottom of the hold. Handgrips shall be fitted where appropriate. Ladders shall be protected against slipping and falling by means of loops.

(4) The steps on ladders or the fixed steps shall be such that the risk of falling is minimized as much as possible. Thus, they shall have a breadth of at least 250 mm, and in vessels built after 1 January 2003, each step shall have a depth of at least 150 mm. It shall not be possible for the foot to slip to the side of the step. Round bars may be accepted as steps only after a concrete assessment.

(5) Where the vessel's crew carry out work in the fish hold at sea, such holds shall be provided with at least one means of evacuation. This means of evacuation may be the cargo hatchway. It shall be possible to open and close such hatchways from both sides. If the fish hold has a length of or above 20 m, two means of evacuation shall be provided placed as far apart as possible. Such hatchways shall comply with the provisions of chapter II, regulation 5 or 6, and the access to them shall comply with the provisions of these regulations. The requirement for two hatchways shall not apply to vessels built before 1 August 1990. If the fish hold is a refrigerating or freezer room, it shall be possible to open the hatchway or door to this room from both sides, and it shall be possible to sound an alarm from the room to the wheelhouse.

(6) Access to the fish hold shall be such that it is possible for a person to enter the holds wearing a fireman's outfit. This provision shall not apply to vessels of less than 45 m built before 1 August 1990.

(7) Fishing vessels used for catching or carrying industrial fish shall have at least the following hatches in each fish hold and cargo tank:

(a) A discharge hatch with a free access opening of minimum 1200 x 1200 mm. On vessels with a length of less than 24 m, hatch openings of minimum 1000 x 1000 mm may be accepted on the basis of a concrete assessment of the conditions. On vessels of less than 24 m, a hatch opening of minimum 750 x 750 mm may be accepted as an alternative to hatch openings of minimum 1000 x 1000 provided that an extra means of access to the fish hold of minimum 600 x 600 mm is provided; this means of access shall comply with the provisions of paragraph 5 of this regulation and it shall be documented that it is possible to take a stretcher out of the hold. The hatch cover for this means of access may be a flush hatch and, if so, it shall be marked "not to be opened at sea". On existing vessels, a hatch size of minimum 800 x 1000 mm may be accepted if there are two such hatches in each fish hold. On existing wooden vessels with a gross tonnage below 50, the traditional single hatch may be accepted if the opening is minimum 800 x 1000 mm.

(b) An ice cover with a free internal diameter of 290 mm. The ice cover shall be located as far as possible from the discharge hatch and be used during discharge to place the fresh-air ventilator directly on the top. The ice cover shall be lockable and, if the Administration deems it necessary, the fresh-air ventilator shall be placed on a coaming of the same height as the discharge hatch.

(8) In vessels with RSW/CSW tanks, such tanks shall be provided with a fixed ladder complying with the requirements of paragraph 4 to the entire depth of the tank. At the companionway to the tank, mountings for fastening fall-protective equipment shall be fitted. At least two approved items of fall-protective equipment as well as two approved H-harnesses shall be carried on board. Fall-protective equipment and H-harness shall be used during each entry into the fish holds regardless of the reason for such entry.

(9) Vessels built after 1 January 2003 shall be provided with a fixed stairway over the entire depth of the fish hold. The stairway shall be fitted with handgrips on both sides. If the fish hold has a depth of less than 3 m, the stairway may be replaced by a fixed ladder complying with the provisions of paragraph 4 on the basis of a concrete assessment. If the fish hold has a height of less than 2.2 m, a removable ladder with fittings for holding it stable and in place may be accepted on the basis of a concrete assessment.

Regulation 7 – Embarkation and disembarkation

(1) It shall be ensured that the vessel can be embarked and disembarked in a safe way.

(2) The master of a vessel where passage is to take place shall ensure that such passage may take place safely. In vessels with fully or partly roofed freeboard decks, arrangements shall be made so that a proper means of access may be established to the vessel or to other vessels moored alongside one another in port.

(3) The necessary anti-skid and holding arrangements shall be established, such as handrails, rails and steps, and the arrangement shall be lit properly.

(4) Fishing vessels with a length L between 45 and 85 m shall be equipped with at least one gangway with areas of use at angles to the horizontal plane of between 0^o and 45^o.

(5) Fishing vessels with a length L of more than 85 m shall be equipped with at least:

(a) one gangway with adjustable steps for use at angles to the horizontal plane of between 0^o and 55^o, or

(b) one gangway for use at angles of between 0^o and 55^o and one gangway with fixed steps for use at angles to the horizontal plane of between 20^o and 50^o.

(6) If the gangway referred to in paragraph (5)(a) cannot be moved from one side to the other by the vessel's crew, there shall be a gangway on each side.

(7) *New vessels with a length L of or above 24 m but below 45 m shall have steps made into the vessel's side or steps welded onto the vessel's side. The steps shall be placed on the vertical section of the vessel's side extending from the upper edge of the gunwale to the vessel's lightest waterline. Vessels registered in Greenland shall be exempted from the requirement for steps on the vessel's side if the vessel if fitted with a rescue boat. In new vessels built after 1 January 2003, the width of the steps shall be at least 250 mm and their depth shall be at least 125 mm.*

(8) *On vessels where a rescue boat is not required or which have been exempted from the requirement for a rescue boat, an arrangement shall be established to ensure that crewmembers who have fallen overboard may be brought aboard both in port and at sea. In order to find the most suitable means of rescue for the vessel concerned, it is recommended that the shipowner consults the "Report on the rescue of persons who have fallen over board fishing vessels" (Danish title: "Rapport om bjergning af overbordfaldne fra fiskefartøjer"). The report is available in Danish from the following web-site: www.f-a.dk.*

Regulation 8 – Work at heights

(1) *Masts on which lifting gear, antennas, lights, etc. that may require inspection or repair have been fitted shall be provided with proper ladders and, if necessary, working platforms. The ladder shall extend from the deck to the upper light or other equipment that may require inspection. This requirement shall not apply to existing vessels with wooden masts. On fishing vessels built after 1 January 2003, ladder steps may not have been made of round bars.*

(2) *All ladders with an angle to the horizontal plane greater than 70 degrees and a height above deck greater than 5 m shall, from a height of 2.20 m above deck, be provided with approved arrangements for fall prevention. Equipment for fall prevention may be replaced by approved loops.*

(3) *At the top of A-masts, on the top of wheelhouses and in other places where work is carried out or where it may be necessary to carry out repair work, inspection, etc., suitable rails shall be established.*

(4) *Fish lifts shall be provided with ladders and loops from a height of 2.20 m above deck. Furthermore, a suitable platform from which lubrication, maintenance and any repair may be carried out shall be located on or near to the top of the tower. The platform shall be provided with suitable railings and a floor moulding or the like to prevent falls. Each individual feeding pipe from the ice or fish lift shall be mutually secured so as to prevent the individual pipe pieces falling down. If the length of the pipes exceeds 2 m, the pipes shall have fixed supports or suspension. Feeding pipes may never be moved by one single person.*

(5) *It shall be possible to inspect and maintain the block and suspension for the tackle wire in a way that is secure from the point of view of safety and health.*

(6) *Approved fall-protection equipment (H-harness) shall be available on board.*

Regulation 9 – Working conditions and conditions of passage

(1) *Free passage shall be ensured in passageways (minimum 600 mm) and at work stations (minimum 600 x 600 mm), such as in front of net hauling equipment, around winches and at environmental systems. On existing vessels, free passage shall be ensured if technically possible. If, according to a concrete assessment, it is not possible to ensure free passage, other technical measures shall be taken to reduce or minimize the risk.*

(2) *On vessels with a length of or above 24 m, it shall be ensured that the manual handling of fish on board the vessel may take place below deck or forecastle. Full standing height shall be provided (at*

least 2 m) along with access to daylight in the form of, for example, sidescuttles. On existing vessels, the requirement for full standing height and access to daylight shall be met insofar as possible. On vessels with a length of less than 24 m, it shall be ensured that the handling of fish may be carried out under protected conditions.

(3) In the machinery space, there shall be free passage to all important parts and components for maintenance and repair purposes. There shall also be free passage to companionways or emergency exits.

(4) Where equipment for processing or feeding the catch into chutes prevents free passage, the equipment shall be removable or flexible in some other way so as to ensure free passage in periods when the catch is not being processed.

(5) In enclosed and partly enclosed working spaces used for rigging and fish processing, a ventilation system shall be provided to the satisfaction of the Administration. Where fish is being processed as such (filleting, boiling or the like), fish is being stored and chemicals are being used, a fixed mechanical ventilation system shall be fitted to ensure that the air is changed at least six times per hour. The Administration may exempt partly enclosed working spaces from the above requirements if it is found through a concrete assessment that sufficient natural ventilation is supplied.

(6) A safety helmet or other head protection offering similar protection shall be carried for everyone on board at risk of being hit by falling objects.

Regulation 10 – Lighting

(1) All passageways, all working spaces and all working areas on board the vessel shall be well lit. The lighting shall be sufficient to ensure that the work may be carried out with full regard to health and safety.[2]

(2) The amount of light shall be sufficient for distinguishing details. The light shall create suitable contrast conditions and may not blind.

(3) Fish holds shall be provided with fixed lighting ensuring sufficient lighting under all conditions – both for orientation and during work in the fish hold. On existing vessels used for catching industrial fish as well as on vessels with cargo tanks, it may be permissible, after a concrete assessment by the Administration, for the lighting of fish holds to be established in another way, which shall, however, be as reliable as a fixed system. Such lighting shall be of the low voltage type (24 volts) and explosion-proof.

(4) The lighting on the deck may not obstruct the visibility from the wheelhouse.

Regulation 11 – Deck machinery in general

(1) Winches, net hauling equipment, trawl board arrangements and other deck machinery shall, in respect of design, structure, fittings, safety equipment and stability, be designed so that they can, under the anticipated operating conditions, be fitted, used, maintained and repaired without presenting a risk to health and safety.

(2) Winches, net hauling equipment, trawl board arrangements and other deck machinery shall be used with full regard of health and safety and in accordance with the rules on the use of technical equipment in force at any time.

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2 *Danish Standard 700 on lighting shall be met as a minimum.*

(3) Winches, net hauling equipment and other deck machinery shall, if technically practicable, be designed so that the power is shut off when the protective devices are removed.

(4) Mechanically operated gallows posing a risk of persons being jammed shall be fitted with a sound device warning persons in the vicinity when the gallows are being moved.

(5) Mechanically operated hatches posing a risk of persons being jammed shall be fitted with a sound device warning persons in the vicinity.

Regulation 12 – Winches

(1) Winches shall, as far as practicable, be designed, guarded and fenced so that moving parts may not cause personal injury. All protective devices shall have the required strength.

(2) Fairleads shall be provided with protection devices or other equally effective approved safety arrangements capable of offering protecting against personal injury.

(3) If technically possible, wires along the deck shall be carried in pipes or be covered in an equally safe way. They shall be placed so that passage on deck may take place with full regard of safety.

(4) It shall be possible to reverse winches. Operating handles shall automatically return to the neutral position when released and be provided with a locking device or shielding preventing unintentional activation. Operating handles for net hauling equipment, long line winches and seine drums may be exempted from the requirement to return to the neutral position after a concrete assessment in accordance with the instructions and guidelines of the Administration in force at any time.

(5) Winch barrels shall be provided with means for fastening the wire ends.

(6) If a winch is operable from more than one place, it shall be possible to see at each operating point from where the winch is being operated. It may only be possible to operate the winch from one point at a time.

(7) The design and construction of winches shall be such that the maximum effort necessary for operating handwheels, handles, crank handles, levers, etc. does not exceed 160 N and in the case of pedals does not exceed 320 N. The requirement shall not apply to existing vessels built before 1 August 1990.

(8) All parts of the fishing gear, including wires, chains, blocks and the like, shall be of a sufficient strength to resist the loads that they may be exposed to. The guidelines and directions of the Administration for the approval and inspection of such equipment in force at any time shall apply.

(9) Lifting and hoisting appliances and similar equipment, including all parts and working gear thereof, whether fixed or movable, and all plant shall be of good construction, reliable material, adequate strength and free from defects. They shall be adequately and suitably fastened, supported or suspended having regard to the purpose for which they are used. The guidelines and directions of the Administration for the approval and inspection of such equipment in force at any time shall apply.

(10) The repair or replacement of any part of the above-mentioned equipment may not lead to a reduction of the original strength.

(11) Winches shall be fitted with brakes capable of effectively arresting and holding the safe working load. Brakes shall be provided with simple and easily accessible means of adjustment. Every winch drum which could be uncoupled from the drive shall be furnished with a separate brake independent of the brake connected with the drive.

(12) Winches shall be provided with means to prevent overhoisting and to prevent the accidental release of load if power supply fails.

(13) Shielding shall be established around all warping ends. The Administration may, after a concrete assessment, exempt warping ends from satisfying this requirement.

(14) Where a winch is operable from the control station (wheelhouse, bridge), emergency control switches shall be installed at suitable points (e.g. around the winch and at the other fixed work stations on deck and in the wheelhouse). Such control switches shall be able to stop the movement of the winch, and the winch shall be secured so that there is no uncontrolled discharge of the wire.

(15) Rig winches may not be capable of pulling at a greater force than the least permissible working load in any part of the rigging system.

(16) Trawl winches shall be fitted with an automatic winding system. The Administration may exempt self-stowing winches from meeting this requirement after a concrete assessment in accordance with the directions and guidelines of the Administration in force at any time.

(17) Suspended blocks shall be fitted with security chains or wire security with an ultimate strength at least twice that of the suspension point of the blocks.

(18) Operating panels shall be designed to avoid inadvertent starting of the winches, for example as a consequence of incorrectly set switch contacts for the operating handles.

Regulation 13 – Cargo handling

(1) Reception bins where the load is brought in hanging freely shall be provided with a solid pipe guard around the bin. If necessary, a platform shall be established on the guard at an appropriate height so that the tying of the net may be carried out in a good working posture.

(2) Fish processing shall be carried out at a good working height. Auxiliary and other equipment shall, to the extent necessary, be easily adjustable.

(3) To reduce the risk of slippery deck surfaces, fish waste shall be led overboard by means of skids, conveyor belts or similar arrangements.

(4) Technical measures shall be taken ensuring that the handling of fish on deck, from deck to fish hold and in the fish hold as such may be carried out so that unnecessary physical strains are avoided or reduced to a minimum.

Regulation 14 – Ice handling

(1) Conveyor belts for the carriage of ice for mixing with fish may not be installed on board new vessels wholly or partly used to carry or catch industrial fish. On other fishing vessels, any ice conveyor arrangements shall be submitted to the Administration for approval at the design stage. A separate risk assessment covering all work functions in connection with the use of the conveyor belt shall be enclosed; furthermore, written instructions for work carried out in connection with repairs of the conveyor belt and the ice-mixing system shall be drawn up.

(2) For existing ice-conveyor systems, a separate risk assessment shall also be drawn up covering all work functions in connection with the use of the conveyor belt. Furthermore, written instructions for work carried out in connection with repairs of the conveyor belt and the ice-mixing system shall be drawn up. Furthermore, the following requirements shall apply to existing ice-mixing systems:

(a) Ice-conveyor systems with spiral, belt or chain conveyors shall be constructed and shielded so that it is not possible to get arms, legs, etc. caught in the conveyors. There shall be a main switch which switches off the power supply when the ice-conveyor system is being repaired. It shall be possible to lock the main switch using a padlock or another lock, and the key shall be handed over to the repairer. In fish holds through which the ice-conveyor system is carried a suitable number of emergency stops shall be fitted so that it is possible to stop the ice conveyor immediately from any point near to it.

(b) The part of the ice-conveyor system used for "feeding" shall be protected by a strong grating constructed of minimum 5 mm flat bar with a square opening of maximum 120 x 120 mm and a depth of minimum 70 mm. The distance between the lower edge of the grating and the top edge of the ice-conveying construction or rotating parts shall be minimum 200 mm.

(c) Where the ice lift is fed directly in the fish hold through a single opening to the conveyor belt or spiral, this opening shall be provided with a grating constructed of minimum 5 mm flat bar with a square opening of maximum 120 x 120 mm and a depth of minimum 70 mm. The installation shall be surveyed and approved by the Administration before being put into operation.

(d) In cases where ice is supplied to the conveyor belt via a corrugated bulkhead, horizontal bars or pipes at a maximum vertical distance of 300 mm shall be welded on to this. At the lower edge where the bulkhead extends over the ice conveyor belt itself, the above-mentioned bars shall be replaced by a plate which terminates tight to the belt at the lower edge and is minimum 1200 mm in height.

(e) Protective plates and gratings shall be secured by welding.

(f) Gratings may not be removed when ice lifts with spirals or chain conveyors are in operation.

(g) If protective plates or gratings have been disassembled, the master shall enter a reason for this together with an indication of the time and place in the vessel's survey book. The vessel may not resume operations until the statutory arrangement has been re-established and surveyed personally by the vessel's master.

(h) Anyone who moves about or works in fish holds with ice lifts with spiral or chain conveyors shall use especially suitable protective footwear.

(3) Ice shall be handled without causing any unnecessary strains. In vessels carrying out fishing for consumption purposes, this may, for example, mean installing an ice machine with sufficient capacity, an ice silo with raisable bottom or other technical ice handling auxiliaries to avoid heavy lifting and inappropriate working postures when handling ice.

Regulation 15 – Moveable bars

(1) Moveable bars shall be mechanically operated on vessels used wholly or partly for catching industrial fish. On vessels with a length above 24 m with longitudinal net hauling equipment, they shall be mechanically operated. For the same group of vessels with transversal net hauling equipment, the Administration shall assess in each individual case whether moveable bars are needed. Fastenings for moveable bars that can be mechanically operated shall be secured in such a way that the crew cannot get jammed. The Administration may, on special conditions and after a concrete assessment, permit transversal net hauling equipment to be used as a spare on existing vessels where fishing is carried out for consumption purposes without mechanical moveable bars having been established if the requirement would lead to poor space or other impractical consequences.

(2) Moveable bars shall be designed so that the trawl or lines cannot jump over the bars and so that the bars cannot "unscrew themselves" from their fastening.

Regulation 16 – Net hauling equipment

(1) Net hauling equipment shall be installed so that persons cannot get jammed.

(2) The passageway between bulkheads, deckhouses or the like and fully rolled up hauling equipment with nets shall as a minimum be 600 mm. For existing vessels, the Administration may, however, permit a smaller passageway if it is deemed proper.

(3) If the net hauling equipment is operated locally at the winch, the operating handle shall be located so that the danger of the person operating the winch being jammed is eliminated.[3] Operating handles shall automatically return to the neutral position when released, and they shall be provided with a locking device or shielding preventing unintentional activation.

(4) Operating panels shall be designed to avoid inadvertent starting of the net hauling equipment, for example as a consequence of incorrectly set switch contacts for the operating handles.

Regulation 17 – Trawl boards and trawl separation device

(1) Precautions shall be taken to prevent trawl boards and trawl separation devices from accidentally swinging inboard, e.g. by erecting one or more movable protective bars, pipe clamps or the like at the gallows. It shall be ensured that it is not possible to haul in the trawl separation device over the stern unless a chute arrangement has been established holding it in a safe way.

(2) There shall be effective means of holding trawl boards and trawl separation devices when coupling up or uncoupling in-haulers, etc.[4]

(3) There shall be suitable platforms or similar arrangements so that wires, shackles, sensors may be replaced/secured and so that any other work in connection with the trawl boards and trawl separation devices may be carried out in a safe way.

(4) On existing fishing vessels where the master does not have full visibility when trawl boards are being replaced/secured, either an electronic communication system shall be used between the bridge and the working deck or video surveillance shall be established with a system suitable for maritime use and where the location of the camera has been approved by the Administration.

Regulation 18 – Deck machinery in beam trawlers

(1) On beam trawlers, the winch arrangement shall, regardless of the bollard pull, be arranged so that the winch drums for the trawl wires can be disconnected when loaded by means of a single handle in the wheelhouse independent of the hydraulic pump and brakes. However, sufficient friction braking shall be maintained to avoid uncontrolled freewheeling. In beam trawlers with a length above 24 m, a similar, easily accessible disconnecting device shall be available on deck.

(2) At winches with a claw coupling, this may not be activated during fishing operations.

(2) It shall be possible to lower all winches under all conditions.

Regulation 19 – Fish-processing plants

(1) Fish-processing plants mean plants that mechanically sort, clean, fillet, boil, preserve, pack, transport or otherwise process the catch.

(2) Fish-processing plants shall be designed so that persons working or moving about around the plant are not injured. The plant shall be protected in all situations, e.g. during normal operation, repairs, maintenance and cleaning.

(3) It may not be possible to remove protective shields without using tools unless one of the following special precautions has been taken:

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3 *The operating handle shall, for example, be located so that it is impossible to operate the winch and remain at a risky work station at the same time.*

4 *For example, a separate winch may be fitted holding the trawl board against the gallows and any pipe clamps during the switch-over.*

(a) It may not be possible to open the protective shield until the driving power has been switched off and the plant has been shut down. Subsequently, it may not be possible to activate the plant until the protective shields are in place again.

(b) When the shielding is opened, the driving power shall be switched off automatically and the plant shall stop faster than it takes to introduce a part of the body into the danger zone. The plant may not start until the shielding is in place and it may not be possible to reactivate it automatically.

(c) For existing fishing vessels built before 1 August 1990, the Administration may approve plants that do not comply with the provision provided that the plant is assessed as being equally safe.

(4) It shall be possible to switch off fish-processing plants easily, fast and safely by means of an emergency control switch if dangerous situations arise in connection with the operation of the plant. Emergency control switches shall function in all operating fields, including when part of the plant is disconnected.

(5) Plants that can, for technical reasons, not be designed or shielded so that the risk of personal injury is eliminated shall be provided with emergency control switches at danger points. In case of dangerous continuous running, the emergency control switch shall be combined with a brake. It shall be possible to reactivate the plant only by means of the normal starting devices and only after the emergency control switch has been manually placed in the "operational position". Emergency control switches shall be permanently installed. If the Administrations deems that there is an increased danger that a plant may be started accidentally with a risk of causing personal injury, the Administration may require that the power supply to the plant in question be shut off by means of a key.

(6) It shall, as far as practicable, be possible to repair and clean a plant when effective shields are fitted. If this is not possible, a key-operated manoeuvre shall be carried out to make the plant run when the shielding has been removed. Subsequently, it may be possible to run the plant only by means of a dead man's handle.

(7) Once a plant has been stopped, it may not retain an accumulated pressure that may lead to a dangerous movement of the machinery during repairs or interventions.

(8) Fish processing plants, conveyor belts, etc. shall comply with the following provisions:

(a) Emergency control switches shall be located at suitable points.

(b) The plants shall, in addition to the emergency control switches mentioned in subparagraph (a), be provided with emergency control switches that are automatically activated in case of interventions, accidents, during cleaning, inspection or the like.

(9) Where several conveyor belts operate in continuation of each other, emergency control switches shall be located at intervals not exceeding 10 m. Each emergency control switch shall stop all conveyor belts in the line. If the conveyor belts have a length of or above 15 m, acoustic or visual signals shall be provided in order to issue a warning when the conveyor belt is started.

(10) The arrangement shall ensure safe and free passage for inspection, operation and cleaning of the fish processing plant. Working areas around such plants may not have a breadth below 750 mm. However, the Administration may permit a smaller breadth following a concrete assessment if it is deemed appropriate.

(11) Materials used for fish processing plants, including pipe connections, shall be non-combustible, solid and stable in a vibrating environment and may not have an external surface temperature that is harmful to or unpleasant for the crew on contact. The insulating materials shall be securely applied. In vessels built before 1 August 1990, the said requirement shall be met, insofar as possible. The materials shall also have been approved for use in the food industry.

(12) Machinery and installations operating under pressure shall comply with the requirements for pressure vessels in chapter IV.

(13) Machinery and other installations from which steam, gas, dust, harmful or annoying substances escape shall be provided with extraction systems. The suction opening of the extraction system shall be located as close as possible to the source of the steam, gas, dust or discharge of harmful or annoying substances. The piping shall be arranged so that the products that are carried away are not harmful to the crew. The steam or fume outlet from equipment, such as lobster, crab, shrimp and liver cookers and equipment where heated water is used, shall be located as high as possible. Outlet pipes shall have a diameter of at least 50 mm and shall be carried to the open air. Steam and water fog from the outlet may not hamper bridge visibility.

(14) Dampers, valves or other means of closing or stopping shall be fitted so that they are easily accessible and safe to operate.

(15) Machinery and equipment in working areas shall be erected on strong, fixed foundations securely fastened to the structure of the vessel.

(16) Moving parts of machinery and other installations as well as gear that may present a danger shall be effectively shielded.

(17) Fish processing plants requiring water shall be provided with effective drainage systems taking account of their special susceptibility to clogging.

(18) Machinery and installations requiring routine checks at a height of more than 2 m shall, if technically possible, be provided with 600 mm broad platforms with rails of a minimum height of 1 m.

(19) The placing in and removal of fish from the plant shall be carried out at a safe and comfortable working height.

(20) Feed openings for machinery and other installations (such as liver or fish oil cookers) shall be within comfortable reach of the crew. Feed opening covers shall be fitted with suitable means of closing so that steam, hot water or fumes are prevented from escaping the room. The cover shall be fitted with a counterbalance or another secure arrangement for securing it in the open position when required.

Regulation 20 – Measures to counteract the health hazards related to industrial fish cargoes

(1) The following definitions shall apply in this regulation:

(a) "Formalin" means the liquid formaldehyde HCHO dissolved in water.

(b) "Breathing mask" means a protective device ensuring that a person may be supplied with fresh air from stationary compressed air cylinders, compressor plants with pressure vessel or portable pressure vessels.

(c) "Industrial fish" means fish caught exclusively for use in the fish meal and fish oil industries.

(d) "Hydrogen sulphide" means the gas H_2S.

(2) Vessels used for catching and/or carrying industrial fish shall comply with the provisions laid down in this regulation.

(3) To counteract decay in fish cargoes and hence the production of poisonous gases, the provisions laid down by the Danish Ministry of Food shall apply. If the Danish Ministry of Food grants permission to use new preservatives that have not been used before, the shipowner shall report this to the Administration before such preservatives are being used. The preservatives may not be used until the rules of the Administration on the use of the preservatives in question are available.

(4) To counteract health hazards in connection with the unloading of industrial fish, the provisions laid down by the Danish Working Environment Service in force at any time shall be complied with: "At-instructions on the work with industrial fish on ships in port" (present AT instructions no. 4.04.12).

(5) Formalin shall be stored on open deck in approved packages.

(6) In order to check the air in the spaces of the vessel, type-approved gauging equipment shall be available on board capable of measuring the content of oxygen, carbon dioxide and hydrogen sulphide as well as of formalin in case this substance is carried on board.

(7) Type-approved safety equipment shall be available on board consisting of at least two safety belts with associated lifelines as well as at least one breathing mask. In existing vessels, existing equipment that has already been approved may still be accepted.

(8) Rubber or plastic gloves as well as protective glasses or a face mask shall be used when working with formalin.

(9) Access to fish holds, storerooms or similar spaces shall not be permitted until it has been ensured through measurements that the air in the space is not noxious or hazardous to health.

(10) If it has been found through measurements that the air in the space is not noxious or hazardous to health and that the air has a sufficient content of oxygen (minimum 21%), the person who is to enter the fish hold shall be fitted with a safety belt with associated lifeline. A person holding the line shall constantly be posted at the hatchway.

(11) During the voyage, the master of the vessel shall keep fish holds containing industrial fish under observation at suitable intervals with a view to releasing dangerous overpressure.

(12) On the lower side of each hatch cover (apart from ice covers) leading to fish holds used to store industrial fish, a warning sign made of durable, seawater-resistant material shall be affixed. Alternatively, a sign may be affixed on the wheelhouse at the point where the vessel is normally being embarked.

The text on the sign shall run as follows:

DANGER *POISONOUS AND SUFFOCATING GASES* *It is prohibited to enter the hold before gauging.* *Safety belts and lifelines must be used.* *There must be a watch at the hatchway.* *Danish text:* *FARE* *GIFTIGE OG KVÆLENDE LUFTARTER* *Det er forbudt at gå ned, før målinger er foretaget.* *Sikkerhedsbælte og livline skal benyttes.* *Der skal være vagt ved lugen.*

(13) A copy of the At-instructions mentioned in subparagraph (4) as well as of the publication issued by the Danish Working Environment Service and the Administration entitled "Work with industrial fish, instructions about elements of danger and safety rules" shall be available on board.

(14) The master of the vessel shall ensure that all persons employed by him or the shipowner who work with the loading, stowing and unloading of industrial fish are aware of the safety provisions and of the publications mentioned in this regulation.

(15) Persons who load, stow and unload industrial fish shall be instructed in the use of the gauging and safety equipment mentioned in this regulation. Drills shall be held with the equipment each time a new

crewmember signs on who is to load, stow and unload industrial fish, however at least once every third month. The master of the vessel shall record the time and place of drills in the survey book.

Regulation 21 – Safe access to tanks and enclosed spaces

(1) On the bridge and the control station, a sign shall be affixed warning against the danger of entering the space until it has been ensured that the space has been sufficiently ventilated.

(2) The size of the sign shall be at least A5.

Part B – Central systems for welding with acetylene and oxygen

Regulation 1 – General provisions

(1) Acetylene (C_2H_2) shall be stored in special containers (1.5-1.8 N/mm^2 at 15 C).

(2) Oxygen (0_2) shall be stored in gaseous condition in special containers (15-20 N/mm^2 at 15 C).

(3) The central system shall be arranged in a separate container space or in a separate container cabinet, cf. regulation 3, with a permanent arrangement for each gas – including high-pressure manifolds with a closable high-pressure non-return valve for each connected container, any high-pressure hoses, a main regulator including pressure gauges for high- and low-pressure, safety valves, fixing arrangements for containers and operating instructions.

(4) A welding station shall consist of an arrangement comprising stop valves with connections to the low-pressure piping, a backflash valve for acetylene ending in a 3/8" left-hand thread, oxygen reduction valve with a pressure gauge, a backflash valve for oxygen ending in a 3/8" right-hand thread as well as a hose connection fitted with a coupling for each gas.

(5) The burners, stop valves, main regulators and valves, backflash valves and hoses shall be of a recognised and accepted type. Burners shall be of the straight tube type.

(6) Operating and maintenance instructions for the equipment shall be available.

Regulation 2 – Containers

(1) The containers shall be approved by a recognised authority/institution or by a recognised classification society.

(2) Only containers of 50 litres or less may be used.

(3) The containers shall be stamped with the tare and gross weight, the month and year of the latest pressure test and the test pressure.

(4) The containers, including spare containers, shall be stored in an upright position and shall be secured properly. The securing arrangement shall be designed so that rapid dismounting of the containers may be carried out.

Regulation 3 – Arrangement of containers

(1) Regardless of their number, the containers shall be placed above the bulkhead deck outside engine rooms and areas presenting an explosion hazard, i.e. outside areas where other readily ignitable and/or explosive gases or fumes may be expected to be present.

(2) A container space shall be a separate room enclosed by gas-tight steel bulkheads, steel decks, etc. against the side of the vessel. Access to the room shall be possible only from the open deck, and the door to the room shall open outwards.

.1 The room shall be isolated, ventilated and arranged so that the room temperature will not normally exceed 40 C. If temperature conditions permit, natural ventilation may be used.

(3) A container cabinet shall be made of steel and it shall be solidly installed on the free deck. The cabinet doors shall open outwards.

.1 The cabinet shall be ventilated and arranged so that the cabinet temperature will not normally exceed 40 C.

(4) Electrical installations and components – including switches, light fittings, ventilation motors, etc. – in rooms/cabinets shall be of an explosion-proof design.

(5) A sign with the following text shall be placed on the outside of doors to rooms and cabinets:

English text: *PRESSURE BOTTLES TO BE REMOVED IN CASE OF FIRE* *NAKED FLAME PROHIBITED* *Danish text:* *TRYKFLASKER FJERNES VED BRAND* *BRUG AF ÅBEN ILD FORBUDT*

(6) It shall be possible to get access to the room/cabinet rapidly and easily regardless of whether the doors are locked, and fixed tools for the closing of stop valves as well as for the dismounting of containers and fittings shall be available.

(7) In the room/cabinet, durably designed instructions for the handling of acetylene and oxygen as well as for the operation of the system shall be available. The contents of such instructions shall be written in a simple and clear manner to avoid wrong operation.

.1 The instructions shall, among other things, underline that oil products and greasy substances may under no circumstances be introduced into the room/cabinet, that the room/cabinet may not be entered by persons whose skin (hands) or clothing are significantly contaminated with oil or a fatty substance and that portable electric equipment may not be brought into the room or introduced into the container cabinet.

Regulation 4 – Pipe installations

(1) The high-pressure side for acetylene

.1 Manifolds shall be made of seamless steel tubing. Pipes and fittings shall be dimensioned for 30 N/mm^2 and shall be hydraulically pressure-tested with the said pressure before being fitted. Copper and copper alloys with a copper content of 65% by weight or more may not be used.

.2 If more than one container is connected to the manifold, a stop valve shall be fitted for each container directly on the manifold.

(2) The high-pressure side for oxygen

.1 Manifolds shall be made of either seamless copper tubing or seamless steel tubing dimensioned and pressure-tested as stipulated in subparagraph (1-1).

.2 Stop valves shall be fitted as stipulated in subparagraph (1-2).

(3) The low-pressure side for acetylene and oxygen

.1 Low-pressure pipes for acetylene shall be made of seamless steel tubing. The internal diameter shall not exceed 30 mm.

.2 Low-pressure pipes for oxygen shall be made of either seamless copper tubing or seamless steel tubing.

.3 The low-pressure side for acetylene shall be connected to the high-pressure side via a reduction valve reducing the acetylene pressure to a maximum of 0.09 N/mm^2. Immediately after the reduction valve, a

safety valve that opens between 0.15 N/mm^2 and 0.17 N/mm^2 shall be installed. The discharge pipe from the safety valve shall lead to the open air.

.4 The low-pressure side for oxygen shall be connected to the high-pressure side via a reduction valve reducing the oxygen pressure to a maximum of 1.5 N/mm^2. Immediately after the reduction valve, a safety valve shall be installed preventing the pressure from exceeding 2.25 N/mm^2. The discharge pipe from the safety valve shall lead to the open air.

.5 The low-pressure piping shall be installed outside the crew and passenger accommodation and shall be accessible for inspection. Furthermore, the pipelines shall be installed outside non-ventilated spaces and cabinets.

.6 The pipelines shall be permanently installed with the necessary scope for expansion and in a way so that they may not easily be exposed to mechanical overload.

.7 The number of pipe joints shall be as few as possible. Joints shall primarily be produced by welding or brazing. Silver brazing may not be used in connection with fittings and pipelines for acetylene.

.8 Where the pipelines penetrate non-watertight bulkheads and decks, they shall be protected by protective tubing made of hard plastic fibre or the like. Where the pipelines penetrate watertight bulkheads and decks, a watertight stuffing box shall be fitted.

.9 The stuffing material shall be suitable for acetylene (aluminium or fibre) and oxygen (copper, aluminium or fibre), respectively.

.10 The seamless steel tubing mentioned in this regulation shall be tested according to DS/EN 10246.

(4) Welding stations

.1 Normally, welding stations may be placed only in engine rooms and/or workshops.

.2 At every welding station, there shall be a solidly fitted sign stating, among other things, that the valves of the welding station and stop valves in the container room/cabinet shall be closed when the welding equipment is not in use.

Regulation 5 – Control prior to installation

(1) In addition to the pressure tests mentioned in regulation 4, subparagraphs (1) and (2), the following shall be carried out before the installation may be carried out on board the ship: the pipelines, joints and fittings, etc. for oxygen shall be carefully cleaned for greasy substances. Trichloroethylene or a similar cleaning agent may be used for the cleaning – petrol/gasoline may not be used. When the cleaning has been carried out, the pipes, joints and fittings, etc. shall be finally cleaned with a 10% trisodium phosphate solution to remove residues of cleaning fluids and then the pipes shall be flushed with nitrogen.

(2) A written statement that the control mentioned in subparagraph (1) has been carried out shall be present on board and be shown on request.

Regulation 6 – Control of flushing and leakage tests after installation

(1) Nitrogen shall be used for the flushing of pipelines for acetylene, while either nitrogen or grease-free, purified, compressed air shall be used for the flushing of pipelines for oxygen. The container containing the medium to be used for the flushing shall be connected to the low-pressure side. Regulators, backflash valves, pressure gauges, etc. shall be dismounted during the flushing, which shall last until the pipes are clean.

.1 When flushing pipelines for acetylene, the pressure shall gradually be increased to about 0.8 N/mm^2.

.2 When flushing pipelines for oxygen, the pressure shall gradually be increased to about 1.5 N/mm^2.

(2) The leakage test of pipelines for acetylene shall be carried out with nitrogen.
During the testing, the valves, joints, etc. shall be brushed with soapy water and be examined for any leaks.

.1 The high-pressure side shall be leakage-tested with 6 N/mm^2 and the low-pressure side with 0.8-1 N/mm^2.

.2 After 8 hours, the pressure drop on the low-pressure side may not exceed 0.04 N/mm^2.

(3) The leakage test of pipelines for oxygen shall be carried out with either nitrogen or fat-free, purified air, and the pipelines shall be brushed with soapy water and examined.

.1 The high-pressure side shall be leakage tested with 20 N/mm^2 and the low-pressure side with 2.25 N/mm^2.

(4) A written statement that the control mentioned in subparagraphs (1), (2) and (3) has been carried out shall be submitted to the Danish Maritime Authority in connection with a survey of a new central system.

Regulation 7 – Authorisation

(1) The relevant classification society or the chief engineer of the vessel is authorised to carry out the control required in regulations 5 and 6 and to issue the necessary written documentation.

Regulation 8 – Portable equipment for welding with acetylene and oxygen

(1) Burners shall be of the straight tube type and be fitted with a backflash valve for acetylene.

(2) The provisions of regulation 1, subparagraphs 1, 2 and 5, and of regulation 2, subparagraph 3, shall be complied with.

Part C – Installation and use of equipment for arc welding and allied processes

Introduction

The provisions of this part are in accordance with those of the international standard IEC/TS 62081 (1999), "Arc welding equipment – installation and use".

Regulation 1 – Application

(1) These provisions shall apply to the installation and use of welding power sources, equipment and accessories for arc welding and allied processes on board vessels, the most common of which are:

- *Manual metal arc welding (MMA);*
- *Tungsten inert gas arc welding (TIG);*
- *Metal inert gas welding (MIG);*
- *Metal active gas welding (MAG);*

but which also comprise:

- *Powder welding;*
- *Plasma welding;*
- *Plasma cutting;*
- *Arc cutting;*
- *Flame-spraying;*
- *Plasma-spraying;*
- *and others.*

Regulation 2 – Definitions

(1) "Welding circuit" means a circuit that includes all conductive material, including the arc, through which the welding current is intended to flow.

(2) "Extraneous conductive part" means a conductive part that does not form a part of the electrical installation and is liable to introduce a certain potential, generally the earth potential (under ordinary conditions, the vessel is an extraneous conductive part).

(3) "Work piece" means one or more metal pieces on which welding or allied processes are performed.

(4) "Personal protective means" means protective clothing and accessories (e.g. gloves, hand shields, head masks, filter lenses) used to diminish electric shock risks, to protect against welding fumes and spatter, and to protect the eyes and the skin against radiation and heat.

(5) "Environments with increased hazard of electric shock" means environments where the hazard of electric shock by welding is increased in relation to normal welding conditions, e.g. where freedom of movement is restricted, in locations fully or partially limited by conductive elements, and in wet, humid and hot locations.

(6) "Expert" means a welder who can judge the work assigned to him or her and who can recognise possible hazards on the basis of professional training, cf. the requirement of regulation 4.6, knowledge, experience and knowledge of the relevant equipment.

Regulation 3 – Installation

(1) General

.1 Welding power sources, equipment, cables and accessories used in installations for electrical arc welding shall be CE-marked in accordance with Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits, "the Low Voltage Directive", as amended, cf. Order no. 797 of 30 August 1994 on the entry into force of the said Directives.

.2 The electromagnetic compatibility (EMC) requirements shall be taken into consideration during installation.

.3 Full use shall be made of all technical data relevant to the welding equipment, including the manufacturer's instructions.

.4 Specific advice shall be obtained from the manufacturer of the welding equipment as necessary.

(2) Selection of supply cable and protection against overload

.1 Supply cables for welding power sources and their overload protection shall be selected on the basis of information given by the manufacturer of the welding equipment.

.2 Supply cables shall be placed or armoured so that they cannot be damaged in use. In order to reduce the risk of electric shock in connection with any damaged cables, a sensitive residual current circuit breaker with a leakage current not exceeding 30 mA may be used.

(3) Supply disconnecting device

If the welding equipment is not fitted with a supply disconnecting device, the person installing the welding equipment shall ensure that such a disconnecting device is fitted at the point of supply.

(4) Emergency stopping device

Emergency stopping devices shall comply with subparagraph (1-1).

(5) Protection against electric shock from the mains supply

The equipment shall be constructed according to subparagraph (1-1).

(6) Isolation from the mains supply

The welding circuit and circuits electrically connected to the welding circuit shall be electrically isolated from the mains supply. This shall be verified by the foreman.

(7) Welding voltage supply

.1 In cases where more than one welding power source is in use at the same time, their no-load voltages can be cumulative and create an increased hazard of electric shock. Welding power sources shall be installed so as to minimize this risk. Guidance is given in the annex on voltages and connections.

.2 Where more than one welding power source is installed, the individual welding power sources with their separate controls and connections shall be clearly marked to show which items belong to any one welding circuit.

(8) Location of gas cylinders

Measures shall be taken to prevent gas cylinders in the vicinity of the work piece becoming part of the welding circuit.

Regulation 4 – Use of welding equipment

(1) General

.1 Arc welding equipment and accessories shall be CE-marked in accordance with the provisions of regulation 3 (1-1). Before welding equipment is put into service, the user shall take account of the instructions provided by the manufacturer and any other relevant requirements.

.2 Consideration shall be given to the environment in which the welding equipment is used as specific precautions may need to be taken.

(2) Connection between several welding power sources

.1 If more welding power sources are to be connected in parallel or in series, this shall be carried out by an expert in accordance with the manufacturer's recommendations and the foreman's verification. The equipment may not be used until a test has been carried out to ensure that the permissible no-load voltage cannot be exceeded. Reference is also made to the annex on voltages and connections.

.2 When a welding power source connected in parallel or in series is taken out of service, this power source shall be disconnected from the mains supply and the welding circuit so as to preclude any hazards that might be caused by feed-back voltages.

(3) Inspection and maintenance of the welding installation

.1 On installation and periodically thereafter, the foreman shall check the following:

.1 that the welding equipment has been correctly selected and connected for the work to be carried out in accordance with the manufacturer's instructions,

.2 that all connections are clean and tight, and

.3 that the welding equipment is in good condition.

.2 Furthermore, all protective earthing shall be checked for effectiveness. Any defects found shall be repaired. Particular attention shall be paid to the installation of supply and welding cables, electrode holders and coupling devices. The operator shall be instructed to check all external connections each time a reconnection is made. Any defects found shall be reported, and faulty equipment may not be used. The welding current return clamp (the earth clamp) shall be connected directly to the work piece as close as practicable to the point of welding or to the welding bench on which the work piece is situated or to the work-handling device.

.3 For plasma cutting where the no-load voltages are higher than with welding, particular care shall be taken when carrying out inspection and maintenance procedures. Particular attention shall be paid to the water cooling equipment to ensure that any leaks do not affect the insulation.

.4 Before carrying out arc welding on equipment having associated transformers, such transformers shall be disconnected to avoid the hazard of shock from induced voltages on the input side of the transformers.

(4) Disconnection of welding power sources and/or welding circuits

.1 When operators interrupt their work or leave their work place, the power source shall be switched off.

.2 If the supply cable is liable to damage when the welding power source is moved to another location, the welding power source, including its supply cable, shall be disconnected from the mains supply before it is moved.

.3 When maintenance or repair work is carried out on the welding equipment, the input and output should be disconnected.

(5) Guards

Guards and removable parts shall be in position before the welding equipment is made live.

(6) Operator training and obligation to provide operators with instructions and information

Welders shall have attended and passed at least the module of the ship's assistant training containing requirements for welding skills, other equivalent training or have several years of practical experience with the welding technique in question. Any assistants to operators shall have received sufficient instructions of a professional and safety-related character about the welding process in question. Other persons working in the vicinity of the welding operation shall be warned of the hazards and informed about protective measures concerning arc processes.

Annex: Voltages and connections

1 Voltages between electrode holders or torches (more welding power sources)

.1 When working with several welding power sources on a single work piece or on conductively connected work pieces, a hazardous sum of no-load voltages may arise between two electrode holders or torches. This voltage may reach twice the value of the admissible no-load voltage (see also regulation 3.7).

.2 The foreman shall ensure that a measuring device is used to determine whether there is a hazard.

.3 Operators shall:

.1 be warned of this hazard;

.2 never touch two electrode holders or torches at the same time;

.3 work out of reach of each other, where practicable.

.4 The following examples show schematically the influence that the connection to the mains supply and the polarity for welding may have on the sum of welding voltages between electrode holders and torches. It is assumed that the no-load voltages for each welding power source are identical, but in practice they may differ (see items (5) to (7) below).

.5 Direct current

.1 The connections to the mains supply have no influence on the sum of no-load voltages. The voltage "U" depends on the polarity of the output connections (see figure A).

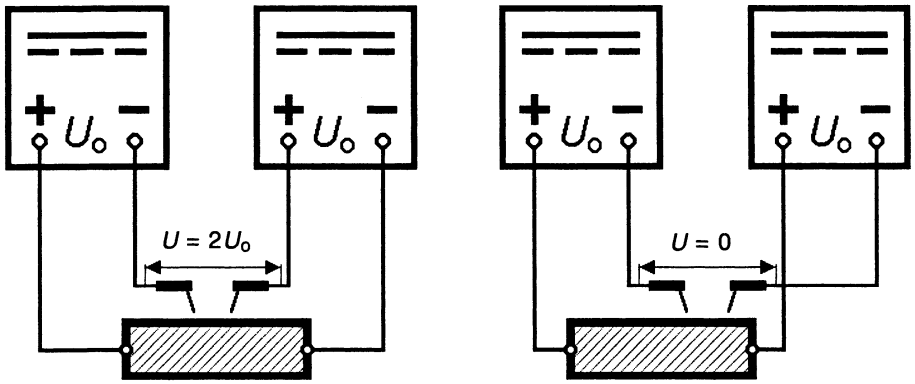

Figure A: Example of d.c. voltage between electrode holders or torches

.6 Alternating current single-phase welding power sources

.1 The connections to the mains supply and the output connections will influence the sum "U" of the no-load voltages (see figure B).

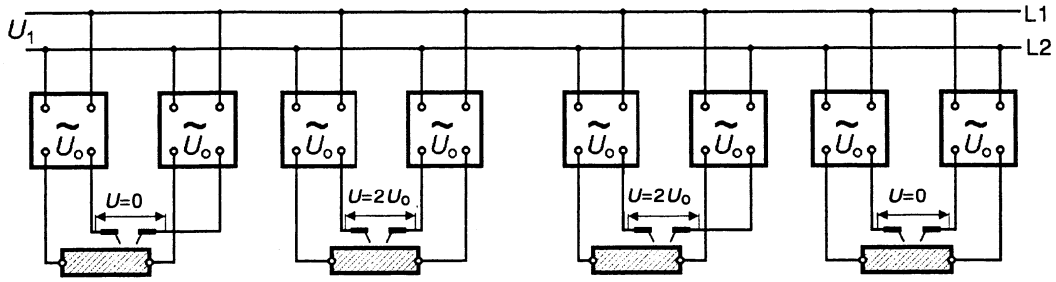

Figure B: Example of a.c. voltage between electrode holders or torches – Single-phased supply from the same pair of lines of a three-phase mains supply

.2 If the connections to a three-phase mains supply are made across different pairs of lines, the sum "U" of the no-load voltages will always be greater than zero (see figure C).

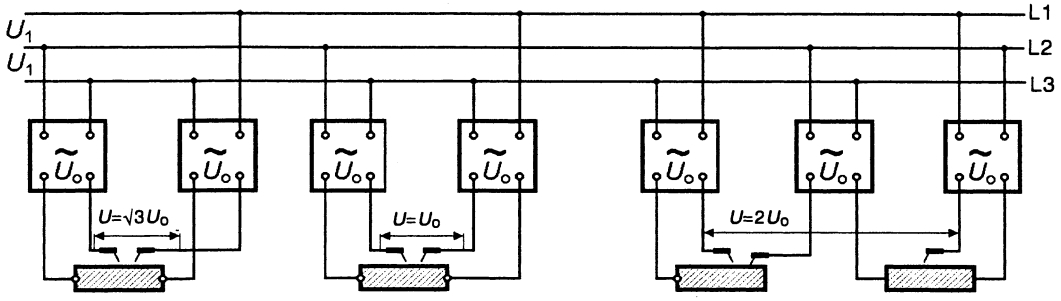

Figure C: Example of a.c. voltage between electrode holders or torches – Single-phase supply from different pairs of lines of a three-phase mains supply

.3 Increased a.c. voltages can be avoided by reversing:

.1 the welding cable connections, or

.2 the mains supply connections to the welding power source (see regulation 4.2).

.4 Three-phase multi-operator welding transformer

.1 The connections to the mains supply have no influence on the sum "U" of the no-load voltages (see figure D).

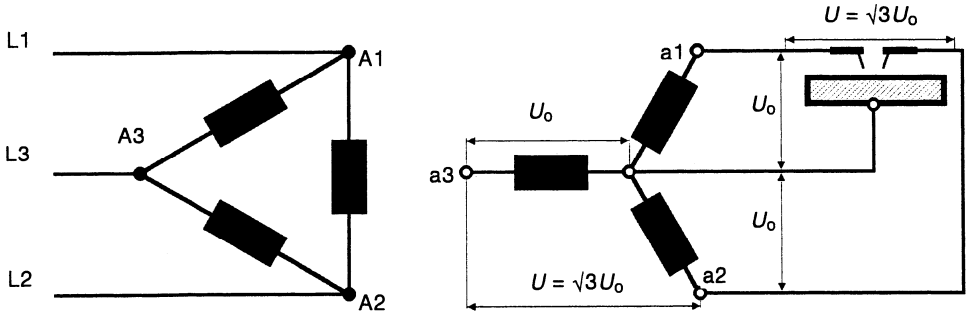

Figure D: Example of a.c. voltage between different electrode holders connected between different lines of output

(2) Connection between the welding power source and the work piece

.1 When the welding current does not flow entirely in the welding circuit, part of the welding current occurs as harmonics (stray currents). These may cause damage and shall be eliminated by the following means:

.1 The electrical connection between the welding power source and the work piece shall be made as direct as practicable by means of an insulated welding return cable (earth connection) having an adequate current carrying capacity.

.2 Extraneous conductive parts, such as metal rails, pipes and frames, may not be used as part of the welding return circuit, unless they constitute part of the work piece itself.

.3 The welding current return clamp shall be located as near as practicable to the welding arc.

.4 The welding circuit shall not be earthed (see paragraph 3 below).

.5 Connection of the welding return cable to the work piece shall be ensured by the use of devices having suitable means for cable connection, a fastening system not liable to come loose accidentally, and good electrical contact. Magnetic devices only present a good electrical contact if the contact surfaces of the magnetic device and the contact area of the work piece are sufficiently large, even, conductive and clean (e.g. free from rust and primer) and if the contact area of the work piece is magnetic.

.6 Connection devices for non-stationary, flexible welding cables in the welding circuit shall:

.1 have an adequate covering of insulating material to prevent inadvertent contact with voltage carrying parts when connected (with the exception of the welding return current clamp at the work piece itself);

.2 be suitable for the sizes of cables used and the welding current;

.3 be effective connected to the welding cables and in good electrical contact with them.

.2 Both the welding cable and the connection device shall be used within their specified current rating. The connection device may not be fitted with a cable smaller in diameter than specified by the manufacturer of the connection device.

.3 When coupling devices are used, they shall comply with regulation 3 (1-1).

(3) Earthing of the work piece

.1 The welding circuit shall not be earthed since it may increase the risk of harmonics (stray welding currents) (see paragraph 2 above). Earthing of the welding circuit may also increase the area of metal through which a person in contact with the welding circuit, e.g. the welding electrode, could receive a shock.

.2 An assessment of the welding circuit and the welding area shall ensure that welding current will not flow through a connection intended for the protective earth connection of equipment frame conduit or any object connected to earth but not intended or capable to carry the welding current.

.3 If electrical tools are used which may come into contact with the work piece, such tools shall be of class II equipment ⧈, i.e. with double or reinforced insulation without protective earth connection.

.4 Precautions shall be taken to insulate the operator from earth as well as from the work piece.

(4) Welding in an environment with increased hazard of electric shock

.1 When welding is carried out in an environment with increased hazard of electric shock, operators shall only be permitted to weld when other persons who have been instructed and who are able to help in case of an emergency are in the immediate vicinity. Means for electrically disconnecting the welding power source or the welding circuit quickly shall be provided within easy access to these persons.

.2 The following precautions shall be taken to reduce the risk of an electric shock from the voltage between the welding electrode and earth.

.1 The welding power source shall be out of normal reach of the operator during welding. Additional protection against a shock from current from the mains supply under fault conditions may be provided by the use of a residual current circuit breaker that is capable of operating at a leakage current not exceeding 30 mA and feeds all mains powered equipment in the vicinity.

.2 Remote controls shall be supplied with the protective measure "safety extra low voltage" (SELV).

.3 Only welding power sources and welding equipment intended for use in environments with increased hazard of electric shock shall be used. Where appropriate, voltage reducing devices shall be used. This shall be verified by the foreman unless the welding power source is marked with the symbol S*.*

.4 Electrode holders shall be of type A or B.

.5 Insulating platforms or mats shall be used wherever possible.

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Chapter VII
Life-saving appliances and arrangements

Part A – General

Regulation 1 – Application

(1) Unless provided otherwise, this chapter shall apply to new vessels of *15* m in length and over.

(2) Regulations 13 and 14 shall also apply to existing vessels of 45 m in length and over, provided that the Administration may defer the implementation of the requirements of these regulations until 1 February 1999.

Regulation 2 – Definitions

(1) "Float-free launching" is that method of launching a survival craft whereby the craft is automatically released from a sinking vessel and is ready for use.

(2) "Free-fall launching" is that method of launching a survival craft whereby the craft with its complement of persons and equipment on board is released and allowed to fall into the sea without any restraining apparatus.

(3) "Inflatable appliance" is an appliance which depends upon non-rigid, gas-filled chambers for buoyancy and which is normally kept uninflated until ready for use.

(4) "Inflated appliance" is an appliance which depends upon non-rigid, gas-filled chambers for buoyancy and which is kept inflated and ready for use at all times.

(5) "Launching appliance or arrangement" is a means of transferring a survival craft or rescue boat from its stowed position safely to the water.

(6) "Novel life-saving appliance or arrangement" is a life-saving appliance or arrangement which embodies new features not fully covered by the provisions of this chapter but which provides an equal or higher standard of safety.

(7) "Rescue boat" is a boat designed to rescue persons in distress and to marshall survival craft.

(8) "Retro-reflective material" is a material which reflects in the opposite direction a beam of light directed on it.

(9) "Survival craft" is a craft capable of sustaining the lives of persons in distress from the time of abandoning the vessel.

Regulation 3 – Evaluation, testing and approval of life-saving appliances and arrangements

(1) Except as provided in paragraphs (5) and (6), life-saving appliances and arrangements required by this chapter shall be approved by the Administration.

(2) Before giving approval to life-saving appliances and arrangements, the Administration shall ensure that such life-saving appliances and arrangements are tested, to confirm that they comply with the requirements of this chapter, in accordance with the requirements of Council Directive 96/98/EC on marine equipment which includes the IMO recommendations on Testing of Life-Saving Appliances.

(3) Before giving approval to novel life-saving appliances or arrangements, the Administration shall ensure that such appliances or arrangements:

(a) provide safety standards at least equivalent to the requirements of this chapter *and the LSA Code* and have been evaluated and tested in accordance with the recommendations of the Organization;[1] or

(b) have successfully undergone, to the satisfaction of the Administration, evaluation and tests which are substantially equivalent to those recommendations.

(4) Procedures adopted by the Administration for approval shall also include the conditions whereby approval would continue or would be withdrawn.

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[1] See the Code of Practice for the Evaluation, Testing and Acceptance of Prototype Novel Life-Saving Appliances and Arrangements adopted by the Organization by resolution A.520(13).

(5) Before accepting life-saving appliances and arrangements that have not been previously approved by the Administration, the Administration shall be satisfied that life-saving appliances and arrangements comply with the requirements of this chapter and the Code.

(6) Life-saving appliances required by this chapter for which detailed specifications are not included in part C shall be to the satisfaction of the Administration, taking into consideration the detailed specifications as given for those appliances in Chapter III of SOLAS 1974, as amended, and in the IMO International Life-Saving Appliance Code.

Regulation 4 – Production tests

The Administration shall require life-saving appliances to be subjected to such production tests as are necessary to ensure that the life-saving appliances are manufactured to the same standard as the approved prototype.

Part B – Vessel Requirements

Regulation 5 – Number and types of survival craft and rescue boats

(1) Every vessel shall be provided with at least two survival craft.

(2) The number, capacity and type of survival craft and rescue boats of vessels of 75 m in length and over shall comply with the following:

(a) survival craft of sufficient aggregate capacity to accommodate on each side of the vessel at least the total number of persons on board shall be provided. However, if the vessel complies with subdivision requirements, damage stability criteria and criteria of increased structural fire protection additional to those stipulated by regulation III/14 and by chapter V, and the Administration considers that a decrease of the number of survival craft and their capacity will not affect safety, the Administration may allow this decrease provided that the aggregate capacity of survival craft situated on each side of the vessel is sufficient to accommodate at least 50% of the persons on board. In addition, liferafts for at least 50% of the total number of persons on board shall be provided; and

(b) a rescue boat shall be provided unless the vessel is provided with a lifeboat which fulfils the requirements for a rescue boat and which is capable of being recovered after the rescue operation.

(3) Vessels of less than 75 m in length but of 45 m in length and over shall comply with the following:

(a) survival craft of sufficient aggregate capacity to accommodate on each side of the vessel at least the total number of persons on board shall be provided; and

(b) a rescue boat shall be provided, unless the vessel is provided with a suitable survival craft which is capable of being recovered after the rescue operation.

(3a) Vessels of 24 m in length and more, but of less than 45 m in length shall be provided with:

(a) survival craft of sufficient aggregate capacity to accommodate at least 200% of the total number of persons on board. Sufficient of these survival craft to accommodate at least the total number of persons on board shall be capable of being launched from either side of the vessel; and

(b) a rescue boat, except where the Administration is satisfied that because of the size and the manoeuvrability of the vessel, the near availability of search and rescue facilities and meteorological warning systems, the operation of the vessel in areas not susceptible to heavy weather or the seasonal characteristics of the operation, such provision is unnecessary.

(3b) Vessels of 17 m in length and more, but of less than 24 m in length shall be provided with survival craft of sufficient aggregate capacity to accommodate 200% of the total number of persons on board.

Sufficient of these survival craft to accommodate at least the total number of persons on board shall be capable of being launched from either side of the vessel.

(3c) Vessels of 15 m in length and more, but of less than 17 m in length shall be provided with survival craft of sufficient capacity to accommodate the total number of persons on board. If the number of persons on board is less than 12, the aggregate capacity, irrespective of the provision in paragraph (1), may be constituted by a single survival craft of sufficient capacity. The survival craft shall insofar as possible be stowed so that it is immediately ready for being launched from either side of the vessel.

(4) In lieu of meeting the requirements of paragraphs 2(a), 3(a) and 3a(a), vessels may carry one or more lifeboats capable of being free-fall launched over the stern of the vessel of sufficient capacity to accommodate the total number of persons on board and with liferafts of sufficient capacity to accommodate the total number of persons on board.

(5) The number of lifeboats and rescue boats that are carried on vessels shall be sufficient to ensure that in providing for abandonment by the total number of persons on board not more than nine liferafts need be marshalled by each lifeboat or rescue boat.

(6) The survival craft and rescue boats shall comply with the applicable requirements of regulations 17 to 23 inclusive.

Regulation 6 – Availability and stowage of survival craft and rescue boats

(1) Survival craft shall:

(a)(i) be readily available in case of emergency;

(ii) be capable of being launched safely and rapidly under the conditions required by regulation 32(1)(a); and

(iii) be capable of rapid recovery if fulfilling also the requirements for a rescue boat;

(b) be so stowed that:

(i) the marshalling of persons at the embarkation deck is not impeded;

(ii) their prompt handling is not impeded;

(iii) embarkation can be effected rapidly and in good order; and

(iv) the operation of any other survival craft is not interfered with.

(2) Where the distance from the embarkation deck to the waterline of the vessel in the lightest operating condition exceeds 4.5 m, survival craft, except float-free liferafts, shall be capable of being davit-launched with a full complement of persons or be provided with equivalent approved means of embarkation.

(3) Survival craft and launching appliances shall be in working order and available for immediate use before the vessel leaves port and kept so at all times when at sea.

(4) (a) Each survival craft shall be stowed:

- so that neither the survival craft nor its stowage arrangements will interfere with the operation of any other survival craft or rescue boat at any other launching location.
- as near to the water surface as is safe and practicable and, in the case of a survival craft other than a liferaft intended for throw over board launching, in such a position that the survival craft in the embarkation position is not less than 2 m above the waterline with the vessel in fully loaded condition under unfavourable conditions of trim of up to 10 and listed up to 20 either way, or to the angle at which the ship's weatherdeck edge becomes submerged, whichever is less.
- in a state of continuous readiness so that the crew members can carry out preparation for embarkation and launching in less than 5 min.

- fully equipped as required by this chapter.

(b) Every lifeboat shall be attached to a separate set of davits or approved launching appliance.

(c) Survival craft shall be positioned as close to accommodation and service spaces as possible, stowed in suitable positions to ensure safe launching, with particular regard to clearance from the propeller. Lifeboats for lowering down the vessel's side shall be stowed with regard to steeply overhanging portions of the hull, so ensuring, as far as practicable, that they can be launched down the straight side of the vessel. If positioned forward, they shall be stowed abaft the collision bulkhead in a sheltered position and in this respect the Administration shall give special consideration to the strength of the davits.

(d) The method of launching and recovering of rescue boats shall be approved taking into account the weight of the rescue boat including its equipment and 50% of the number of persons it is certificated to carry in regulations 23(1)(b)(ii) and 23(1)(c), the construction and size of the rescue boat and its position of stowage above the waterline in the vessel's lightest operating condition. However, every rescue boat stowed at a height of more than 4.5 m above the waterline in the vessel's lightest operating condition shall be provided with approved arrangements for launching and recovery.

(e) Launching and embarkation appliances shall comply with the requirements of regulation 32.

(f)(i) The liferafts shall be so stowed as to be readily available in case of emergency in such a manner as to permit them to float free from their stowage, inflate and break free from the vessel in the event of its sinking. However, davit-launched liferafts need not float free;

(ii) lashings, if used, shall be fitted with an automatic (hydrostatic) release system of an approved type.

(g) The Administration, if it is satisfied that the constructional features of the vessel and the method of fishing operation may render it unreasonable and impractical to apply particular provisions of this paragraph, may accept relaxations from such provisions, provided that the vessel is fitted with alternative launching and recovering arrangements adequate for the service for which it is intended. The Administration which has allowed alternative launching and recovery arrangements under this subparagraph shall inform the Organization of the particulars of such arrangements for circulation to other Parties.

Regulation 7 – Embarkation into survival craft

Suitable arrangements shall be made for embarkation into the survival craft which shall include:

(a) at least one ladder, or other approved means, on each side of the vessel to afford access to the survival craft when waterborne except where the Administration is satisfied that the distance from the point of embarkation to the waterborne survival craft is such that a ladder is unnecessary;

(b) means for illuminating the stowage position of survival craft and their launching appliances during preparation for and the process of launching, and also for illuminating the water into which the survival craft are launched until the process of launching is completed, the power for which is to be supplied from the emergency source required by regulation IV/17;

(c) arrangements for warning all persons on board that the vessel is about to be abandoned, and

(d) means for preventing any discharge of water into the survival craft.

Regulation 8 – Lifejackets

(1) For every person on board, a lifejacket of an approved type complying with the requirements of regulation 24 shall be carried.

(2) Lifejackets shall be so placed as to be readily accessible and their position shall be plainly indicated.

Regulation 9 – Immersion suits

(1) An approved immersion suit, of an appropriate size, complying with the requirements of regulation 25 shall be provided for every person assigned to crew the rescue boat.

(2) Vessels shall carry immersion suits complying with the requirements of regulation 25 for every person on board.

(3) The requirements of paragraph (2) above do not apply to vessels constantly engaged in warm climates, where, in the opinion of the Administration, immersion suits are unnecessary.

(4) The immersion suits required by paragraph (2) may be used to comply with the requirements of paragraph (1).

Regulation 10 – Lifebuoys

(1) At least the following number of lifebuoys complying with the requirements of regulation 27(1) shall be provided:

(a) eight lifebuoys in vessels of 75 m in length and over;

(b) six lifebuoys in vessels of less than 75 m in length but 45 m in length and over;

(c) four lifebuoys in vessels of *24 m in length and more, but* less than 45 metres in length.

(d) two lifebuys in vessels of 15 m in length and more, but of less than 24 m in length.

(2) At least half of the number of lifebuoys referred to in paragraph (1) shall be provided with self-igniting lights complying with the requirements of regulation 27(2).

(3) *In vessels of 24 m in length and over,* at least two of the lifebuoys provided with self-igniting lights in accordance with paragraph (2) shall be provided with self-activating smoke signals complying with the requirements of regulation 27(3), and shall be capable of quick release from the navigating bridge.

(4) At least one lifebuoy on each side of the vessel shall be fitted with a buoyant lifeline complying with the requirements of regulation 27(4) equal in length to not less than twice the height at which it is stowed above the waterline in the lightest seagoing condition, or 30 m, whichever is greater.

(5) All lifebuoys shall be so placed as to be readily accessible to the persons on board and shall always be capable of being rapidly cast loose and shall not be permanently secured in any way.

Regulation 11 – Line-throwing appliances

Every vessel *of 24 m in length and over* shall carry a line-throwing appliance of an approved type, complying with the requirements of regulation 28. *The propellants shall be renewed in accordance with the manufacturer's instructions.*

Regulation 12 – Distress signals

(1) Every vessel shall be provided, to the satisfaction of the Administration, with means of making effective distress signals by day and by night, including at least 12 rocket parachute flares complying with the requirements of regulation 29.

(2) Distress signals shall be of an approved type. They shall be so placed as to be readily accessible and their position shall be plainly indicated.

(3) The distress signals shall be renewed in accordance with the manufacturer's instructions.

Regulation 13 – Radio life-saving appliances GMDSS

(1) At least three portable VHF radiotelephone apparatus shall be provided on new vessels of 24 m in length and over and existing vessels of 45 m in length and over. Such apparatus shall conform to

performance standards not inferior to those adopted by the IMO.[2] If a portable VHF radiotelephone apparatus is fitted in a survival craft it shall conform to performance standards not inferior to those adopted by the IMO.[2]

(2) However, for new vessels of 24 m in length and over, but of less than 45 m in length the number of such apparatus may be reduced to two, if the Administration considers the requirements to carry three such apparatus unnecessary taking into account the operation area of the vessel and the number of persons employed on board.

(3) For existing vessels of 24 m in length and over, but of less than 45 m in length, the number of portable VHF radiotelephone apparatus may be reduced to one.

(4) Vessels of less than 24 m in length shall be exempted from the requirement for portable VHF radiotelephone apparatus. The Danish Maritime Authority recommends that such vessels also carry a portable VHF radiotelephone apparatus in the wheelhouse ready for use in the liferaft together with a spare battery in an emergency.

Regulation 14 – Radar transponders (SART)

(1) At least one SART shall be carried on each side of both new and existing vessels *of 45 m in length and over*. Such SART's shall conform to performance standards not inferior to those adopted by the Organization.[3]

(2) New and existing vessels of less than 45 m in length shall carry at least one SART.

(3) The SART's[4] shall be stowed in such locations that they can be rapidly placed in any survival craft. Alternatively one SART shall be stowed in each survival craft.

(4) Existing vessels of less than 24 m in length operating in sea area A1 shall be exempted from the requirement to carry a SART. However, also those vessels are recommended to carry one in the wheelhouse ready for use in the liferaft for position indicating in case of emergency.

Regulation 15 – Retro-reflective materials on life-saving appliances

All survival craft, rescue boats, lifejackets and lifebuoys shall be fitted with retro-reflective material in accordance with the recommendations of the Organization.[5]

Regulation 16 – Operational readiness, maintenance and inspections

(1) Operational readiness

Before the vessel leaves port and at all times during the voyage, all life-saving appliances shall be in working order and ready for immediate use.

(2) Maintenance

(a) Instructions for on-board maintenance of life-saving appliances approved by the Administration shall be provided and maintenance shall be carried out accordingly.

(b) The Administration may accept, in lieu of the instructions required by subparagraph (a), a shipboard planned maintenance programme.

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2 See the Recommendation on Performance Standards for Survival Craft Portable Two-Way VHF Radiotelephone Apparatus adopted by IMO resolution A.809(19), as amended, annex 1 or annex 2.

3 See the Recommendation on Performance Standards for Survival Craft Radar Transponders for Use in Search and Rescue Operations adopted by IMO resolution A.802(19).

4 One of these may be the radar transponder required by regulation IX/6(1)(c).

5 See the Recommendation on the Use and Fitting of Retro-Reflective Materials on Life-Saving Appliances adopted by IMO resolution A.658(16).

(3) Maintenance of falls.

Falls used in launching shall be turned end for end at intervals of not more than 30 months and be renewed when necessary due to deterioration of the falls or at intervals of not more than 5 years, whichever is the earlier.

(4) Spares and repair equipment.

Spares and repair equipment shall be provided for life-saving appliances and their components which are subject to excessive wear or consumption and need to be replaced regularly.

(5) Weekly inspection.

The following tests and inspections shall be carried out weekly:

(a) all survival craft, rescue boats and launching appliances shall be visually inspected to ensure that they are ready for use;

(b) all engines in lifeboats and rescue boats shall be run ahead and astern for a total period of not less than 3 minutes provided the ambient temperature is above the minimum temperature required for starting the engine;

(c) the general emergency alarm system shall be tested.

(6) Monthly inspections.

Inspection of the life-saving appliances, including lifeboat equipment, shall be carried out monthly using a checklist to ensure that they are complete and in good order. A report of the inspection shall be entered in the log-book *or in the "Instructions for maintenance of life-saving appliances"*.

(7) Servicing of inflatable liferafts, inflatable lifejackets, marine evacuation systems and inflated rescue boats.

(a) Every inflatable liferaft, inflatable lifejacket and evacuation chutes shall be serviced:

(i) at intervals not exceeding 12 months. However, in cases where it appears proper and reasonable, the Administration may extend this period to 17 months;

(ii) at an approved servicing station which is competent to service them, maintains proper servicing facilities and uses only properly trained personnel.[6]

(8) Periodic servicing of hydrostatic release units

Disposable hydrostatic release units shall be replaced when their date of expiry has passed. If not disposable, hydrostatic release units shall be serviced:

(i) at intervals not exceeding 12 months. However, in cases where it appears proper and reasonable, the Administration may extend this period to 17 months;

(ii) at a servicing station which is competent to service them, maintains proper servicing facilities and uses only properly trained personnel.

(9) In cases of vessels where the nature of fishing operations may cause difficulty for compliance with the requirements of paragraphs (7) and (8), the Administration may allow the extension of the service intervals to 24 months, provided that the Administration is satisfied that such appliances are so manufactured and arranged that they will remain in satisfactory condition until the next period of servicing.

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[6] See the Recommendation on Conditions for the Approval of Servicing Stations for Inflatable Liferafts adopted by IMO resolution A.761(18).

Part C – Life-saving appliances requirements

Regulation 17 – General requirements for lifeboats

(1) Construction of lifeboats

(a) All lifeboats shall be properly constructed and shall be of such form and proportions that they have ample stability in a seaway and sufficient freeboard when loaded with their full complement of persons and equipment. All lifeboats shall have rigid hulls and shall be capable of maintaining positive stability when in an upright position in calm water and loaded with their full complement of persons and equipment and holed in any one location below the waterline, assuming no loss of buoyancy material and no other damage.

(b) All lifeboats shall be of sufficient strength to enable them to be safely lowered into the water when loaded with their full complement of persons and equipment.

(c) Hulls and rigid covers shall be fire-retardant or non-combustible.

(d) Seating shall be provided on thwarts, benches or fixed chairs fitted as low as practicable in the lifeboat and constructed so as to be capable of supporting the number of persons each weighing 100 kg for which spaces are provided in compliance with the requirements of paragraph (2)(b)(ii).

(e) Each lifeboat shall be of sufficient strength to withstand a load, without residual deflection on removal of that load:

(i) in the case of boats with metal hulls, 1.25 times the total mass of the lifeboat when loaded with its full complement of persons and equipment; or

(ii) in the case of other boats, twice the total mass of the lifeboat when loaded with its full complement of persons and equipment.

(f) Each lifeboat shall be of sufficient strength to withstand, when loaded with its full complement of persons and equipment and with, where applicable, skates or fenders in position, a lateral impact against the vessel's side at an impact velocity of at least 3.5 m/s and also a drop into the water from a height of at least 3 m.

(g) The vertical distance between the floor surface and the interior of the enclosure or canopy over 50% of the floor area shall be:

(i) not less than 1.3 m for a lifeboat permitted to accommodate nine persons or less,

(ii) not less than 1.7 m for a lifeboat permitted to accommodate 24 persons or more:

(iii) not less than the distance as determined by linear interpolation between 1.3 m and 1.7 m for a lifeboat permitted to accommodate between 9 and 24 persons.

(2) Carrying capacity of lifeboats

(a) No lifeboat shall be approved to accommodate more than 150 persons.

(b) The number of persons which a lifeboat shall be permitted to accommodate shall be equal to the lesser of:

(i) the number of persons having an average mass of 75 kg, all wearing lifejackets, that can be seated in a normal position without interfering with the means of propulsion or the operation of any of the lifeboat's equipment; or

(ii) the number of spaces that can be provided on the seating arrangements in accordance with figure 1. The shapes may be overlapped as shown, provided footrests are fitted and there is sufficient room for legs and the vertical separation between the upper and lower seat is not less than 350 mm.

(c) Each seating position shall be clearly indicated in the lifeboat.

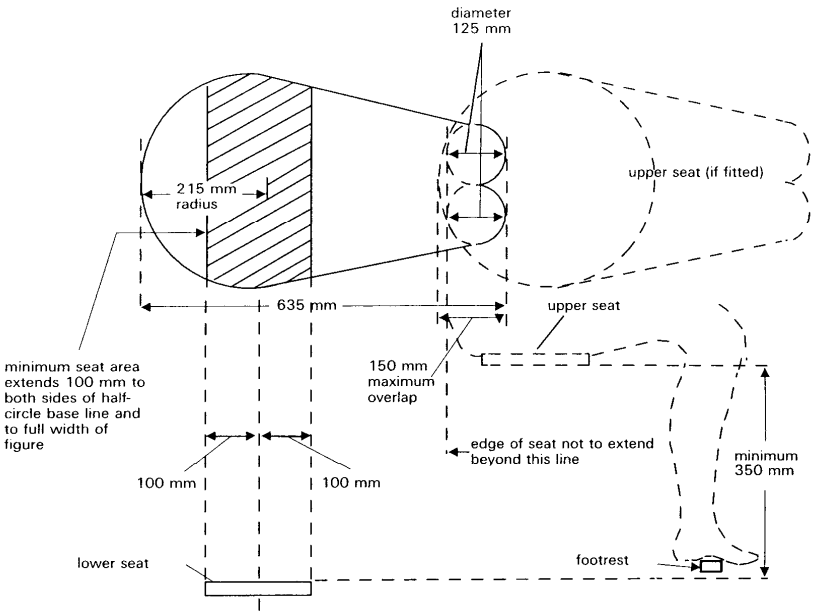

Figure 1

(3) Access into lifeboats

(a) Every vessel lifeboat shall be so arranged that it can be boarded by its full complement of persons in not more than 3 min from the time the instruction to board is given. Rapid disembarkation shall also be possible.

(b) Lifeboats shall have a boarding ladder that can be used on either side of the lifeboat to enable persons in the water to board the lifeboat. The lowest step of the ladder shall be not less than 0.4 m below the lifeboat's light waterline.

(c) The lifeboat shall be so arranged that helpless people can be brought on board either from the sea or on stretchers.

(d) All surfaces on which persons might walk shall have a non-skid finish.

(4) Lifeboat buoyancy

All lifeboats shall have inherent buoyancy or shall be fitted with inherently buoyant material which shall not be adversely affected by seawater, oil or oil products, sufficient to float the lifeboat with all its equipment on board when flooded and open to the sea. Additional inherently buoyant material, equal to 280 N of buoyant force per person shall be provided for the number of persons the lifeboat is permitted to accommodate. Buoyant material, unless in addition to that required above, shall not be installed external to the hull of the lifeboat.

(5) Lifeboat freeboard and stability

All lifeboats, when loaded with 50% of the number of persons the lifeboat is permitted to accommodate seated in their normal positions to one side of the centreline, shall have a freeboard, measured from the waterline to the lowest opening through which the lifeboat may become flooded, of at least 1.5% of the lifeboat's length or 100 mm, whichever is the greater.

(6) Lifeboat propulsion

(a) Every lifeboat shall be powered by a compression ignition engine. No engine shall be used for any lifeboat if its fuel has a flashpoint of 43 C or less (closed cup test).

(b) The engine shall be provided with either a manual starting system, or a power starting system with two independent rechargeable energy sources. Any necessary starting aids shall also be provided. The engine starting systems and starting aids shall start the engine at an ambient temperature of -15 C within 2 min of commencing the start procedure unless, in the opinion of the Administration having regard to the particular voyages in which the vessel carrying the lifeboat is constantly engaged, a different temperature is appropriate. The starting systems shall not be impeded by the engine casing, thwarts or other obstructions.

(c) The engine shall be capable of operating for not less than 5 min after starting from cold with the lifeboat out of the water.

(d) The engine shall be capable of operating when the lifeboat is flooded up to the centreline of the crankshaft.

(e) The propeller shafting shall be so arranged that the propeller can be disengaged from the engine. Provision shall be made for ahead and astern propulsion of the lifeboat.

(f) The exhaust pipe shall be so arranged as to prevent water from entering the engine in normal operation.

(g) All lifeboats shall be designed with due regard to the safety of persons in the water and to the possibility of damage to the propulsion system by floating debris.

(h) The speed of a lifeboat when proceeding ahead in calm water, when loaded with its full complement of persons and equipment and with all engine-powered auxiliary equipment in operation, shall be at least 6 knots and at least 2 knots when towing a 25-person liferaft loaded with its full complement of persons and equipment or its equivalent. Sufficient fuel, suitable for use throughout the temperature range expected in the area in which the vessel operates, shall be provided to run the fully loaded lifeboat at 6 knots for a period of not less than 24 h.

(i) The lifeboat engine, transmission and engine accessories shall be enclosed in a fire-retardant casing or other suitable arrangements providing similar protection. Such arrangements shall also protect persons from coming into accidental contact with hot or moving parts and protect the engine from exposure to weather and sea. Adequate means shall be provided to reduce the engine noise. *The noise level in the boat may not impede safe use of the boat in emergency and drill situations. This noise level may, however, never exceed 90 dB(A)*. Starter batteries shall be provided with casings, which form a watertight enclosure around the bottom and sides of the batteries. The battery casings shall have a tight fitting top, which provides for necessary gas venting.

(j) The lifeboat engine and accessories shall be designed to limit electromagnetic emissions so that engine operation does not interfere with the operation of radio life-saving appliances used in the lifeboat.

(k) Means shall be provided for recharging all engine-starting, radio and searchlight batteries. Radio batteries shall not be used to provide power for engine starting. Means shall be provided for recharging lifeboat batteries from the vessel's power supply at a supply voltage not exceeding 55 V which can be disconnected at the lifeboat embarkation station.

(l) Water-resistant instructions for starting and operating the engine shall be provided and mounted in a conspicuous place near the engine starting controls.

(7) Lifeboat fittings

(a) All lifeboats shall be provided with at least one drain valve fitted near the lowest point in the hull, which shall automatically open to drain water from the hull when the lifeboat is not waterborne and shall automatically close to prevent entry of water when the lifeboat is waterborne. Each drain valve shall be provided with a cap or plug to close the valve, which shall be attached to the lifeboat by a

lanyard, a chain, or other suitable means. Drain valves shall be readily accessible from inside the lifeboat and their position shall be clearly indicated.

(b) All lifeboats shall be provided with a rudder and tiller. When a wheel or other remote steering mechanism is also provided the tiller shall be capable of controlling the rudder in case of failure of the steering mechanism. The rudder shall be permanently attached to the lifeboat. The tiller shall be permanently installed on, or linked to, the rudder stock; however, if the lifeboat has a remote steering mechanism, the tiller may be removable and securely stowed near the rudder stock. The rudder and tiller shall be so arranged as not to be damaged by operation of the release mechanism or the propeller.

(c) Except in the vicinity of the rudder and propeller, a buoyant lifeline shall be becketed around the outside of the lifeboat.

(d) Lifeboats which are not self-righting when capsized shall have suitable handholds on the underside of the hull to enable persons to cling to the lifeboat. The handholds shall be fastened to the lifeboat in such a way that, when subjected to an impact sufficient to cause them to break away from the lifeboat, they break away without damaging the lifeboat.

(e) All lifeboats shall be fitted with sufficient watertight lockers or compartments to provide for the storage of the small items of equipment, water and provisions required by paragraph (8). Means shall be provided for the storage of collected rainwater.

(f) Every lifeboat to be launched by a fall or falls shall be fitted with a release mechanism complying with the following requirements:

(i) the mechanism shall be so arranged that all hooks are released simultaneously;

(ii) the mechanism shall have two release capabilities as follows:

(1) a normal release capability which will release the lifeboat *by means of manual activation* when it is waterborne or when there is no load on the hooks;

(2) an on-load release capability which will release the lifeboat with a load on the hooks. This release shall be so arranged as to release the lifeboat under any conditions of loading from no-load with the lifeboat waterborne to a load of 1.1 times the total mass of the lifeboat when loaded with its full complement of persons and equipment. This release capability shall be adequately protected against accidental or premature use;

(iii) the release control shall be clearly marked in a colour that contrasts with its surroundings;

(iv) the mechanism shall be designed with a factor of safety of 6 based on the ultimate strength of the materials used, assuming the mass of the lifeboat is equally distributed between the falls.

(g) Every lifeboat shall be fitted with a release device to enable the forward painter to be released when under tension.

(h) Every lifeboat which is fitted with a fixed two-way VHF radiotelephone apparatus with an antenna which is separately mounted shall be provided with arrangements for siting and securing the antenna effectively in its operating position.

(i) Lifeboats intended for launching down the side of a vessel shall have skates and fenders as necessary to facilitate launching and prevent damage to the lifeboat.

(j) A manually controlled lamp visible on a dark night with a clear atmosphere at a distance of at least 2 miles for a period of not less than 12 h shall be fitted to the top of the cover or enclosure. If the light is a flashing light, it shall initially flash at a rate of not less than 50 flashes per minute over the first 2 h of operation of the 12 h operating period.

(k) A lamp or source of light shall be fitted inside the lifeboat to provide illumination for not less than 12 h to enable reading of survival and equipment instructions; however, oil lamps shall not be permitted for this purpose.

(l) Unless expressly provided otherwise, every lifeboat shall be provided with effective means of bailing or be automatically self-bailing.

(m) Every lifeboat shall be so arranged that an adequate view forward, aft and to both sides is provided from the control and steering position for safe launching and manoeuvring.

(8) Lifeboat equipment

All items of lifeboat equipment, whether required by this paragraph or elsewhere in this chapter, with the exception of boat-hooks which shall be kept free for fending off purposes, shall be secured within the lifeboat by lashings, storage in lockers or compartments, storage in brackets or similar mounting arrangements or other suitable means. The equipment shall be secured in such a manner as not to interfere with any abandonment procedures. All items of lifeboat equipment shall be as small and of as little mass as possible and shall be packed in a suitable compact form. Except where otherwise stated, the normal equipment of every lifeboat shall consist of:

(i) sufficient buoyant oars to make headway in calm seas. Thole pins, crutches or equivalent arrangements shall be provided for each oar provided. Thole pins or crutches shall be attached to the boat by lanyards or chains;

(ii) two boat-hooks;

(iii) a buoyant bailer and two buckets;

(iv) a survival manual;[7]

(v) a binnacle containing an efficient compass which is luminous or provided with suitable means of illumination. In a totally enclosed lifeboat, the binnacle shall be permanently fitted at the steering position; in any other lifeboat, it shall be provided with suitable mounting arrangements;

(vi) a sea-anchor of adequate size fitted with a shock-resistant hawser and a tripping line which provides a firm hand grip when wet. The strength of the sea-anchor, hawser and tripping line shall be adequate for all sea conditions;

(vii) two efficient painters of a length equal to not less than twice the distance from the stowage position of the lifeboat to the waterline in the lightest seagoing condition or 15 m, whichever is the greater. One painter attached to the release device required by paragraph (7)(g) shall be placed at the forward end of the lifeboat and the other shall be firmly secured at or near the bow of the lifeboat ready for use;

(viii) two hatchets, one at each end of the lifeboat;

(ix) watertight receptacles containing a total of 3 l of fresh water for each person the lifeboat is permitted to accommodate, of which 1 l per person may be replaced by a de-salting apparatus capable of producing an equal amount of fresh water in two days;

(x) a rustproof dipper with lanyard;

(xi) a rustproof graduated drinking vessel;

(xii) a food ration totalling not less than 10,000 kJ for each person the lifeboat is permitted to accommodate; these rations shall be kept in airtight packaging and be stowed in a watertight container;

(xiii) four rocket parachute flares complying with the requirements of regulation 29;

(xiv) six hand flares complying with the requirements of regulation 30;

(xv) two buoyant smoke signals complying with the requirements of regulation 31;

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[7] See the Instructions for Action in Survival Craft adopted by the Organisation by resolution A.567(16).

(xvi) one waterproof electric torch suitable for Morse signalling together with one spare set of batteries and one spare bulb in a waterproof container;

(xvii) one daylight signalling mirror with instructions for its use for signalling to ships and aircraft;

(xviii) one copy of the life-saving signals prescribed by regulation V/16 of the International Convention for the Safety of Life at Sea, 1974, on a waterproof card or in a waterproof container;

(xix) one whistle or equivalent sound signal;

(xx) a first-aid outfit in a waterproof case capable of being closed tightly after use;

(xxi) six doses of anti-seasickness medicine and one seasickness bag for each person;

(xxii) a jack-knife to be kept attached to the boat by a lanyard;

(xxiii) three tin-openers;

(xxiv) two buoyant rescue quoits, attached to not less than 30 m of buoyant line;

(xxv) a manual pump;

(xxvi) one set of fishing tackle;

(xxvii) sufficient tools for minor adjustments to the engine and its accessories;

(xxviii) portable fire-extinguishing equipment suitable for extinguishing oil fires;

(xxix) a searchlight capable of effectively illuminating a light-coloured object at night having a width of 18 m at a distance of 180 m for a total period of 6 h and of working for not less than 3 h continuously;

(xxx) an efficient radar reflector, unless a survival craft radar transponder is stowed in the lifeboat;

(xxxi) thermal protective aids complying with the requirements of regulation 26 sufficient for 10% of the number of persons the lifeboat is permitted to accommodate or two, whichever is greater;

(xxxii) in the case of vessels engaged on voyages of such a nature and duration that, in the opinion of the Administration, the items specified in subparagraphs (xii) and (xxvi) are unnecessary, the Administration may allow these items to be dispensed with.

(9) Lifeboat markings

(a) The dimension of the lifeboat and the number of persons which it is permitted to accommodate shall be marked on it in clear permanent characters.

(b) The name and port of registry of the vessel to which the lifeboat belongs shall be marked on each side of the lifeboat's bow in block capitals of the Roman alphabet;

(c) Means of identifying the vessel to which the lifeboat belongs and the number of the lifeboat shall be marked in such a way that they are, as far as practicable, visible from above.

Regulation 18 – Self-righting partially enclosed lifeboats

(1) Self-righting partially enclosed lifeboats shall comply with the requirements of regulation 17 and, in addition, shall comply with the requirements of this regulation.

(2) Enclosure

(a) Permanently attached rigid covers shall be provided extending over not less than 20% of the length of the lifeboat from the stem and not less than 20% of the length of the lifeboat from the aftermost part of the lifeboat.

(b) The rigid covers shall form two shelters. If the shelters have bulkheads they shall have openings of sufficient size to permit easy access by persons each wearing an immersion suit or warm clothes and a lifejacket. The interior height of the shelters shall be sufficient to permit persons easy access to their seats in the bow and stern of the lifeboat.

(c) The rigid covers shall be so arranged that they include windows or translucent panels to admit sufficient daylight to the inside of the lifeboat with the openings or canopies closed so as to make artificial light unnecessary.

(d) The rigid covers shall have railings to provide a secure handhold for persons moving about the exterior of the lifeboat.

(e) Open parts of the lifeboat shall be fitted with a permanently attached foldable canopy so arranged that:

(i) it can be easily erected by not more than two persons in not more than 2 min;

(ii) it is insulated to protect the occupants against cold by means of not less than two layers of material separated by an air gap or other equally efficient means.

(f) The enclosure formed by the rigid covers and canopy shall be so arranged:

(i) as to allow launching and recovery operations to be performed without any occupant having to leave the enclosure;

(ii) that it has entrances at both ends and on each side, provided with efficient adjustable closing arrangements which can be easily and quickly opened and closed from inside or outside so as to permit ventilation but exclude seawater, wind and cold; means shall be provided for holding the entrances securely in the open and in the closed position;

(iii) that with the canopy erected and all entrances closed, sufficient air is admitted for the occupants at all times;

(iv) that it has means for collecting rainwater;

(v) that the exterior of the rigid covers and canopy and the interior of that part of the lifeboat covered by the canopy is of a highly visible colour. The interior of the shelters shall be of a colour which does not cause discomfort to the occupants;

(vi) that it is possible to row the lifeboat.

(3) Capsizing and re-righting

(a) A safety belt shall be fitted at each indicated seating position. The safety belt shall be so designed as to hold a person of a mass of 100 kg securely in place when the lifeboat is in a capsized position.

(b) The stability of the lifeboat shall be such that it is inherently or automatically self-righting when loaded with its full or a partial complement of persons and equipment and the persons are secured with safety belts.

(4) Propulsion

(a) The engine and transmission shall be controlled from the helmsman's position.

(b) The engine and engine installation shall be capable of running in any position during capsize and continue to run after the lifeboat returns to the upright or shall automatically stop on capsizing and be easily restarted after the lifeboat returns to the upright and the water has been drained from the lifeboat. The design of the fuel and lubricating systems shall prevent the loss of fuel and the loss of more than 250 ml of lubricating oil from the engine during capsize.

(c) Air-cooled engines shall have a duct system to take in cooling air from, and exhaust it to, the outside of the lifeboat. Manually operated dampers shall be provided to enable cooling air to be taken in from, and exhausted to, the interior of the lifeboat.

(5) Construction and fendering

(a) Notwithstanding regulation 17(1)(f), a self-righting partially enclosed lifeboat shall be so constructed and fendered as to ensure that the lifeboat renders protection against harmful accelerations resulting from an impact of the lifeboat, when loaded with its full complement of persons and equipment, against the vessel's side at an impact velocity of not less than 3.5 m/s.

(b) The lifeboat shall be automatically self-bailing.

Regulation 19 – Totally enclosed lifeboats

(1) Totally enclosed lifeboats shall comply with the requirements of regulation 17 and, in addition, shall comply with the requirements of this regulation.

(2) Enclosure

Every totally enclosed lifeboat shall be provided with a rigid watertight enclosure which completely encloses the lifeboat. The enclosure shall be so arranged that:

(i) it protects the occupants against heat and cold;

(ii) access to the lifeboat is provided by hatches which can be closed to make the lifeboat watertight;

(iii) hatches are positioned so as to allow launching and recovery operations to be performed without any occupant having to leave the enclosure;

(iv) access hatches are capable of being opened and closed from both inside and outside and are equipped with means to hold them securely in open positions;

(v) it is possible to row the lifeboat;

(vi) it is capable, when the lifeboat is in the capsized position with the hatches closed and without significant leakage, of supporting the entire mass of the lifeboat, including all equipment, machinery and its full complement of persons;

(vii) it includes windows or translucent panels on both sides which admit sufficient daylight to the inside of the lifeboat with the hatches closed to make artificial light unnecessary;

(viii) its exterior is of a highly visible colour and its interior of a colour which does not cause discomfort to the occupants;

(ix) handrails provide a secure handhold for persons moving about the exterior of the lifeboat, and aid embarkation and disembarkation;

(x) persons have access to their seats from an entrance without having to climb over thwarts or other obstructions;

(xi) the occupants are protected from the effects of dangerous subatmospheric pressures which might be created by the lifeboat's engine.

(3) Capsizing and re-righting

(a) A safety belt shall be fitted at each indicated seating position. The safety belt shall be designed to hold a person of a mass of 100 kg securely in place when the lifeboat is in a capsized position.

(b) The stability of the lifeboat shall be such that it is inherently or automatically self-righting when loaded with its full or a partial complement of persons and equipment and all entrances and openings are closed watertight and the persons are secured with safety belts.

(c) The lifeboat shall be capable of supporting its full complement of persons and equipment when the lifeboat is in the damaged condition prescribed in regulation 17(1)(a) and its stability shall be such that, in the event of capsizing, it will automatically attain a position that will provide an above-water escape for its occupants.

(d) The design of all engine exhaust pipes, air ducts and other openings shall be such that water is excluded from the engine when the lifeboat capsizes and re-rights.

(4) Propulsion

(a) The engine and transmission shall be controlled from the helmsman's position.

(b) The engine and engine installation shall be capable of running in any position during capsize and continue to run after the lifeboat returns to the upright or shall automatically stop on capsizing and be

easily restarted after the lifeboat returns to the upright. The design of the fuel and lubricating systems shall prevent the loss of fuel and the loss of more than 250 ml of lubricating oil from the engine during capsize.

(c) Air cooled engines shall have a duct system to take in cooling air from, and exhaust it to, the outside of the lifeboat. Manually operated dampers shall be provided to enable cooling air to be taken in from, and exhausted to, the interior of the lifeboat.

(5) Construction and fendering

Notwithstanding regulation 17(1)(f), a totally enclosed lifeboat shall be so constructed and fendered as to ensure that the lifeboat renders protection against harmful accelerations resulting from an impact of the lifeboat, when loaded with its full complement of persons and equipment, against the vessel's side at an impact velocity of not less than 3.5 m/s.

(6) Free-fall lifeboats

A lifeboat arranged for free-fall launching shall be so constructed that it is capable of rendering protection against harmful accelerations resulting from being launched, when loaded with its full complement of persons and equipment, from at least the maximum height at which it is designed to be stowed above the waterline with the vessel in its lightest seagoing condition, under unfavourable conditions of trim of up to 10 and with the vessel listed not less than 20 either way.

Regulation 20 – General requirements for liferafts

(1) Construction of liferafts

(a) Every life raft shall be so constructed as to be capable of withstanding exposure for 30 days afloat in all sea conditions.

(b) The liferaft shall be so constructed that when it is dropped into the water from a height of 18 m, the liferaft and its equipment will operate satisfactorily. If the liferaft is to be stowed at a height of more than 18 m above the waterline in the lightest seagoing condition, it shall be of a type which has been satisfactorily drop-tested from at least that height.

(c) The floating liferaft shall be capable of withstanding repeated jumps on to it from a height of at least 4.5 m above its floor both with and without the canopy erected.

(d) The liferaft and its fittings shall be so constructed as to enable it to be towed at a speed of 3 knots in calm water when loaded with its full complement of persons and equipment and with one of its sea-anchors streamed.

(e) The liferaft shall have a canopy to protect the occupants from exposure which is automatically set in place when the liferaft is launched and waterborne. The canopy shall comply with the following:

(i) it shall provide insulation against heat and cold by means of either two layers of material separated by an air gap or other equally efficient means. Means shall be provided to prevent accumulation of water in the air gap:

(ii) its interior shall be of a colour that does not cause discomfort to the occupants;

(iii) each entrance shall be clearly indicated and be provided with efficient adjustable closing arrangements which can be easily and quickly opened from inside and outside the liferaft so as to permit ventilation but exclude seawater, wind and cold. Liferafts accommodating more than eight persons shall have at least two diametrically opposite entrances. Liferafts accommodating more than 25 persons shall have at least three entrances;

(iv) it shall admit sufficient air for the occupants at all times, even with the entrances closed;

(v) it shall be provided with at least one viewing port. Liferafts accommodating more than 25 persons shall be provided with at least two viewing ports located so that the total field of vision is a close as possible to 360 ;

(vi) it shall be provided with means for collecting rainwater;

(vii) it shall have sufficient headroom for sitting occupants under all parts of the canopy.

(2) Minimum carrying capacity and mass of life rafts

(a) No liferaft shall be approved which has a carrying capacity of less than six persons calculated in accordance with the requirements of regulation 21(3) or 22(3) as appropriate.

(b) Unless the liferaft is to be launched by an approved launching appliance complying with the requirements of regulation 32 and is not required to be portable, the total mass of the liferaft, its container and its equipment shall not be more than 185 kg.

(3) Liferaft fittings

(a) Lifelines shall be securely becketed around the inside and outside of the liferaft.

(b) The liferaft shall be fitted with an efficient painter of length equal to not less than twice the distance from the stowed position to the waterline in the lightest seagoing condition or 15 m whichever is the greater.

(4) Davit-launched liferafts

(a) In addition to the above requirements, a liferaft for use with an approved launching appliance shall:

(i) when the liferaft is loaded with its full complement of persons and equipment, be capable of withstanding a lateral impact against the vessel's side at an impact velocity of not less than 3.5 m/s and also a drop into the water from a height of not less than 3 m without damage that will affect its function;

(ii) be provided with means for bringing the liferaft alongside the embarkation deck and holding it securely during embarkation.

(b) Every davit-launched liferaft shall be so arranged that it can be boarded by its full complement of persons in not more than 3 min from the time the instruction to board is given.

(5) Equipment

(a) The normal equipment of every liferaft shall consist of:

(i) one buoyant rescue quoit, attached to not less than 30 m of buoyant line;

(ii) one knife of the non-folding type having a buoyant handle and lanyard attached and stowed in a pocket on the exterior of the canopy near the point at which the painter is attached to the liferaft. In addition, a liferaft which is permitted to accommodate 13 persons or more shall be provided with a second knife which need not be of the non-folding type;

(iii) for a liferaft which is permitted to accommodate not more than 12 persons, one buoyant bailer. For a liferaft which is permitted to accommodate 13 persons or more, two buoyant bailers;

(iv) two sponges;

(v) two sea-anchors each with a shock-resistant hawser and tripping line, one being spare and the other permanently attached to the liferaft in such a way that when the liferaft inflates or is waterborne it will cause the liferaft to lie oriented to the wind in the most stable manner. The strength of each sea-anchor and its hawser and tripping line shall be adequate for all sea conditions. The sea-anchors shall be fitted with a swivel at each end of the line and shall be of a type which is unlikely to turn inside-out between its shroud lines;

(vi) two buoyant paddles;

(vii) three tin-openers; safety knives containing special tin-opener blades are satisfactory for this requirement;
(viii) one first-aid outfit in a waterproof case capable of being closed tightly after use;
(ix) one whistle or equivalent sound signal;
(x) four rocket parachute flares complying with the requirements of regulation 29;
(xi) six hand flares complying with the requirements of regulation 30;
(xii) two buoyant smoke signals complying with the requirements of regulation 31;
(xiii) one waterproof electric torch suitable for Morse signalling together with one spare set of batteries and one spare bulb in a waterproof container;
(xiv) an efficient radar reflector, unless a survival craft radar transponder is stowed in the liferaft;
(xv) one daylight signalling mirror with instructions on its use for signalling to ships and aircraft;
(xvi) one copy of the life-saving signals referred to in regulation V/16 of the International Convention for the Safety of Life at Sea, 1974, on a waterproof card or in a waterproof container;
(xvii) one set of fishing tackle;
(xviii) a food ration totalling not less than 10,000 kJ for each person the liferaft is permitted to accommodate; these rations shall be kept in airtight packaging and be stowed in a watertight container;
(xix) watertight receptacles containing a total of 1.5 l of fresh water for each person the liferaft is permitted to accommodate, of which 0.5 l per person may be replaced by a de-salting apparatus capable of producing an equal amount of fresh water in two days;
(xx) one rustproof graduated drinking vessel;
(xxi) six doses of anti-seasickness medicine and one seasickness bag for each person the liferaft is permitted to accommodate;
(xxii) instructions on how to survive;[8]
(xxiii) instructions for immediate action;[9]
(xxiv) thermal protective aids complying with the requirements of regulation 26 sufficient for 10% of the number of persons the liferaft is permitted to accommodate or two, whichever is the greater.

(b) The marking required by regulations 21(7)(c)(v) and 22(7)(vii) on liferafts equipped in accordance with subparagraph (a) shall be "SOLAS A PACK" in block capitals of the Roman alphabet.

(6) Float-free arrangements for liferafts

(a) Painter system

The liferaft painter system shall provide a connection between the vessel and the liferaft and shall be so arranged as to ensure that the liferaft when released and, in the case of an inflatable liferaft, inflated is not dragged under by the sinking vessel.

(b) Weak link

If a weak link is used in the float-free arrangements, it shall:

(i) not be broken by the force required to pull the painter from the liferaft container;
(ii) if applicable, be of sufficient strength to permit the inflation of the liferaft;
(iii) break under a strain of 2.2 ± 0.4 kN.

(c) Hydrostatic release units

If a hydrostatic release unit is used in the float-free arrangements, it shall:

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[8] See the Instructions for Action in Survival Craft adopted by the Organization by resolution A.657(16).

[9] See the Instructions for Action in Survival Craft adopted by the Organization by resolution A.657(16).

(i) be constructed of compatible materials so as to prevent malfunction of the unit. Galvanizing or other forms of metallic coating on parts of the hydrostatic release unit shall not be accepted;
(ii) automatically release the liferaft at a depth of not more than 4 m;
(iii) have drains to prevent the accumulation of water in the hydrostatic chamber when the unit is in its normal position;
(iv) be so constructed as to prevent release when seas wash over the unit;
(v) be permanently marked on its exterior with its type and serial number;
(vi) be provided with a document or identification plate stating the date of manufacture, type and serial number;
(vii) be such that each part connected to the painter system has a strength of not less than that required for the painter;
(viii) if disposable, have instructions for determining the date of expiry and means for marking the date on the unit.

Regulation 21 – Inflatable liferafts

(1) Inflatable liferafts shall comply with the requirements of regulation 20 and, in addition, shall comply with the requirements of this regulation.
(2) Construction of inflatable liferafts
(a) The main buoyancy chamber shall be divided into not less than two separate compartments, each inflated through a nonreturn inflation valve on each compartment. The buoyancy chambers shall be so arranged that, in the event of any one of the compartments being damaged or failing to inflate, the intact compartments shall be able to support, with positive freeboard over the liferaft's entire periphery, the number of persons which the liferaft is permitted to accommodate, each having a mass of 75 kg and seated in their normal positions.
(b) The floor of the liferaft shall be waterproof and shall be capable of being sufficiently insulated against cold either:
(i) by means of one or more compartments that the occupants can inflate, or which inflate automatically and can be deflated and reinflated by the occupants; or
(ii) by other equally efficient means not dependent on inflation.
(c) The liferaft shall be inflated with a non-toxic gas. Inflation shall be completed within a period of 1 min at an ambient temperature of between 18 C and 20 C and within a period of 3 min at an ambient temperature of -30 C. After inflation the liferaft shall maintain its form when loaded with its full complement of persons and equipment.
(d) Each inflatable compartment shall be capable of withstanding a pressure equal to at least three times the working pressure and shall be prevented from reaching a pressure exceeding twice the working pressure either by means of relief valves or by a limited gas supply. Means shall be provided for fitting the topping-up pump or bellows required by paragraph (10)(a)(ii) so that the working pressure can be maintained.
(3) Carrying capacity of inflatable liferafts
The number of persons which a liferaft shall be permitted to accommodate shall be equal to the lesser of:
(i) the greatest whole number obtained by dividing by 0.096 the volume, measured in cubic metres, of the main buoyancy tubes (which for this purpose shall include neither the arches nor the thwarts, if fitted) when inflated; or

(ii) the greatest whole number obtained by dividing by 0.372 the inner horizontal cross-sectional area of the liferaft measured in square metres (which for this purpose may include the thwart or thwarts, if fitted) measured to the innermost edge of the buoyancy tubes; or

(iii) the number of persons having an average mass of 75 kg all wearing lifejackets, that can be seated with sufficient comfort and headroom without interfering with the operation of any of the liferaft's equipment.

(4) Access into inflatable liferafts

(a) At least one entrance shall be fitted with a semi-rigid boarding ramp to enable persons to board the liferaft from the sea so arranged as to prevent significant deflation of the liferaft if the ramp is damaged. In the case of a davit-launched liferaft having more than one entrance, the boarding ramp shall be fitted at the entrance opposite the bowsing lines and embarkation facilities.

(b) Entrances not provided with a boarding ramp shall have a boarding ladder, the lowest step of which shall be situated not less than 0.4 m below the liferaft's light waterline. Entrances provided with a boarding ramp shall also be provided with a boarding ladder. The lowest step of the boarding ladder shall be loaded so that it sinks.

(c) There shall be means inside the liferaft to assist persons to pull themselves into the liferaft from the ladder.

(5) Stability of inflatable liferafts

(a) Every inflatable liferaft shall be so constructed that, when fully inflated and floating with the canopy uppermost, it is stable in a seaway.

(b) The stability of the liferaft when in the inverted position shall be such that it can be righted in a seaway and in calm water by one person.

(c) The stability of the liferaft when loaded with its full complement of persons and equipment shall be such that it can be towed at speeds of up to 3 knots in calm water.

(6) Inflatable liferaft fittings

(a) The breaking strength of the painter system including its means of attachment to the liferaft, except the weak link required by regulation 20(6)(b), shall be not less than 10.0 kN for a liferaft permitted to accommodate nine persons or more, and not less than 7.5 kN for any other liferaft. The liferaft shall be capable of being inflated by one person.

(b) A manually controlled lamp visible on a dark night with a clear atmosphere at a distance of at least 2 miles for a period of not less than 12 h shall be fitted to the top of the liferaft canopy. If it is a flashing light it shall flash at a rate of not less than 50 flashes per minute for the first 2 h of operation of the 12 h operating period. The lamp shall be powered by a sea-activated cell or a dry chemical cell and shall light automatically when the liferaft inflates. The cell shall be of a type that does not deteriorate due to damp or humidity in the stowed liferaft.

(c) A manually controlled lamp shall be fitted inside the liferaft capable of continuous operation for a period of at least 12 h. It shall light automatically when the liferaft inflates and be of sufficient intensity to enable reading of survival and equipment instructions.

(7) Containers for inflatable liferafts

(a) The liferaft shall be packed in a container that is:

(i) so constructed as to withstand hard wear under conditions encountered at sea;

(ii) of sufficient inherent buoyancy, when packed with the liferaft and its equipment, to pull the painter from within and to operate the inflation mechanism should the vessel sink;

(iii) as far as practicable watertight, except for drain holes in the container bottom.

(b) The liferaft shall be packed in its container in such a way as to ensure, as far as possible, that the waterborne liferaft inflates in an upright position on breaking free from its container.

(c) The container shall be marked with:

(i) maker's name or trade mark;

(ii) serial number;

(iii) name of approving authority and the number of persons it is permitted to carry;

(iv) SFV;[10]

(v) type of emergency pack enclosed;

(vi) date when last serviced;

(vii) length of painter;

(viii) maximum permitted height of stowage above waterline (depending on drop-test height and length of painter);

(ix) launching instructions.

(8) Markings on inflatable liferafts

The liferaft shall be marked with:

(i) maker's name or trade mark;

(ii) serial number;

(iii) date of manufacture (month and year);

(iv) name of approving authority;

(v) name and place of servicing station where it was last serviced;

(vi) number of persons it is permitted to accommodate over each entrance in characters not less than 100 mm in height of a colour contrasting with that of the liferaft.

(9) Davit-launched inflatable liferafts

(a) In addition to complying with the above requirements, a liferaft for use with an approved launching appliance shall, when suspended from its lifting hook or bridle, withstand a load of:

(i) 4 times the mass of its full complement of persons and equipment, at an ambient temperature and a stabilized liferaft temperature of 20 ± 3 C with all relief valves inoperative; and

(ii) 1.1 times the mass of its full complement of persons and equipment at an ambient temperature and a stabilized liferaft temperature of -30 C with all relief valves operative.

(b) Rigid containers for liferafts to be launched by a launching appliance shall be so secured that the container or parts of it are prevented from falling into the sea during and after inflation and launching of the contained liferaft.

(10) Additional equipment for inflatable liferafts

(a) In addition to the equipment required by regulation 20(5), every inflatable liferaft shall be provided with:

(i) one repair outfit for repairing punctures in buoyancy compartments;

(ii) one topping-up pump or bellows.

(b) The knives required by regulation 20(5)(a)(ii) shall be safety knives.

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[10] Inflatable liferafts complying with regulation III/39 of the International Convention for the Safety of Life at Sea, 1974, as amended and marked SOLAS A are fully equivalent to the liferafts described in this regulation, and may be accepted as fully equivalent to liferafts marked SFV.

Regulation 22 – Rigid liferafts

(1) Rigid liferafts shall comply with the requirements of regulation 20 and, in addition, shall comply with the requirements of this regulation.

(2) Construction of rigid liferafts

(a) The buoyancy of the liferaft shall be provided by approved inherently buoyant material placed as near as possible to the periphery of the liferaft. The buoyant material shall be fire-retardant or be protected by a fire-retardant covering.

(b) The floor of the liferaft shall prevent the ingress of water and shall effectively support the occupants out of the water and insulate them from cold.

(3) Carrying capacity of rigid liferafts

The number of persons which a liferaft shall be permitted to accommodate shall be equal to the lesser of:

(i) the greatest whole number obtained by dividing by 0.096 the volume, measured in cubic metres, of the buoyancy material multiplied by a factor of 1 minus the specific gravity of that material; or

(ii) the greatest whole number obtained by dividing by 0.372 the horizontal cross-sectional area of the floor of the liferaft measured in square metres; or

(iii) the number of persons having an average mass of 75 kg all wearing lifejackets, that can be seated with sufficient comfort and headroom without interfering with the operation of any of the liferaft's equipment.

(4) Access into rigid liferafts

(a) At least one entrance shall be fitted with a rigid boarding ramp to enable persons to board the liferaft from the sea. In the case of a davit-launched liferaft having more than one entrance, the boarding ramp shall be fitted at the entrance opposite to the bowsing and embarkation facilities.

(b) Entrances not provided with a boarding ramp shall have a boarding ladder, the lowest step of which shall be situated not less than 0.4 m below the liferaft's light waterline.

(c) There shall be means inside the liferaft to assist persons to pull themselves into the liferaft from the ladder.

(5) Stability of rigid liferafts

(a) Unless the liferaft is capable of operating safely whichever way up it is floating, its strength and stability shall be such that it is either self-righting or can be readily righted in a seaway and in calm water by one person.

(b) The stability of the liferaft when loaded with its full complement of persons and equipment shall be such that it can be towed at speeds of up to 3 knots in calm water.

(6) Rigid liferaft fittings

(a) The liferaft shall be fitted with an efficient painter. The breaking strength of the painter system, including its means of attachment to the liferaft, except the weak link required by regulation 20(6)(b), shall be not less than 10.0 kN for liferafts permitted to accommodate nine persons or more, and not less than 7.5 kN for any other liferaft:

(b) A manually controlled lamp visible on a dark night with a clear atmosphere at a distance of at least 2 miles for a period of not less than 12 h shall be fitted to the top of the liferaft canopy. If the light is a flashing light it shall flash at a rate of not less than 50 flashes per minute for the first 2 h of operation of the 12 h operating period. The lamp shall be powered by a sea-activated cell or a dry chemical cell and shall light automatically when the liferaft canopy is set in place. The cell shall be of a type that does not deteriorate due to damp or humidity in the stowed liferaft.

(c) A manually controlled lamp shall be fitted inside the liferaft, capable of continuous operation for a period of at least 12 h. It shall light automatically when the canopy is set in place and be of sufficient intensity to enable reading of survival and equipment instructions.

(7) Markings on rigid liferafts

The liferafts shall be marked with:

(i) name and port of registry of the vessel to which it belongs;

(ii) maker's name or trade mark;

(iii) serial number;

(iv) name of approving authority;

(v) number of persons it is permitted to accommodate over each entrance in characters not less than 100 mm in height of a colour contrasting with that of the liferaft;

(vi) SFV;[11]

(vii) type of emergency pack enclosed;

(viii) length of painter;

(ix) maximum permitted height of stowage above waterline (drop-test height);

(x) launching instructions.

(8) Davit-launched rigid liferafts

In addition to the above requirements, a rigid liferaft for use with an approved launching appliance shall, when suspended from its lifting hook or bridle, withstand a load of four times the mass of its full complement of persons and equipment.

Regulation 23 – Rescue boats

(1) General requirements

(a) Except as provided by this regulation, all rescue boats shall comply with the requirements of regulations 17(1) to 17(7)(d) inclusive and 17(7)(f), 17(7)(g), 17(7)(i), 17(7)(l) and 17(9).

(b) Rescue boats may be either of rigid or inflated construction or a combination of both and shall:

(i) be not less than 3.8 m and not more than 8.5 m in length except where, owing to the size of the vessel, or for other reasons where the carriage of such boats is considered unreasonable or impracticable, the Administration may accept a rescue boat of a lesser length but not less than 3.3 m;

(ii) be capable of carrying at least five seated persons and a person lying down or, for vessels with a length of less than 45 m, in the case of a rescue boat less than 3.8 m be capable of carrying at least four persons seated and one person laying down.

(c) The number of persons which a boat shall be permitted to accommodate shall be determined by the Administration by means of a seating test. The minimum carrying capacity shall be as given in regulation 23(b)(ii). Seating, except for the helmsman, may be provided on the floor. No part of a seating position shall be on the gunwale, transom, or on inflated buoyancy at the sides of the boat.

(d) Rescue boats which are a combination of rigid and inflated construction shall comply with the appropriate requirements of this regulation to the satisfaction of the Administration.

(e) Unless the rescue boat has adequate sheer, it shall be provided with a bow cover extending for not less than 15% of its length.

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[11] Rigid liferafts complying with regulation III/40 of the International Convention for the Safety of Life at Sea, 1974, as amended and marked SOLAS A are fully equivalent to the liferafts described in this regulation, and may be accepted as fully equivalent to liftrafts marked SFV.

(f) Rescue boats shall be capable of manoeuvring at speeds up to 6 knots and maintaining that speed for a period of at least 4 h.

(g) Rescue boats shall have sufficient mobility and manoeuvrability in a seaway to enable persons to be retrieved from the water, marshal liferafts and tow the largest liferaft carried on the vessel when loaded with its full complement of persons and equipment or its equivalent at a speed of at least 2 knots.

(h) A rescue boat shall be fitted with an inboard engine or outboard motor. If it is fitted with an outboard motor, the rudder and tiller may form part of the engine. Notwithstanding the requirements of regulation 17(6)(a), petrol-driven outboard engines with an approved fuel system may be fitted in rescue boats provided the fuel tanks are specially protected against fire and explosion.

(i) Arrangements for towing shall be permanently fitted in rescue boats and shall be sufficiently strong to marshal or tow liferafts as required by paragraph (1)(g).

(j) Rescue boats shall be fitted with weathertight stowage for small items of equipment.

(2) Rescue boat equipment

(a) All items of rescue boat equipment, with the exception of boat-hooks which shall be kept free for fending off purposes, shall be secured within the rescue boat by lashings, storage in lockers or compartments, storage in brackets or similar mounting arrangements, or other suitable means. The equipment shall be secured in such a manner as not to interfere with any launching or recovery procedures. All items of rescue boat equipment shall be as small and of as little mass as possible and shall be packed in suitable and compact form.

(b) The normal equipment of every rescue boat shall consist of:

(i) sufficient buoyant oars or paddles to make headway in calm seas. Thole pins, crutches or equivalent arrangements shall be provided for each oar. Thole pins or crutches shall be attached to the boat by lanyards or chains;

(ii) a buoyant bailer;

(iii) a binnacle containing an efficient compass which is luminous or provided with suitable means of illumination;

(iv) a sea-anchor and tripping line with a hawser of adequate strength not less than 10 m in length;

(v) a painter of sufficient length and strength, attached to the release device complying with the requirements of regulation 17(7)(g) and placed at the forward end of the rescue boat;

(vi) one buoyant line, not less than 50 m in length, of sufficient strength to tow a liferaft as required by paragraph (1)(g);

(vii) one waterproof electric torch suitable for Morse signalling, together with one spare set of batteries and one spare bulb in a waterproof container;

(viii) one whistle or equivalent sound signal;

(ix) a first-aid outfit in a waterproof case capable of being closed tightly after use;

(x) two buoyant rescue quoits, attached to not less than 30 m of buoyant line;

(xi) a searchlight capable of effectively illuminating a light-coloured object at night having a width of 18 m at a distance of 180 m for a total period of 6 h and of working for at least 3 h continuously;

(xii) an efficient radar reflector;

(xiii) thermal protective aids complying with the requirements of regulation 26 sufficient for 10% of the number of persons the rescue boat is permitted to accommodate or two, whichever is the greater.

(c) In addition to the equipment required by paragraph (2)(b), the normal equipment of every rigid rescue boat shall include:

(i) a boat-hook;
(ii) a bucket;
(iii) a knife or hatchet.
(d) In addition to the equipment required by paragraph (2)(b) the normal equipment of every inflated rescue boat shall consist of:
(i) a buoyant safety knife;
(ii) two sponges;
(iii) an efficient manually operated bellows or pump;
(iv) a repair kit in a suitable container for repairing punctures;
(v) a safety boat-hook.
(3) Additional requirements for inflated rescue boats
(a) The requirements of regulations 17(1)(c) and 17(1)(e) do not apply to inflated rescue boats.
(b) An inflated rescue boat shall be constructed in such a way that, when suspended by its bridle or lifting hook:
(i) it is of sufficient strength and rigidity to enable it to be lowered and recovered with its full complement of persons and equipment;
(ii) it is of sufficient strength to withstand a load of 4 times the mass of its full complement of persons and equipment at an ambient temperature of 20 ± 3 C with all relief valves inoperative;
(iii) it is of sufficient strength to withstand a load of 1.1 times the mass of its full complement of persons and equipment at an ambient temperature of -30 C, with all relief valves operative.
(c) Inflated rescue boats shall be so constructed as to be capable of withstanding exposure:
(i) when stowed on an open deck on a vessel at sea:
(ii) for 30 days afloat in all sea conditions.
(d) In addition to complying with the requirements of regulation 17(9), inflated rescue boats shall be marked with a serial number, the maker's name or trade mark and the date of manufacture.
(e) The buoyancy of an inflated rescue boat shall be provided by either a single tube subdivided into at least five separate compartments of approximately equal volume or two separate tubes neither exceeding 60% of the total volume. The buoyancy tubes shall be so arranged that, in the event of any one of the compartments being damaged, the intact compartments shall be able to support the number of persons which the rescue boat is permitted to accommodate, each having a mass of 75 kg, when seated in their normal positions with positive freeboard over the rescue boat's entire periphery.
(f) The buoyancy tubes forming the boundary of the inflated rescue boat shall on inflation provide a volume of not less than 0.17 m^3 for each person the rescue boat is permitted to accommodate.
(g) Each buoyancy compartment shall be fitted with a nonreturn valve for manual inflation and means for deflation. A safety relief valve shall also be fitted unless the Administration is satisfied that such an appliance is unnecessary.
(h) Underneath the bottom and on vulnerable places on the outside of the inflated rescue boat, rubbing strips shall be provided to the satisfaction of the Administration.
(i) Where a transom is fitted, it shall not be inset by more than 20% of the overall length of the rescue boat.
(j) Suitable patches shall be provided for securing the painters fore and aft and the becketed lifelines inside and outside the boat.
(k) The inflated rescue boat shall be maintained at all times in a fully inflated condition.

Regulation 24 – Lifejackets

(1) General requirements for lifejackets

(a) A lifejacket shall not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 s.

(b) A lifejacket shall be so constructed that:

(i) after demonstration, a person can correctly don it within a period of 1 min without assistance;

(ii) it is capable of being worn inside-out or is clearly capable of being worn in only one way and, as far as possible, cannot be donned incorrectly;

(iii) it is comfortable to wear;

(iv) it allows the wearer to jump from a height of at least 4.5 m into the water without injury and without dislodging or damaging the lifejacket.

(c) A lifejacket shall have sufficient buoyancy and stability in calm fresh water to:

(i) lift the mouth of an exhausted or unconscious person not less than 120 mm clear of the water with the body inclined backwards at an angle of not less than 20 and not more than 50 from the vertical position;

(ii) turn the body of an unconscious person in the water from any position to one where the mouth is clear of the water in not more than 5 s.

(d) A lifejacket shall have buoyancy which is not reduced by more than 5% after 24 h submersion in fresh water.

(e) A lifejacket shall allow the person wearing it to swim a short distance and to board a survival craft.

(f) Each lifejacket shall be fitted with a whistle firmly secured by a cord.

(2) Inflatable lifejackets

A lifejacket which depends on inflation for buoyancy shall have not less than two separate compartments and comply with the requirements of paragraph (1) and shall:

(i) inflate automatically on immersion, be provided with a device to permit inflation by a single manual motion and be capable of being inflated by mouth;

(ii) in the event of loss of buoyancy in any one compartment be capable of complying with the requirements of paragraph (1)(b), (c) and (e);

(iii) comply with the requirements of paragraph (1)(d) after inflation by means of the automatic mechanism.

(3) Lifejacket lights

(a) Each lifejacket shall have a light which shall:

(i) have a luminous intensity of not less than 0.75 cd;

(ii) have a source of energy capable of providing a luminous intensity of 0.75 cd for a period of at least 8 h;

(iii) be visible over as great a segment of the upper hemisphere as is practicable when attached to a lifejacket.

(b) If the light referred to in paragraph (3)(a) is a flashing light it shall, in addition:

(i) be provided with a manually operated switch;

(ii) not be fitted with a lens or curved reflector to concentrate the beam;

(iii) flash at a rate of not less than 50 flashes per minute with an effective luminous intensity of at least 0.75 cd.

Regulation 25 – Immersion suits

(1) General requirements for immersion suits

(a) The immersion suit shall be constructed with waterproof materials such that:

(i) it can be unpacked and donned without assistance within 2 min taking into account any associated clothing, and a lifejacket if the immersion suit is to be worn in conjunction with a lifejacket;

(ii) it will not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 s;

(iii) it will cover the whole body with the exception of the face. Hands shall also be covered unless permanently attached gloves are provided;

(iv) it is provided with arrangements to minimize or reduce free air in the legs of the suit;

(v) following a jump from a height of not less than 4.5 m into the water there is no undue ingress of water into the suit.

(b) An immersion suit which also complies with the requirements of regulation 24 may be classified as a lifejacket.

(c) An immersion suit shall permit the person wearing it, and also wearing a lifejacket if the immersion suit is to be worn in conjunction with a lifejacket to:

(i) climb up and down a vertical ladder at least 5 m in length;

(ii) perform normal duties during abandonment;

(iii) jump from a height of not less than 4.5 m into the water without damaging or dislodging the immersion suit, or being injured;

(iv) swim a short distance through the water and board a survival craft.

(d) An immersion suit which has buoyancy and is designed to be worn without a lifejacket shall be fitted with a light complying with the requirements of regulation 24(3) and the whistle prescribed by regulation 24(1)(f).

(e) If the immersion suit is to be worn in conjunction with a lifejacket, the lifejacket shall be worn over the immersion suit. A person wearing such an immersion suit shall be able to don a lifejacket without assistance.

(2) Thermal performance requirements for immersion suits

(a) An immersion suit made of material which has no inherent insulation shall be:

(i) marked with instructions that it must be worn in conjunction with warm clothing;

(ii) so constructed that, when worn in conjunction with warm clothing and with a lifejacket if the immersion suit is to be worn with a lifejacket, the immersion suit continues to provide sufficient thermal protection following one jump by the wearer into the water from a height of 4.5 m to ensure that when it is worn for a period of 1 h in calm circulating water at a temperature of 5 C the wearer's body core temperature does not fall more than 2 C.

(b) An immersion suit made of material with inherent insulation when worn either on its own or with a lifejacket, if the immersion suit is to be worn in conjunction with a lifejacket, shall provide the wearer with sufficient thermal insulation following one jump into the water from a height of 4.5 m to ensure that the wearer's body core temperature does not fall more than 2 C after a period of 6 h immersion in calm circulating water at a temperature of between 0 C and 2 C.

(c) The immersion suit shall permit the person wearing it with hands covered to pick up a pencil and write after being immersed in water at 5 C for a period of 1 h.

(3) Buoyancy requirements

A person in fresh water wearing either an immersion suit complying with the requirements of regulation 24 or an immersion suit with a lifejacket shall be able to turn from a face-down to a face-up position in not more than 5 s.

Regulation 26 – Thermal protective aids

(1) A thermal protective aid shall be made of waterproof material having a thermal conductivity of not more than 0.25 W/m.K and shall be so constructed that, when used to enclose a person, it shall reduce both the convective and evaporative heat loss from the wearer's body.

(2) The thermal protective aid shall:

(i) cover the whole body of a person wearing a lifejacket with the exception of the face. Hands shall also be covered unless permanently attached gloves are provided;

(ii) be capable of being unpacked and easily donned without assistance in a survival craft or rescue boat;

(iii) permit the wearer to remove it in the water in not more than 2 min, if it impairs ability to swim.

(3) The thermal protective aid shall function properly throughout an air temperature range -30 C to +20 C.

Regulation 27 – Lifebuoys

(1) Lifebuoy specification

Every lifebuoy shall:

(i) have an outer diameter of not more than 800 mm and an inner diameter of not less than 400 mm;

(ii) be constructed of inherently buoyant material; it shall not depend upon rushes, cork shavings or granulated cork, any other loose granulated material or any air compartment which depends on inflation for buoyancy;

(iii) be capable of supporting not less than 14.5 kg of iron in fresh water for a period of 24 h;

(iv) have a mass of not less than 2.5 kg;

(v) not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 s;

(vi) be constructed to withstand a drop into the water from the height at which it is stowed above the waterline in the lightest seagoing condition or 30 m, whichever is the greater, without impairing either its operating capability or that of its attached components;

(vii) if it is intended to operate the quick-release arrangement provided for the self-activated smoke signals and self-igniting lights, have a mass sufficient to operate the quick-release arrangement or 4 kg, whichever is the greater;

(viii) be fitted with a grabline not less than 9.5 mm in diameter and not less than four times the outside diameter of the body of the buoy in length. The grabline shall be secured at four equidistant points around the circumference of the buoy to form four equal loops.

(2) Lifebuoy self-igniting lights

Self-igniting lights required by regulation 10(2) shall:

(i) be such that they cannot be extinguished by water;

(ii) be capable of either burning continuously with a luminous intensity of not less than 2 cd in all directions of the upper hemisphere or flashing (discharge flashing) at a rate of not less than 50 flashes per minute with at least the corresponding effective luminous intensity;

(iii) be provided with a source of energy capable of meeting the requirement of subparagraph (ii) for a period of at least 2 h;

(iv) be capable of withstanding the drop test required by paragraph (1)(vi).

(3) Lifebuoy self-activating smoke signals

Self-activating smoke signals required by regulation 10(3) shall:

(i) emit smoke of a highly visible colour at a uniform rate for a period of at least 15 min when floating in calm water;

(ii) not ignite explosively or emit any flame during the entire smoke emission time of the signal;

(iii) not be swamped in a seaway;

(iv) continue to emit smoke when fully submerged in water for a period of at least 10 s;

(v) be capable of withstanding the drop test required by paragraph (1)(vi).

(4) Buoyant lifelines

Buoyant lifelines required by regulation 10(4) shall;

(i) be non-kinking;

(ii) have a diameter of not less than 8 mm;

(iii) have a breaking strength of not less than 5 kN.

Regulation 28 – Line-throwing appliances

(1) Every line-throwing appliance shall:

(i) be capable of throwing a line with reasonable accuracy;

(ii) include not less than four projectiles each capable of carrying the line at least 230 m in calm weather;

(iii) include not less than four lines each having a breaking strength of not less than 2 kN;

(iv) have brief instructions or diagrams clearly illustrating the use of the line-throwing appliance.

(2) The rocket, in the case of a pistol-fired rocket, or the assembly, in the case of an integral rocket and line, shall be contained in a water-resistant casing. In addition, in the case of a pistol-fired rocket, the line and rockets together with the means of ignition shall be stowed in a container which provides protection from the weather.

Regulation 29 – Rocket parachute flares

(1) The rocket parachute flare shall:

(i) be contained in a water-resistant casing;

(ii) have brief instructions or diagrams clearly illustrating the use of the rocket parachute flare printed on its casing;

(iii) have integral means of ignition;

(iv) be so designed as not to cause discomfort to the person holding the casing when used in accordance with the manufacturer's operating instructions.

(2) The rocket shall, when fired vertically, reach an altitude of not less than 300 m. At or near the top of its trajectory, the rocket shall eject a parachute flare, which shall:

(i) burn with a bright red colour;

(ii) burn uniformly with an average luminous intensity of not less than 30,000 cd;

(iii) have a burning period of not less than 40 s;

(iv) have a rate of descent of not more than 5 m/s;

(v) not damage its parachute or attachments while burning.

Regulation 30 – Hand flares

(1) The hand flare shall:

(i) be contained in a water-resistant casing;

(ii) have brief instructions or diagrams clearly illustrating the use of the hand flare printed on its casing;
(iii) have a self-contained means of ignition;
(iv) be so designed as not to cause discomfort to the person holding the casing and not endanger the survival craft by burning or glowing residues when used in accordance with the manufacturer's operating instructions.
(2) The hand flare shall:
(i) burn with a bright red colour;
(ii) burn uniformly with an average luminous intensity of not less than 15,000 cd;
(iii) have a burning period of not less than 1 min;
(iv) continue to burn after having been immersed for a period of 10 s under 100 mm of water.

Regulation 31 – Buoyant smoke signals

(1) The buoyant smoke signal shall:
(i) be contained in a water-resistant casing;
(ii) not ignite explosively when used in accordance with the manufacturer's operating instructions;
(iii) have brief instructions or diagrams clearly illustrating the use of the buoyant smoke signal printed on its casing.
(2) The buoyant smoke signal shall:
(i) emit smoke of a highly visible colour at a uniform rate for a period of not less than 3 min when floating in calm water;
(ii) not emit any flame during the entire smoke emission time;
(iii) not be swamped in a seaway;
(iv) continue to emit smoke when submerged in water for a period of 10 s under 100 mm of water.

Regulation 32 – Launching and embarkation appliances

(1) General requirements
(a) Each launching appliance together with all its lowering and recovery gear shall be so arranged that the fully equipped survival craft or rescue boat it serves can be safely lowered against a trim of up to 10 and a list of up to 20 either way:
(i) when boarded by its full complement of persons;
(ii) without persons in the survival craft or rescue boat.
(b) A launching appliance shall not depend on any means other than gravity or stored mechanical power which is independent of the vessel's power supplies to launch the survival craft or rescue boat it serves in the fully loaded and equipped condition and also in the light condition.
(c) A launching mechanism shall be so arranged that it may be actuated by one person from a position on the vessel's deck, and from a position within the survival craft or rescue boat; the survival craft shall be visible to the person on deck operating the launching mechanism.
(d) Each launching appliance shall be so constructed that a minimum amount of routine maintenance is necessary. All parts requiring regular maintenance by the vessel's crew shall be readily accessible and easily maintained.
(e) The winch brakes of a launching appliance shall be of sufficient strength to withstand:
(i) a static test with a proof load of not less than 1.5 times the maximum working load; and
(ii) a dynamic test with a proof load of not less than 1.1 times the maximum working load at maximum lowering speed.

(f) The launching appliance and its attachments other than winch brakes shall be of sufficient strength to withstand a static proof load on test of not less than 2.2 times the maximum working load.

(g) Structural members and all blocks, falls, padeyes, links, fastenings and all other fittings used in connection with launching equipment shall be designed with not less than a minimum factor of safety on the basis of the maximum working load assigned and the ultimate strength of the material used for construction. A minimum factor of safety of 4.5 shall be applied to all davit and winch structural members, and a minimum factor of safety of 6 shall be applied to falls, suspension chains, links and blocks.

(h) Each launching appliance shall, as far as practicable, remain effective under conditions of icing.

(i) A lifeboat launching appliance shall be capable of recovering the lifeboat with its crew and equipment by means of a mechanically driven winch.

(j) The arrangements of the launching appliance shall be such as to enable safe boarding of the survival craft in accordance with the requirements of regulations 20(4)(b) and 17(3)(a).

(2) Launching appliances using falls and a winch

(a) Falls shall be of rotation-resistant and corrosion-resistant steel wire rope.

(b) In the case of a multiple drum winch, unless an efficient compensatory device is fitted, the falls shall be so arranged as to wind off the drums at the same rate when lowering, and to wind on to the drums evenly at the same rate when hoisting.

(c) Every rescue boat launching appliance shall be fitted with a powered winch motor of such capacity that the rescue boat can be raised from the water with its full complement of persons and equipment.

(d) An efficient hand gear shall be provided for recovery of each survival craft and rescue boat. Hand gear handles or wheels shall not be rotated by moving parts of the winch when the survival craft or rescue boat is being lowered or when it is being hoisted by power.

(e) Where davit arms are recovered by power, safety devices shall be fitted which will automatically cut off the power before the davit arms reach the stops in order to avoid overstressing the falls or davits, unless the motor is designed to prevent such overstressing.

(f) The speed at which the survival craft or rescue boat is lowered into the water shall be not less than that obtained from the formula:

$S = 0.4 + 0.02H$

where:

S = speed of lowering in metres per second, and

H = height in metres from davit head to the waterline in the lightest seagoing condition.

(g) The maximum lowering speed shall be established by the Administration having regard to the design of the survival craft or rescue boat, the protection of its occupants from excessive forces, and the strength of the launching arrangements taking into account inertia forces during an emergency stop. Means shall be incorporated in the appliance to ensure that this speed is not exceeded.

(h) Every rescue boat launching appliance shall be capable of hoisting the rescue boat when loaded with its full rescue boat complement of persons and equipment at a rate of not less than 0.3 m/s.

(i) Every launching appliance shall be fitted with brakes capable of stopping the descent of the survival craft or rescue boat and holding it securely when loaded with its full complement of persons and equipment; brake pads shall, where necessary, be protected from water and oil.

(j) Manual brakes shall be so arranged that the brake is always applied unless the operator, or a mechanism activated by the operator, holds the brake control in the "off" position.

(3) Float-free launching

Where a survival craft requires a launching appliance and is also designed to float free, the float-free release of the survival craft from its stowed position shall be automatic.

(4) Free-fall launching

Every free-fall launching appliance using an inclined plane shall, in addition to complying with the applicable requirements of paragraph (1), also comply with the following requirements:

(i) The launching appliance shall be so arranged that excessive forces are not experienced by the occupants of the survival craft during launching;

(ii) The launching appliance shall be a rigid structure with a ramp angle and length sufficient to ensure that the survival craft effectively clears the vessel;

(iii) The launching appliance shall be efficiently protected against corrosion and be so constructed as to prevent incendive friction or impact sparking during the launching of the survival craft.

(5) Evacuation-slide launching and embarkation

Every evacuation-slide launching appliance shall, in addition to complying with the applicable requirements of paragraph (1), also comply with the following requirements:

(i) The evacuation slide shall be capable of being deployed by one person at the embarkation station;

(ii) The evacuation slide shall be capable of being used in high winds and in a seaway.

(6) Liferaft launching appliances

Every liferaft launching appliance shall comply with the requirements of paragraphs (1) and (2), except with regard to use of gravity for turning out the appliance, embarkation in the stowed position and recovery of the loaded liferaft. The launching appliance shall be so arranged as to prevent premature release during lowering and shall release the liferaft when waterborne.

(7) Embarkation ladders

(a) Handholds shall be provided to ensure a safe passage from the deck to the head of the ladder and vice versa.

(b) The steps of the ladder shall be:

(i) made of hardwood, free from knots or other irregularities, smoothly machined and free from sharp edges and splinters, or of suitable material of equivalent properties;

(ii) provided with an efficient non-slip surface either by longitudinal grooving or by the application of an approved non-slip coating;

(iii) not less than 480 mm long, 115 mm wide and 25 mm in depth, excluding any non-slip surface or coating;

(iv) equally spaced not less than 300 mm or more than 380 mm apart and secured in such a manner that they will remain horizontal.

(c) The side ropes of the ladder shall consist of two uncovered manila ropes not less than 65 mm in circumference on each side. Each rope shall be continuous with no joints below the top step. Other materials may be used provided the dimensions, breaking strain, weathering, stretching and gripping properties are at least equivalent to those of manila rope. All rope ends shall be secured to prevent unravelling.

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Chapter VIII
Emergency procedures, musters and drills

Regulation 1 – Application

Regulations of this chapter shall apply to new and existing vessels of *15* m in length and over.

Regulation 2 – General emergency alarm system, muster list and emergency instructions

(1) The general emergency alarm system shall be capable of sounding the general alarm signal consisting of seven or more short blasts followed by one long blast on the vessel's whistle or siren and additionally on an electrically operated bell or klaxon or other equivalent warning system which shall be powered from the vessel's main supply and the emergency source of electrical power required by regulation IV/17.

(2) All vessels shall be provided with clear instructions for each crew member, which shall be followed in case of emergency.

(3) The muster list *and emergency instructions* shall be posted up in several parts of the vessel and, in particular, in the wheelhouse, the engine room and in the crew accommodation and shall include the information specified in the following paragraphs.

(4) The muster list shall specify details of the general alarm signal prescribed by paragraph (1) and also the action to be taken by the crew *and the passengers* when this alarm is sounded. The muster list shall also specify how the order to abandon ship will be given.

(5) The muster list shall show the duties assigned to the different members of the crew including:

(a) closing of watertight doors, fire doors, valves, scuppers, overboard shoots, sidescuttles, skylights, portholes and other similar openings in the vessel;

(b) equipping the survival craft and other life-saving appliances;

(c) preparation and launching of survival craft;

(d) general preparation of other life-saving appliances;

(e) use of communication equipment; and

(f) manning of fire parties assigned to deal with fires.

(6) In vessels of less than 45 m in length the Administration may permit relaxation of the requirements of paragraph (5) if satisfied that, due to the small number of crew members, no muster list is necessary.

(7) The muster list shall specify which officers are assigned to ensure that the life-saving and fire appliances are maintained in good condition and are ready for immediate use.

(8) The muster list shall specify substitutes for key persons who may become disabled, taking into account that different emergencies may call for different actions.

(9) The muster list shall be prepared before the vessel proceeds to sea. After the muster list has been prepared, if any change takes place in the crew which necessitates an alteration in the muster list, the skipper shall either revise the list or prepare a new list.

Regulation 3 – Abandon ship training and drills

(1) Practice musters and drills

(a) Each member of the crew shall participate in at least one abandon ship drill and one fire drill every month. However, on vessels less than 45 m in length, the Administration may modify this requirement, provided that at least one abandon ship and one fire drill is held at least every three months. The drills of the crew shall take place within 24 h of the vessel leaving a port if more than 25% of the crew have not participated in abandon ship and fire drills on board that particular vessel in the previous muster. *When a vessel proceeds to sea for the first time after a major conversion or when a new crew has been engaged in advance, such drills shall be held before the vessel leaves port.* The Administration may accept other arrangements that are at least equivalent for those classes of vessel for which this is impracticable.

(b) Each abandon ship drill shall include:

(i) summoning of crew to muster stations with the general emergency alarm and ensuring that they are made aware of the order to abandon ship specified in the muster list;

(ii) reporting to stations and preparing for the duties described in the muster list;

(iii) checking that crew are suitably dressed;

(iv) checking that lifejackets are correctly donned;

(v) lowering of at least one lifeboat after any necessary preparation for launching;

(vi) starting and operating the lifeboat engine;

(vii) operation of davits used for launching liferafts.

(c) Each fire drill shall include:

(i) reporting to stations and preparing for the duties described in the fire muster list;

(ii) starting of a fire pump, using at least the two required jets of water to show that the system is in proper working order;

(iii) checking of fireman's outfit and other personal rescue equipment;

(iv) checking of relevant communication equipment;

(v) checking the operation of watertight doors, fire doors, fire dampers and means of escape;

(vi) checking the necessary arrangements for subsequent abandoning of the vessel.

(d) Different lifeboats shall, as far as practicable, be lowered in compliance with the requirements of subparagraph (b)(v) at successive drills.

(e) Drills shall, as far as practicable, be conducted as if there were an actual emergency.

(f) Each lifeboat shall be launched with its assigned operating crew aboard and manoeuvred in the water at least once every three months during an abandon ship drill.

(g) As far as is reasonable and practicable, rescue boats other than lifeboats which are also rescue boats shall be launched each month with their assigned crew aboard and manoeuvred in the water. In all cases this requirement shall be complied with at least once every three months.

(h) If lifeboat and rescue boat launching drills are carried out with the vessel making headway, such drills shall, because of the dangers involved, be practised in sheltered waters only and under the supervision of an officer experienced in such drills.

(i) Emergency lighting for mustering and abandonment shall be tested at each abandon ship drill.

(j) The drills may be adjusted according to the relevant equipment required by those regulations. However, if equipment is carried on a voluntary basis, it shall be used in the drills and the drills shall be adjusted accordingly.

(2) On-board training and instructions

(a) On-board training in the use of the vessel's life-saving appliances, including survival craft equipment, *and in the use of the vessel's fire-extinguishing equipment*, shall be given as soon as possible but not later than two weeks after a crew member joins the vessel. However, if the crew member is on a regularly scheduled rotating assignment to the vessel, such training shall be given not later than two weeks after the time of first joining the vessel.

(b) Instruction in the use of the vessel's life-saving appliances and in survival at sea shall be given at the same intervals as the drills. Individual instruction may cover different parts of the vessel's life-saving system, but all the vessel's life-saving equipment and appliances shall be covered within any period of two months. Each member of the crew shall be given instructions which shall include but not necessarily be limited to:

(i) operation and use of the vessel's inflatable liferafts, including precautions concerning nailed shoes and other sharp objects;

(ii) problems of hypothermia, first-aid treatment for hypothermia and other appropriate first-aid procedures;

(iii) special instructions necessary for use of the vessel's life-saving appliances in severe weather and severe sea conditions.

(c) On-board training in the use of davit-launched liferafts shall take place at intervals of not more than four months on every vessel fitted with such appliances. Whenever practicable this shall include the inflation and lowering of a liferaft. This liferaft may be a special liferaft intended for training purposes only, which is not part of the vessel's life-saving equipment; such a special liferaft shall be conspicuously marked.

(3) Records

The date when musters are held, details of abandon ship drills and fire drills, drills of other life-saving appliances and on-board training shall be recorded in the *" Survey Book" or in the "Manual on the maintenance of life-saving appliances"*. If a full muster, drill or training session is not held at the appointed time, an entry shall be made in the "*Survey Book"* stating the circumstances and the extent of the muster, drill or training session held.

(4) Training manual

(a) A training manual shall be provided in each crew messroom and recreation room or in each crew cabin. The training manual, which may comprise several volumes, shall contain instructions and information, in easily understood terms illustrated wherever possible, on the life-saving appliances provided in the vessel and on the best methods of survival. Any part of such information may be provided in the form of audio-visual aids in lieu of the manual. The following shall be explained in detail:

(i) donning of lifejackets and immersion suits, as appropriate;

(ii) muster at the assigned stations;

(iii) boarding, launching and clearing the survival craft and rescue boats;

(iv) method of launching from within the survival craft;

(v) release from launching appliances;

(vi) methods and use of devices for protection in launching areas, where appropriate;

(vii) illumination in launching areas;
(viii) use of all survival equipment;
(ix) use of all detection equipment;
(x) with the assistance of illustrations, the use of radio life-saving appliances;
(xi) use of drogues;
(xii) use of engine and accessories;
(xiii) recovery of survival craft and rescue boats including stowage and securing;
(xiv) hazards of exposure and the need for warm clothing;
(xv) best use of the survival craft facilities in order to survive;
(xvi) methods of retrieval, including the use of helicopter rescue gear (slings, baskets, stretchers), breeches-buoy and shore life-saving apparatus and vessel's line-throwing apparatus;
(xvii) all other functions contained in the muster list and emergency instructions;
(xviii) instructions for emergency repair of the life-saving appliances.
(b) On vessels of less than 45 m in length the Administration may permit relaxation of the requirements of subparagraph (a). However, appropriate safety information shall be carried on board.

Regulation 4 – Training in emergency procedures

The Administration shall take such measures as it may deem necessary to ensure that crews are adequately trained in their duties in the event of emergencies. Such training shall include, as appropriate:

(a) types of emergencies which may occur, such as collisions, fire and foundering;
(b) types of life-saving appliances normally carried on vessels;
(c) need to adhere to the principles of survival;
(d) value of training and drills;
(e) need to be ready for any emergency and to be constantly aware of:
(i) the information in the muster list, in particular:
- each crew member's specific duties in any emergency;
- each crew member's own survival station; and
- the signals calling the crew to their survival craft or fire stations;
(ii) location of each crew member's own lifejacket and spare lifejackets;
(iii) location of fire alarm controls;
(iv) means of escape;
(v) consequences of panic;
(f) actions to be taken in respect to lifting persons from vessels and survival craft by helicopter;
(g) actions to be taken when called to survival craft stations, including:
(i) putting on suitable clothing;
(ii) donning of lifejacket; and
(iii) collecting additional protection such as blankets, time permitting;
(h) actions to be taken when required to abandon ship, such as:
(i) how to board survival craft from vessel and water; and
(ii) how to jump into the sea from a height and reduce the risk of injury when entering the water;
(i) actions to be taken when in the water, such as:
(i) how to survive in circumstances of:
- fire or oil on the water;
- cold conditions; and

- shark-infested waters;

(ii) how to right a capsized survival craft;

(j) actions to be taken when aboard a survival craft, such as:

(i) getting the survival craft quickly clear of the vessel;

(ii) protection against cold or extreme heat;

(iii) using a drogue or sea-anchor;

(iv) keeping a look-out;

(v) recovering and caring for survivors;

(vi) facilitating detection by others;

(vii) checking equipment available for use in the survival craft and using it correctly; and

(viii) remaining, so far as possible, in the vicinity;

(k) main dangers to survivors and the general principles of survival, including:

(i) precautions to be taken in cold climates;

(ii) precautions to be taken in tropical climates;

(iii) exposure to sun, wind, rain and sea;

(iv) importance of wearing suitable clothing;

(v) protective measures in survival craft;

(vi) effects of immersion in the water and of hypothermia;

(vii) importance of preserving body fluids;

(viii) protection against seasickness;

(ix) proper use of fresh water and food;

(x) effects of drinking seawater;

(xi) means available for facilitating detection by others; and

(xii) importance of maintaining morale;

(l) actions to be taken in respect to fire fighting:

(i) the use of fire hoses with different nozzles;

(ii) the use of fire extinguishers;

(iii) knowledge of the location of fire doors; and

(iv) the use of breathing apparatus.

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Chapter IX
Radiocommunications

Part A – Application and definitions

Regulation 1 – Application

(1) Unless provided otherwise, this chapter shall apply to new fishing vessels of 24 m in length and over and to existing vessels of 45 m in length and over.

(2) From 1 February 2002 this chapter shall apply to all new and existing fishing vessels covered by these regulations. Fishing vessels whose service area is limited to sea area A1 may, however, postpone compliance with the requirements until 1 February 2005. Any exemptions are given at the end of each regulation. An overview of the requirements for equipment in these vessels is provided in an annex.

(3) The following exception shall apply to Greenland:
Fishing vessels with a trade permit within VHF range of the Greenland coastal radio stations do not need to meet the requirements in VII/13-14 and regulation IX/6-8, provided that the vessel has been equipped with the following on 1 February 2005 at the latest:

a) VHF radio system.
b) Float-free 406 MHz EPIRB.
c) Radar transponder.

The requirement for a VHF radio system in (a) may be met by having a traditional VHF radio system (without DSC) or by having a combined VHF-DSC radio system.

(4) No provision in this chapter shall prevent the use by any vessel, survival craft or person in distress of any means at their disposal to attract attention, make known their position and obtain help.

Regulation 2 – Terms and definitions

(1) For the purpose of this chapter, the following terms shall have the meanings defined below:

(a) "Bridge-to-bridge communications" means safety communications between vessels from the position from which the vessels are normally navigated.

(b) "Continuous watch" means that the radio watch concerned shall not be interrupted other than for brief intervals when the vessel's receiving capability is impaired or blocked by its own communications or when the facilities are under periodical maintenance or checks.

(c) "Digital selective calling (DSC)" means a technique using digital codes which enables a radio station to establish contact with, and transfer information to, another station or group of stations, and complying with the relevant recommendations of the International Telecommunication Union (ITU-R).

(d) "EPIRB" (Emergency Position Indicating Radio Beacon) is a satellite emergency position indicator radio transmitter.

(e) "MMSI" (Maritime Mobile Service Identity) is a 9-digit number that identifies the ship on, among other things, DSC equipment and EPIRBs.

(f) "Float-free EPIRB" means an EPIRB placed in a holder arranged so that the EPIRB automatically floats free of the ship and is activated if the ship sinks.

(g) "Direct-printing telegraphy" means automated telegraphy techniques which comply with the relevant recommendations of the International Telecommunication Union (ITU-R).

(h) "General radiocommunications" means operational and public correspondence traffic, other than distress, urgency and safety messages, conducted by radio.

(i) "INMARSAT" means the Organization established by the Convention on the International Maritime Satellite Organization (INMARSAT) adopted on 3 September 1976.

(j) "International NAVTEX service" means the co-ordinated broadcast and automatic reception on 518 kHz of maritime safety information by means of narrow-band direct-printing telegraphy using the English language.[1]

(k) "Locating" means the finding of ships, vessels, aircraft, units or persons in distress.

(l) "Maritime safety information" (MSI) means navigational and meteorological warnings, meteorological forecasts and other urgent safety related messages broadcast to vessels.

(m) "Polar orbiting satellite service" means a service which is based on polar orbiting satellites which receive and relay distress alerts from satellite emergency position indicating radio beacons (satellite EPIRBs) and which provides their position.

(n) "Radio Regulations" means the Radio Regulations annexed to, or regarded as being annexed to, the most recent International Telecommunication Convention *(ITU)* which is in force at any time.

(o) "Sea area Al" means an area within the radiotelephone coverage of at least one VHF coast station in which continuous DSC alerting is available, as may be defined by a Party.[2]

(p) "Sea area A2" means an area, excluding sea area Al, within the radiotelephone coverage of at least one MF coast station in which continuous DSC alerting is available, as may be defined by a Party.[2]

(q) "Sea area A3" means an area, excluding sea areas Al and A2, within the coverage of an INMARSAT geostationary satellite in which continuous alerting is available.

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1 See the NAVTEX Manual approved by the Organization (publication IMO-951E).

2 See resolution A.704(17), "Provision of Radio Services for the Global Maritime Distress and Safety Systems (GMDSS).

(r) "Sea area A4" means an area outside sea areas Al, A2 and A3.

(2) All other terms and abbreviations which are used in this chapter and which are defined in the Radio Regulations shall have the meanings as defined in those Regulations.

Regulation 3 – Exemptions

(1) The Parties to the Protocol consider it highly desirable not to deviate from the requirements of this chapter; nevertheless the Administration may grant partial or conditional exemptions to individual vessels from the requirements of regulations 6 to 10 and 14(7) provided:

(a) such vessels comply with the functional requirements of regulation 4; and

(b) the Administration has taken into account the effect such exemptions may have upon the general efficiency of the service for the safety of all ships and vessels.

(2) An exemption may be granted under paragraph (1) only:

(a) if the conditions affecting safety are such as to render the full application of regulations 6 to 10 and 14(7) unreasonable or unnecessary; or

(b) in exceptional circumstances, for a single voyage outside the sea area or sea areas for which the vessel is equipped.

(3) Each Administration shall submit to the Organization, as soon as possible after the first of January in each year, a report showing all exemptions granted under paragraphs (1) and (2) during the previous calendar year and giving the reasons for granting such exemptions.

Regulation 4 – Functional requirements

Every vessel, while at sea, shall be capable:

(a) except as provided in regulations 7(1)(a) *(VHF DSC)* and 9(1)(d)(iii) *(INMARSAT)*, of transmitting ship-to-shore distress alerts by at least two separate and independent means, each using a different radiocommunication service;

(b) of receiving shore-to-ship distress alerts;

(c) of transmitting and receiving ship-to-ship distress alerts;

(d) of transmitting and receiving search and rescue co-ordinating communications;

(e) of transmitting and receiving on-scene communications;

(f) of transmitting and, as required by regulation X/3(6), receiving signals for locating;[3]

(g) of transmitting and receiving[4] maritime safety information *(MSI)*;

(h) of transmitting and receiving general radiocommunications to and from shore-based radio systems or networks subject to regulation 14(8); and

(i) of transmitting and receiving bridge-to-bridge communications.

Part B – Ship Requirements

Regulation 5 – Radio installations

(1) Every vessel shall be provided with radio installations capable of complying with the functional requirements prescribed by regulation 4 throughout its intended voyage and, unless exempted under regulation 3, complying with the requirements of regulation 6 and, as appropriate for the sea area or

[3] See resolution A.614(15), "Carriage of Radar Operating in the Frequency Band 9,300-9,500 MHz".

[4] It should be noted that vessels may have a need for reception of certain maritime safety information while in port.

areas through which it will pass during its intended voyage, the requirements of either regulation 7, 8, 9 or 10.

(2) Every radio installation shall:

(a) be so located that no harmful interference of mechanical, electrical or other origin affects its proper use, and so as to ensure electromagnetic compatibility and avoidance of harmful interaction with other equipment and systems;

(b) be so located as to ensure the greatest possible degree of safety and operational availability;

(c) be protected against harmful effects of water, extremes of temperature and other adverse environmental conditions;

(d) be provided with reliable, permanently arranged electrical lighting, independent of the main and emergency sources of electrical power, for the adequate illumination of the radio controls for operating the radio installation; and

(e) be clearly marked with the *name,* call sign, *MMSI number and any INMARSAT numbers;*

(f) be provided with a notice at the radio installation providing persons unskilled in the operations of the radio installation with instructions about the starting of the radio installation and transmission of a distress alert in case of an emergency.

(3) Control of the VHF radiotelephone channels, required for navigational safety, shall be immediately available on the navigating bridge convenient to the conning position and, where necessary, facilities should be available to permit radiocommunications from the wings of the navigating bridge. Portable VHF equipment may be used to meet the latter provision.

(4) All relevant radio equipment (DSC and INMARSAT) shall continuously and automatically be provided with information about the vessel's position The purpose is to include such position information in the distress alert when the button or buttons on the emergency panel are activated.

Regulation 6 – Radio equipment – general

(1) Except as provided in regulations 8(4) and 9(4) every vessel shall be provided with:

(a) a VHF radio installation capable of transmitting and receiving:

(i) DSC on the frequency 156.525 MHz (channel 70). It shall be possible to initiate the transmission of distress alerts on channel 70 from the position from which the vessel is normally navigated; and

(ii) radiotelephony on the frequencies 156.300 MHz (channel 6), 156.650 MHz (channel 13) and 156.800 MHz (channel 16);

(b) a radio installation capable of maintaining a continuous DSC watch on VHF channel 70 which may be separate from, or combined with, that required by subparagraph (a)(i);

(c) a radar transponder *(SART)* capable of operating in the 9 GHz band, which:

(i) shall be so stowed that it can be easily utilized; and

(ii) may be one of those required by regulation VII/14 for a survival craft;

Existing vessels of less than 24 m in length with their service area in sea area A1 shall be exempted from the requirement for radar transponders.

(d) a receiver capable of receiving international NAVTEX service broadcasts if the vessel is engaged on voyages in any area in which an international NAVTEX service is provided;

New vessels of less than 24 m in length and existing vessels of less than 45 m in length with their service area in sea areas A1 and A2 within the lines east of 6 eastern longitude in the North Sea and south of 58 northern latitude in the Baltic shall be exempted from the requirement for NAVTEX receivers for the time being.

(e) a radio facility for reception of maritime safety information by the INMARSAT enhanced group calling system *(EGC)* if the vessel is engaged on voyages in any area of INMARSAT coverage but in which an international NAVTEX service is not provided. However, vessels engaged exclusively on voyages in areas where an HF direct-printing telegraphy maritime safety information service is provided and fitted with equipment capable of receiving such service, may be exempted from this requirement;

(f) a satellite EPIRB which shall be:

(i) capable of transmitting a distress alert either through the polar orbiting satellite service operating in the 406 MHz band or, if the vessel is engaged only on voyages within INMARSAT coverage, through the INMARSAT geostationary satellite service operating in the 1.6 GHz band;

(ii) installed in an easily accessible position;

(iii) ready to be manually released and capable of being carried by one person into a survival craft;

(iv) capable of floating free if the vessel sinks and of being automatically activated when afloat; and

(v) capable of being activated manually.

Regulation 7 – Radio equipment – sea area Al

(1) In addition to meeting the requirements of regulation 6, every *new* vessel *of 24 m in length and more and existing vessels of 45 m in length and more* engaged on voyages exclusively in sea area A1 shall be provided with a radio installation capable of initiating the transmission of ship-to-shore distress alerts from the position from which the vessel is normally navigated (*secondary distress alert method),* operating either:

(a) on VHF using DSC; or

(b) through the polar orbiting satellite service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB, required by regulation 6(1)(f), either by installing the satellite EPIRB close to, or by remote activation from, the position from which the vessel is normally navigated; or

(c) if the vessel is engaged on voyages within coverage of MF coast stations equipped with DSC, on MF using DSC; or

(d) on HF using DSC; or

(e) through the INMARSAT geostationary satellite service; this requirement may be fulfilled by:

(i) an INMARSAT ship earth station; or

(ii) the satellite EPIRB, required by regulation 6(1)(f), either by installing the satellite EPIRB close to, or by remote activation from, the position from which the vessel is normally navigated.

(2) The VHF radio installation, required by regulation 6(1)(a), shall also be capable of transmitting and receiving general radiocommunications using radiotelephony.

(3) Notwithstanding the provisions in regulation 4(a), the Administration may exempt new fishing vessels of 24 m in length and over, but less than 45 metres and engaged exclusively on voyages within sea area A1 from the requirement of regulation 6(1)(f) provided that they are equipped with a VHF radio installation as prescribed by regulation 6(1)(a) and in addition a VHF radio installation with DSC for the transmission of ship-to-shore distress alerts as prescribed by regulation 7(1)(a).

Regulation 8 – Radio equipment – sea areas Al and A2

(1) In addition to meeting the requirements of regulation 6, every vessel engaged on voyages beyond sea area Al, but remaining within sea area A2, shall be provided with:

(a) an MF radio installation capable of transmitting and receiving, for distress and safety purposes, on the frequencies:

(i) 2,187.5 kHz using DSC; and

(ii) 2,182 kHz using radiotelephony;

(b) a radio installation capable of maintaining a continuous DSC watch on the frequency 2,187.5 kHz which may be separate from, or combined with, that required by subparagraph (a)(i); and

(c) means of initiating the transmission of ship-to-shore distress alerts by a radio service other than MF (*secondary distress alert methods)* operating either:

(i) through the polar orbiting satellite service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB, required by regulation 6(1)(f), either by installing the satellite EPIRB close to, or by remote activation from, the position from which the vessel is normally navigated; or

(ii) on HF using DSC; or

(iii) through the INMARSAT geostationary satellite service; this requirement may be fulfilled by an INMARSAT ship earth station, or by the satellite EPIRB, required by regulation 6(1)(f), either by installing the satellite EPIRB close to, or by remote activation from, the position from which the vessel is normally navigated.

New vessels of less than 24 m in length and existing vessels of less than 45 m in length shall be exempted from the requirement in regulation 8(1)(c) for secondary distress alert methods.

(2) It shall be possible to initiate transmission of distress alerts by the radio installations specified in paragraphs (l)(a) and (l)(c) from the position from which the vessel is normally navigated.

(3) The vessel shall, in addition, be capable of transmitting and receiving general radiocommunications using radiotelephony or direct-printing telegraphy by either:

(a) a radio installation operating on working frequencies in the bands between 1,605 kHz and 4,000 kHz or between 4,000 kHz and 27,500 kHz. This requirement may be fulfilled by the addition of this capability in the equipment required by paragraph (1)(a); or

(b) an INMARSAT ship earth station.

(4) The Administration may exempt vessels constructed before 1 February 1997 which are engaged exclusively on voyages within sea area A2 from the requirements of regulations 6(1)(a)(i) and 6(1)(b) provided such vessels maintain, when practicable, a continuous listening watch on VHF channel 16. This watch shall be kept at the position from which the vessel is normally navigated.

Regulation 9 – Radio equipment – Sea areas Al, A2 and A3

Alternative 1

(1) In addition to meeting the requirements of regulation 6, every vessel engaged on voyages beyond sea areas Al and A2, but remaining within sea area A3, shall, if it does not comply with the requirements of paragraph (2), be provided with:

(a) an INMARSAT ship earth station capable of:

(i) transmitting and receiving distress and safety communications using direct-printing telegraphy;

(ii) initiating and receiving distress priority calls;

(iii) maintaining watch for shore-to-ship distress alerts, including those directed to specifically defined geographical areas;

(iv) transmitting and receiving general radiocommunications, using either radiotelephony or direct-printing telegraphy; and

(b) an MF radio installation capable of transmitting and receiving, for distress and safety purposes, on the frequencies:

(i) 2,187.5 kHz using DSC; and

(ii) 2,182 kHz using radiotelephony; and

(c) a radio installation capable of maintaining a continuous DSC watch on the frequency 2,187.5 kHz which may be separate from or combined with that required by subparagraph (b)(i); and

(d) means of initiating the transmission of ship-to-shore distress alerts by a radio service (*secondary distress alert method)* operating either:

(i) through the polar orbiting satellite service on 406 MHz, this requirement may be fulfilled by the satellite EPIRB, required by regulation 6(1)(f), either by installing the satellite EPIRB close to, or by remote activation from, the position from which the vessel is normally navigated; or

(ii) on HF using DSC; or

(iii) through the INMARSAT geostationary satellite service, by an additional ship earth station or by the satellite EPIRB required by regulation 6(1)(f), either by installing the satellite EPIRB close to, or by remote activation from, the position from which the vessel is normally navigated.

New vessels of less than 24 m in length and existing vessels of less than 45 m in length shall be exempted from the requirement in regulation 9(1)(d) for secondary distress alert methods.

Alternative 2

(2) In addition to meeting the requirements of regulation 6, every vessel engaged on voyages beyond sea areas Al and A2, but remaining within sea area A3, shall, if it does not comply with the requirements of paragraph (1), be provided with:

(a) an MF/HF radio installation capable of transmitting and receiving, for distress and safety purposes, on all distress and safety frequencies in the bands between 1,605 kHz and 4,000 kHz and between 4,000 kHz and 27,500 kHz:

(i) using DSC;

(ii) using radiotelephony; and

(iii) using direct-printing telegraphy; and

(b) equipment capable of maintaining DSC watch on 2,187.5 kHz, 8,414.5 kHz and on at least one of the distress and safety DSC frequencies 4,207.5 kHz, 6,312 kHz, 12,577 kHz or 16,804.5 kHz; at any time, it shall be possible to select any of these DSC distress and safety frequencies. This equipment may be separate from, or combined with, the equipment required by subparagraph (a); and

(c) means of initiating the transmission of ship-to-shore distress alerts by a radiocommunication service other than HF (*secondary distress alert method)* operating either:

(i) through the polar orbiting satellite service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB, required by regulation 6(1)(f), either by installing the satellite EPIRB close to, or by remote activation from, the position from which the vessel is normally navigated; or

(ii) through the INMARSAT geostationary satellite service; this requirement may be fulfilled by an INMARSAT ship earth station or the satellite EPIRB, required by regulation 6(1)(f), either by installing the satellite EPIRB close to, or by remote activation from, the position from which the vessel is normally navigated; and

(d) in addition, vessels shall be capable of transmitting and receiving general radiocommunications using radiotelephony or direct-printing telegraphy by an MF/HF radio installation operating on working frequencies in the bands between 1,605 kHz and 4,000 kHz and between 4,000 kHz and 27,500 kHz.

This requirement may be fulfilled by the addition of this capability in the equipment required by subparagraph (a).

New vessels of less than 24 m in length and existing vessels of less than 45 m in length shall be exempted from the requirement in regulation 9(2)(a)(iii) for direct-printing telegraphy and from the requirement in regulation 9(2)(c) for secondary distress alert method.

(3) It shall be possible to initiate transmission of distress alerts by the radio installations specified in paragraphs (l)(a), (l)(b), (l)(d), (2)(a) and (2)(c) from the position from which the vessel is normally navigated.

(4) The Administration may exempt vessels constructed before 1 February 1997 and engaged exclusively on voyages within sea areas A2 and A3 from the requirements of regulations 6(1)(a)(i) and 6(1)(b) provided such vessels maintain, when practicable, a continuous listening watch on VHF channel 16. This watch shall be kept at the position from which the vessel is normally navigated.

Regulation 10 – Radio equipment – sea areas Al, A2, A3 and A4

(1) In addition to meeting the requirements of regulation 6, vessels engaged on voyages in all sea areas shall be provided with the radio installations and equipment required by regulation 9(2) *(MF/HF),* except that the equipment required by regulation 9(2)(c)(ii) *(INMARSAT),* shall not be accepted as an alternative to that required by regulation 9(2)(c)(i) *(406 MHz)* which shall always be provided. In addition, vessels engaged on voyages in all sea areas shall comply with the requirements of regulation 9(3).

New vessels of less than 24 m in length and existing vessels of less than 45 m in length shall be exempted from the requirement in regulation 9(2)(c) for secondary distress alert method.

(2) The Administration may exempt vessels constructed before 1 February 1997 and engaged exclusively on voyages within sea areas A2, A3 and A4 from the requirements of regulations 6(1)(a)(i) and 6(1)(b) provided such vessels maintain, when practicable, a continuous listening watch on VHF channel 16. This watch shall be kept at the position from which the vessel is normally navigated.

Regulation 11 – Watches

(1) Every vessel, while at sea, shall maintain a continuous watch:

(a) on VHF DSC channel 70, if the vessel, in accordance with the requirements of regulation 6(1)(b), is fitted with a VHF radio installation:

(b) on the distress and safety DSC frequency 2,187.5 kHz, if the vessel, in accordance with the requirements of regulation 8(1)(b) or 9(1)(c), is fitted with an MF radio installation;

(c) on the distress and safety DSC frequencies 2,187.5 kHz and 8,414.5 kHz and also on at least one of the distress and safety DSC frequencies 4,207.5 kHz, 6,312 kHz, 12,577 kHz or 16,804.5 kHz, appropriate to the time of day and the geographical position of the vessel, if the vessel, in accordance with the requirements of regulation 9(2)(b) or 10(1), is fitted with an MF/HF radio installation. This watch may be kept by means of a scanning receiver;

(d) for satellite shore-to-ship distress alerts, if the vessel, in accordance with the requirements of regulation 9(1)(a), is fitted with an INMARSAT ship earth station.

(2) Every vessel, while at sea, shall maintain a radio watch for broadcasts of maritime safety information *(MSI)* on the appropriate frequency or frequencies on which such information is broadcast for the area in which the vessel is navigating.

(3) Every vessel, while at sea, shall maintain, when practicable, a continuous listening watch on VHF channel 16. This watch shall be kept at the position from which the vessel is normally navigated.

Regulation 12 – Sources of energy

(1) There shall be available at all times, while the vessel is at sea, a supply of electrical energy sufficient to operate the radio installations and to charge any batteries used as part of a reserve source or sources of energy for the radio installations.

(2) A reserve source or sources of energy shall be provided on every vessel, to supply radio installations, for the purpose of conducting distress and safety radiocommunications, in the event of failure of the vessel's main and emergency sources of electrical power. The reserve source or sources of energy shall be capable of simultaneously operating the VHF radio installation required by regulation 6(1)(a) and, as appropriate for the sea area or sea areas for which the vessel is equipped, either the MF radio installation required by regulation 8(1)(a), the MF/HF radio installation required by regulation 9(2)(a) or 10(1), or the INMARSAT ship earth station required by regulation 9(1)(a) and any of the additional loads mentioned in paragraphs (4), (5) and (8) for a period of at least:

(a) on new vessels:

(i) 3 h, or

(ii) 1 h, if the emergency source of electrical power complies fully with all relevant requirements of regulation IV/17 including the requirements to supply the radio installations and is capable of serving for a period of at least 6 h;

(b) on existing vessels:

(i) 6 h, if the emergency source of electrical power is not provided or does not comply fully with all relevant requirements of regulation IV/17 including the requirements to supply the radio installations;[5] or

(ii) 3 h, if the emergency source of electrical power complies fully with all relevant requirements of regulation IV/17 including the requirements to supply the radio installations; or

(iii) 1 h, if the emergency source of electrical power complies fully with all relevant requirements of regulation IV/17 including the requirements to supply the radio installations and is capable of serving for a period of at least 6 h.

The reserve source or sources of energy need not supply independent HF and MF radio installations at the same time.

(3) The reserve source or sources of energy shall be independent of the propelling power of the vessel and the vessel's electrical system.

(4) Where, in addition to the VHF radio installation, two or more of the other radio installations, referred to in paragraph (2), can be connected to the reserve source or sources of energy, they shall be capable of simultaneously supplying, for the period specified, as appropriate, in paragraph (2)(a) or (2)(b), the VHF radio installation and:

(a) all other radio installations which can be connected to the reserve source or sources of energy at the same time; or

[5] For guidance, the following formula is recommended for determining the electrical load to be supplied by the reserve source of energy for each radio installation required for distress conditions: 1/2 of the current consumption necessary for transmission + the current consumption necessary for reception + current consumption of any additional loads.

(b) whichever of the other radio installations will consume the most power, if only one of the other radio installations can be connected to the reserve source or sources of energy at the same time as the VHF radio installation.

(5) The reserve source or sources of energy may be used to supply the electrical lighting required by regulation 5(2)(d).

(6) Where a reserve source of energy consists of a rechargeable accumulator battery or batteries:

(a) a means of automatically charging such batteries shall be provided which shall be capable of recharging them to minimum capacity requirements within 10 h; and

(b) the capacity of the battery or batteries shall be checked, using an appropriate method, at intervals not exceeding 12 months, when the vessel is not at sea.

(7) The siting and installation of accumulator batteries which provide a reserve source of energy shall be such as to ensure:

(a) the highest degree of service;

(b) a reasonable lifetime;

(c) reasonable safety;

(d) that battery temperatures remain within the manufacturer's specifications whether under charge or idle; and

(e) that, when fully charged, the batteries will provide at least the minimum required hours of operation under all weather conditions.

(8) If an uninterrupted input of information from the vessel's navigational or other equipment to a radio installation required by this chapter is needed to ensure its proper performance, means shall be provided to ensure the continuous supply of such information in the event of failure of the vessel's main or emergency source of electrical power.

Regulation 13 – Performance standards

(1) All equipment to which this chapter applies shall be of a type approved by the Administration. Subject to paragraph (2), such equipment shall conform to appropriate performance standards not inferior to those adopted by the Organization.

(2) Equipment installed prior to the dates of application prescribed by regulation 1 may be exempted from full compliance with the appropriate performance standards at the discretion of the Administration, provided that the equipment is compatible with equipment complying with the performance standards, having due regard to the criteria which the Organization may adopt in connection with such standards.

(3) DSC equipment shall be of class A or B. However, DSC equipment in new vessels of less than 24 m in length and in existing vessels of less than 45 m in length with their service area in sea areas A1 and A2 shall be of class A, B or D as regards VHF-DSC equipment and of class A, B or E as regards MF-DSC equipment.

(4) The radio equipment in this chapter and in chapter VII, regulations 13 and 14, shall comply with either the requirements of Council Directive 96/98/EC of 20 December 1998 on marine equipment or the requirements laid down in pursuance of article 3.3e of Council Directive 99/5/EC of 9 March 1999 on radio equipment and telecommunications terminal equipment (R&TTE).

Regulation 14 – Maintenance requirements

(1) Equipment shall be so designed that the main units can be replaced readily, without elaborate recalibration or readjustment.

(2) Where applicable, equipment shall be so constructed and installed that it is readily accessible for inspection and on-board maintenance purposes.

(3) Adequate information shall be provided to enable the equipment to be properly operated and maintained taking into account the recommendations of the Organization.

(4) Adequate tools and spares shall be provided to enable the equipment to be maintained.

(5) The Administration shall ensure that radio equipment required by this chapter is maintained to provide the availability of the functional requirements specified in regulation 4 and to meet the recommended performance standards of such equipment.

(6) On vessels engaged on voyages in sea areas Al and A2, the availability shall be ensured by using such methods as duplication of equipment, shore-based maintenance or at-sea electronic maintenance capability, or a combination of these, as may be approved by the Administration. *New vessels of less than 24 m in length and existing vessels of less than 45 m in length shall be exempted from this requirement.*

(7) On vessels engaged on voyages in sea areas A3 and A4, the availability shall be ensured by using a combination of at least two methods such as duplication of equipment, shore-based maintenance or at-sea electronic maintenance capability, as may be approved by the Administration, taking into account the recommendations of the Organization. *Direct-printing telegraphy equipment shall not be required to be duplicated. In new vessels of less than 24 m in length and in existing vessels of less than 45 m in length only one of the methods described above shall be required to be used.* However, the Administration may exempt a vessel from the requirement of using two methods and allow the use of one method, taking account of the type of vessel and its mode of operation.

(8) While all reasonable steps shall be taken to maintain the equipment in efficient working order to ensure compliance with all the functional requirements specified in regulation 4, malfunction of the equipment for providing the general radiocommunications required by regulation 4(h) shall not be considered as making a vessel unseaworthy or as a reason for delaying the vessel in ports where repair facilities are not readily available, provided the vessel is capable of performing all distress and safety functions.

(9) Satellite EPIRBs shall be:

a) tested at intervals of 12 months (-/+ 3 months) for all aspects of operational efficiency, with special emphasis on checking the emission on operational frequencies, coding and registration. The test may be conducted on board the ship or at an approved testing station; and[6]

b) subject to maintenance at intervals not exceeding five years, to be performed at an approved shore-based maintenance facility.

Regulation 15 – Radio personnel

Every vessel shall carry personnel qualified for distress and safety radiocommunication purposes to the satisfaction of the Administration. The personnel shall be holders of certificates specified in the Radio Regulations, as appropriate. A *specific person among* whom shall be designated to have primary responsibility for radiocommunications during distress incidents.

[6] *Reference is made to the Danish Maritime Authority's guidance no. 1 of 10 January 2003 on annual testing of 406 MHz satellite EPIRBs.*

Regulation 16 – Radio records

A record shall be kept, to the satisfaction of the Administration and as required by the Radio Regulations, of all incidents connected with the radiocommunication service which appear to be of importance to safety of life at sea. *The recording may be made in the vessel's logbook if one is available.*

Annex

Overview of the requirements for equipment in new fishing vessels of less than 24 m in length and in existing fishing vessels of less than 45 m in length stipulated in this chapter as well as in chapter VII, regulations 13 and 14, on radio life-saving appliances (portable VHF radio equipment) and radar transponders (SART):

Sea area	*VHF-DSC*	*MF-DSC*	*HF-DSC*	*Inmarsat-C*	*EPIRB Float-free*	*SART*	*Portable VHF*[i]	*NAV-TEX*[ii]
A1	*1*				*1*	*1/R*	*1/R*[iii]	*R*
A2	*1*	*1*			*1*	*1*	*1/R*	*1/R*
A3	*1*	*1*	*1 or 1*		*1*	*1*	*1/R*	*1*[iv]
A4	*1*	*1*	*1*		*1*	*1*	*1/R*	*1*

1 = equipment required

R = equipment recommended

i) Fishing vessels of less than 24 m in length shall be exempted from the requirement for a portable VHF. In these vessels it is also recommended that a portable VHF radio equipment is kept in the wheelhouse ready for use in the liferaft together with a spare battery in an emergency.

ii) So far vessels with a service area within sea area A2 within the lines east of 6 eastern longitude in the North Sea and south of 58 northern latitude in the Baltic shall not be required to carry a NAVTEX-receiver. However, it is recommended that they carry one.

iii) Existing fishing vessels of less than 24 m in length with their service area within sea area A1 shall be exempted from the requirement for radar transponders (SART). In these vessels it is also recommended that a SART is kept in the wheelhouse ready for use in the liferaft together with a spare battery in an emergency.

iv) Within A3 sea areas where there is no NAVTEX coverage, there is furthermore a requirement for an INMARSAT EGC receiver (built into the INMARSAT-C system).

Translation. Only the Danish version has legal validity

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Chapter X
Safety of navigation

Regulation 36 – Navigation lights, shapes and sound signal devices

This chapter is based on chapter V of the International Convention for the Safety of Life at Sea (SOLAS), the provisions of which shall in general apply to all ships on all voyages. The SOLAS numbering of the chapters has been maintained to make it possible to compare the provisions of this chapter with those of SOLAS, chapter V. Furthermore, the regulations have been adjusted for fishing vessels.

Regulation 1 – Application

1 Unless expressly provided otherwise, this chapter shall apply to all fishing vessels covered by this regulation.

Regulation 2 – Definitions

For the purpose of this chapter:

1 "Ship constructed" means a fishing vessel:

.1 for which the building or major conversion contract is placed before, on or after the date stipulated;

.2 in the absence of a building contract, the keel is laid; or

.2 construction identifiable with a specific ship begins; or

.3 assembly of the ship has commenced comprising at least 50 tonnes or 1% of the estimated mass of all structural material, whichever is less.

2 "Nautical chart" or "nautical publication" is a special-purpose map or book, or a specially compiled database from which such a map or book is derived, that is issued officially by or on the authority of a Government, authorized Hydrographic Office or other relevant government institution and is designed to meet the requirements of marine navigation.[1]

3 "All ships" means any ship, vessel or craft irrespective of type and purpose.

Regulation 3 – Exemptions and equivalents

1 *(Not of relevance to fishing vessels)*

2 The Administration may grant to individual ships exemptions or equivalents of a partial or conditional nature, when any such ship is engaged on a voyage where the maximum distance of the ship from the shore, the length and nature of the voyage, the absence of general navigational hazards, and other conditions affecting safety are such as to render the full application of this chapter unreasonable or unnecessary, provided that the Administration has taken into account the effect such exemptions and equivalents may have upon the safety of all other ships.

3 *(Not of relevance to fishing vessels).*

SOLAS, chapter V, regulations 4-14 on navigational warnings, meteorological services and warnings, the ice patrol service, search and rescue services, life-saving signals, hydrographic services, ships' routeing, ship reporting systems, vessel traffic services, the establishment and operation of aids to navigation and ships' manning are primarily aimed at governments, but have been included here for the purpose of informing the fishing industry.

[1] Refer to appropriate resolutions and recommendations of the International Hydrographic Organization concerning the authority and responsibilities of coastal States in the provision of charting in accordance with regulation 9.

Regulation 4 – Navigational warnings

Each Contracting Government shall take all steps necessary to ensure that, when intelligence of any dangers is received from whatever reliable source, it shall be promptly brought to the knowledge of those concerned and communicated to other interested Governments.[2]

Regulation 5 – Meteorological services and warnings

1 Contracting Governments undertake to encourage the collection of meteorological data by ships at sea and to arrange for their examination, dissemination and exchange in the manner most suitable for the purpose of aiding navigation.[3] Administrations shall encourage the use of meteorological instruments of a high degree of accuracy and shall facilitate the checking of such instruments upon request. Arrangements may be made by appropriate national meteorological services for this checking to be undertaken, free of charge to the ship.

2 In particular, the Contracting Governments undertake to carry out, in co-operation, the following meteorological arrangements:

.1 To warn ships of gales, storms and tropical cyclones by the issue of information in text and, as far as practicable, graphic form, using the appropriate shore-based facilities for terrestrial and space radiocommunications services.

.2 To issue, at least twice daily, by terrestrial and space radiocommunication services,[4] as appropriate, weather information suitable for shipping containing data, analyses, warnings and forecasts of weather, waves and ice. Such information shall be transmitted in text and, as far as practicable, graphic form, including meteorological analysis and prognosis charts transmitted by facsimile or in digital form for reconstitution on board the ship's data processing system.

.3 To prepare and issue such publications as may be necessary for the efficient conduct of meteorological work at sea and to arrange, if practicable, for the publication and making available of daily weather charts for the information of departing ships.

.4 To arrange for a selection of ships to be equipped with tested marine meteorological instruments (such as a barometer, a barograph, a psychrometer and suitable apparatus for measuring sea temperature) for use in this service, and to take, record and transmit meteorological observations at the main standard times for surface synoptic observations (i.e. at least four times daily, whenever circumstances permit) and to encourage other ships to take, record and transmit observations in a modified form, particularly when in areas where shipping is sparse.

.5 To encourage companies to involve as many of their ships as practicable in the making and recording of weather observations; these observations to be transmitted using the ship's terrestrial or space radiocommunications facilities for the benefit of the various national meteorological services.

.6 The transmission of these weather observations is free of charge to the ships concerned.

.7 When in the vicinity of a tropical cyclone, or of a suspected tropical cyclone, ships should be encouraged to take and transmit their observations at more frequent intervals whenever practicable, bearing in mind navigational preoccupations of ships' officers during storm conditions.

.8 To arrange for the reception and transmission of weather messages from and to ships, using the appropriate shore-based facilities for terrestrial and space radiocommunications services.

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2 Refer to IMO Resolution A.706(17), as amended, World-Wide Navigational Warning Service.

3 Refer to IMO Resolution A.528(13), Recommendation on weather routeing.

4 Refer to regulations IV/7.1.4 and IV/7.1.5.

.9 To encourage masters to inform ships in the vicinity and also shore stations whenever they experience a wind speed of 50 knots or more (force 10 on the Beaufort scale) *(25 m/s).*

.10 To endeavour to obtain a uniform procedure in regard to the international meteorological services already specified, and as far as practicable, to conform to the technical regulations and recommendations made by the World Meteorological Organization, to which Contracting Governments may refer, for study and advice, any meteorological question which may arise in carrying out the present Convention.

.11 Any master of a Danish ship may be ordered, by the reception and transmission of meteorological observations, to contribute to the maintenance of meteorological services to the degree necessary for the safety of navigation. The prescribed reports shall be submitted to the Danish authorities without any costs for the ship in question.

3 The information provided for in this regulation shall be furnished in a form for transmission and be transmitted in the order of priority prescribed by the Radio Regulations. During transmission "to all stations" of meteorological information, forecasts and warnings, all ship stations must conform to the provisions of the Radio Regulations.

4 Forecasts, warning, synoptic and other meteorological data intended for ships shall be issued and disseminated by the national meteorological service in the best position to serve various coastal and high seas areas, in accordance with mutual arrangements made by Contracting Governments, in particular as defined by the World Meteorological Organization's system for the preparation and dissemination of meteorological forecasts and warnings for the high seas under the global maritime distress and safety system (GMDSS).

Regulation 6 – Ice Patrol Service

1 The Ice Patrol contributes to safety of life at sea, safety and efficiency of navigation and protection of the marine environment in the North Atlantic. Ships transiting the region of icebergs guarded by the Ice Patrol during the ice season are required to make use of the services provided by the Ice Patrol.

2 The Contracting Governments undertake to continue an ice patrol and a service for study and observation of ice conditions in the North Atlantic. During the whole of the ice season, i.e. for the period from 1 February through 1 July of each year, the south-eastern, southern and south-western limits of the regions of icebergs in the vicinity of the Grand Banks of Newfoundland shall be guarded for the purpose of informing passing ships of the extent of this dangerous region; for the study of ice conditions in general; and for the purpose of affording assistance to ships and crews requiring aid within the limits of operation of the patrol ships and aircraft. During the rest of the year the study and observation of ice conditions shall be maintained as advisable.

3 Ships and aircraft used for the Ice Patrol Service and the study and observation of ice conditions may be assigned other duties provided that such other duties do not interfere with the primary purpose or increase the cost of this service.

4 The Government of the United States of America agrees to continue the overall management of the Ice Patrol Service and the study and observation of ice conditions, including the dissemination of information therefrom.

5 The terms and conditions governing the management, operation and financing of the Ice Patrol are set forth in the Rules for the management, operation and financing of the North Atlantic Ice Patrol appended to this chapter, which shall form an integral part of this chapter.

6 If, at any time, the United States and/or Canadian Governments should desire to discontinue providing these services, it may do so and the Contracting Governments shall settle the question of continuing these services in accordance with their mutual interests. The United States and/or Canadian Governments shall provide 18 months' written notice to all Contracting Governments whose ships are entitled to fly their flag and whose ships are registered in territories to which those Contracting Governments have extended this regulation benefit from these services before discontinuing providing these services.

Regulation 7 – Search and rescue services

1 Each Contracting Government undertakes to ensure the necessary arrangements are made for distress communication and co-ordination in their area of responsibility and for the rescue of persons in distress at sea round its coasts. These arrangements shall include the establishment, operation and maintenance of such search and rescue facilities as are deemed practicable and necessary, having regard to the density of the seagoing traffic and the navigational dangers, and shall, so far as possible, provide adequate means of locating and rescuing such persons.[5]

2 Each Contracting Government undertakes to make available information to the Organization concerning its existing search and rescue facilities and the plans for changes therein, if any.

3 Passenger ships to which chapter I applies shall have on board a plan for co-operation with appropriate search and rescue services in the event of an emergency. The plan shall be developed in co-operation between the ship, the company, as defined in regulation IX/1, and the search and rescue services. The plan shall include provisions for periodic exercises to be undertaken to test its effectiveness. The plan shall be developed based on the guidelines developed by the Organization.

Regulation 8 – Life-saving signals

Contracting Governments undertake to arrange that life-saving signals are used by search and rescue facilities engaged in search and rescue operations when communicating with ships or persons in distress.

Regulation 9 – Hydrographic services

1 Contracting Governments undertake to arrange for the collection and compilation of hydrographic data and the publication, dissemination and keeping up to date of all nautical information necessary for safe navigation.

2 In particular, Contracting Governments undertake to co-operate in carrying out, as far as possible, the following nautical and hydrographic services, in the manner most suitable for the purpose of aiding navigation:

.1 to ensure that hydrographic surveying is carried out, as far as possible, adequate to the requirements of safe navigation;

.2 to prepare and issue nautical charts, sailing directions, lists of lights, tide tables and other nautical publications, where applicable, satisfying the needs of safe navigation;

.3 to promulgate notices to mariners in order that nautical charts and publications are kept, as far as possible, up to date; and

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[5] Refer to the International Convention on Maritime Search and Rescue, 1979,. And the following resolutions adopted by the Organization: "Homing Capability of Search and Rescue (SAR) Aircraft" (resolution A.225(VIII)). "Use of Radar Transponders for Search and Rescue Purposes" (resolution A.530(13)). "Search and rescue homing capability" (resolution A.616(15)) ."International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual" (resolution A.894(21).

.4 to provide data management arrangements to support these services.

3 Contracting Governments undertake to ensure the greatest possible uniformity in charts and nautical publications and to take into account, whenever possible, relevant international resolutions and recommendations.[6]

4 Contracting Governments undertake to co-ordinate their activities to the greatest possible degree in order to ensure that hydrographic and nautical information is made available on a world-wide scale as timely, reliably, and unambiguously as possible.

Regulation 10 – Ships' routeing

1 Ships' routeing systems contribute to safety of life at sea, safety and efficiency of navigation and/or protection of the marine environment. Ships' routeing systems are recommended for use by, and may be made mandatory for, all ships, certain categories of ships or ships carrying certain cargoes, when adopted and implemented in accordance with the guidelines and criteria developed by the Organization.[7]

2 The Organization is recognized as the only international body for developing guidelines, criteria and regulations on an international level for ships' routeing systems. Contracting Governments shall refer proposals for the adoption of ships' routeing systems to the Organization. The Organization will collate and disseminate to Contracting Governments all relevant information with regard to any adopted ships' routeing systems.

3 The initiation of action for establishing a ships' routeing system is the responsibility of the Government or Governments concerned. In developing such systems for adoption by the Organization, the guidelines and criteria developed by the Organization[8] shall be taken into account.

4 Ships' routeing systems should be submitted to the Organization for adoption. However, a Government or Governments implementing ships' routeing systems not intended to be submitted to the Organization for adoption or which have not been adopted by the Organization are encouraged to follow, wherever possible, the guidelines and criteria developed by the Organization.[9]

5 Where two or more Governments have a common interest in a particular area, they should formulate joint proposals for the delineation and use of a routeing system therein on the basis of an agreement between them. Upon receipt of such proposal and before proceeding with the consideration of it for adoption, the Organization shall ensure details of the proposal are disseminated to the Governments which have a common interest in the area, including countries in the vicinity of the proposed ships' routeing system.

6 Contracting Governments shall adhere to the measures adopted by the Organization concerning ships' routeing. They shall promulgate all information necessary for the safe and effective use of adopted ships' routeing systems. A Government or Governments concerned may monitor traffic in those systems. Contracting Governments shall do everything in their power to secure the appropriate use of ships' routeing systems adopted by the Organization.

7 A ship shall use a mandatory ships' routeing system adopted by the Organization as required for its category or cargo carried and in accordance with the relevant provisions in force unless there are

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6 Refer to the appropriate resolutions and recommendations adopted by the International Hydrographic Organization.

7 Refer to the General provisions on ships' routeing adopted by the Organization by resolution A.572(14), as amended.

8 Refer to the General provisions on ships' routeing adopted by the Organization by resolution A.572(14)), as amended.

9 Refer to the General provisions on ships' routeing adopted by the Organization by resolution A.572(14)), as amended.

compelling reasons not to use a particular ships' routeing system. Any such reason shall be recorded in the ship's log.

8 Mandatory ships' routeing systems shall be reviewed by the Contracting Government or Governments concerned in accordance with the guidelines and criteria developed by the Organization.[10]

9 All adopted ships' routeing systems and actions taken to enforce compliance with those systems shall be consistent with international law, including the relevant provisions of the 1982 United Nations Convention on the Law of the Sea.

10 Nothing in this regulation nor its associated guidelines and criteria shall prejudice the rights and duties of Governments under international law or the legal regimes of straits used for international and archipelagic sea lanes.[11]

Regulation 11 – Ship reporting systems[12]

1 Ship reporting systems contribute to safety of life at sea, safety and efficiency of navigation, and protection of the marine environment. A ship reporting system, when adopted and implemented in accordance with the guidelines and criteria developed by the Organization[13] pursuant to this regulation, shall be used by all ships, or certain categories of ships or ships carrying certain cargoes in accordance with the provisions of each system so adopted.

2 The Organization is recognized as the only international body for developing guidelines, criteria and regulations on an international level for ship reporting systems. Contracting Governments shall refer proposals for the adoption of ship reporting systems to the Organization. The Organization will collate and disseminate to Contracting Governments all relevant information with regard to any adopted ship reporting system.

3 The initiation of action for establishing a ship reporting system is the responsibility of the Government or Governments concerned. In developing such systems, provisions of the guidelines and criteria developed by the Organization[14] shall be taken into account.

4 Ship reporting systems not submitted to the Organization for adoption do not necessarily need to comply with this regulation. However, Governments implementing such systems are encouraged to follow, wherever possible, the guidelines and criteria developed by the Organization.[15] Contracting Governments may submit such systems to the Organization for recognition.

5 Where two or more Governments have a common interest in a particular area, they should formulate proposals for a co-ordinated ship reporting system on the basis of agreement between them. Before

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10 Refer to the General provisions on ships' routeing adopted by the Organization by resolution A.572(14), as amended.

11 *Archipelago, sea with many islets (e.g. the Indonesian Archipelago).*

12 This regulation does not address ship reporting systems established by Governments for search and rescue purposes, which are covered by chapter 5 of the 1979 SAR Convention, as amended.

13 Refer to the Guidelines and criteria for ship reporting systems adopted by the Maritime Safety Committee of the Organization by resolution MSC.43(64), as amended by Resolution MSC.111(73). Refer also to the General principles for ship reporting systems and ship reporting requirements, including guidelines for reporting incidents involving dangerous goods, harmful substances and/or marine pollutants adopted by the Organization by resolution A.851(20).

14 Refer to the Guidelines and criteria for ship reporting systems adopted by the Maritime Safety Committee of the Organization by resolution MSC.43(64), as amended by Resolution MSC.111(73). Refer also to the General principles for ship reporting systems and ship reporting requirements, including guidelines for reporting incidents involving dangerous goods, harmful substances and/or marine pollutants adopted by the Organization by resolution A.851(20).

15 Refer to the Guidelines and criteria for ship reporting systems adopted by the Maritime Safety Committee of the Organization by resolution MSC.43(64), as amended by Resolution MSC.111(73). Refer also to the General principles for ship reporting systems and ship reporting requirements, including guidelines for reporting incidents involving dangerous goods, harmful substances and/or marine pollutants adopted by the Organization by resolution A.851(20).

proceeding with a proposal for adoption of a ship reporting system, the Organization shall disseminate details of the proposal to those Governments which have a common interest in the area covered by the proposed system. Where a co-ordinated ship reporting system is adopted and established, it shall have uniform procedures and operations.

6 After adoption of a ship reporting system in accordance with this regulation, the Government or Governments concerned shall take all measures necessary for the promulgation of any information needed for the efficient and effective use of the system. Any adopted ship reporting system shall have the capability of interaction and the ability to assist ships with information when necessary. Such systems shall be operated in accordance with the guidelines and criteria developed by the Organization[16] pursuant to this regulation.

7 The master of a ship shall comply with the requirements of adopted ship reporting systems and report to the appropriate authority all information required in accordance with the provisions of each system.

8 All adopted ship reporting systems and actions taken to enforce compliance with those systems shall be consistent with international law, including the relevant provisions of the United Nations Convention on the Law of the Sea.

9 Nothing in this regulation or its associated guidelines and criteria shall prejudice the rights and duties of Governments under international law or the legal regimes of straits used for international navigation and achipelagic sea lanes.

10 The participation of ships in accordance with the provisions of adopted ship reporting systems shall be free of charge to the ships concerned.

11 The Organization shall ensure that adopted ship reporting systems are reviewed under the guidelines and criteria developed by the Organization.

Regulation 12 – Vessel traffic services

1 Vessel traffic services (VTS) contribute to safety of life at sea, safety and efficiency of navigation and protection of the marine environment, adjacent shore areas, work sites and offshore installations from possible adverse effects of maritime traffic.

2 Contracting Governments undertake to arrange for the establishment of VTS where, in their opinion, the volume of traffic or the degree of risk justifies such services.

3 Contracting Governments planning and implementing VTS shall, wherever possible, follow the guidelines developed by the Organization.[17] The use of VTS may only be made mandatory in sea areas within the territorial seas of a coastal State.

4 Contracting Governments shall endeavour to secure the participation in, and compliance with, the provisions of vessel traffic services by ships entitled to fly their flag.

5 Nothing in this regulation or the guidelines adopted by the Organization shall prejudice the rights and duties of Governments under international law or the legal regimes of straits used for international navigation and archiepelagic sea lanes.

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16 Refer to Resolution A.857(20), “Guidelines on Vessel Traffic Services”.

17 Refer to the Guidelines on vessel traffic services adopted by the Organization by resolution A.857(20).

Regulation 13 – Establishment and operation of aids to navigation

1 Each Contracting Government undertakes to provide, as it deems practical and necessary, either individually or in co-operation with other Contracting Governments, such aids to navigation as the volume of traffic justifies and the degree of risk requires.

2 In order to obtain the greatest possible uniformity in aids to navigation, Contracting Governments undertake to take into account the international recommendations and guidelines[18] when establishing such aids.

3 Contracting Governments undertake to arrange for information relating to aids to navigation to be made available to all concerned. Changes in the transmissions of position-fixing systems which could adversely affect the performance of receivers fitted in ships shall be avoided as far as possible and only be effected after timely and adequate notice has been promulgated.

Regulation 14 – Ship's manning

In Denmark, issues related to the manning of ships are regulated by the Act on the Manning of Ships and associated administrative regulations.

1 Contracting Governments undertake, each for its national ships, to maintain, or, if it is necessary, to adopt, measures for the purpose of ensuring that, from the point of view of safety of life at sea, all ships shall be sufficiently and efficiently manned.[19]

2 Every ship to which chapter I *of SOLAS* applies *(i.e. not fishing vessels)* shall be provided with an appropriate safe manning document or equivalent issued by the Administration as evidence of the minimum safe manning considered necessary to comply with the provisions of paragraph 1.

3 On all ships, to ensure effective crew performance in safety matters, a working language shall be established and recorded in the ship's log-book. The company, as defined in regulation IX/1 *of SOLAS*, or the master, as appropriate, shall determine the appropriate working language. Each seafarer shall be required to understand and, where appropriate, give orders and instructions and to report back in that language. If the working language is not an official language of the State whose flag the ship is entitled to fly, all plans and lists required to be posted shall include a translation into the working language.

4 On ships to which chapter I *of SOLAS* applies, English shall be used on the bridge as the working language for bridge-to-bridge and bridge-to-shore safety communications as well as for communications on board between the pilot and bridge watchkeeping personnel,[20] unless those directly involved in the communication speak a common language other than English.

Regulation 15 – Principles relating to bridge design, design and arrangement of navigational systems and equipment and bridge procedures

All decisions which are made for the purpose of applying the requirements of regulations 19, 22, 24, 25, 27 and 28 and which affect bridge design, the design and arrangement of navigational systems and equipment on the bridge and bridge procedures[21] shall be taken with the aim of:

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18 Refer to the appropriate guidelines of IALA and to SN/Circ. 107, Maritime buoyage system.

19 Refer to Resolution A.890(21), "Principles of safe manning".

20 Refer to MSC/circ. 794, "Standard Marine Communication Phrases (SMCPs)".

21 Refer to MSC/Circ. 982, "Guidelines on ergonomic criteria for bridge equipment and layout", as well as Resolution MSC.64(67), annex 1, "Recommendation on performance standards for Integrated Bridge Systems (IBS)", and Resolution MSC.86(70), annex 3, "Recommendation on performance standards for an Integrated Navigations System (INS)".

.1 facilitating the tasks to be performed by the bridge team and the pilot in making full appraisal of the situation and in navigating the ship safely under all operational conditions;

.2 promoting effective and safe bridge resource management;

.3 enabling the bridge team and the pilot to have convenient and continuous access to essential information which is presented in a clear an unambiguous manner, using standardized symbols and coding systems for controls and displays;

.4 indicating the operational status of automated functions and integrated components, systems and/or sub-systems;

.5 allowing for expeditious, continuous and effective information processing and decision-making by the bridge team and the pilot;

.6 preventing or minimizing excessive or unnecessary work and any conditions or distractions on the bridge which may cause fatigue or interfere with the vigilance of the bridge team and the pilot; and

.7 minimizing the risk of human error and detecting such error, if it occurs, through monitoring and alarm systems, in time for the bridge team and the pilot to take appropriate action.

Regulation 16 – Maintenance of equipment

1 The Administration shall be satisfied that adequate arrangements are in place to ensure that the performance of the equipment required by this chapter is maintained.

2 While all reasonable steps shall be taken to maintain the equipment required by this chapter in efficient working order, malfunctions of that equipment shall not be considered as making the ship unseaworthy or as a reason for delaying the ship in ports where repair facilities are not ready available, provided suitable arrangements are made by the master to take the inoperative equipment or unavailable information into account in planning and executing a safe voyage to a port where repairs can take place.

Regulation 17 – Electromagnetic compatibility

1 All electrical and electronic equipment on the bridge or in the vicinity of the bridge, on ships constructed on or after 1 January 2005, is tested for electromagnetic compatibility, taking into account the recommendations developed by the Organization.[22]

2 Electrical and electronic equipment shall be so installed that electromagnetic interference does not affect the proper function of navigational systems and equipment.

3 Portable electrical and electronic equipment shall not be operated on the bridge if it may affect the proper function of navigational systems and equipment.

Regulation 18 – Approval, surveys and performance standards of navigational systems and equipment and voyage data recorder

1 Systems and equipment required to meet the requirements of regulations 19 and 20 shall be of a type approved by the Administration.

2 Systems and equipment, including associated back-up arrangements, where applicable, installed on or after 1 January 2005 to perform the functional requirements of regulations 19 and 20 shall conform to appropriate performance standards not inferior to those adopted by the Organization.[23]

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[22] Refer to Resolution A.813(19), "General requirements for Electromagnetic Compatibility for all Electrical and Electronic Ships Equipment".

3 When systems and equipment are replaced or added to on ships constructed before 1 January 2005, such systems and equipment shall, in so far as is reasonable and practicable, comply with the requirements of paragraph 2.

4 Systems and equipment installed prior to the adoption of performance standards by the Organization may subsequently be exempted from full compliance with such standards at the discretion of the Administration, having due regard to the recommended criteria adopted by the Organization. However, for an electronic chart display and information system (ECDIS) to be accepted as satisfying the chart carriage requirement of regulation 19.2.1.4, that system shall conform to the relevant performance standards not inferior to those adopted by the Organization in effect on the date of installation, or, for systems installed before 1 January 2005, not inferior to the performance standards adopted by the Organization on 23 November 1995.[24]

5 The Administration shall require that the manufacturers have a quality control system audited by a competent authority to ensure continuous compliance with the type approval conditions. Alternatively, the Administration may use final product verification procedures where the compliance with the type approval certificate is verified by a competent authority before the product is installed on board ships.

6 Before giving approval to systems or equipment embodying new features not covered by this chapter, the Administration shall ensure that such features support functions at least as effective as those required by this chapter.

7 When equipment, for which performance standards have been developed by the Organization, is carried on ships in addition to those items of equipment required by regulations 19 and 20, such equipment shall be subject to approval and shall, as far as practicable, comply with performance standards not inferior to those adopted by the Organization.

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[23] Refer to the following recommendations adopted by the Organization by the resolutions indicated: Resolution A.694(17), "Recommendations on general requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids"; Resolution A.424(XI), "Performance standards for gyro-compasses"; Resolution MSC.64(67), annex 4, "Recommendation on performance standards for radar equipment"; Resolution A.823(19), "Performance standards for automatic radar plotting aids"; Resolution A.817(19), as amended by resolutions MSC.64(67), annex 5, and MSC.86(70), annex 4, Recommendation on performance standards for Electronic Chart Display and Information Systems (ECDIS)"; Resolution A.529(13), "Recommendation on accuracy standards for navigation"; Resolution A.818(19), "Recommendation on performance standards for shipborne Loran-C and Chayka receivers"; Resolution A.819(19), "Recommendation on performance standards for shipborne global positioning system receiver equipment", as amended by resolution MSC.112(73); Resolution MSC.53(66), as amended by resolution MSC.113(73), "Recommendation on performance standards for shipborne GLONASS receiver equipment"; Resolution MSC.64(67), annex 2, as amended by resolution MSC.114(73), "Recommendation on performance standards for shipborne GPS and DGPS maritime radio beacon receiver equipment"; Resolution MSC.74(69), annex 1, as amended by resolution MSC.115(73), "Recommendation on performance standards for combined DGPS/DGLONASS receiver equipment"; Resolution MSC.64(67), annex 3, "Recommendation on performance standards for heading control systems"; Resolution MSC.74(69), annex 2, "Recommendation on Performance Standards for track control systems"; Resolution MSC.74(69), annex 3, "Recommendation on performance standards for universal shipborne automatic identification system (AIS)"; Resolution A.224(VII), as amended by Resolution MSC.74(69), annex 2, Recommendation on performance standards for echo-sounding equipment"; Resolution A.824(19), as amended by resolution MSC.96(72), "Recommendation on performance standards for devices to indicate speed and distance"; Resolution A.526(13), "Performance standards for rate-of-turn indicators"; Resolution A.575(14), "Recommendation on unification of performance standards for navigational equipment"; Resolution A.343(IX), "Recommendation on methods of measuring noise levels at listening posts"; Resolution A.384(X), "Recommendation on performance standards for Radar Reflectors"; Resolution A.382(X), "Recommendation on performance standards for magnetic compasses"; Resolution MSC.95(72), "Recommendation on performance standards for daylight signalling lamps"; Resolution MSC.86(70), annex 1, "Recommendation on Performance Standards for sound reception systems"; Resolution MSC.86(70), annex 2, "Recommendation on Performance Standards for marine transmitting magnetic heading devices (GMHDs)"; Resolution MSC.116(20), "Recommendation on Performance Standards for voyage data recorders (VDRs)"; Resolution MSC.116(73), Recommendation on Performance Standards for marine transmitting heading devices (THDs); Resolution A.861(20) "Recommendation on Performance Standards for voyage data recorders (VDRs).

[24] Resolution A.817(19), "Recommendation on performance standards for Electronic Chart Display and Information Systems (ECDIS)".

8 The voyage data recorder system, including all sensors, shall be subjected to an annual performance test. The test shall be conducted by an approved testing or servicing facility to verify the accuracy, duration and recoverability of the recorded data. In addition, tests and inspections shall be conducted to determine the serviceability of all protective enclosures and devices fitted to aid location. A copy of the certificate of compliance issued by the testing facility, stating the date of compliance and the applicable performance standards, shall be retained on board the ship.

Regulation 19 – Carriage requirements for shipborne navigational systems and equipment

1 Application and requirements

1.1 Fishing vessels constructed on or after 1 January 2005 shall be fitted with navigational systems and equipment which will fulfil the requirements prescribed in paragraphs 2.1 to 2.9 *and paragraph 7*.

1.2 Fishing vessels constructed before 1 January 2005 shall:

.1 subject to the provisions of paragraphs 1.2.2 and 1.2.3, unless they comply fully with this regulation, continue to be fitted with equipment which fulfils the requirements prescribed *in Notice E from the Danish Maritime Authority in force until now*;

.2 be fitted with the equipment or systems required in paragraph 2.1.6 not later than the first survey after 1 January 2005, at which time the radio direction-finding apparatus referred to in V/12(p) of the International Convention for the Safety of Life at Sea, 1974, in force prior to 1 January 2005 shall no longer be required; and

.3 be fitted with the system required in paragraph 2.4 not later than the dates specified in paragraphs 2.42. and 2.4.3.

.4 be fitted with a bridge navigation watch alarm in accordance with the provisions of paragraph 7.

2 Shipborne navigational equipment and systems

2.1 All fishing vessels shall have:

.1 a properly adjusted standard magnetic compass, or other means, independent of any power supply, to determine the fishing vessel's heading and display the reading at the main steering position;

.2 a pelorus or compass bearing device, or other means, independent of any power supply, to take bearings over an arc of the horizon of 360º;

.3 means of correcting heading and bearings to true at all times;

.4 nautical charts and nautical publications to plan and display the ship's route for the intended voyage and to plot and monitor positions throughout the voyage; an electronic chart display and information system (ECDIS) may be accepted as meeting the chart carriage requirements of this subparagraph;

.5 back-up arrangements to meet the functional requirements of subparagraph .4, if this function is partly or fully fulfilled by electronic means;[25]

.6 a receiver for a global navigation satellite system or a terrestrial radionavigation system or other means, suitable for use at all times throughout the intended voyage to establish and update the fishing vessel's position by automatic means;

.7 if less than 24 metres in length and if practicable, a radar reflector, or other means, to enable detection by fishing vessels navigating by radar at both 9 and 3 GHz;

.8 when the ship's bridge is totally enclosed and unless the Administration determines otherwise, a sound reception system, or other means, to enable the officer in charge of the navigational watch to hear sound signals and determine their direction;

[25] An appropriate folio of paper nautical charts may be used as a back-up arrangement for ECDIS. Other back-up arrangements for ECDIS are acceptable (see appendix 6 to resolution A.817(19), as amended).

.9 a telephone, or other means, to communicate heading information to the emergency steering position, if provided.

2.2 All fishing vessels with a length of or above 24 metres shall, in addition to the requirements of paragraph 2.1, be fitted with:

.1 a spare magnetic compass, interchangeable with the magnetic compass as referred to in paragraph 2.1.1, or other means to perform the function referred to in paragraph 2.1.1 by means of replacement or duplicate equipment;

.2 a daylight signalling lamp, or other means, to communicate by light during day and night using an energy source of electrical power not solely dependent upon the fishing vessel's power supply.

2.3 All fishing vessels with a length of or above 36 metres shall, in addition to meeting the requirements of paragraph 2.2, be fitted with:

.1 an echo-sounding device, or other electronic means, to measure and display the available depth of water;

.2 a 9 GHz radar, or other means, to determine and display the range and bearing of radar transponders and of other surface craft, obstructions, buoys, shorelines and navigational marks to assist in navigation and in collision avoidance;

.3 an electronic plotting aid, or other means, to plot electronically the range and bearing of targets to determine collision risk;

.4 speed and distance measuring device, or other means, to indicate speed and distance through the water;

.5 a properly adjusted transmitting heading device, or other means, to transmit heading information for input to the equipment referred to in paragraphs 2.3.2, 2.3.3 and 2.4.

2.4 All fishing vessels with a length of or above 45 metres shall be fitted with an automatic identification system (AIS), as follows:

.1 fishing vessels constructed on or after 1 January 2005 before being put into service;

.2 fishing vessels constructed before 1 January 2005:

.1-.4 *(not of relevance to fishing vessels).*

.5 fishing vessels with a length of or above 85 metres, not later than 1 July 2006;

.6 fishing vessels with a length of or above 45 metres, not later than 1 July 2007; and

.3 *(not of relevance to fishing vessels).*

.4 the Danish Maritime Authority may exempt fishing vessels from the application of the requirements of this paragraph when such fishing vessels will be taken permanently out of service within two years after the implementation date specified in subparagraph .2;

.5 AIS shall:

.1 provide automatically to appropriately equipped shore stations, other ships and aircraft information, including the fishing vessel's identity, type, position, course, speed, navigational status and other safety-related information;

.2 receive automatically such information from similarly fitted ships;

.3 monitor and track ships; and

.4 exchange data with shore-based facilities;

.6 the requirements of paragraph 2.4.5 shall not be applied to cases where international agreements, rules or standards provide for the protection of navigational information; and

.7 AIS shall be operated taking into account the guidelines adopted by the Organization.[26] On board ships equipped with AIS, this system shall be switched on at all times except when international agreements, rules or standards prescribe the protection of navigational information.

2.5 All fishing vessels with a length of or above 45 metres shall, in addition to meeting the requirements of paragraph 2.3, with the exception of paragraphs 2.3.3 and 2.3.5, and the requirements of paragraph 2.4, have:

.1 a gyro-compass, or other means, to determine and display their heading by shipborne non-magnetic means and to transmit heading information for input to the equipment referred in paragraphs 2.3.2, 2.4 and 2.5.5;

.2 a gyro-compass heading repeater, or other means, to supply heading information visually at the emergency steering position if provided;

.3 a gyro-compass bearing repeater, or other means, to take bearings, over an arc of the horizon of 360º, using the gyro-compass or other means referred to in subparagraph .1. However, fishing vessels with a length of less than 70 metres shall be fitted with such means as far as possible.

.4 rudder, propeller, thrust, pitch and operational mode indicators, or other means, to determine and display rudder angle, propeller revolutions, the force and direction of thrust and, if applicable, the force and direction of lateral thrust and the pitch and operational mode, all to be readable from the conning position; and

.5 an automatic tracking aid, or other means, to plot automatically the range and bearing of other targets to determine collision risk.

2.6 On all fishing vessels with a length of above 45 metres, failure of one piece of equipment should not reduce the fishing vessel's ability to meet the requirements of paragraphs 2.1.1, 2.1.2 and 2.1.4.

2.7 All fishing vessels with a length of or above 85 metres shall, in addition to meeting the requirements of paragraph 2.5, have:

.1 a 3 GHz radar or, where considered appropriate by the Administration, a second 9 GHz radar, or other means, to determine and display the range and bearing of other surface craft, obstructions, buoys, shorelines and navigational marks to assist in navigation and in collision avoidance, which are functionally independent of those referred to in paragraph 2.3.2; and

.2 a second automatic tracking aid, or other means, to plot automatically the range and bearing of other targets to determine collision risk which are functionally independent of those referred to in paragraph 2.5.5.

2.8 *(not of relevance to fishing vessels).*

2.9 *(not of relevance to fishing vessels).*

3 When "other means" are permitted under this regulation, such means must be approved by the Danish Maritime Authority in accordance with regulation 18.

4 The navigational equipment and systems referred to in this regulation shall be so installed, tested and maintained as to minimize malfunction.

5 Navigational equipment and systems offering alternative modes of operation shall indicate the actual mode of use.

6 Integrated bridge systems[27] shall be so arranged that failure of one sub-system is brought to the immediate attention of the officer in charge of the navigational watch by audible and visual alarms and

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[26] Refer to resolution A.917(22), "Guidelines for the onboard operational use of Shipborne Automatic Identification Systems".

[27] Refer to resolution MSC.64(67), annex 1, Performance standard for integrated bridge systems.

does not cause failure to any other sub-system. In case of failure in one part of an integrated navigational system,[28] it shall be possible to operate each other individual item of equipment or part of the system separately.

7 *Ships fitted with a wheelhouse shall be equipped with a bridge navigation watch alarm which, as a minimum, meet the technical and operational requirements of IMO's performance standards.[29] Such ships shall be equipped with a bridge navigation watch alarm in accordance with the following schedule:*

.1 ships constructed on or after 1 March 2003, upon delivery;

.2 ships constructed before 1 March 2003:

.1 ships with a length of or below 24 metres, not later than 1 March 2004;

.2 ships with a length of or below 45 metres, but of or above 24 metres, not later than 1 March 2005; and

.3 all other ships, not later than 1 March 2006.

.3 Ships which were equipped with a bridge navigation watch alarm before 1 March 2002 which ensures, in a satisfactory way, the awareness of the watch-keeping officer, but which does not fully comply with IMO's performance standards, may use such an alarm instead of the prescribed bridge navigation watch alarm until 1 March 2006.

.4 In ships equipped with an automatic heading control system or track control system, the bridge navigation watch alarm shall be switched on when this equipment is in use. In ships without an automatic heading control system or track control system, the bridge navigation watch alarm shall be switched on when the ship is located outside a port or safe anchorage.

Regulation 20 – Voyage data recorders (VDR)

1 To assist in casualty investigations, fishing vessels of or above 3,000 gross tonnage, constructed on or after 1 January 2005, when operating on international voyages, i.e. a voyage from a country to a port outside that country or reversely or voyages between Denmark and the Faroe Islands and between Denmark and Greenland as well as voyages between the Faroe Islands and Greenland, shall be fitted with a voyage data recorder (VDR).

Regulation 21 – International Code of Signals and IAMSAR manual

1 All ships with a length of or above 45 metres which, in accordance with the present set of regulations, are required to carry a radio installation shall carry the International Code of Signals as may be amended by the Organization. The Code shall also be carried by any other ship which, in the opinion of the Administration, has a need to use it.

2 All ships shall carry an up-to-date copy of Volume III of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual.[30]

3 Ships engaged on voyages outside restricted trade (voyages in the North Sea east of 3 E longitude and south of 61 N latitude as well as in the Baltic Sea and intermediate waters) as well as ships engaged

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28 Refer to resolution MSC.86(70), annex 3, Performance standard for integrated navigational systems.

29 *Resolution MSC.128(75), "Performance standards for Bridge Navigation Watch Alarms", which is expected to be adopted by the Maritime Safety Committee in May 2002 and will, subsequently, be printed in a Danish translation in Notice from the Danish Maritime Authority.*

30 Joint ICAO and IMO manual on aeronautical and maritime rescue services, IMO Resolution A.894(21).

on voyages more than 200 nautical miles from the coast of Greenland shall be equipped with a copy of IMO's maritime communication phrases.[31]

Regulation 22 – Navigation bridge visibility

1 Fishing vessels of or above 24 metres in length, constructed on or after 1 January 2005, shall meet the following requirements:

.1 The view of the sea surface from the conning position shall not be obscured by more than two ship lengths, or 500 m, whichever is less, forward of the bow[32] to 10º on either side under all conditions of draught, trim and deck cargo;

.2 No blind sector, caused by cargo, cargo gear or other obstructions outside of the wheelhouse forward of the beam which obstructs the view of the sea surface as seen from the conning position, shall exceed 10º. The total arc of blind sectors shall not exceed 20º. The clear sectors between blind sectors shall be at least 5º. However, in the view described in paragraph .1, each individual blind sector shall not exceed 5º;

.3 The horizontal field of vision from the conning position shall extend over an arc of at least 225º, that is from right ahead to not less than 22.5º abaft the beam on either side of the ship;

.4 From each bridge wing, the horizontal field of vision shall extend over an arc of at least 225º, that is from at least 45º on the opposite bow through right ahead and then from right ahead to right astern through 180º on the same side of the ship;

.5 From the main steering position, the horizontal field of vision shall extend over an arc from right ahead to at least 60º on each side of the fishing vessel;

.6 The fishing vessel's side shall be visible from the bridge wing;

.7 The height of the lower edge of the navigation bridge front windows above the bridge deck shall be kept as low as possible. In no case shall the lower edge present an obstruction to the forward view as described in this regulation;

.8 The upper edge of the navigation bridge front windows shall allow a forward view of the horizon, for a person with a height of eye of 1,800 mm above the bridge deck at the conning position, when the fishing vessel is pitching in heavy seas. The Administration, if satisfied that a 1,800 mm height of eye is unreasonable and impractical, may allow reduction of the height of eye but not to less than 1,600 mm;

.9 Windows shall meet the following requirements:

.1 to help avoid reflections, the bridge front windows shall be inclined from the vertical plane top out, at an angle of not less than 10º and not more than 25º;

.2 framing between navigation bridge windows shall be kept to a minimum and not be installed immediately forward of any workstation;

.3 polarized and tinted windows shall not be fitted;

.4 a clear view through at least two of the navigation bridge front windows and, depending on the bridge configuration, an additional number of clear-view windows shall be provided at all times, regardless of weather conditions.

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31 Reference is made to MSC/Circ. 794, "Standard Marine Communication Phrases (SMCPs)".

32 *Refer to ISO 8468: 1990 (E), item 4.1.2.*

1a Fishing vessels with a length of or above 15 metres, but below 24 metres, shall comply with the provisions of paragraph 1 or the provisions of Notice F from the Danish Maritime Authority, chapter X, regulation 6.

2 Fishing vessels constructed before 1 January 2005 shall, where practicable, meet the requirements of paragraphs 1.1 and 1.2. However, structural alterations or additional equipment need not be required.

3 With fishing vessels of unconventional design which, in the opinion of the Administration, cannot comply with this regulation, arrangements shall be provided to achieve a level of visibility that is as near as practical to those prescribed in this regulation.

Regulation 23 – Pilot transfer arrangements

1 Application

1.1 Fishing vessels engaged on voyages in the course of which pilots are likely to be employed shall be provided with pilot transfer arrangements.

1.2 Equipment and arrangements for pilot transfer which are installed on or after 1 January 2005 shall comply with the requirement of this regulation and due regard shall be paid to the standards adopted by the Organization.[33]

1.3 Equipment and arrangements for pilot transfer which are provided on ships before 1 January 2005 shall at least comply with the requirements of regulation 17 of the International Convention for the Safety of Life at Sea, 1974, in force prior to that date, and due regard shall be paid to the standards adopted by the Organization prior to that date.

1.4 Equipment and arrangements which are replaced after 1 January 2005 shall, in so far as is reasonable and practicable, comply with the requirements of this regulation.

2 General

2.1 All arrangements used for pilot transfer shall efficiently fulfil their purpose of enabling pilots to embark and disembark safely. The appliances shall be kept clean, properly maintained and stowed and shall be regularly inspected to ensure that they are safe to use. They shall be used solely for the embarkation and disembarkation of personnel.

2.2 The rigging of the pilot transfer arrangements and the embarkation of a pilot shall be supervised by a responsible officer having means of communication with the navigation bridge who shall also arrange for the escort of the pilot by a safe route to and from the navigation bridge. Personnel engaged in rigging and operating any mechanical equipment shall be instructed in the safe procedures to be adopted and the equipment shall be tested prior to use.

3 Transfer arrangements

3.1 Arrangements shall be provided to enable the pilot to embark and disembark safely on either side of the ship.

3.2 In all ships where the distance from sea level to the point of access to, or egress from, the ship exceeds 9 m, and when it is intended to embark and disembark pilots by means of the accommodation ladder, or by means of mechanical pilot hoists or other equally safe and convenient means in conjunction with a pilot ladder, the fishing vessel shall carry such equipment on each side, unless the equipment is capable of being transferred for use on either side.

3.3 Safe and convenient access to, and egress from, the ship shall be provided by either:

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[33] Refer to A.889(21), "Recommendation on pilot transfer arrangements" as well as MSC/Circ.568/Rev.1, "Required Boarding Arrangements for Pilots".

.1 a pilot ladder requiring a climb of not less than 1.5 m and not more than 9 m above the surface of the water so positioned and secured that:

.1 it is clear of any possible discharges from the ship;

.2 it is within the parallel body length of the ship and, as far as is practicable, within the mid-ship half length of the ship;

.3 each step rests firmly against the ship's side; where constructional features, such as rubbing bands, would prevent the implementation of this provision, special arrangements shall, to the satisfaction of the Administration, be made to ensure that persons are able to embark and disembark safely;

.4 the single length of pilot ladder is capable of reaching the water from the point of access to, or egress from, the ship and due allowance is made for all conditions of loading and trim of the fishing vessel, and for an adverse list of 15º; the securing strong point, shackles and securing ropes shall be at least as strong as the side ropes;

.2 an accommodation ladder in conjunction with the pilot ladder, or other equally safe and convenient means, whenever the distance from the surface of the water to the point of access to the ship is more than 9 m. The accommodation ladder shall be sited leading aft. When in use, the lower end of the accommodation ladder shall rest firmly against the ship's side within the parallel body length of the ship and, as far as is practicable, within the mid-ship half length and clear of all discharges; or

.3 a mechanical pilot hoist so located that it is within the parallel body length of the ship and, as far as is practicable, within the mid-ship half length of the ship and clear of all discharges.

4 Access to the fishing vessel's deck

4.1 Means shall be provided to ensure safe, convenient and unobstructed passage for any person embarking on, or disembarking from, the fishing vessel between the head of the pilot ladder, or of any accommodation ladder or other appliance, and the fishing vessel's deck. Where such passage is by means of:

.1 a gateway in the rails or bulwark, adequate handholds shall be provided;

.2 a bulwark ladder, two handhold stanchions rigidly secured to the fishing vessel's structure at or near their bases and at higher points shall be fitted. The bulwark ladder shall be securely attached to the fishing vessel to prevent overturning.

5 Shipside doors

Shipside doors used for pilot transfer shall not open outwards.

6 Mechanical pilot hoists

6.1 The mechanical pilot hoist and its ancillary equipment shall be of a type approved by the Administration. The pilot hoist shall be *constructed* to operate as a moving ladder to lift and lower one person on the side of the ship, or as a platform to lift and lower one or more persons on the side of the ship. It shall be of such design and construction as to ensure that the pilot can be embarked and disembarked in a safe manner, including a safe access from the hoist to the deck and vice versa. Such access shall be gained directly by a platform securely guarded by handrails.

6.2 Efficient hand gear shall be provided to lower or recover the person or persons carried, and kept ready for use in the event of power failure.

6.3 The hoist shall be securely attached to the structure of the fishing vessel. Attachment shall not be solely by means of the fishing vessel's side rails. Proper and strong attachment points shall be provided for hoists of the portable type on each side of the fishing vessel.

6.4 If belting is fitted in the way of the hoist position, such belting shall be cut back sufficiently to allow the hoist to operate against the fishing vessel's side.

6.5 A pilot ladder shall be rigged adjacent to the hoist and be available for immediate use so that access to it is available from the hoist at any point of its travel. The pilot ladder shall be capable of reaching the sea level from its own point of access to the fishing vessel.

6.6 The position on the fishing vessel's side where the hoist will be lowered shall be indicated.

6.7 An adequate protected stowage position shall be provided for the portable hoist. In very cold weather, to avoid the danger of ice formation, the portable hoist shall not be rigged until its use is imminent.

7 Associated equipment

7.1 The following associated equipment shall be kept at hand ready for immediate use when persons are being transferred:

.1 two man-ropes of not less than 28 mm in diameter properly secured to the fishing vessel if required by the pilot;

.2 a lifebuoy equipped with a self-igniting light;

.3 a heaving line.

7.2 When required by paragraph 4, stanchions and bulwark ladders shall be provided.

8 Lighting

8.1 Adequate lighting shall be provided to illuminate the transfer arrangement's overside, the position on deck where a person embarks or disembarks and the controls of the mechanical pilot hoist.

Regulation 24 – Use of heading and/or track control systems

1 In areas of high traffic density, in conditions of restricted visibility and in all other hazardous navigational situations where heading and/or track control systems are in use, it shall be possible to establish manual control of the fishing vessel's steering immediately.

2 In circumstances as above, the officer in charge of the navigational watch shall have available without delay the services of a qualified helmsperson who shall be ready at all times to take over steering control.

3 The change-over from automatic to manual steering and vice versa shall be made by, or under the supervision of, a responsible officer.

4 The manual steering shall be tested after prolonged use of heading and/or track control systems and before entering areas where navigation demands special caution.

Regulation 25 – Operation of steering gear

In areas where navigation demands special caution, ships shall have more than one steering gear power unit in operation when such units are capable of simultaneous operation.

Regulation 26 – Steering gear: Testing and drills

1 Within 12 hours before departure, the fishing vessel's steering gear shall be checked and tested by the fishing vessel's crew. The test procedure shall include, where applicable, the operation of the following:

.1 the main steering gear;

.2 the auxiliary steering gear;

.3 the remote steering gear control systems;

.4 the steering positions located on the navigation bridge;

.5 the emergency power supply;

.6 the rudder angle indicators in relation to the actual position of the rudder;

.7 the remote steering gear control system power failure alarms;
.8 the steering gear power unit failure alarms; and
.9 automatic isolating arrangements and other automatic equipment.

2 The checks and tests shall include:
.1 the full movement of the rudder according to the required capabilities of the steering gear;
.2 a visual inspection of the steering gear and its connecting linkage; and
.3 the operation of the means of communication between the navigation bridge and steering gear compartment.

3.1 Simple operating instructions with a block diagram showing the change-over procedures for remote steering gear control systems and steering gear power units shall be permanently displayed on the navigation bridge and in the steering gear compartment.

3.2 All ships' officers concerned with the operation and/or maintenance of steering gear shall be familiar with the operation of the steering systems fitted on the fishing vessel and with the procedures for changing from one system to another.

4 In addition to the routine checks and tests prescribed in paragraphs 1 and 2, emergency steering drills shall take place at least once every three months in order to practise emergency steering procedures. These drills shall include direct control within the steering gear compartment, the communications procedure with the navigation bridge and, where applicable, the operation of alternative power supplies.

5 The Administration may waive the requirements to carry out the checks and tests prescribed in paragraphs 1 and 2 for fishing vessels which regularly engage on voyages of short duration. *Fishing vessel engaged on regular voyages of less than 12 hours' duration and with stays in ports of less than 12 hours between such voyages shall be exempted from carrying out the checks and tests required in paragraphs 1 and 2 above.* Such fishing vessels shall carry out these checks and tests at least once every week.

6 The date upon which the checks and tests prescribed in paragraphs 1 and 2 are carried out and the date and details of emergency steering drills carried out under paragraph 4 shall be recorded.

Regulation 27 – Nautical charts and nautical publications

Nautical charts and nautical publications, such as sailing directions, lists of lights, notices to mariners, tide tables, and all other nautical publications necessary for the intended voyage, shall be adequate and up to date.

Regulation 28 – Records of navigational activities

Reference is made to the Order on ship's logbooks and survey books.

All ships engaged on international voyages shall keep on board a record of navigational activities and incidents which are of importance to safety of navigation and which must contain sufficient detail to restore a complete record of the voyage, taking into account the recommendations adopted by the Organization.[34] When such information is not maintained in the ship's log-book, it shall be maintained in another form approved by the Administration.

[34] Refer to "Guidelines for recording events related to navigation", IMO Resolution A.916(22).

Regulation 29 – Life-saving signals to be used by ships, aircraft or persons in distress

An illustrated table describing the life-saving signals[35] shall be readily available to the officer of the watch of every ship to which this chapter applies. The signals shall be used by ships or persons in distress when communicating with life-saving stations, maritime rescue units and aircraft engaged in search and rescue operations.

Regulation 30 – *(Not of relevance to fishing vessels).*

Regulation 31 – Danger messages

1 The master of every ship which meets with dangerous ice, a dangerous derelict, or any other direct danger to navigation, or a tropical storm or encounters sub-freezing air temperatures associated with gale force winds causing severe ice accretion on superstructures, or winds of force 10 *(24-28 m/second)* or above on the Beaufort scale for which no storm warning has been received, is bound to communicate the information by all the means at his disposal to ships in the vicinity, and also to the competent authorities. The form in which the information is sent is not obligatory. It may be transmitted either in plain language (preferably English) or by means of the International Code of Signals.

2 Each Contracting Government will take all steps necessary to ensure that when intelligence of any of the dangers specified in paragraph 1 is received, it will be promptly brought to the knowledge of those concerned and communicated to other interested Governments.

3 The transmission of messages regarding the dangers specified is free of cost to the ships concerned.

4 All radio messages issued under paragraph 1 shall be preceded by the safety signal, using the procedure as prescribed by the Radio Regulations as defined in regulation IV/2.

Regulation 32 – Information required in danger messages

The following information is required in danger messages:

1 Ice, derelicts and other direct dangers to navigation

.1 The kind of ice, derelict or dangers observed.

.2 The position of the ice, derelict or danger when last observed.

.3 The time and date (Universal Co-Ordinated Time) when danger last observed.

2 Tropical cyclones (storms):[36]

.1 A statement that a tropical cyclone has been encountered. This obligation should be interpreted in a broad spirit, and information transmitted whenever the master has good reason to believe that a tropical cyclone is developing or exists in the neighbourhood.

.2 Time, date (Universal Co-ordinated Time) and position of ship when the observation was taken.

.3 As much of the following information as is practicable should be included in the message:

- barometric pressure,[37] preferably corrected (stating millibars, millimetres, or inches, and whether corrected or uncorrected);

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35 Such life-saving signals are described in the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual, volume III, *Mobile Facilities*, and illustrated in the International Code of Signals, as amended pursuant to resolution A.80(IV).

36 The term “tropical cyclone” is the generic term used by national meteorological services of the World Meteorological Organization. The terms hurricane, “typhoon, cyclone, severe tropical storm”, etc, may also be used, depending on the geographic location.

- barometric tendency (the change in barometric pressure during the past three hours);
- true wind direction;
- wind force (Beaufort scale);
- state of the sea (smooth, moderate, rough, high);
- swell (slight, moderate, heavy) and the true direction from which it comes. Period or length of swell (short, average, long) would also be of value;
- true course and speed of ship.

Subsequent observations

3 When a master has reported a tropical or other dangerous storm, it is desirable, but not obligatory, that further observations be made and transmitted hourly, if practicable, but in any case at intervals of not more than 3 hours, so long as the ship remains under the influence of the storm.

4 Winds of force 10 (*25 m/second)* or above on the Beaufort scale for which no storm warning has been received. This is intended to deal with storms other than the tropical storms referred to in paragraph 2; when such a storm is encountered, the message should contain similar information to that listed under the paragraph but excluding the details concerning sea and swell.

5 Sub-freezing air temperatures associated with gale force wind causing severe ice accretion on superstructures:

.1 Time and date (Universal Co-Ordinated Time).

.2 Air temperature.

.3 Sea temperature (if practicable).

.4 Wind force and direction.

Examples

ICE

TTT ICE. LARGE BERG SIGHTED IN 4605 N., 4410 W., AT 0800 UTC. MAY 15.

DERELICTS

TTT DERELICT. OBSERVED DERELICT ALMOST SUBMERGED IN 4006 N., 1243 W., AT 1630 UTC. APRIL 21.

DANGER TO NAVIGATION

TTT NAVIGATION. ALPHA LIGHTSHIP NOT ON STATION. 1800 UTC. JANUARY 3.

TROPICAL CYCLONE

TTT STORM. 0030 UTC. AUGUST 18. 2004 N, 11354 E. BAROMETER CORRECTED 994 MILLIBARS, TENDENCY DOWN 6 MILLIBARS. WIND NW, FORCE 9, HEAVY SQUALLS. HEAVY EASTERLY SWELL. COURSE 067, 5 KNOTS.

TTT STORM. APPEARANCES INDICATE APPROACH OF HURRICANE. 1300 UTC. SEPTEMBER 14. 2200 N, 7236 W. BAROMETER CORRECTED 29.64 INCHES, TENDENCY DOWN .015 INCHES. WIND NE, FORCE 8, FREQUENT RAIN SQUALLS. COURSE 035, 9 KNOTS.

TTT STORM. CONDITIONS INDICATE INTENSE CYCLONE HAS FORMED. 0200 UTC. MAY 4. 1620 N, 9203 E. BAROMETER UNCORRECTED 753 MILLIMETRES, TENDENCY DOWN 5 MILLIMETRES. WIND S BY W, FORCE 5. COURSE 300, 8 KNOTS.

TTT STORM. TYPHOON TO SOUTHEAST. 0300 UTC. JUNE 12. 1812 N, 12605 E. BAROMETER FALLING RAPIDLY. WIND INCREASING FROM N.

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[37] The standard international unit for barometric pressure is the hectopascal (hPa), which is numerically equivalent to the millibar (mbar).

TTT STORM. WIND FORCE 11, NO STORM WARNING RECEIVED. 0300 UTC. MAY 4. 4830 N, 30 W. BAROMETER CORRECTED 983 MILLIBARS, TENDENCY DOWN 4 MILLIBARS. WIND SW, FORCE 11 VEERING. COURSE 260, 6 KNOTS.

ICING

TTT EXPERIENCING SEVERE ICING. 1400 UTC. MARCH 2. 69 N, 10 W. AIR TEMPERATURE 18° F (-7.8°C). SEA TEMPERATURE 29°F (-1.7° C). WIND NE, FORCE 8.

Regulation 33 – Distress messages: obligations and procedures

1 The master of a ship at sea which is in a position to be able to provide assistance, on receiving a signal from any source that persons are in distress at sea, is bound to proceed with all speed to their assistance, if possible informing them or the search and rescue service, that the ship is doing so. If the ship receiving the distress alert is unable or, in the special circumstances of the case, considers it unreasonable or unnecessary to proceed to their assistance, the master must enter in the log-book the reason for failing to proceed to the assistance of the persons in distress, taking into account the recommendations of the Organization, inform the appropriate search and rescue service accordingly.

2 The master of a ship in distress or the search and rescue service concerned, after consultation, so far as may be possible, with the masters of ships which answer the distress alert, has the right to requisition one or more of those ships as the master of the ship in distress or the search and rescue service considers best able to render assistance, and it shall be the duty of the master or masters of the ship or ships so requisitioned to comply with the requisition by continuing to proceed with all speed to the assistance of persons in distress.

3 Masters of ships shall be released from the obligation imposed by paragraph 1 on learning that their ships have not been requisitioned and that one or more other ships have been requisitioned and are complying with the requisition. This decision shall, if possible, be communicated to the other requisitioned ships and to the search and rescue service.

4 The master of a ship shall be released from the obligation imposed by paragraph 1, and, if his ship has been requisitioned, from the obligation imposed by paragraph 2 on being informed by the persons in distress or by the search and rescue service or by the master of another ship which has reached such persons that assistance is no longer necessary.

5 The provisions of this regulation do not prejudice the Convention for the Unification of Certain Rules of Law relating to Assistance and Salvage at Sea, signed at Brussels on 23 September 1910, particularly the obligation to render assistance imposed by article 11 of that Convention.[38]

Regulation 34 – Safe navigation and avoidance of dangerous situations

1 Prior to proceeding to sea, the master shall ensure that the intended voyage has been planned using the appropriate nautical charts and nautical publications for the area concerned, taking into account the guidelines and recommendations developed by the Organization.[39]

2 The voyage plan shall identify a route which:

.1 takes into account any relevant ships' routeing systems;

.2 ensures sufficient sea room for the safe passage of the ship throughout the voyage;

.3 anticipates all known navigational hazards and adverse weather conditions; and

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38 International Convention on Salvage, 1989, done at London on 28 April 1989, entered into force on 14 July 1996.

39 Refer to resolution A.893(21), "Guidelines for Voyage Planning".

.4 takes into account the marine environmental protection measures that apply, and avoids, as far as possible, actions and activities which could cause damage to the environment.

3 The owner, the charterer, or the company, as defined in regulation IX/1, operating the ship or any other person shall not prevent or restrict the master of the ship from taking or executing any decision which, in the master's professional judgement, is necessary for safe navigation and protection of the marine environment.

Regulation 35 – Misuse of distress signals

The use of an international distress signal, except for the purpose of indicating that a person or persons are in distress, and the use of any signal which may be confused with an international distress signal are prohibited.

Regulation 36 – Navigation lights, shapes and sound signal devices

1 All ships shall be provided with navigation lights, shapes and sound signal devices to such an extent that they comply with the Convention on the International Regulations for Preventing Collisions at Sea, 1972, as amended. The design of the shapes and the effectiveness and installation of the sound signal devices on board shall be in accordance with the International Regulations for Preventing Collisions at Sea as well as the regulations issued by the Danish Maritime Authority in force at any time.

2 Ships engaged on voyages outside restricted trade, ships beyond 120 nautical miles of the Faroe Islands and ships beyond 100 nautical miles of Greenland shall be provided with a spare set of navigation lights for the top, side, stern and anchor lights prescribed in the International Regulations for Preventing Collisions at Sea for the type of ship in question. In new ships the spare lights shall be permanently connected to the ship's electrical emergency power source.

3 Navigation lights and sound signal devices shall be of an approved type and comply with the provisions of the Convention on the International Regulations for Preventing Collisions at Sea, 1972, as amended.

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Chapter XI
Regional and local provisions

(ANNEX III of the Directive) **Regional and local provisions**
(Articles 3(3) and 4(1))

A. The provisions apply to "northern" regions

1. Area of application

Unless mentioned otherwise elsewhere, the waters north of the boundary as illustrated on the chart attached to this Annex, excluding the Baltic Sea. This boundary is defined by the parallel of latitude 62° N from the west coast of Norway to longitude 4° W, thence the meridian of longitude 4° W to latitude 60° 30' N, thence the parallel of latitude 60° 30' N to longitude 5° W, thence the meridian of longitude 5° W to latitude 60° N, thence the parallel of latitude 60° N to longitude 15° W, thence the meridian of longitude 15° W to latitude 62° N, thence the parallel of latitude 62° N to longitude 27° W, thence the meridian of longitude 27° W to latitude 59° N and thence the parallel of latitude 59° N to the west.

2. Definitions

"Heavy drift ice" means drift ice covering 80% or more of the sea surface.

3. Regulation III/7(1) (Operating conditions)

In addition to the specific operating conditions given in Regulation III/7(1) the following operating conditions shall be considered also:

(e) operating condition (b), (c) or (d), whichever produces the lowest values of the stability parameters contained in the stability criteria listed in Regulation 2, shall be calculated including allowance for ice accretion in accordance with the provisions of Regulation III/8;

(f) for ships designed for seining: departure from the fishing grounds with the fishing gear, no catch and 30 % bunkers, including allowance for ice accretion in accordance with the provisions of Regulation III/8.

4. Regulation III/8 (Ice accretion)

The specific requirements of Regulation III/8 and the specific guidelines stated in recommendation 2 of the Torremolinos conference shall be applied within the region concerned, i.e. also outside the boundaries shown on the chart accompanying said recommendation.

Notwithstanding the provisions of regulation III/8(1)(a) and (b) the following icing allowance shall be given in the stability calculations for vessels operating in the area north of latitude 63° N, between longitude 28° W and longitude 11° W:

(a) 40 kilograms per square metre on exposed weather decks and gangways;
(b) 10 kilograms per square metre for projected lateral area of each side of the vessel above the water plane.

5. Regulations VII/5(2)(b) and (3)(b) (Number and types of survival craft and rescue boats)

Notwithstanding the provisions of regulation VII/5 (2)(b), (3)(b), and (3a), for fishing vessels the hull of which is built to comply with the rules of a recognised organisation for operation in waters with heavy drift ice, concentration in compliance with regulation II/1/2 of the Annex to the Torremolinos Protocol, the rescue boat/lifeboat required in (2)(b), (3)(b) or (3a)(b), shall at least be partially covered (as defined in Regulation VII/18) and shall have sufficient capacity to accommodate all persons on board.

6. Regulation VII/9 (Immersion suits and thermal protective aids)

Notwithstanding the provisions of regulation VII/9 an approved immersion suit, of an appropriate size, complying with the provisions of regulation VII/25, including the measures applied to in this regulation and listed in this Annex under item 1.8, shall be provided for every person on board.

7. Regulation VII/14 (radar transponder)

In addition to the provisions of Chapter VII, Part B, every lifeboat, rescue boat and life-raft shall permanently be equipped with an approved radar transponder capable of operating in the 9 GHz band.

8. Regulation VII/25 (Immersion suits)

Notwithstanding the provisions of regulation VII/25 all immersion suits required under item 1.6 of this Annex shall, as a single unit, be made of material with inherent insulation and shall also comply with the buoyancy requirements of Regulation VII/24(1)(c)(i). All other relevant requirements of regulation VII/25 shall also be complied with.

9. Regulation X/3(7) (Radar installations)

Notwithstanding the provisions of regulation X/3(7), every vessel of 24 metres in length and over shall be fitted with a radar installation to the satisfaction of the administration. This radar installation shall be capable of operating in the 9 GHz band.

10. Regulation X/5 (Signalling equipment)

In addition to the provisions of regulation X/5, every vessel shall, when operating in waters where drift ice may occur, be fitted with at least one searchlight with a lighting capacity of at least 1 lux, measured at a distance of 750 metres.

B. The provisions apply for southern regions

1. Areas of application

The Mediterranean sea and the coastal areas, within 20 miles from the coast of Spain and Portugal, of the summer zone of the Atlantic Ocean, as defined on the (Chart of zones and seasonal areas) in Annex II to the 1996 International Convention on Load Lines[1)], as amended.

2. Regulation VII/9(1) (Immersion suits)

Taking into consideration the provisions of item 4 of Regulation VII/9, add at the end of paragraph 1 the following sentence:

“For vessels of less than 45 metres in length the number of immersion suits need not be higher than two”.

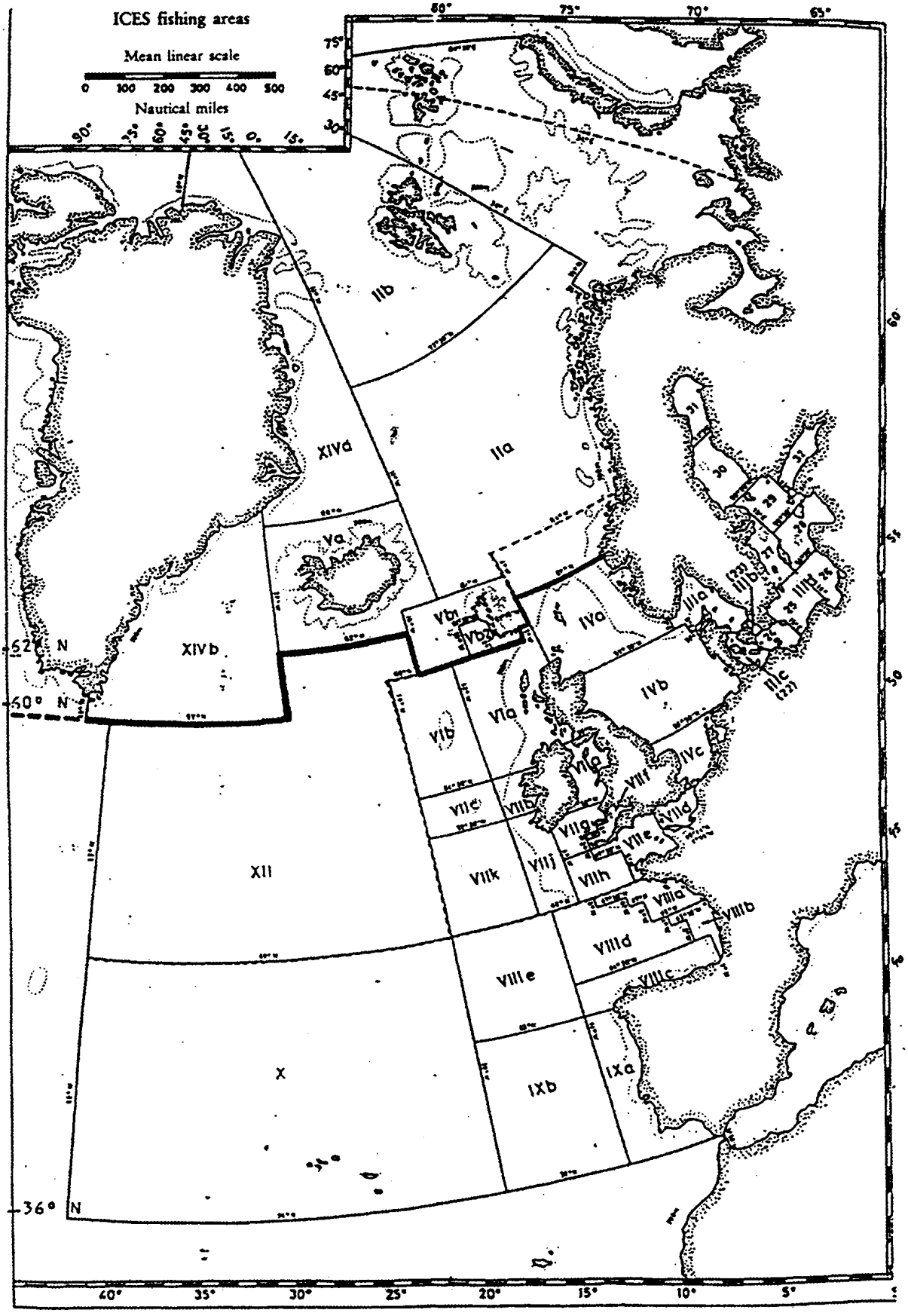
3. Regulation IX/1 (Radio communications)

Insert a new item 1a as follows:

'This chapter shall also apply to new vessels of 24 metres in length and above, provided that the area in which they operate is supported appropriately by a coast station operating in accordance with IMO’s master plan”.

1) The International Convention on Load Lines, 1966, adopted 5 April 1966 by the International Load Lines Conference in London at the request of the Intergovernmental Maritime Consultative Organization (IMCO).

Northern Area



Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Chapter XII
Accommodation, etc.[1]

This chapter shall apply to new fishing vessels constructed after 1 August 2007. Regulation 4, paragraph 4(a) on air conditioning systems shall apply to all fishing vessels.

Regulation 1 – General, equivalents and exemptions

(1) Definitions

(a) "Accommodation": includes sleeping quarters, messrooms, infirmaries, galleys, corridors in accommodation spaces and spaces for sanitary installations.

(b) "Officers": Mates, engineers, radio operators, leading seamen and other members of the responsible crew, with the exception of the master.

(c) "The vessel's crew" or "the crew": covers any person employed on board, with the exception of the master.

(d) "Steel": also includes iron and equivalent, suitable materials.

(2) Equivalence

The provisions of this chapter may be departed from in general if the Danish Maritime Authority so permits, if, following negotiations with the organisations of the fishing industry, the Danish Maritime Authority is satisfied that such deviations would result in such advantages that the general conditions are not less favourable than they would have been had the provisions been applied in full.

(3) Exemptions

(a) For vessels of a length (L) below 24 m, the Danish Maritime Authority may grant exemptions from the provisions of these regulations considering the special circumstances that apply to each individual vessel and the vessel's size and intended use.

(b) On vessels that are normally away from their homeport for a period of less than 36 h and where the crew do not reside on board when the vessel is in port, exemptions may be granted from the provisions of regulations 5, 6 and 7. In such vessels, sufficient sanitary installations shall, however, be provided,

[1] *The provisions of this chapter are based on the Accommodation of Crews (Fishermen) Convention, 1966, ILO Convention no. 126 of 21 June 1966.*

and it shall be possible to store supplies as well as to prepare and eat meals, and restrooms with a possibility of lying down shall be available.

(c) On vessels of 24 m in length or more, the Danish Maritime Authority may grant exemptions from regulations 2-5 and 7-8, when, after negotiations with the employer and employee organisations of the fishing industry, if such organisations exist, the Administration is satisfied that the planned changes would result in similar advantages and that the general conditions would not be less favourable than they would have been had the provisions been applied in full. And when conditions may so necessitate considering the special circumstances that apply to each individual vessel.

(4) Approval and survey

(a) For all new vessels, drawings as well as information about the vessel's service area, expected gross tonnage, the number of crewmembers and their distribution by category shall be forwarded to the Danish Maritime Authority for approval, etc. The drawings shall show the location, size and arrangement of the accommodation, the utilisation of the space, the placing of fittings and appurtenances as well as the arrangement of heating, ventilation, exits, etc.

(b) Equivalent drawings and information shall be submitted to the Danish Maritime Authority before the accommodation in an existing vessel undergoes alterations and modifications.

(c) A complete survey of the accommodation, etc. shall be carried out before the vessel is put into service.

(d) Dependent on the circumstances, either a complete or a partial survey shall be carried out following major repairs, alterations or modifications involving considerable changes to the accommodation.

(e) The Administration or a recognised organisation authorised by the Administration may, at any time, carry out an unannounced inspection of the accommodation on board.

(5) Storage of goods, etc.

(a) Toxic, flammable or foul-smelling substances may not be stored in accommodation spaces.

(b) Goods or supplies that are not the personal property of the crew may not be placed in accommodation spaces. However, in vessels of a length (L) of less than 24 m, a special room or locker for the storage of vessel equipment, provided that it is not of the type referred to in regulation 1(5)(a), may be arranged in connection with accommodation spaces if this does not entail a risk or inconvenience for the crew.

(6) Paint

(a) Accommodation spaces, corridors and galleys shall be in light colours. Surface treatment which comes off when touched may not be used.

Regulation 2 – Location and design, corridors and exits

(1) Location, etc.

(a) Accommodation spaces shall be located either below deck or in solid and tight structures, and access to them in relation to other rooms shall provide adequate safety, protection from the weather and sea, and insulation against heat and cold, unnecessary noise and emanations from other spaces.

(b) Accommodation spaces may not be located in front of the collision bulkhead or its extension. This applies to accommodation spaces situated both below and above the working deck. If the collision bulkhead has been extended only up to the working deck, accommodation spaces above the working deck may not be situated forward of the foremost permitted position of the collision bulkhead.

(c) In vessels of a length (L) of or above 24 m, accommodation spaces may not be located below a deck lying below the deepest operating waterline. Sleeping quarters shall, as far as possible, be located amidships or aft.

(d) Direct access may not be provided from sleeping quarters, galleys and messrooms to common toilets, bathrooms, laundry rooms, machinery spaces, fish holds, lamp rooms, rooms for storing paint, storerooms, drying rooms or similar rooms.

(e) If access is provided from the same corridor to both sleeping quarters and machinery spaces, the door to the machinery space shall be made of steel, be reasonably gastight and be of the self-closing type.

(f) In vessels of a length (L) of or above 24 m, sufficient and suitably ventilated wardrobe space shall be arranged for hanging up oilskins outside the sleeping quarters, but in a place easily accessible from them.

(g) Suitable measures shall, insofar as possible, be taken to protect non-smokers against nuisance from tobacco smoke.

(2) Corridors, staircases and doors

(a) In general, the width of corridors used for access to the accommodation may not be less than 90 cm measured between the restricting bulkheads.

(b) In general, staircases shall have a width between the restricting bulkheads of 80 cm and at least 70 cm free width on staircases used for means/routes of escape. Stairs shall have a suitable rise and be provided with handrails on at least one side.

(c) Permission may be granted to place fire alarm boxes, ventilation ducts, cable tracks and the like on the restricting bulkheads when it is considered not to cause inconvenience during passage. However, the room for free passage may not be less than 60 cm at any point in a corridor.

(d) In short, enclosed corridors that are normally used by only one or two persons, permission may be granted to reduce the width provided that the free passage area is not less than 60 cm.

(e) In vessels of less than 60 m in length or more, dead-end corridors may not be longer than 7.00 m and in vessels of less than 60 m in length, such corridors may not be longer than 2.50 m and never more than 5.00 m.[2]

(f) Doors on fishing vessels built on or after 1 January 2003 shall comply with the following:

(i) All doorways from open deck to infirmaries shall have a free width of at least 750 mm.

(ii) Doors providing access to a staircase[3] *or means/route of escape shall have a free width of at least 700 mm.*

(iii) Doors providing access to common accommodation spaces, cabins and the like shall in general have a free width of 650 mm.

(iv) Other doors to toilets, bathrooms and the like shall in general have a free width of 600 mm.

(g) The height of the doorway shall in general be at least 1.88 m above the floor covering measured up to the lower edge of the upper frame.

(h) On vessels with a length (L) below 24 m, the Danish Maritime Authority may permit deviations from the stipulated door widths considering the size and intended use of the vessel.

(i) All corridors and staircases in and to accommodation spaces shall be fitted with secure handrails or grips, insofar as possible on both sides.

(3) Exits

(a) At least two exits shall be provided from each part of the accommodation to open deck located as far apart as possible.

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2 *Reference is also made to chapter V, regulation 13(1)(d).*

3 *Reference is also made to chapter V, regulations 13, 33 and 50.*

(b) One of these exits may be an emergency exit through a hatchway/door or porthole/window which shall comply with the following requirements:

(i) A hatchway/door to open deck shall have an internal dimension of at least 600 x 600 mm.

(ii) It shall be possible to open the hatchway/door from the inside without using a key or tool. It shall also be possible to open the hatchway or the door directly from the outside; however, the handle or another device may be removable and placed in a central place, e.g. in the wheelhouse. The hatchway/door may not be provided with permanent fittings for a padlock.

(iii) A porthole/window that is used as an emergency exit shall have a minimum internal diameter of 450 mm for portholes and an internal dimension measured across of 450 mm for windows.

(iv) If the emergency exit is accessed from the accommodation through separate rooms (steering engine room, cabins or the like), it may not be possible to lock doors to such rooms unless they are fitted with a kick-hatch that may be removed in the direction of escape.

(v) The necessary ladders, steps and handrails shall be fitted to make access through the emergency exit easier.

(vi) Appropriate points, e.g. doors, kick-hatches, windows/portholes, etc. shall be labelled "Emergency exit".

(c) The location of the exits shall also be such that a fire at one level cannot trap persons at another level.

(d) If a radio station does not have direct access to the weather deck, two means of access shall be provided from such a room, one of which may be a window or porthole complying with the requirements of regulation 2(3)(b).

(4) Structure

(a) External bulkheads and the part of a bulkhead separating sleeping quarters from common toilets, bathrooms, laundry rooms, machinery spaces, fish holds, lamp rooms, rooms for storing paint, storerooms, drying rooms or similar rooms shall be sound and securely made of steel or another suitable material and shall be watertight and gastight.

(b) If steel decks or steel bulkheads in accommodation spaces form the top or side of an oil tank, they shall be coated with a non-combustible material with a thickness of at least 40 mm. Manholes or other openings to oil tanks may not be fitted in accommodation spaces.

(c) If anchor cables are carried through an accommodation space, they shall be enclosed in watertight steel piping or casings of adequate size which are suitably insulated.

(d) The floor in the crew's accommodation shall be of suitable material and design and shall have a surface that is resistant to moisture and easy to keep clean.

(e) Where the floor covering is made of a composite material, the joints at the walls shall be rounded off to avoid cracks.

(f) Inspection hatches and outlets for lower decks or a drainage system shall be provided to a sufficient extent.

(g) All possible measures shall be taken to prevent insects from entering the crew's accommodation.

(5) Insulation

(a) External bulkheads, the vessel's sides and decks, etc. delimiting accommodation spaces shall be insulated with at least 100 mm of approved, non-combustible insulating material. In steel vessels, bulkheads between accommodation spaces and machinery or fish holds shall be made of steel. In wooden vessels, they may be built of two layers of wood with two intermediate layers of felt or the like or of 60 mm of wood with a covering of insulating plates.

(b) Care shall be taken to provide protection against the effects of heat from steam and/or hot water pipes in accommodation spaces. Where accommodation spaces or corridors leading to accommodation spaces are adjacent to galleys, machinery spaces or casings where the temperature differential between the rooms is particularly large, insulating material of an approved, non-combustible type shall be provided between the rooms.

(c) The insulation used may not comprise materials containing asbestos.

Regulation 3 – Lighting and heating

(1) Lighting

(a) All accommodation spaces shall be adequately lit. The supply of daylight in accommodation spaces shall at least be sufficient for a person with normal sight to read ordinary newsprint anywhere in the room on a clear day. If it is not possible to procure entry of sufficient daylight, artificial lighting of equivalent intensity shall be provided.

(b) Electric lighting shall be installed in the crew's accommodation spaces. If two independent sources of electricity for lighting are not available, it shall be possible to provide emergency lighting, for example by means of suitable battery lamps.

(c) The independent sources of electricity mentioned above may be either the vessel's normal electrical supply system or the standby and emergency source of energy mentioned in regulation 17 in chapter IV.

(d) A reading lamp with a switch shall be fitted at each berth in sleeping quarters.

(e) The following guidelines are laid down as to the luminous intensity that shall be considered suitable for artificial lighting:

Sleeping quarters and separate dayrooms:
General lighting 50 lux
Lighting at tables where reading
and writing take place 200 lux

Messrooms and recreation rooms:
General lighting 50 lux
Lighting on dining tables 150 lux
Lighting on tables where reading, writing
and games, etc. take place 200 lux

Bathrooms and toilets:
General lighting 50 lux
At mirrors 200 lux

Corridors and staircases:
General lighting 50 lux
(to be measured at a horizontal plane
85 cm above floor level)

Infirmaries:
Working light over the bed 200 lux
(the general lighting shall be variable)

In other rooms that are not mentioned here and as an equivalent to the luminious power mentioned above, the luminous power recommended by the Danish Standards Association[4] may be used.

(2) Heating[5]

(a) A suitable heating system for the accommodation shall be fitted in all vessels.

(b) The heating system shall constantly be switched on when the crew is on board and the vessel is operating or when the crew is working on board as well as when circumstances necessitate its use. The capacity shall be sufficient to maintain a room temperature of at least 20º C under all conditions.

(c) In vessels of a length (L) of or above 24 m, heating by means of open fire shall not be permitted.

(d) When furnaces are used, they shall be of sufficient size and be correctly installed and secured, and combustible material shall be protected against ignition. The uptake may not be fitted with a damper. Bonnets shall, if installed, be of an appropriate design. Spaces where furnaces have been installed shall be sufficiently ventilated letting air both in and out.

(e) Electrical radiators shall be of an approved type, permanently fixed and of a design such that the risk of fire is limited to a minimum.

(f) Radiators and other heating systems shall be arranged and shielded so that they do not cause inconvenience or represent a risk of lining, curtains or other similar materials being scorched or set on fire by heat from the element.

Regulation 4 – Ventilation and air-conditioning systems

(1) General

(a) All accommodation spaces shall be generally ventilated so that there is both a sufficient supply and discharge of air under all conditions when doors, portholes, skylights or the like are closed. It shall be possible to regulate the ventilation system so that the air is constantly satisfactory and the circulation of air sufficient under all weather and climatic conditions.

(b) Vent holes for both the supply and discharge of air shall be located so that the space is well ventilated. The vent hole for the supply of air shall be located so that there is no risk of harmful waste gases being sucked in.

(c) Vent holes may not exit above or immediately next to a berth.

(d) Spaces designed for combustible, corrosive or smelly materials shall be separately ventilated.

(2) Natural ventilation

(a) In vessels with natural ventilation, the outlet of air may take place via air gratings in the doors or bulkheads leading to corridors from which there is sufficient access to open deck.

(b) In vessels with natural ventilation, the flow area in both the supply and discharge ducts of sleeping quarters shall be at least 30 cm^2 for each person for which the space is designed.

(c) In the case of natural ventilation, the flow area in both the supply and discharge ducts of dining and messrooms, etc. shall be at least 7.5 cm^2 for each seat in the room, however not less than 30 cm^2.

(d) In the case of natural ventilation, the ducts shall be as short as possible with a minimum of bends.

(3) Mechanical ventilation

(a) In vessels of a length (L) of or above 45 m, the ventilation mentioned in regulation 4(1) shall be mechanical.

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4 *Reference is made to DS 700 Artificial lighting in work premises.*

5 *Reference is also made to chapter V, regulation 47, Heating installations.*

(b) The mechanical ventilation shall be dimensioned such that the air capacity is equivalent to six changes of air per hour in each individual room. As to toilets, etc., see, however, regulation 4(5).

(c) The ventilation system shall be adjustable.

(d) Supply and discharge ducts shall be large enough for the air speed in the ducts not to exceed 6 m/s.

(e) The discharge of air may be to corridors or directly to the open air.

(f) Recirculation of up to 50% of the air supply may be permitted on the condition that toilets and bathrooms are provided with separate mechanical extraction.

(g) The ventilation system shall be constantly switched on during the operation of the vessel. Maintenance of the mechanical ventilation shall be ensured by means of the necessary spare-parts, cf. regulation 4(4)(f).

(h) Vessels engaged in trade south of 36º northern latitude shall be provided with both mechanical and natural ventilation. However, only one of these means shall be necessary in areas where this provides sufficient ventilation.

(4) Air conditioning system

(a) Vessels of a length (L) of or above 45 m engaged in trade between 36 northern and 36º southern latitude shall be equipped with air conditioning in sleeping quarters, infirmaries, messrooms, recreation rooms, offices, radio rooms and engine manoeuvring spaces. The same applies to navigation rooms, with the exception of the wheelhouse.

(b) The air conditioning system may be a central system or consist of separate units and shall be designed so that, at 35º C and 70% relative humidity outside, it can maintain 29º C and about 50% relative humidity inside. No more than 50% return air may be used.

(c) Furthermore, the cooling machinery and air coolers of the system shall be designed so that, at 28º C and 80% relative humidity outside, they can maintain 24º C and about 50% relative humidity inside. It shall be possible to achieve such conditions with the capacity mentioned in regulation 4(3)(b) and regulation 4(3)(f).

(d) Ventilation and air-conditioning systems shall be provided with appropriate filters at air inlets, shall be designed for the special conditions characteristic of operation at sea and may not cause noise nuisance or vibrations.

(e) The air conditioning system shall be constantly switched on during the operation of the vessel in the service area mentioned in regulation 4(4)(a). Maintenance of operation shall be ensured by means of the necessary spare-parts.

(f) The following spare-parts shall be considered necessary as a minimum:

(i) one spare motor for each type of motor in the ventilation systems;

(ii) one set of extra bearings for each type of motor in both the ventilation and air-conditioning system as well as one set of extra bearings for the ventilator where this is driven by a belt drive from a motor;

(iii) 100% supplement of air filters;

(iv) one set of V-belts of each type;

(v) one spares box containing special tools and small spare-parts and O-rings.

(5) Ventilation in toilets and bathrooms

(a) Toilets and bathrooms shall be provided with separate ventilation discharging to the open air.

(b) In vessels of a length (L) of or above 45 m, toilets and bathrooms shall be ventilated by means of a special extraction system leading directly to the open air. The extraction system shall be designed for ten changes of air per hour. The intake of air to toilets and bathrooms may be provided via openings under the door from adjacent sleeping quarters or corridors.

(6) Ventilation in galleys

(a) Where cooking facilities are fitted, a cooker hood with outlet to the open air shall be provided above such facilities.

(b) In the open air, the duct shall be fitted with an exhaust hood if extraction is not mechanical.

(7) Ventilation in infirmaries/treatment rooms

In infirmaries, the ventilation shall be so arranged that air from such rooms cannot penetrate into other accommodation spaces. Doors from infirmaries/treatment rooms to corridors providing access to other accommodation spaces may not be fitted with ventilation openings. Ventilation ducts serving both these and other accommodation spaces shall be provided with non-return flaps or another arrangement to ensure that the air from infirmaries/treatment rooms does not penetrate into other accommodation spaces.

Regulation 5 – Sleeping quarters, floor area, clear headroom, berths, furniture

(1) General

(a) Sleeping quarters shall be arranged and fitted out such that it is easy to keep them tidy and that they afford the crew a reasonable level of comfort.

(2) Number of persons

(a) The number of persons for which each sleeping quarter is designed may not exceed:

for officers: 1

for the remainder of the crew:

in vessels of a length (L) below 45 m: 4

in vessels of a length (L) of or above 45 m: 2

(b) Sleeping quarters shall be marked with the number of persons for which the space is intended and for whom it is intended.

(3) Floor area and clear headroom

(a) The floor area for each person in sleeping quarters shall in addition to the area taken up by berths and lockers as well as by other fixed items of furniture be at least:

In vessels of a length (L) below 24 m: 0.75 m^2

In vessels of a length (L) of or above 24 m: 1.0 m^2

(b) The clear headroom in all accommodation spaces and corridors shall be at least 1.98 m.

(4) Berths

(a) Each crewmember shall have a separate berth.

(b) Berths shall not be placed side by side in such a way that access to one berth can be obtained only over another.

(c) Berths shall not be arranged in tiers of more than two; in the case of berths placed along the vessel's side, there shall be only a single tier where a porthole is situated above a berth.

(d) The lower berth in a double tier shall not be less than 30 cm above the floor; the upper berth shall be placed approximately midway between the bottom of the lower berth and the lower side of the deckhead beams.

(e) The minimum inside dimensions of a berth shall be at least 1.98 x 0.68 m; however, at least 1.98 x 0.58 m in vessels of a length (L) below 24 m. Under special circumstances, a lower width may be permitted at one end of the berths.

(f) *Each berth with associated berth equipment shall be made of suitable materials. The framework and the lee-board, if any, of a berth shall be of approved material, hard, smooth and not likely to corrode or to harbour vermin.*

If tubular frames are used for the construction of berths, they shall be completely sealed and without perforations which would give access to vermin.

Each berth shall be fitted with a spring mattress of approved material or with a spring bottom and a mattress of approved material. Stuffing of straw or other material likely to harbour vermin shall not be used.

(g) *When one berth is placed over another a dust-proof bottom of wood, canvas or other suitable material shall be fitted beneath the upper berth.*

(5) *Furnishings*

(a) *Sleeping quarters shall be fitted with clothes lockers with a rod for holding clothes on hangers. Furthermore, there shall be a locker or the like with drawers with a capacity of at least 0.056 m^3 for each person for which the room is intended. At least one locker or drawer for each person shall be lockable with a separate key.*

(b) *Each sleeping room shall be provided with a table or desk and an appropriate number of seats. There shall be at least one seat for each person for whom the room is intended.*

(c) *The furniture shall be of suitable material.*

(d) *Sleeping rooms shall be fitted with curtains for the sidelight.*

(e) *Sleeping rooms or toilets shall be fitted with a mirror, a book rack and a sufficient number of coat hooks. Furthermore, there shall also be a small cabinet for toilet requisites for each person for whom the room is intended.*

Regulation 6 – Mess rooms, galleys and storerooms as well as potable water systems

(1) *Mess rooms*

(a) *In vessels carrying a crew of four persons or more, mess rooms shall be separate from sleeping quarters.*

(b) *The dimensions and equipment of each mess room shall be sufficient for the number of persons likely to use it at any time and be equipped with a sufficient number of tables and seats.*

(c) *If mess rooms and galleys are separate, they shall be as close as practicable to each other.*

(d) *For mess rooms not located directly next to the galley, there shall be a pantry or mess room with adequate lockers for mess utensils and facilities for washing them.*

The furniture in dining areas shall be of suitable material. The tops of tables and seats shall be of damp-resisting material, without cracks and easily kept clean.

(2) *Galleys*

(a) *The galley shall be separate from sleeping quarters.*

(b) *The galley shall be suited for and sufficiently large for its purpose, and it shall be well lit, well ventilated and fitted with sufficient drains. Drains shall comply with the provisions of regulation 7(1)(e).*

(c) *The galley shall be equipped with cooking utensils, cupboards and shelves to the extent necessary as well as washing up stands of a rustproof material. Drinking water shall be supplied to the galley via pipelines; if the supply is pressurised, measures shall be taken to avoid backflow. Where the galley does not have a hot water installation, another facility for heating water shall be provided.*

(3) *Storerooms*

(a) A provision storeroom of adequate capacity shall be provided which can be kept dry, cool and well ventilated. In vessels of a length (L) of or above 24 m, refrigerators or other facilities for the storage of foods at low temperature shall be provided.

(4) Potable water system

(a) Potable water tanks

Fixed potable water tanks shall have a cofferdam separating them from tanks that may be used for other liquids. Cofferdams may be dispensed from as separation from tanks containing seawater. In riveted vessels, the side of the vessel may not form boundaries on a potable water tank. The potable water tanks shall have the necessary manholes, and they shall, as far as possible, be accessible for both external and internal inspection. If their construction and size does not allow access to the inside of the tanks, they shall be provided with a sufficient number of cleaning holes. Manholes and cleaning holes shall be designed so that the accumulation of impurities is avoided. Manhole covers and cleaning hole covers shall be fitted on frames that have a height of at least 50 mm and shall be marked "Potable water tank".

All steel in potable water tanks shall be fully welded. All internal surfaces, including surfaces in small containers, etc., shall have a suitable finish approved by the Administration.

Pipes forming part of other pipe systems may not be carried through potable water tanks unless such pipes are carried through a watertight sleeve pipe of a thickness equal to that of the tank bulkhead.

The tanks shall be fully emptied either by means of suction from the lowest point in the tank or through a bottom valve. If drain plugs are fitted, they shall be of a dimension different from that of the vessel's other drain plugs.

(b) Pipe connections

Filling pipes for tanks which are filled from shore-based plants shall be led up to a height of 400 mm above deck and be provided with covers which shall be lockable by means of a padlock and be marked "Potable water tank". In smaller vessels, the filling pipe may, however, be designed with a lower height considering the circumstances. Filler necks made in accordance with ISO 5620 may be approved.

The tanks shall be provided with sounding pipe or another approved sounding device that shall be designed so that the water may not be polluted by this means. If sounding pipes for sounding rods/tapes have been fitted, the means of closing these shall be lockable by means of a padlock and be marked "Potable water tank".

For ventilation purposes, potable water tanks shall normally be provided with at least two air pipes that shall be provided with a fine-meshed net.

(c) Pipe systems, etc.

The potable water pipe system may not be connected to other pipe systems in the vessel, and only materials and components that have been VA-approved may be used.[6]

Systems made in accordance with a recognised standard[7] *may be approved provided that the following conditions are met:*

(i) Pipes that may be exposed to frost shall be sufficiently insulated.

(ii) All pumps shall be of the centrifugal-membrane type or another suitable type that does not require lubrication of the parts that are in contact with the potable water.

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6 *"VA-approved": Material approved by the approval committee of the Danish Ministry of Housing for water and drainage material.*

7 *For example, Dansk Værfts Standard (DVS) 34003 or the like.*

(iii) Dead-end service pipes on main pipes (for any later fitting of tapping facilities) shall be provided with a shut-off device at the main pipe.

(iv) Pipes may not be led through tanks intended for other liquids with the exception of tanks for seawater, or unless such pipes have been carried through a watertight sleeve pipe of a thickness equal to that of the tank bulkhead.

(v) Disinfecting equipment shall, if installed, be of an approved type.

(d) The sea suction from the freshwater generator shall be placed clear of all drains from the vessel.

(e) Putting potable water systems into use

In vessels of a length (L) of or above 24 m, a bacteriological analysis of potable water samples from the system shall be carried out in connection with the initial main survey and before the system is put into use. Such water samples, at least one of which shall be from the galley, shall have been taken by a recognised laboratory (e.g the Danish Regional Veterinary and Food Control Authorities) and analysed by it in accordance with the provisions in force. The approval of the Administration will be based on the laboratory's analysis report including a chemical and bacteriological analysis and conclusion.

When a contaminated potable water system has been found, disinfection shall be carried out in accordance with the guidance issued by the Danish National Board of Health.[8]

Regulation 7 – Toilets, bathrooms and laundry rooms, etc.

(1) Toilets and bathrooms

On vessels with accommodation, there shall be suitably equipped and installed showers with running hot and cold water, wash basins and toilets, and such rooms shall be fitted with an appropriate ventilation.

(a) In vessels of a length (L) below 24 m, at least one toilet shall be installed for every eight persons or part thereof.

(b) In vessels of a length (L) of or above 24 m, the following sanitary facilities shall be provided for each number of persons given below or part thereof for all members of the crew who do not have their own sleeping cabin with en-suite toilet and bath:

one tub and/or shower bath for every eight persons

one water closet for every six persons

one wash basin for every four persons.

(c) In vessels of a length (L) of or above 45 m, an additional separate toilet shall be provided conveniently close to the bridge. In vessels of a length (L) of or above 85 m, an additional separate toilet shall be provided conveniently close to the machinery space.

(d) Toilets and bathrooms shall meet the following requirements:

(i) Each toilet shall be flushable.

(ii) Each separate toilet room shall be provided with a wash basin.

(iii) Installations for hot and cold fresh water shall be installed separately for each individual bath and wash basin.

(iv) Wash basins, shower rooms and baths shall be sufficiently large and made of suitable material.

(v) The floor shall be of a suitable material and shall be provided with suitable drains. Floor drains are, however, not required in separate toilet rooms.

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[8] *Reference is made to the guidance issued by the Danish National Board of Health on disinfection during the cleaning of potable water tanks and potable water pipes on ships.*

(vi) Bulkheads shall be of suitable material and shall be watertight at least 300 mm above floor level.

(vii) Toilets shall be located convenient in relation to sleeping cabins and washrooms but separate from these. Direct access may not be provided from a sleeping cabin intended for more than one person or from other rooms, with the exception of enclosed corridors.

(viii) Doors to toilets and bathrooms shall be lockable.

(e) Floor drains shall be of sufficient dimensions and be designed so as to minimise the risk of clogging. They shall also be easy to keep clean. The drains may not be led through freshwater tanks, and if they are carried through galleys, messrooms or sleeping quarters, the drains shall be insulated and enclosed.

(2) Laundry rooms, etc.

(a) In vessels of a length (L) of or above 24 m, there shall be suitable facilities for laundering and drying clothes to the extent appropriate for the size of the crew and the normal duration of the voyage.

(b) The facilities for laundering clothes shall include suitable basins provided with drains or washing machines with associated installations. If it is not practicable to fit out a separate laundry room, the installations for this purpose may be fitted in bathrooms or washrooms. There shall be a suitable provision of hot and cold fresh water for laundering clothes.

(c) There shall be facilities for drying clothes in a room separate from sleeping quarters and messrooms. The drying room shall be suitably ventilated and heated and equipped with lines or other facilities for drying clothes.

(d) If it is not possible to fit out a separate drying room, it shall be possible to use the room described in regulation 2(1)(f).

Regulation 8 – Infirmary and hoist stretcher, etc.

(1) General

(a) In vessels of a length (L) of or above 45 m, a separate infirmary shall be set up. The infirmary shall contain one bed when the number of crewmembers is 18 or less, and otherwise two.

(b) In vessels where each crewmember has his/her own sleeping cabin with en-suite toilet and bath, a treatment room (casualty room) may be set up instead of the required infirmary, regardless of the size of the crew. The treatment room shall be equipped with a single bed and its size and arrangement shall be as that of the infirmary. The treatment room shall be suitably equipped, including a wash basin and an emergency treatment area, and it shall have direct access to a toilet room.

(c) The infirmary/treatment room shall be located in a suitable place where inconvenience caused by noise and vibrations is as little as possible so that the patients may be given good conditions and so that they may be properly looked after in all kinds of weather.

(d) It shall be possible to enter the rooms in a convenient way with a person lying on a stretcher. All doorways from open deck to the infirmary shall be at least 750 mm wide.

(2) Infirmaries

(a) The bed or the beds shall be arranged separately so that they are accessible from at least three sides, i.e. the two sides and one end.

(b) Next to each bed, there shall be a pushbutton with a wire connection ringing a bell located at a suitable place.

(c) A washroom with a toilet and a wash basin shall be located immediately next to the infirmary with direct access to it from the infirmary.

(d) The floor area in infirmaries/treatment rooms shall be at least 6.5 m^2. The floor area shall be measured as stipulated in regulation 5(3)(a) and the area of the bed(s) may be included in the area.

(e) Infirmaries/treatment rooms shall be marked as such and may not be used for other purposes.

(3) Emergency treatment area

(a) There shall be an emergency treatment area in connection with infirmaries/treatment rooms. This shall comprise a floor area of a minimum of 2 x 3 metres with drainage and an anti-skid floor covering corresponding to the requirements for bathrooms. The area may be arranged in a corridor area or similar with minor traffic in the immediate vicinity of the treatment room.

(b) Access to the emergency treatment area shall be as to infirmaries/treatment rooms.

(c) The area shall be well lit as a work station with the facility to switch the light on/off locally.

(d) The following shall be within reach of the person providing treatment who is kneeling next to a patient situated roughly in the middle of the floor:

1. Hand showers with individual cubicle and holder. The water supply (fresh hot and cold water) shall be thermostatically controlled, but may be joint.

2. Telephone connected to the ship's internal telephone system with hands-free operation and, where appropriate, a head set, allowing the medical practitioner to be put through to the ship's communications system enabling direct communication with Radio-Medical.

3. A thin, water-repellent rubber mattress.

(e) For existing ships built before 1 August 2007, a bath tub may be equivalent to the stated emergency treatment area.

(4) Hoist stretchers

(a) In vessels of a length (L) of or above 24 m, a hoist stretcher of a suitable type shall be kept in an appropriate place.

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Chapter XXI
Prevention of pollution by oil

Introduction

This chapter contains the provisions of annex I to the International Convention for the Prevention of Pollution from Ships – the 1973 MARPOL Convention – with the amendments and additions contained in the 1978 Protocol to MARPOL 73 (MARPOL 73/78), as amended.

The administration of the regulations has been distributed so that the Danish Environmental Protection Agency is responsible for the regulations on discharge and the Danish Maritime Authority is responsible for the regulations on the technical installations on board the ships, including certificates, record books and plans. This distribution of the responsibility is indicated in the overview of the chapters in connection with each individual regulation by an "M" for the Danish Environmental Protection Agency and an "S" for the Danish Maritime Authority.

Attention is drawn to the fact that, in principle, this chapter contains provisions for all ships, including cargo ships with a gross tonnage below 500, passenger ships engaged on domestic voyages and fishing vessels.

In connection with the implementation of the provisions of the MARPOL Convention in Denmark, the Danish Ministry of the Environment has issued some orders that must also be complied with in addition to the technical regulations issued by the Danish Maritime Authority.

Part I – General

Regulation 1 – Definitions

For the purpose of this chapter:

1 "Oil" means petroleum in any form, including crude oil, fuel oil, sludge, oil refuse and refined products (other than petrochemicals which are subject to the provisions of Annex II of the MARPOL Convention) and, without limiting the generality of the foregoing, includes the substances listed in appendix I.

2 "Crude oil" means any liquid hydrocarbon mixture occurring naturally in the earth whether or not treated to render it suitable for transportation and includes:

.1 crude oil from which certain distillate fractions may have been removed; and

.2 crude oil to which certain distillate fractions may have been added.

3 "Oily mixture" means a mixture with any oil content.

4 "Oil fuel" means any oil used as fuel in connection with the propulsion and auxiliary machinery of the ship in which such oil is carried.

5-8 *Not relevant for ships covered by these regulations.*

9 "Major conversion":

.1 means a conversion of a ship:

.1 which substantially alters the dimensions or carrying capacity of the ship; or

.2 which changes the type of the ship; or

.3 the intent of which in the opinion of the Administration is substantially to prolong its life; or

.4 which otherwise so alters the ship that, if it were a new ship, it would become subject to relevant provisions of the present chapter not applicable to it as an existing ship.

.2 Not relevant for ships covered by these regulations.

10 "Nearest land". The term "from the nearest land" means from the baseline from which the territorial sea of the territory in question is established in accordance with international law, except that, for the purposes of the present chapter "from the nearest land" off the north-eastern coast of Australia shall mean from a line drawn from a point on the coast of Australia in:
latitude 11°00' S, longitude 142°08' E
to a point in latitude 10°35' S, longitude 141°55' E,
thence to a point latitude 10°00' S, longitude 142°00' E,
thence to a point latitude 9°10' S, longitude 143°52' E,
thence to a point latitude 9°00' S, longitude 144°30' E,
thence to a point latitude 10°41' S, longitude 145°00' E,
thence to a point latitude 13°00' S, longitude 145°00' E,
thence to a point latitude 15°00' S, longitude 146°00' E,
thence to a point latitude 17°30' S, longitude 147°00' E,
thence to a point latitude 21°00' S, longitude 152°55' E,
thence to a point latitude 24°30' S, longitude 154°00' E,
thence to a point on the coast of Australia

in latitude 24°42' S, longitude 153°15' E.

11 “Special area” means a sea area where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by oil is required. For the purposes of this chapter, the special areas are defined as follows:

.1 the Mediterranean Sea area means the Mediterranean Sea proper including the gulfs and seas therein with the boundary between the Mediterranean and the Black Sea constituted by the 41° N parallel and bounded to the west by the Straits of Gibraltar at the meridian of 005°36' W;

.2 the Baltic Sea area means the Baltic Sea proper with the Gulf of Bothnia, the Gulf of Finland and the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at 57°44.8' N;

.3 the Black Sea area means the Black Sea proper with the boundary between the Mediterranean Sea and the Black Sea constituted by the parallel 41° N;

.4 the Red Sea area means the Red Sea proper including the Gulfs of Suez and Aqaba bounded at the south by the rhumb line between Ras si Ane (12°28.5' N, 043°19.6' E) and Husn Murad (12°40.4' N, 043°30.2' E);

.5 the Gulfs area means the sea area located north-west of the rhumb line between Ras al Hadd (22°30' N, 059°48' E) and Ras al Fasteh (25°04' N, 061° 25' E);

.6 the Gulf of Aden area means that part of the Gulf of Aden between the Red Sea and the Arabian Sea bounded to the west by the rhumb line between Ras si Ane (12°28.5'N, 043°19.6' E) and Husn Murad (12°40.4' N, 043°30.2' E) and to the east by the rhumb line between Ras Asir (11°50' N, 051°16.9' E) and the Ras Fartak (15°35' N, 052°13.8' E);

.7 the Antarctic area means the sea area south of latitude 60°S; and

.8 the North West European waters include the North Sea and its approaches, the Irish Sea and its approaches, the Celtic Sea, the English Channel and its approaches and part of the North East Atlantic immediately to the west of Ireland. The area is bounded by lines joining the following points:

48° 27' N on the French coast
48° 27' N; 006° 25' W
49° 52' N; 007° 44’ W
50° 30' N; 012° W
56° 30' N; 012° W
62° N; 003° W
62° N on the Norwegian coast
57° 44.8' N on the Danish and Swedish coasts

.9 the Oman area of the Arabian Sea means the sea area enclosed by the following coordinates:

22° 30.00' N; 059° 48.00' E
23° 47.27' N; 060° 35.73' E
22° 40.62' N; 062° 25.29' E
21° 47.40' N; 063° 22.22' E
20° 30.37' N; 062° 52.41' E
19° 45.90' N; 062° 25.97' E
18° 49.92' N; 062° 02.94' E
17° 44.36' N; 061° 05.53' E

16° 43.71' N; 060° 25.62' E
16° 03.90' N; 059° 32.24' E
15° 15.20' N; 058° 58.52' E
14° 36.93' N; 058° 10.23' E
14° 18.93' N; 057° 27.03' E
14° 11.53' N; 056° 53.75' E
13° 53.80' N; 056° 19.24' E
13° 45.86' N; 055° 54.53' E
14° 27.38' N; 054° 51.42' E
14° 40.10' N; 054° 27.35'E
14° 46.21' N; 054° 08.56' E
15° 20.74' N; 053° 38.33' E
15° 48.69' N; 053° 32.07' E
16° 23.02' N; 053° 14.82' E
16° 39.06' N; 053° 06.52' E

.10 the southern South African Sea means the sea area enclosed by the following coordinates (applies from 1 March 2008):
31° 14' S; 017° 50' E
31° 30' S; 017° 12' E
32° 00' S; 017° 06' E
32° 32' S; 016° 52' E
34° 06' S; 017° 24' E
36° 58' S; 020° 54' E
36° 00' S; 022° 30' E
35° 14' S; 022° 54' E
34° 30' S; 026° 00' E
33° 48' S; 027° 25' E
33° 27' S; 027° 12' E

12 “Instantaneous rate of discharge of oil content” means the rate of discharge of oil in litres per hour at any instant divided by the speed of the ship in knots at the same instant.

13 “Tank” means an enclosed space which is formed by the permanent structure of a ship and which is designed for the carriage of liquid in bulk.

14 “Wing tank” means any tank adjacent to the side shell plating.

15 “Centre tank” means any tank inboard of a longitudinal bulkhead.

16-18 *Not relevant for ships covered by these regulations.*

19 “Length” (L) means 96 per cent of the total length on a waterline at 85 per cent of the least moulded depth measured from the top of the keel, or the length from the foreside of the stem to the axis of the rudder stock on that waterline, if that be greater. In ships designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline. The length (L) shall be measured in metres.

20 “Forward and after perpendiculars” shall be taken at the forward and after ends of the length (L). The forward perpendicular shall coincide with the foreside of the stem on the waterline on which the length is measured.

21 “Amidships” is at the middle of the length (L).

22 "Breadth" (B) means the maximum breadth of the ship, measured amidships to the moulded line of the frame in a ship with a metal shell and to the outer surface of the hull in a ship with a shell of any other material. The breadth (B) shall be measured in metres.

23 "Deadweight" (DW) means the difference in metric tonnes between the displacement of a ship in water of a relative density of 1.025 at the load waterline corresponding to the assigned summer freeboard and the lightweight of the ship.

24 "Lightweight" means the displacement of a ship in metric tons without cargo, fuel, lubricating oil, ballast water, fresh water and feed water in tanks, consumable stores, and passengers and crew and their effects.

25 "Permeability of a space" means the ratio of the volume within that space which is assumed to be occupied by water to the total volume of that space.

26 "Volumes and areas" in a ship shall be calculated in all cases to moulded lines.

27 "Anniversary date" means the day and the month of each year, which will correspond to the date of expiry of the International Oil Pollution Prevention Certificate.

28.1 "Ship delivered on or before 31 December 1979" means a ship:

.1 for which the building contract is placed on or before 31 December 1975; or

.2 in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or before 30 June 1976; or

.3 the delivery of which is on or before 31 December 1979; or

.4 which has undergone a major conversion:

.1 for which the contract is placed on or before 31 December 1975; or

.2 in the absence of a contract, the construction work of which is begun on or before 30 June 1976; or

.3 which is completed on or before 31 December 1979.

28.2 "Ship delivered after 31 December 1979" means a ship:

.1 for which the building contract is placed after 31 December 1975; or

.2 in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction after 30 June 1976; or

.3 the delivery of which is after 31 December 1979; or

.4 which has undergone a major conversion:

.1 for which the contract is placed after 31 December 1975; or

.2 in the absence of a contract, the construction work of which is begun after 30 June 1976; or

.3 which is completed after 31 December 1979.

28.3-.8 *Not relevant for ships covered by these regulations.*

28.9 "Ship delivered on or after 1 August 2010" means a ship:

.1 for which the building contract is placed on or after 1 August 2007; or

.2 in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on 1 February 2008; or

.3 the delivery of which is on or after 1 August 2010; or

.4 which has undergone a major conversion:

.1 for which the contract is placed on or after 1 August 2007; or

.2 in the absence of a contract, the construction work of which is begun on or after 1 February 2008; or

.3 which is completed on 1 August 2010.

29 “Parts per million (ppm)” means parts of oil per million parts of water by volume.

30 “Constructed” means a ship the keel of which is laid or which is at a similar stage of construction.

31 "Oil residue (sludge)" means the residual waste oil products generated during the normal operation of a ship such as those resulting from the purification of fuel or lubricating oil for main or auxiliary machinery, separated waste oil from oil filtering equipment, waste oil collected in drip trays, and waste hydraulic and lubricating oils.

32 "Oil residue (sludge) tank" means a tank which holds oil residue (sludge) from which sludge may be disposed directly through the standard discharge connection or any other approved means of disposal.

33 "Oily bilge water" means water which may be contaminated by oil resulting from things such as leakage or maintenance work in machinery spaces. Any liquid entering the bilge system including bilge wells, bilge piping, tank top or bilge holding tanks is considered oily bilge water.

34 "Oily bilge water holding tank" means a tank collecting oily bilge water prior to its discharge, transfer or disposal.

Regulation 2 – Application

1 Unless expressly provided otherwise, the provisions of this chapter shall apply to all ships.

2 In ships other than oil tankers fitted with cargo spaces which are constructed and utilized to carry oil in bulk of an aggregate capacity of 200 cubic metres or more, the requirements of regulations 16, 26.4, 29, 30, 31, 32, 34 and 36 of this chapter for oil tankers shall also apply to the construction and operation of those spaces, except that where such aggregate capacity is less than 1,000 cubic metres the requirements of regulation 34.6 of this chapter may apply in lieu of regulations 29, 31 and 32.

3-6 *Not relevant for ships covered by these regulations.*

S Regulation 3 – Exemptions

1 Any ship such as hydrofoil, air-cushion vehicle, near-surface craft and submarine craft etc. whose constructional features are such as to render the application of any of the provisions of parts 3 and 4 of this chapter relating to construction and equipment unreasonable or impracticable may be exempted by the Administration from such provisions, provided that the construction and equipment of that ship provides equivalent protection against pollution by oil, having regard to the service for which it is intended.

2 Particulars of any such exemption granted by the Administration shall be indicated in the Certificate referred to in regulation 7.

3 The Administration which allows any such exemption shall, as soon as possible, but not more than 90 days thereafter, communicate to the Organization particulars of same and the reasons therefore, which the Organization shall circulate to the Parties to the Convention for their information and appropriate action, if any.

4-5 *Not relevant for ships covered by these regulations.*

S Regulation 4 – Exceptions

1 Regulations 15 and 34 shall not apply to:

.1 the discharge into the sea of oil or oily mixture necessary for the purpose of securing the safety of a ship or saving life at sea; or

.2 the discharge into the sea of oil or oily mixture resulting from damage to a ship or its equipment:

.1 provided that all reasonable precautions have been taken after the occurrence of the damage or discovery of the discharge for the purpose of preventing or minimizing the discharge; and

.2 except if the owner or the master acted either with intent to cause damage, or recklessly and with knowledge that damage would probably result; or

.3 the discharge into the sea of substances containing oil, approved by the Administration, when being used for the purpose of combating specific pollution incidents in order to minimize the damage from pollution. Any such discharge shall be subject to the approval of any Government in whose jurisdiction it is contemplated the discharge will occur.

S Regulation 5 – Equivalents

1 The Administration may allow any fitting, material, appliance or apparatus to be fitted in a ship as an alternative to that required by this chapter if such fitting, material, appliance or apparatus is at least as effective as that required by this chapter. This authority of the Administration shall not extend to substitution of operational methods to effect the control of discharge of oil as equivalent to those design and construction features which are prescribed by regulations in this chapter.

2 The Administration which allows a fitting, material, appliance or apparatus, as an alternative to that required by this chapter shall communicate to the Organization for circulation to the Parties to the Convention particulars thereof, for their information and appropriate action, if any.

Part II – Surveys and certification

S Regulation 6 – Surveys

1 Every oil tanker of 150 gross tonnage and above, and every other ship of 400 gross tonnage and above shall be subject to the surveys specified below:

.1 an initial survey before the ship is put in service or before the Certificate required under regulation 7 is issued for the first time, which shall include a complete survey of its structure, equipment, systems, fittings, arrangements and material in so far as the ship is covered by this chapter. This survey shall be such as to ensure that the structure, equipment, systems, fittings, arrangements and material fully comply with the applicable requirements of this chapter;

.2 a renewal survey at intervals specified by the Administration, but not exceeding 5 years, except where regulation 10.2.2, 10.5, 10.6 or 10.7 of this chapter is applicable. The renewal survey shall be such as to ensure that the structure, equipment, systems, fittings, arrangements and material fully comply with applicable requirements of this chapter;

.3 an intermediate survey within 3 months before or after the second anniversary date or within 3 months before or after the third anniversary date of the Certificate which shall take the place of one of the annual surveys specified in paragraph 1.4 of this regulation. The intermediate survey shall be such as to ensure that the equipment and associated pump and piping systems, including oil discharge monitoring and control systems, crude oil washing systems, oily-water separating equipment and oil filtering systems, fully comply with the applicable requirements of this chapter and are in good working order. Such intermediate surveys shall be endorsed on the Certificate issued under regulation 7 or 8 of this chapter;

.4 an annual survey within 3 months before or after each anniversary date of the Certificate, including a general inspection of the structure, equipment, systems, fittings, arrangements and material referred to in paragraph 1.1 of this regulation to ensure that they have been maintained in accordance with paragraphs 4.1 and 4.2 of this regulation and that they remain satisfactory for the service for which the ship is intended. Such annual surveys shall be endorsed on the Certificate issued under regulation 7 or 8 of this chapter; and

.5 an additional survey either general or partial, according to the circumstances, shall be made after a repair resulting from investigations prescribed in paragraph 4.3 of this regulation, or whenever any important repairs or renewals are made. The survey shall be such as to ensure that the necessary repairs or renewals have been effectively made, that the material and workmanship of such repairs or renewals are in all respects satisfactory and that the ship complies in all respects with the requirements of this chapter.

2 The Administration shall establish appropriate measures for ships which are not subject to the provisions of paragraph 1 of this regulation in order to ensure that the applicable provisions of this chapter are complied with.

3.1 Surveys of ships as regards the enforcement of the provisions of this chapter shall be carried out by officers of the Administration. The Administration may, however, entrust the surveys either to surveyors nominated for the purpose or to organizations recognized by it. Such organizations shall comply with the guidelines adopted by the Organization by resolution A.739(18), as may be amended by the Organization, and the specifications adopted by the Organization by resolution A.789(19), as may be amended by the Organization, provided that such amendments are adopted, brought into force and take effect in accordance with the provisions of article 16 of the MARPOL Convention concerning the amendment procedures applicable to this chapter.

3.2 An Administration nominating surveyors or recognizing organizations to conduct surveys as set forth in paragraph 3.1 of this regulation shall, as a minimum, empower any nominated surveyor or recognized organization to:

.1 require repairs to a ship; and

.2 carry out surveys, if requested by the appropriate authorities of a port State.

The Administration shall notify the Organization of the specific responsibilities and conditions of the authority delegated to the nominated surveyors or recognized organizations, for circulation to Parties to the Convention for the information of their officers.

3.3 When a nominated surveyor or recognized organization determines that the condition of the ship or its equipment does not correspond substantially with the particulars of the Certificate or is such that the ship is not fit to proceed to sea without presenting an unreasonable threat of harm to the marine environment, such surveyor or organization shall immediately ensure that corrective action is taken and shall in due course notify the Administration. If such corrective action is not taken the Certificate shall be withdrawn and the Administration shall be notified immediately; and if the ship is in a port of another Party, the appropriate authorities of the port State shall also be notified immediately. When an officer of the Administration, a nominated surveyor or a recognized organization has notified the appropriate authorities of the port State, the Government of the port State concerned shall give such officer, surveyor or organization any necessary assistance to carry out their obligations under this regulation. When applicable, the Government of the port State concerned shall take such steps as will ensure that the ship shall not sail until it can proceed to sea or leave the port for the purpose of

proceeding to the nearest appropriate repair yard available without presenting an unreasonable threat of harm to the marine environment.

3.4 In every case, the Administration concerned shall fully guarantee the completeness and efficiency of the survey and shall undertake to ensure the necessary arrangements to satisfy this obligation.

4.1 The condition of the ship and its equipment shall be maintained to conform with the provisions of this chapter to ensure that the ship in all respects will remain fit to proceed to sea without presenting an unreasonable threat of harm to the marine environment.

4.2 After any survey of the ship under paragraph 1 of this regulation has been completed, no change shall be made in the structure, equipment, systems, fittings, arrangements or material covered by the survey, without the sanction of the Administration, except the direct replacement of such equipment and fittings.

4.3 Whenever an accident occurs to a ship or a defect is discovered which substantially affects the integrity of the ship or the efficiency or completeness of its equipment covered by this chapter the master or owner of the ship shall report at the earliest opportunity to the Administration, the recognized organization or the nominated surveyor responsible for issuing the relevant Certificate, who shall cause investigations to be initiated to determine whether a survey as required by paragraph 1 of this regulation is necessary. If the ship is in a port of another Party, the master or owner shall also report immediately to the appropriate authorities of the port State and the nominated surveyor or recognized organization shall ascertain that such report has been made.

S Regulation 7 – Issue or endorsement of Certificate

1 An International Oil Pollution Prevention Certificate shall be issued, after an initial or renewal survey in accordance with the provisions of regulation 6, to any oil tanker of 150 gross tonnage and above and any other ships of 400 gross tonnage and above which are engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention.

2 Such Certificate shall be issued or endorsed either by the Administration or by any other persons or organizations duly authorized by it. In every case the Administration assumes full responsibility for the Certificate.

S Regulation 8 – Issue or endorsement of a Certificate by another Government

1 The Government of a Party to the Convention may, at the request of the Administration, cause a ship to be surveyed and, if satisfied that the provisions of this chapter are complied with, shall issue or authorize the issue of an International Oil Pollution Prevention Certificate to the ship, and where appropriate, endorse or authorize the endorsement of that Certificate on the ship, in accordance with this chapter.

2 A copy of the Certificate and a copy of the survey report shall be transmitted as soon as possible to the requesting Administration.

3 A Certificate so issued shall contain a statement to the effect that it has been issued at the request of the Administration and it shall have the same force and receive the same recognition as the Certificate issued under regulation 7.

4 No International Oil Pollution Prevention Certificate shall be issued to a ship which is entitled to fly the flag of a State which is not a Party.

S Regulation 9 – Form of Certificate

The International Oil Pollution Prevention Certificate shall be drawn up in the form corresponding to the model given in appendix II to this chapter[1] and shall be at least in English, French or Spanish. If an official language of the issuing country is also used, this shall prevail in case of a dispute or discrepancy.

S Regulation 10 – Duration and validity of Certificate

1 An International Oil Pollution Prevention Certificate shall be issued for a period specified by the Administration, which shall not exceed five years.

2.1 Notwithstanding the requirements of paragraph 1 of this regulation, when the renewal survey is completed within 3 months before the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding 5 years from the date of expiry of the existing certificate.

2.2 When the renewal survey is completed after the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding 5 years from the date of expiry of the existing certificate.

2.3 When the renewal survey is completed more than 3 months before the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding 5 years from the date of completion of the renewal survey.

3 If a certificate is issued for a period of less than 5 years, the Administration may extend the validity of the certificate beyond the expiry date to the maximum period specified in paragraph 1 of this regulation, provided that the surveys referred to in regulations 6.1.3 and 6.1.4 of this chapter applicable when a certificate is issued for a period of 5 years are carried out as appropriate.

4 If a renewal survey has been completed and a new certificate cannot be issued or placed on board the ship before the expiry date of the existing certificate, the person or organization authorized by the Administration may endorse the existing certificate and such a certificate shall be accepted as valid for a further period which shall not exceed 5 months from the expiry date.

5 If a ship at the time when a certificate expires is not in a port in which it is to be surveyed, the Administration may extend the period of validity of the certificate but this extension shall be granted only for the purpose of allowing the ship to complete its voyage to the port in which it is to be surveyed, and then only in cases where it appears proper and reasonable to do so. No certificate shall be extended for a period longer than 3 months, and a ship to which an extension is granted shall not, on its arrival in the port in which it is to be surveyed, be entitled by virtue of such extension to leave that port without having a new certificate. When the renewal survey is completed, the new certificate shall be valid to a date not exceeding 5 years from the date of expiry of the existing certificate before the extension was granted.

6 A certificate issued to a ship engaged on short voyages which has not been extended under the foregoing provisions of this regulation may be extended by the Administration for a period of grace of up to one month from the date of expiry stated on it. When the renewal survey is completed, the new certificate shall be valid to a date not exceeding 5 years from the date of expiry of the existing certificate before the extension was granted.

7 In special circumstances, as determined by the Administration, a new certificate need not be dated from the date of expiry of the existing certificate as required by paragraphs 2.2, 5 or 6 of this

[1] Reference is made to appendix 1C of Notice B.

regulation. In these special circumstances, the new certificate shall be valid to a date not exceeding 5 years from the date of completion of the renewal survey.

8 If an annual or intermediate survey is completed before the period specified in regulation 6, then:

.1 the anniversary date shown on the certificate shall be amended by endorsement to a date which shall not be more than 3 months later than the date on which the survey was completed;

.2 the subsequent annual or intermediate survey required by regulation 8 shall be completed at the intervals prescribed by that regulation using the new anniversary date; and

.3 the expiry date may remain unchanged provided one or more annual or intermediate surveys, as appropriate, are carried out so that the maximum intervals between the surveys prescribed by regulation 6.1 are not exceeded.

9 A certificate issued under regulation 7 or 8 shall cease to be valid in any of the following cases:

.1 if the relevant surveys are not completed within the periods specified under regulation 6.1;

.2 if the certificate is not endorsed in accordance with regulation 6.1.3 or 6.1.4; or

.3 upon transfer of the ship to the flag of another State. A new certificate shall only be issued when the Government issuing the new certificate is fully satisfied that the ship is in compliance with the requirements of regulations 6.4.1 and 6.4.2. In the case of a transfer between Parties, if requested within 3 months after the transfer has taken place, the Government of the Party whose flag the ship was formerly entitled to fly shall, as soon as possible, transmit to the Administration copies of the certificate carried by the ship before the transfer and, if available, copies of the relevant survey reports.

S Regulation 11 – Port State control on operational requirements[2]

1 A ship when in a port or an offshore terminal of another Party is subject to inspection by officers duly authorized by such Party concerning operational requirements under this chapter, where there are clear grounds for believing that the master or crew are not familiar with essential shipboard procedures relating to the prevention of pollution by oil.

2 In the circumstances given in paragraph 1 of this regulation, the Party shall take such steps as will ensure that the ship shall not sail until the situation have been brought to order in accordance with the requirements of this chapter.

3 Procedures relating to the port State control prescribed in article 5 of the MARPOL Convention shall apply to this regulation.

4 Nothing in this regulation shall be construed to limit the rights and obligations of a Party carrying out control over operational requirements specifically provided for in the MARPOL Convention.

Part III – Requirements for machinery spaces on all ships

Part A – Construction

S Regulation 12 – Tanks for oil residues (sludge)

1 Every ship of 400 gross tonnage and above shall be provided with a tank or tanks of adequate capacity, having regard to the type of machinery and length of voyage, to receive the oil residues (sludge) which cannot be dealt with otherwise in accordance with the requirements of this Chapter.

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[2] Refer to the Procedures for port State control, adopted by the Organization by resolution A.787(19) as amended by resolution A.882(21).

2 Oil residue (sludge) may be disposed of directly from the oil residue (sludge) tank(s) through the standard discharge connection referred to in regulation 13, or any other approved means of disposal. The oil residue (sludge) tank(s):

2.1 shall be provided with a designated pump for disposal that is capable of taking suction from the oil residue (sludge) tank(s); and

2.2 shall have no discharge connections to the bilge system, oily bilge water holding tank(s), tank top or oily water separators except that the tank(s) may be fitted with drains, with manually operated self-closing valves and arrangements for subsequent visual monitoring of the settled water, that lead to an oily bilge water holding tank or bilge well, or an alternative arrangement, provided such arrangement does not connect directly to the bilge piping system.

3 Piping to and from sludge tanks shall have no direct connection overboard, other than the standard discharge connection referred to in regulation 13.

4 In ships delivered after 31 December 1979, as defined in regulation 1.28.2, tanks for oil residues shall be designed and constructed so as to facilitate their cleaning and the discharge of residues to reception facilities. Ships delivered on or before 31 December 1979, as defined in regulation 1.28.1, shall comply with this requirement as far as is reasonable and practicable.

5 Minimum capacity of sludge tanks.

.1 On ships that do not carry ballast water in oil fuel tanks, the capacity of sludge tanks shall be calculated in accordance with the following formula:

$V_1 = K_1 \times C \times D$ (m^3)

K_1 = 0.01 for ships using heavy oil fuel for propulsion that is centrifuged on board or 0.005 for ships using diesel oil for propulsion or where the heavy oil fuel is not centrifuged on board.

C = Daily oil fuel consumption.

D = Maximum time of operation expressed in days between ports where reception facilities are available if this is known, minimum 30.

.2 On ships fitted with equipment on board that has been approved by the Danish Maritime Authority for the removal of oil sludge, the capacity V1 of the sludge tank may be stipulated as 1 m^3 for ships with a gross tonnage of 400 or more and 2 m^3 for ships with a gross tonnage of 4,000 and more.

.3 On ships carrying ballast water in oil fuel tanks, the capacity of the oil fuel tank shall be calculated in accordance with the following formula:

$V_2 = V_1 + K2 \times B$ (m^3)

V_1 = Capacity of oil fuel tank as specified in 1 or 2.

K_2 = 0.01 for ships using heavy oil fuel and 0.005 for ships using diesel oil.

B = Capacity of water ballast tanks that may also be used for oil fuel.

S Regulation 12A – Oil fuel tank protection

1 This regulation shall apply to all ships with an aggregate oil fuel capacity of 600 m^3 and above which are delivered on or after 1 August 2010, as defined in regulation 1.28.9 of this chapter.

2 The application of this regulation in determining the location of tanks used to carry oil fuel does not govern over the provisions of regulation 19 of this Chapter.

3 For the purpose of this regulation, the following definitions shall apply:

.1 "Oil fuel" means any oil used as fuel oil in connection with the propulsion and auxiliary machinery of the ship in which such oil is carried.

.2 "Load line draught (dS)" is the vertical distance, in metres, from the moulded baseline at mid-length to the waterline corresponding to the summer freeboard draught to be assigned to the ship.

.3 "Light ship draught" is the moulded draught amidships corresponding to the lightweight.

.4 "Partial load line draught (d_P)" is the light ship draught plus 60% of the difference between the light ship draught and the load line draught (d_S). The partial load line draught (d_p) shall be measured in metres.

.5 "Waterline (d_B)" is the vertical distance, in metres, from the moulded baseline at mid-length to the waterline corresponding to 30% of the depth Ds.

.6 "Breadth (B_S)" is the greatest moulded breadth of the ship, in metres, at or below the deepest load line draught (d_S).

.7 "Breadth (B_B)" is the greatest moulded breadth of the ship, in metres, at or below the waterline (d_B).

.8 "Depth (D_S)" is the moulded depth, in metres, measured at mid-length to the upper deck at side. For the purpose of the application, "upper deck" means the highest deck to which the watertight transverse bulkheads except aft peak bulkheads extend.

.9 "Length (L)" means 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel, or the length from the foreside of the stem to the axis of the rudder stock on that waterline, if that be greater. In ships designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline. The length (L) shall be measured in metres.

.10 "Breadth (B)" means the maximum breadth of the ship, in metres, measured amidships to the moulded line of the frame in a ship with a metal shell and to the outer surface of the hull in a ship with a shell of any other material.

.11 "Oil fuel tank" means a tank in which oil fuel is carried, but excludes those tanks which would not contain oil fuel in normal operation, such as overflow tanks.

.12 "Small oil fuel tank" is an oil fuel tank with a maximum individual capacity not greater than 30 m^3.

.13 "C" is the ship's total volume of oil fuel, including that of the small oil fuel tanks, in m^3, at 98% tank filling.

.14 "Oil fuel capacity" means the volume of a tank in m^3, at 98% filling.

4 The provisions of this regulation shall apply to all oil fuel tanks except small oil fuel tanks, as defined in 3.12, provided that the aggregate capacity of such excluded tanks is not greater than 600 m^3.

5 Individual oil fuel tanks shall not have a capacity of over 2,500 m^3.

6 For ships, other than self-elevating drilling units, having an aggregate oil fuel capacity of 600 m^3 and above, oil fuel tanks shall be located above the moulded line of the bottom shell plating nowhere less than the distance h as specified below:

h = B/20 m or,

h = 2.0 m, whichever is the lesser.

The minimum value of h = 0.76 m

In the turn of the bilge area and at locations without a clearly defined turn of the bilge, the oil fuel tank boundary line shall run parallel to the line of the midship flat bottom as shown in Figure 1.

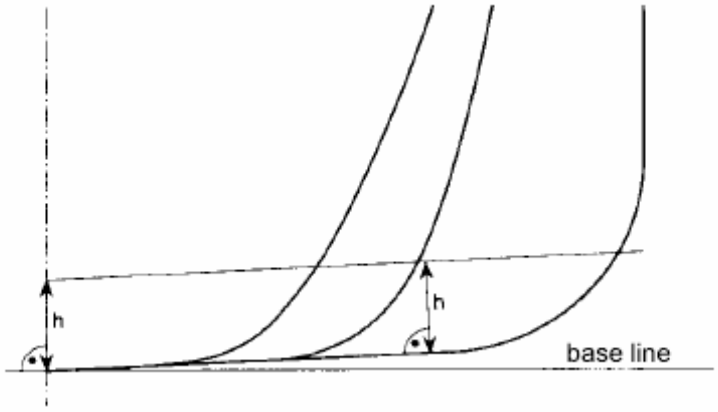

Figure 1 – Oil fuel tank boundary lines for the purpose of paragraph 6

7 For ships having an aggregate oil fuel capacity of 600 m^3 or more but less than 5,000 m^3, oil fuel tanks shall be located inboard of the moulded line of the side shell plating, nowhere less than the distance w which, as shown in Figure 2, is measured at any cross-section at right angles to the side shell, as specified below:

w = 0.4 + 2.4 C/20,000 m

The minimum value of w = 1.0 m, however for individual tanks with an oil fuel capacity of less than 500 m^3 the minimum value is 0.76 m.

8 For ships having an aggregate oil fuel capacity of 5,000 m^3 and over, oil fuel tanks shall be located inboard of the moulded line of the side shell plating, nowhere less than the distance w which, as shown in Figure 2, is measured at any cross-section at right angles to the side shell, as specified below:

w = 0.5 + C/20,000 m or

w = 2.0 m, whichever is the lesser.

The minimum value of w = 1.0 m

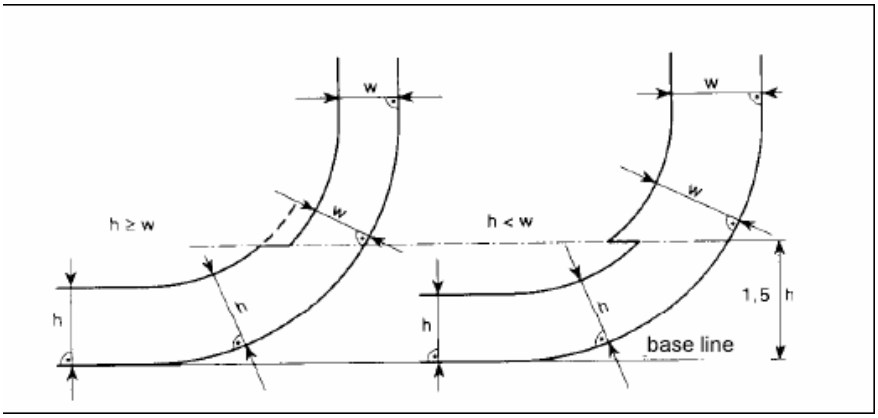

Figure 2 – Oil fuel tank boundary lines for the purpose of paragraphs 7 and 8

9 Lines of oil fuel piping located at a distance from the ship's bottom of less than *h*, as defined in paragraph 6, or from the ship's side less than *w*, as defined in paragraphs 7 and 9 shall be fitted with valves or similar closing devices within or immediately adjacent to the oil fuel tank. These valves shall

be capable of being brought into operation from a readily accessible enclosed space the location of which is accessible from the navigation bridge or propulsion machinery control position without traversing exposed freeboard or superstructure decks.

The valves shall close in case of remote control system failure (fail in a closed position) and shall be kept closed at sea at any time when the tank contains oil fuel except that they may be opened during oil fuel transfer operations.

10 Suction wells in oil fuel tanks may protrude into the double bottom below the boundary line defined by the distance h provided that such wells are as small as practicable and the distance between the well bottom and the bottom shell plating is not less than 0.5 h.

11 Alternatively to paragraphs 6 and either 7 or 8, ships shall comply with the accidental oil fuel outflow performance standard specified below:

.1 The level of protection against oil fuel pollution in the event of collision or grounding shall be assessed on the basis of the mean oil outflow parameter as follows:

OM < 0.0157-1.14E-6·C 600 $m^3 \leq C < 5{,}000$ m^3

OM < 0.010 C ≥ 5,000 m^3

Where OM = mean oil outflow parameter;

C = total oil fuel volume.

.2 The following general assumption shall apply when calculating the mean oil outflow parameter:

.1 the ship shall be assumed loaded to the partial load line draught d_P without trim or heel;

.2 all oil fuel tanks shall be assumed loaded to 98% of their volumetric capacity;

.3 the nominal density of the oil fuel (ρn) shall generally be taken as 1,000 kg/m^3. If the density of the oil fuel is specifically restricted to a lesser value, the lesser value may be applied; and

.4 for the purpose of these outflow calculations, the permeability of each oil fuel tank shall be taken as 0.99, unless proven otherwise.

.3 The following assumptions shall be used when combining the oil outflow parameters:

.1 The mean oil outflow shall be calculated independently for side damage and for bottom damage and then combined into a non-dimensional oil outflow parameter OM, as follows:

OM = (0.4 OMS + 0.6 OMB) / C

where:

OMS = mean outflow for side damage, in m3

OMB = mean outflow for bottom damage, in m3

C = total oil fuel volume.

.2 For bottom damage, independent calculations for mean outflow shall be done for 0 m and 2.5 m tide conditions, and then combined as follows:

OMB = 0.7 OMB(0) + 0.3 OMB(2.5)

where:

OMB(0) = mean outflow for 0 m tide condition, and

OMB(2.5) = mean outflow for minus 2.5 m tide condition, in m3.

.4 The mean outflow for side damage OMS shall be calculated as follows:

$$O_{MS} = \sum_{1}^{n} P_{s(i)} O_{s(i)} [m^3]$$

where:

i = represents each oil fuel tank under consideration;

n = total number of oil fuel tanks;

PS(i) = the probability of penetrating oil fuel tank i from side damage, calculated in accordance with paragraph 11.6 of this regulation;

OS(i) = the outflow, in m3, from side damage to oil fuel tank i, which is assumed equal to the total volume in oil fuel tank i at 98% filling.

.5 The mean outflow for bottom damage shall be calculated for each tidal condition as follows:

.1 $$O_{MB(0)} = \sum_{1}^{n} P_{B(i)} O_{B(i)} C_{DB8i)} [m^3]$$

where:

i = represents each oil fuel tank under consideration;

n = total number of oil fuel tanks;

PB(i) = the probability of penetrating oil fuel tank (i) from bottom damage, calculated in accordance with paragraph 11.7 of this regulation;

OB(i) = the outflow from oil fuel tank i, in m3, calculated in accordance with paragraph 11.5.3 of this regulation; and

CDB(i) = factor to account for oil capture as defined in paragraph 11.5.4.

.2 $$O_{MB(2.5)} = \sum_{1}^{n} P_{B(i)} O_{B(i)} C_{DB(i)} [m^3]$$

where:

i, n, PB(i) and CDB(i) = as defined in paragraph 11.5.1 above

OB(i) = the outflow from oil fuel tank i, in m3, after tidal change.

.3 The oil outflow OB(i) for each oil fuel tank shall be calculated based on pressure balance principles, in accordance with the following assumptions:

.1 The ship shall be assumed stranded with zero trim and heel, with the stranded draught prior to tidal change equal to the partial load line draught d_P.

.2 The oil fuel level after damage shall be calculated as follows:

$h_F = \{(d_P + t_C - Zl)(\rho_S)\}/\rho_n$

where:

h_F = the height of the oil fuel surface above Z_l, in m;

t_C = the tidal change, in m. Reductions in tide shall be expressed as negative values;

Z_l = the height of the lowest point in the oil fuel tank above the baseline, in m;

ρ_S = density of seawater, to be taken as 1,025 kg/m^3; and,

ρ_n = nominal density of the oil fuel, as defined in 11.2.3.

.3 The oil outflow OB(i) for any tank bounding the bottom shell plating shall be taken not less than the following formula, but no more than the tank capacity:

$O_{B(i)} = H_W$. :A

where:

H_W = 1.0 m, when $Y_B = 0$

$H_W = B_B/50$ but not greater than 0.4 m, when Y_B is greater than $B_B/5$ or 11.5 m, whichever is less

"H_W" is to be measured upwards from the midship flat bottom line. In the turn of the bilge area and at locations without a clearly defined turn of the bilge, H_W is to be measured from a line parallel to the midship flat bottom, as shown for distance "h" in Figure 1.

For Y_B values outboard $B_B/5$ or 11.5 m, whichever is less, H_W is to be linearly interpolated.

Y_B = the minimum value of Y_B over the length of the oil fuel tank, where at any given location, Y_B is the transverse distance between the side shell at waterline d_B and the tank at or below waterline d_B.

A = the maximum horizontal projected area of the oil fuel tank up to the level of H_W from the bottom of the tank.

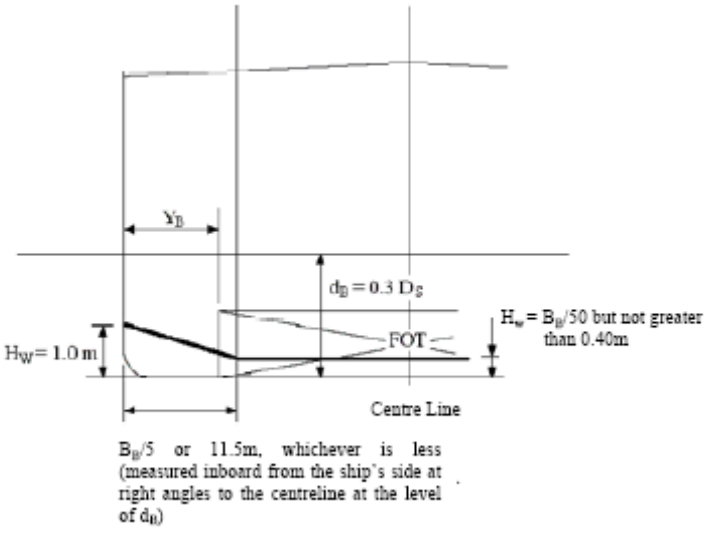

Figure 3 – Dimensions for calculation of the minimum oil outflow for the purpose of subparagraph 11.5.3.3

.4 In the case of bottom damage, a portion from the outflow from an oil fuel tank may be captured by non-oil compartments. This effect is approximated by application of the factor $C_{DB(i)}$ for each tank, which shall be taken as follows:

$C_{DB(i)} = 0.6$ for oil fuel tanks bounded from below by non-oil compartments;

$C_{DB(i)} = 1$ otherwise.

.6 The probability P_S of breaching a compartment from side damage shall be calculated as follows:

.1 $P_S = P_{SL} * P_{SV} * P_{ST}$

where:

$P_{SL} = (1 - P_{Sf} - P_{Sa})$ = probability the damage will extend into the longitudinal zone bounded by X_a and X_f;

$P_{SV} = (1 - P_{Su} - P_{Sl})$ = probability the damage will extend into the vertical zone bounded by Z_l and Z_u;

$P_{ST} = (1 - P_{Sy})$ = probability the damage will extend transversely beyond the boundary defined by y;

.2 P_{Sa}, P_{Sf}, P_{Su} and P_{Sl} shall be determined by linear interpolation from the table of probabilities for side damage provided in 11.6.3, and P_{Sy} shall be calculated from the formulas provided in 11.6.3, where:

PSa = the probability the damage will lie entirely aft of location Xa/L;

PSf = the probability the damage will lie entirely forward of location Xf/L;

PSl = probability the damage will lie entirely below the tank;

PSu = probability the damage will lie entirely above the tank; and

PSy = probability the damage will lie entirely outboard the tank.

Compartment boundaries Xa, Xf, Zl, Zu and y shall be developed as follows:

Xa = the longitudinal distance from aft terminal of L to the aft most point on the compartment being considered, in m;

Xf = the longitudinal distance from aft terminal of L to the foremost point on the compartment being considered, in m;

Zl = the vertical distance from the moulded baseline to the lowest point on the compartment being considered, in m.

Zu = the vertical distance from the moulded baseline to the highest point on the compartment being considered, in m. Where Zu is greater than DS, Zu shall be taken as DS; and,

y = the minimum horizontal distance measured at right angles to the centreline between the compartment under consideration and the side shell, in m.[3]

In way of the turn of the bilge, y need not to be considered below a distance h above baseline, where h is lesser of B/10, 3 m or the top of the tank.

.3 Table of Probabilities for side damage

X_a/L	P_{Sa}	X_f/L	P_{Sf}	Z_l/D_S
0.00	0.000	0.00	0.967	0.00
0.05	0.023	0.05	0.917	0.05
0.10	0.068	0.10	0.867	0.10
0.15	0.117	0.15	0.817	0.15
0.20	0.167	0.20	0.767	0.20
0.25	0.217	0.25	0.717	0.25
0.30	0.267	0.30	0.667	0.30
0.35	0.317	0.35	0.617	0.35
0.40	0.367	0.40	0.567	0.40
0.45	0.417	0.45	0.517	0.45
0.50	0.467	0.50	0.467	0.50
0.55	0.517	0.55	0.417	0.55
0.60	0.567	0.60	0.367	0.60
0.65	0.617	0.65	0.317	0.65
0.70	0.667	0.70	0.267	0.70
0.75	0.717	0.75	0.217	0.75
0.80	0.767	0.80	0.167	0.80
0.85	0.817	0.85	0.117	0.85
0.90	0.867	0.90	0.068	0.90
0.95	0.917	0.95	0.023	0.95
1.00	0.967	1.00	0.000	1.00

P_{Sy} shall be calculated as follows:

$P_{Sy} = (24.96 – 199.6\ y/B_S)\ (y/B_S)$ for $y/B_S \leq 0.05$

$P_{Sy} = 0.749 + \{5 – 44.4\ (y/B_S – 0.05)\}\ \{(y/B_S) – 0.05\}$ for $0.05 < y/B_S < 0.1$

$P_{Sy} = 0.888 + 0.56\ (\ y/B_S\ -0.1)$ for $y/B_S \geq 0.1$

P_{Sy} is not to be taken greater than 1.

.7 The probability PB of breaching a compartment from bottom damage shall be calculated as follows:

.1 $P_B = P_{BL} * P_{BT} * P_{BV}$

where:

$P_{BL} = (1 – P_{Bf} – P_{Ba})$ = probability the damage will extend into the longitudinal zone bounded by X_a and X_f;

$P_{BT} = (1 – P_{Bp} – P_{Bs})$ = probability the damage will extend into transverse zone bounded by Y_p and Y_s; and

$P_{BV} = (1 – P_{Bz})$ = probability the damage will extend vertically above the boundary defined by z;

.2 P_{Ba}, P_{Bf}, P_{Bp} and P_{Bs} shall be determined by linear interpolation from the table of probabilities for bottom damage provided in 11.7.3, and P_{Bz} shall be calculated from the formulas provided in 11.7.3, where:

P_{Ba} = the probability the damage will lie entirely aft of location X_a/L;

P_{Bf} = the probability the damage will lie entirely forward of location X_f/L;

P_{Bp} = probability the damage will lie entirely to port of the tank;

P_{Bs} = probability the damage will lie entirely to starboard the tank; and

P_{Bz} = probability the damage will lie entirely below the tank.

Compartment boundaries X_a, X_f, Y_p, Y_s and z shall be developed as follows:

X_a and X_f as defined in 11.6.2;

Y_p = the transverse distance from the port-most point on the compartment located at or below the waterline d_B, to a vertical plane located $B_B/2$ to starboard of the ship's centreline;

Ys = the transverse distance from the starboard-most point on the compartment located at or below the waterline d_B, to a vertical plane located $B_B/2$ to starboard of the ship's centreline; and

z = the minimum value of z over the length of the compartment, where, at any given longitudinal location, z is the vertical distance from the lower point of the bottom shell at that longitudinal location to the lower point of the compartment at that longitudinal location.

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[3] For symmetrical tank arrangements, damages are considered for one side of the ship only, in which case all "y" dimensions are to be measured from that side. For asymmetrical arrangements reference is made to the Explanatory Notes on matters related to the accidental oil outflow performance, adopted by the Organization by resolution MEPC.122(52).

.3 Table of probabilities for bottom damage

X_a/L	P_{Ba}	X_f/L	P_{Bf}	Y_p/B_B
0,00	0,000	0,00	0,969	0,00
0,05	0,002	0,05	0,953	0,05
0,10	0,008	0,10	0,936	0,10
0,15	0,017	0,15	0,916	0,15
0,20	0,029	0,20	0,894	0,20
0,25	0,042	0,25	0,870	0,25
0,30	0,058	0,30	0,842	0,30
0,35	0,076	0,35	0,810	0,35
0,40	0,096	0,40	0,775	0,40
0,45	0,119	0,45	0,734	0,45
0,50	0,143	0,50	0,687	0,50
0,55	0,171	0,55	0,630	0,55
0,60	0,203	0,60	0,563	0,60
0,65	0,242	0,65	0,489	0,65
0,70	0,289	0,70	0,413	0,70
0,75	0,344	0,75	0,333	0,75
0,80	0,409	0,80	0,252	0,80
0,85	0,482	0,85	0,170	0,85
0,90	0,565	0,90	0,089	0,90
0,95	0,658	0,95	0,026	0,95
1,00	0,761	1,00	0,000	1,00

P_{Bz} shall be calculated as follows:

$P_{Bz} = (14.5 – 67\ z/D_S)\ (z/D_S)$ for $z/D_S \leq 0.1$

$P_{Bz} = 0.78 + 1.1\ \{(z/D_S - 0.1)\}$ for $z/D_S > 0.1$

P_{Bz} is not to be taken greater than 1.

.8 For the purpose of maintenance and inspection, any oil fuel tanks that do not border the outer shell plating shall be located no closer to the bottom shell plating than the minimum value of *h* in paragraph 6 and no closer to the side shell plating than the applicable minimum value of *w* in paragraph 7 or 8.

12 In approving the design and construction of ships to be built in accordance with this regulation, Administrations shall have due regard to the general safety aspects, including the need for maintenance and inspection of wing and double bottom tanks or spaces.

S Regulation 13 – Standard discharge connection

To enable pipes of reception facilities to be connected with the ship's discharge pipeline for residues from machinery bilges and from sludge tanks, both lines shall be fitted with a standard discharge connection in accordance with the following table:

Standard dimensions of flanges for discharge connections

Description	Dimensions
Outside diameter	215 mm
Inside diameter	According to pipe outside diameter
Bolt circle diameter	183 mm
Slots in flange	6 holes 22 mm in diameter equidistantly placed on a bolt circle of the above diameter, slotted to the flange periphery. The slot width to be 22 mm
Flange thickness	20 mm
Bolts and nuts: Quantity, diameter	6, each of 20 mm in diameter and of suitable length
The flange is designed to accept pipes up to a maximum internal diameter of 125 mm and shall be of steel or other equivalent material having a flat face. This flange, together with a gasket of oil-proof material, shall be suitable for a service pressure of 600 kPa.	

Part B – Equipment

S Regulation 14 – Oil filtering equipment

1 Except as specified in paragraph 3 of this regulation any ship of 400 gross tonnage and above but less than 10,000 gross tonnage shall be fitted with oil filtering equipment complying with paragraph 6 of this regulation. Any such ship which may discharge into the sea ballast water retained in fuel oil tanks in accordance with regulation 16.2 shall comply with paragraph 2 of this regulation.

2 Except as specified in paragraph 3 of this regulation any ship of 10,000 gross tonnage and above shall be fitted with oil filtering equipment complying with paragraph 7 of this regulation.

3 Ships, such as hotel ships, storage vessels, etc., which are stationary except for non-cargo-carrying relocation voyages need not be provided with oil filtering equipment. Such ships shall be provided with a holding tank having a volume adequate, to the satisfaction of the Administration, for the total retention on board of the oily bilge water. All oily bilge water shall be retained on board for subsequent discharge to reception facilities.

4 The Administration shall ensure that ships of less than 400 gross tonnage are equipped, as far as practicable, to retain on board oil or oily mixtures or discharge them in accordance with the requirements of regulation 15.6.

Ships with a gross tonnage of less than 400 shall be fitted with:

.1 a shore connection with a pump and an oil/water separation system as well as alarm equipment making it possible to treat the oily water from the machinery space bilges and to discharge this in accordance with the provisions of regulation 15 or with

.2 a holding tank of at least 1 m^3 as well as a pump and shore connection so that the oily water from the machinery space bilges can be stored on board for later discharge to reception facilities ashore or with

.3 other systems that are acceptable to the Danish Maritime Authority as well as a shore connection with a pump.

Ships with a gross tonnage of less than 400 that use centrifuges or the like to treat oil fuel and lubricating oils shall be fitted with sludge tanks in accordance with regulation 12, paragraphs 1 and 2.

5 The Administration may waive the requirements of paragraphs 1 and 2 of this regulation for:

.1 any ship engaged exclusively on voyages within special areas, or

.2 any ship certified under the International Code of Safety for High-Speed Craft (or otherwise within the scope of this Code with regard to size and design) engaged on a scheduled service with a turn-around time not exceeding 24 hours and covering also non-passenger/cargo-carrying relocation voyages for these ships,

.3 with regard to the provision of subparagraphs .1 and .2 above, the following conditions shall be complied with:

.1 the ship is fitted with a holding tank having a volume adequate, to the satisfaction of the Administration, for the total retention on board of the oily bilge water;

.2 all oily bilge water is retained on board for subsequent discharge to reception facilities;

.3 the Administration has determined that adequate reception facilities are available to receive such oily bilge water in a sufficient number of ports or terminals the ship calls at;

.4 the International Oil Pollution Prevention Certificate, when required, is endorsed to the effect that the ship is exclusively engaged on the voyages within special areas or has been accepted as a high-speed craft for the purpose of this regulation and the service is identified; and

.5 the quantity, time, and port of the discharge are recorded in the Oil Record Book Part I.

6 Oil filtering equipment referred to in paragraph 1 of this regulation shall be of a design approved by the Administration and shall be such as will ensure that any oily mixture discharged into the sea after passing through the system has an oil content not exceeding 15 parts per million. In considering the design of such equipment, the Administration shall have regard to the specification recommended by the Organization.[4]

7 Oil filtering equipment referred to in paragraph 2 of this regulation shall comply with paragraph 6 of this regulation. In addition, it shall be provided with alarm arrangement to indicate when this level cannot be maintained. The system shall also be provided with arrangements to ensure that any discharge of oily mixtures is automatically stopped when the oil content of the effluent exceeds 15 parts per million. In considering the design of such equipment and approvals, the Administration shall have regard to the specification recommended by the Organization.

8 Guidelines on the minimum capacities of oil separators for the treatment of bilge water from machinery spaces:

Gross tonnage	*Minimum capacity (m^3)/hour*
200-400	*0.25*
400-1,600	*0.5*
1,600-4,000	*1.0*
4,000-15,000	*2.5*
15,000 and above	*5.0*

Greater separator capacities may be necessary in ships with large, complex machinery spaces.

The capacity of oil separators that are also used to treat ballast water shall be approved by the Danish Maritime Authority in each individual case.

[4] Refer to the Recommendation on International Performance and Test Specification for Oily-Water Separating Equipment and Oil Content Meters, adopted by the Organization by Assembly resolution A.393(X), or the Guidelines and specifications for Pollution Prevention equipment for Machinery space Bilges of Ships, adopted by the Marine Environment Protection Committee by resolution MEPC.60(33), or the revised guidelines and specification for pollution prevention equipment for machinery space bilges of ships, adopted by the Marine Environment Protection Committee by resolution MEPC.107(49).

Part C – Control of operational discharge of oil

M Regulation 15 – Control of discharge of oil

Attention is drawn to the fact that the following is merely the Danish Maritime Authority's translation of MARPOL. As regards Danish legislation, reference is made to the Danish Ministry of the Environment.

1 Subject to the provisions of regulation 4 and paragraphs 2, 3, and 6 of this regulation, any discharge into the sea of oil or oily mixtures from ships shall be prohibited.[5]

A Discharges outside special areas

2 Any discharge into the sea of oil or oily mixtures from ships of 400 gross tonnage and above shall be prohibited except when all the following conditions are satisfied:

.1 the ship is proceeding en route;

.2 the oily mixture is processed through an oil filtering equipment meeting the requirements of regulation 14;

.3 the oil content of the effluent without dilution does not exceed 15 parts per million;

.4 the oily mixture does not originate from cargo pump room bilges on oil tankers; and

.5 the oily mixture, in case of oil tankers, is not mixed with oil cargo residues.

B Discharges in special areas

3 Any discharge into the sea of oil or oily mixtures from ships of 400 gross tonnage and above shall be prohibited except when all of the following conditions are satisfied:

.1 the ship is proceeding en route;

.2 the oily mixture is processed through an oil filtering equipment meeting the requirements of regulation 14.7;

.3 the oil content of the effluent without dilution does not exceed 15 parts per million;

.4 the oily mixture does not originate from cargo pump room bilges on oil tankers; and

.5 the oily mixture, in case of oil tankers, is not mixed with oil cargo residues.

4 In respect of the Antarctic area, any discharge into the sea of oil or oily mixtures from any ship shall be prohibited.

5 Nothing in this regulation shall prohibit a ship on a voyage only part of which is in a special area from discharging outside a special area in accordance with paragraphs 2 of this regulation.

C Requirements for ships of less than 400 gross tonnage in all areas except the Antarctic area

6 In the case of a ship of less than 400 gross tonnage, oil and all oily mixtures shall either be retained on board for subsequent discharge to reception facilities or discharged into the sea in accordance with the following provisions:

.1 the ship is proceeding en route;

.2 the ship has in operation equipment of a design approved by the Administration that ensures that the oil content of the effluent without dilution does not exceed 15 parts per million;

.3 the oily mixture does not originate from cargo pump room bilges on oil tankers; and

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[5] *This shall not apply to Danish territorial waters, where any type of oil discharge is prohibited, cf. the Act on Protection of the Marine Environment.*

.4 the oily mixture, in case of oil tankers, is not mixed with oil cargo residues.

D General requirements

7 Whenever visible traces of oil are observed on or below the surface of the water in the immediate vicinity of a ship or its wake, Governments of Parties to the Convention should, to the extent they are reasonably able to do so, promptly investigate the facts bearing on the issue of whether there has been a violation of the provisions of this regulation. The investigation should include, in particular, the wind and sea conditions, the track and speed of the ship, other possible sources of the visible traces in the vicinity, and any relevant oil discharge records.

8 No discharge into the sea shall contain chemicals or other substances in quantities or concentrations which are hazardous to the marine environment or chemicals or other substances introduced for the purpose of circumventing the conditions of discharge specified in this regulation.

9 The oil residues which cannot be discharged into the sea in compliance with this regulation shall be retained on board for subsequent discharge to reception facilities.

S Regulation 16 – Segregation of oil and water ballast and carriage of oil in forepeak tanks

1 Except as provided in paragraph 2 of this regulation, in ships delivered after 31 December 1979, as defined in regulation 1.28.2, of 4,000 gross tonnage and above other than oil tankers, and in oil tankers delivered after 31 December 1979, as defined in regulation 1.28.2, of 150 gross tonnage and above, no ballast water shall be carried in any oil fuel tank.

2 Where the need to carry large quantities of oil fuel render it necessary to carry ballast water which is not a clean ballast in any oil fuel tank, such ballast water shall be discharged to reception facilities or into the sea in compliance with regulation 15 using the equipment specified in regulation 14.2, and an entry shall be made in the Oil Record Book to this effect.

3 In a ship of 400 gross tonnage and above, for which the building contract is placed after 1 January 1982 or, in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction after 1 July 1982, oil shall not be carried in a forepeak tank or a tank forward of the collision bulkhead.

4 All ships other than those subject to paragraphs 1 and 3 of this regulation shall comply with the provisions of those paragraphs as far as is reasonable and practicable.

S Regulation 17 – Oil Record Book, Part I – Machinery space operations

1 Every oil tanker of 150 gross tonnage and above and every ship of 400 gross tonnage and above other than an oil tanker shall be provided with an Oil Record Book Part I (Machinery Space Operations). The Oil Record Book, whether as a part of the ship's official log-book or otherwise, shall be in the Form specified in appendix III to this chapter.[6] *The record books shall be kept in accordance with the instruction provided in the record books.*

2 The Oil Record Book Part I shall be completed on each occasion, on a tank-to-tank basis if appropriate, whenever any of the following machinery space operations takes place in the ship:

.1 ballasting or cleaning of oil fuel tanks;

.2 discharge of dirty ballast or cleaning water from oil fuel tanks;

.3 collection and disposal of oil residues (sludge and other oil residues);

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6 Reference is made to Appendix III of MARPOL, Annex I.

.4 discharge overboard or disposal otherwise of bilge water which has accumulated in machinery spaces; and

.5 bunkering of fuel or bulk lubricating oil.

3 In the event of such discharge of oil or oily mixture as is referred to in regulation 4 or in the event of accidental or other exceptional discharge of oil not excepted by that regulation, a statement shall be made in the Oil Record Book Part I of the circumstances of, and the reasons for, the discharge.

4 Each operation described in paragraph 2 of this regulation shall be fully recorded without delay in the Oil Record Book Part I, so that all entries in the book appropriate to that operation are completed. Each completed operation shall be signed by the officer or officers in charge of the operations concerned and each completed page shall be signed by the master of ship. The entries in the Oil Record Book Part I, for ships holding an International Oil Pollution Prevention Certificate, shall be at least in English, French or Spanish. Where entries in an official national language of the State whose flag the ship is entitled to fly are also used, this shall prevail in case of a dispute or discrepancy.

5 Any failure of the oil filtering equipment shall be recorded in the Oil Record Book Part I.

6 The Oil Record Book Part I, shall be kept in such a place as to be readily available for inspection at all reasonable times and, except in the case of unmanned ships under tow, shall be kept on board the ship. It shall be preserved for a period of three years after the last entry has been made.

7 The competent authority of the Government of a Party to the Convention may inspect the Oil Record Book Part I on board any ship to which this chapter applies while the ship is in its port or offshore terminals and may make a copy of any entry in that book and may require the master of the ship to certify that the copy is a true copy of such entry. Any copy so made which has been certified by the master of the ship as a true copy of an entry in the ship's Oil Record Book Part I shall be made admissible in any judicial proceedings as evidence of the facts stated in the entry. The inspection of an Oil Record Book Part I and the taking of a certified copy by the competent authority under this paragraph shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

8 The Oil Record Book shall be kept in legible writing and pages may not be torn out. Entries that have been made, may not be erased, crossed out or made illegible in any other way. Should it be necessary to make alterations in the record book, they shall be in the form of remarks.

Part IV – requirements for the cargo area of oil tankers

18-36 *Not relevant for ships covered by these regulations.*

Part 5 – Prevention of pollution arising from an oil pollution incident

S Regulation 37 – Shipboard oil pollution emergency plan

1 Every oil tanker of 150 gross tonnage and above and every ship other than an oil tanker of 400 gross tonnage and above shall carry on board a shipboard oil pollution emergency plan approved by the Administration.

2 Such a plan shall be prepared based on guidelines[7] developed by the Organization and written in the working language of the master and officers.

The plan shall consist at least of:

[7] Refer to the Guidelines for the development of shipboard oil pollution emergency plans adopted by the Organization by resolution MEPC.54(32) as amended by resolution MEPC.86(44).

.1 the procedure to be followed by the master or other persons having charge of the ship to report an oil pollution incident, as required in article 8 and Protocol I of the Convention, based on the guidelines developed by the Organization;[8]

.2 the list of authorities or persons to be contacted in the event of an oil pollution incident;

.3 a detailed description of the action to be taken immediately by persons on board to reduce or control the discharge of oil following the incident; and

.4 the procedures and point of contact on the ship for co-ordinating shipboard action with national and local authorities in combating the pollution.

3 Such a plan may be combined with the shipboard marine pollution emergency plan for noxious liquid substances required under regulation 17 of chapter XXII. In this case, the title of such a plan shall be "Shipboard marine pollution emergency plan".

4 All oil tankers of 5,000 tons deadweight or more shall have prompt access to computerised, shore-based damage stability and residual structural strength calculation programs.

Part VI – Reception facilities

M Regulation 38 – Reception facilities

Attention is drawn to the fact that the following regulation is the Danish Maritime Authority's translation of MARPOL. As regards Danish legislation, reference is made to the Ministry of the Environment.

A Reception facilities outside special areas

1 The Government of each Party to the present Convention undertakes to ensure the provision at oil loading terminals, repair ports, and in other ports in which ships have oily residues to discharge, of facilities for the reception of such residues and oily mixtures as remain from oil tankers and other ships adequate to meet the needs of the ships using them without causing undue delay to ships.[9]

2 Reception facilities in accordance with paragraph 1 of this regulation shall be provided in:

.1 all ports and terminals in which crude oil is loaded into oil tankers where such tankers have immediately prior to arrival completed a ballast voyage of not more than 72 hours or not more than 1200 nautical miles;

.2 all ports and terminals in which oil other than crude oil in bulk is loaded at an average quantity of more than 1,000 tonnes per day;

.3 all ports having ship repair yards or tank cleaning facilities;

.4 all ports and terminals which handle ships provided with the sludge tank(s) required by regulation 12;

.5 all ports in respect of oily bilge waters and other residues, which cannot be discharged in accordance with regulations 15 and 34; and

.6 all loading ports for bulk cargoes in respect of oil residues from combination carriers which cannot be discharged in accordance with regulation 34 of this Chapter.

3 The capacity for the reception facilities shall be as follows:

[8] Refer to the General Principles for Ship Reporting Systems and Ship Reporting Requirements, including Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and/or Marine Pollutants adopted by the Organization by resolution A.851(20).

[9] Reference is made to resolution MEPC.83(44), "Guidelines for ensuring the adequacy of port waste reception facilities."

.1 Crude oil loading terminals shall have sufficient reception facilities to receive oil and oily mixtures which cannot be discharged in accordance with the provisions of regulation 34.1 of this Chapter from all oil tankers on voyages as described in paragraph 2.1 of this regulation.

.2 Loading ports and terminals referred to in paragraph 2.2 of this regulation shall have sufficient reception facilities to receive oil and oily mixtures which cannot be discharged in accordance with the provisions of regulation 34.1 of this Chapter from oil tankers which load oil other than crude oil in bulk.

.3 All ports having ship repair yards or tank cleaning facilities shall have sufficient reception facilities to receive all residues and oily mixtures which remain on board for disposal from ships prior to entering such yards or facilities.

.4 All facilities provided in ports and terminals under paragraph 2.4 of this regulation shall be sufficient to receive all residues retained according to regulation 12 from all ships that may reasonably be expected to call at such ports and terminals.

.5 All facilities provided in ports and terminals under this regulation shall be sufficient to receive oily bilge waters and other residues which cannot be discharged in accordance with regulation 15.

.6 The facilities provided in loading ports for bulk cargoes shall take into account the special problems of combination carriers as appropriate.

B Reception facilities within special areas

4 The Government of each Party to the Convention the coastline of which borders on any given special area shall ensure that all oil loading terminals and repair ports within the special area are provided with facilities adequate for the reception and treatment of all the dirty ballast and tank washing water from oil tankers. In addition all ports within the special area shall be provided with adequate reception facilities for other residues and oily mixtures from all ships.[10] Such facilities shall have adequate capacity to meet the needs of the ships using them without causing undue delay**.**

5 The Government of each Party to the MARPOL Convention having under its jurisdiction entrances to seawater courses with low depth contour which might require a reduction of draught by the discharge of ballast shall ensure the provision of the facilities referred to in paragraph 4 of this regulation but with the proviso that ships required to discharge slops or dirty ballast could be subject to some delay.

6 With regard to the Red Sea area, Gulfs area, Gulf of Aden area and Oman area of the Arabian Sea:

6.1 Each Party concerned shall notify the Organization of the measures taken pursuant to provisions of paragraphs 4 and 5 of this regulation. Upon receipt of sufficient notifications, the Organization shall establish a date from which the discharge requirements of regulations 15 and 34 of this Chapter in respect of the area in question shall take effect. The Organization shall notify all Parties of the date so established no less than twelve months in advance of that date.

6.2 During the period between the entry into force of the present Convention and the date so established, ships while navigating in the special area shall comply with the requirements of regulations 15 and 34 of this Chapter as regards discharges outside special areas.

6.3 After such date, oil tankers loading in ports in these special areas where such facilities are not yet available shall also fully comply with the requirements of regulations 15 and 34 of this Chapter as regards discharges within special areas. However, oil tankers entering these special

[10] Reference is made to resolution MEPC.83(44), "Guidelines for ensuring the adequacy of port waste reception facilities."

areas for the purpose of loading shall make every effort to enter the area with only clean ballast on board.

6.4 After the date on which the requirements for the special area in question take effect, each Party shall notify the Organization for transmission to the Parties concerned of all cases where the facilities are alleged to be inadequate.

6.5 At least the reception facilities as prescribed in paragraphs 1, 2 and 3 of this regulation shall be provided one year after the date of entry into force of the MARPOL Convention.

7 Notwithstanding paragraphs 4, 5 and 6 of this regulation, the following rules apply to the Antarctic area:

7.1 The Government of each Party to the MARPOL Convention at whose ports ships depart en route to or arrive from the Antarctic area undertakes to ensure that as soon as practicable adequate facilities are provided for the reception of all oil residue (sludge), dirty ballast, tank washing water, and other oily residues and mixtures from all ships, without causing undue delay, and according to the needs of the ships using them.

7.2 The Government of each Party to the present Convention shall ensure that all ships entitled to fly its flag, before entering the Antarctic area, are fitted with a tank or tanks of sufficient capacity on board for the retention of all oil residue (sludge), dirty ballast, tank washing water and other oily residues and mixtures while operating in the area and have concluded arrangements to discharge such oily residues at a reception facility after leaving the area.

C General requirements

8 Each Party shall notify the Organization for transmission to the Parties concerned of all cases where the facilities provided under this regulation are alleged to be inadequate.

Part 7 – Special requirements for fixed or floating platforms

39 *Not relevant for ships covered by these regulations.*

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Chapter XXIV
Prevention of pollution by sewage from vessels

Introduction

The provisions of chapter XXIV (previously chapter XX) have been drawn up on the basis of annex IV to the International Convention for the Prevention of Pollution from Ships – the 1973 MARPOL Convention – as amended, as well as Annex IV, regulations 4 and 5 of the Helsinki Convention.

The administration of the rules has been distributed so that the Danish Environmental Protection Agency is responsible for the rules on discharge, and the Danish Maritime Authority is responsible for the rules on the technical installations on board the ships, including records and plans. This distribution of responsibility has been indicated in the table of contents with an "M" for the Danish Environmental Protection Agency and an "S" for the Danish Maritime Authority.

In addition to the technical regulations contained in the sets of regulations issued by the Danish Maritime Authority, orders have been issued by the Danish Ministry of the Environment, which must be observed as well.

In the provisions, the IMO is referred to as the Organisation, MARPOL 73/78 is referred to as the Convention, and the Danish Environmental Protection Agency and the Danish Maritime Authority, respectively, are referred to as the Administration.

Part 1 – Treatment and storage of sewage on large vessels

Part 1 – General

Regulation 1 – Definitions

For the purposes of this chapter:

1 "New ship" means a ship:
   .1 for which the building contract is placed, or in the absence of a building contract, the keel of which is laid, or which is at a similar stage of construction, on or after 27 September 2003; or
   .2 the delivery of which is 27 September 2006 or later.

2 "Existing ship" means a ship which is not a new ship.

3 "Sewage" means:
   .1 drainage and other wastes from any form of toilets and urinals;
   .2 drainage from medical premises (dispensary, sick bay, etc.) via wash basins, wash tubs and scuppers located in such premises;
   .3 drainage from spaces containing living animals; or
   .4 other waste waters when mixed with the drainages defined above.

4 "Holding tank" means a tank used for the collection and storage of sewage.

5 "Nearest land". The term "from the nearest land" means from the baseline from which the territorial sea of the territory in question is established in accordance with international law except that, for the purposes of these provisions, "from the nearest land" off the north-eastern coast of Australia shall mean from a line drawn from a point on the coast of Australia in:
latitude 11°00' S, longitude 142°08' E
to a point in latitude 10°35' S, longitude 141°55' E,
thence to a point latitude 10°00' S, longitude 142° 00' E,
thence to a point latitude 09°10' S, longitude 143° 52' E,
thence to a point latitude 09°00' S, longitude 144° 30' E,
thence to a point latitude 10°41' S, longitude 145° 00' E,
thence to a point latitude 13°00' S, longitude 145° 00' E,
thence to a point latitude 15°00' S, longitude 146° 00' E,
thence to a point latitude 17°30' S, longitude 147° 00' E,
thence to a point latitude 21°00' S, longitude 152° 55' E,
thence to a point latitude 24°30' S, longitude 154° 00' E,
thence to a point on the coast of Australia in latitude 24°42' S, longitude 153°15' E.

6 "International voyage" means a voyage from a country to which the present Convention (MARPOL) applies to a port outside such country, or conversely.

7 "Person" means member of the crew and passengers.

8 "Anniversary date" means the day and the month of each year which will correspond to the date of expiry of the International Sewage Pollution Prevention Certificate.

Regulation 2 – Application

1 The provisions of this chapter shall apply to the following ships engaged in *domestic*[1] *and* international voyages:

.1 new ships of 400 gross tonnage and above; and

.2 new ships of less than 400 gross tonnage which are certified to carry more than 15 persons; and

.2a Existing ships engaged in service in the Baltic Sea area and Danish territorial waters with a gross tonnage of or above 400,

.2b Existing ships engaged in service in the Baltic Sea area and Danish territorial waters with a gross tonnage below 400, approved for carrying more than 15 persons,

.3 existing ships of 400 gross tonnage and above, not later than on 27 September 2008; and

.4 existing ships of less than 400 gross tonnage which are certified to carry more than 15 persons, not later than on 27 September 2008.

2 The Administration shall ensure that existing ships, according to subparagraphs 1.3 and 1.4 of this regulation, the keels of which are laid or which are of a similar stage of construction before 2 October 1983 shall be equipped, as far as practicable, to discharge sewage in accordance with the requirements of regulation 11.

Regulation 3 – Exceptions

1 Regulation 11 shall not apply to:

.1 the discharge of sewage from a ship necessary for the purpose of securing the safety of a ship and those on board or saving life at sea; or

.2 the discharge of sewage resulting from damage to a ship or its equipment if all reasonable precautions have been taken before and after the occurrence of the damage, for the purpose of preventing or minimizing the discharge.

Part 2 – Surveys and certificates

Regulation 4 – Surveys

1 Every ship which, in accordance with regulation 2, is required to comply with the provisions of this chapter shall be subject to the surveys specified below:

.1 An initial survey before the ship is put in service or before the Certificate required under regulation 5 is issued for the first time, which shall include a complete survey of its structure, equipment, systems, fittings, arrangements and material in so far as the ship is covered by this chapter. This survey shall be such as to ensure that the structure, equipment, systems, fittings, arrangements and materials fully comply with the applicable requirements of this chapter.

.2 A renewal survey at intervals specified by the Administration, but not exceeding five years, except where regulation 8.2, 8.5, 8.6 or 8.7 is applicable. The renewal survey shall be such as to ensure that the structure, equipment, systems, fittings, arrangements and materials fully comply with applicable requirements of this chapter.

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[1] *Shall, however, not apply to ships engaged in domestic voyages in Greenland.*

.3 An additional survey, either general or partial, according to the circumstances, shall be made after a repair resulting from investigations prescribed in paragraph 4 of this regulation, or whenever any important repairs or renewals are made. The survey shall be such as to ensure that the necessary repairs or renewals have been effectively made, that the material and workmanship of such repairs or renewals are in all respects satisfactory and that the ship complies in all respects with the requirements of this chapter.

2 The Administration shall establish appropriate measures for ships which are not subject to the provisions of paragraph 1 of this regulation in order to ensure that the applicable provisions of this chapter are complied with.

3 Surveys of ships as regards the enforcement of the provisions of this chapter shall be carried out by officers of the Administration. The Administration may, however, entrust the surveys either to surveyors nominated for the purpose or to organizations recognized by it.

4 An Administration nominating surveyors or recognizing organizations to conduct surveys as set forth in paragraph 3 of this regulation shall, as a minimum, empower any nominated surveyor or recognized organization to:

.1 require repairs to a ship; and

.2 carry out surveys if requested by the appropriate authorities of a Port State.

The Administration shall notify the Organization of the specific responsibilities and conditions of the authority delegated to the nominated surveyors or recognized organizations, for circulation to Parties to the Convention for the information of their officers.

5 When a nominated surveyor or recognized organization determines that the condition of the ship or its equipment does not correspond substantially with the particulars of the Certificate or is such that the ship is not fit to proceed to sea without presenting an unreasonable threat of harm to the marine environment, such surveyor or organization shall immediately ensure that corrective action is taken and shall in due course notify the Administration. If such corrective action is not taken, the Certificate should be withdrawn and the Administration shall be notified immediately and if the ship is in a port of another Party, the appropriate authorities of the Port State shall also be notified immediately. When an officer of the Administration, a nominated surveyor or recognized organization has notified the appropriate authorities of the Port State, the Government of the Port State concerned shall give such officer, surveyor or organization any necessary assistance to carry out their obligations under this regulation. When applicable, the Government of the Port State concerned shall take such steps as will ensure that the ship shall not sail until it can proceed to sea or leave the port for the purpose of proceeding to the nearest appropriate repair yard available without presenting an unreasonable threat of harm to the marine environment.

6 In every case, the Administration concerned shall fully guarantee the completeness and efficiency of the survey and shall undertake to ensure the necessary arrangements to satisfy this obligation.

7 The condition of the ship and its equipment shall be maintained to conform with the provisions of the present chapter to ensure that the ship in all respects will remain fit to proceed to sea without presenting an unreasonable threat of harm to the marine environment.

8 After any survey of the ship under paragraph 1 of this regulation has been completed, no change shall be made in the structure, equipment, systems, fittings, arrangements or materials covered by the survey, without the sanction of the Administration, except the direct replacement of such equipment and fittings.

9 Whenever an accident occurs to a ship or a defect is discovered which substantially affects the integrity of the ship or the efficiency or completeness of its equipment covered by this chapter, the master or owner of the ship shall report at the earliest opportunity to the Administration, the recognized organization or the nominated surveyor responsible for issuing the relevant Certificate, who shall cause investigations to be initiated to determine whether a survey as required by paragraph 1 of this regulation is necessary. If the ship is in a port of another Party, the master or owner shall also report immediately to the appropriate authorities of the Port State and the nominated surveyor or recognized organization shall ascertain that such report has been made.

Regulation 5 – Issue or endorsement of Certificate

1 An International Sewage Pollution Prevention Certificate shall be issued, after an initial or renewal survey in accordance with the provisions of regulation 4, to any ship which is engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention. In the case of existing ships this requirement shall apply from 27 September 2008.

2 Such Certificate shall be issued or endorsed either by the Administration or by any persons or organization[2)] duly authorized by it. In every case, the Administration assumes full responsibility for the Certificate.

Regulation 6 – Issue or endorsement of a Certificate by another Government

1 The Government of a Party to the Convention may, at the request of the Administration, cause a ship to be surveyed and, if satisfied that the provisions of this chapter are complied with, shall issue or authorize the issue of an International Sewage Pollution Prevention Certificate to the ship, and where appropriate, endorse or authorize the endorsement of that Certificate on the ship in accordance with this chapter.

2 A copy of the Certificate and a copy of the survey report shall be transmitted as soon as possible to the Administration requesting the survey.

3 A Certificate so issued shall contain a statement to the effect that it has been issued at the request of the Administration and it shall have the same force and receive the same recognition as the Certificate issued under regulation 5.

4 No International Sewage Pollution Prevention Certificate shall be issued to a ship which is entitled to fly the flag of a State which is not a Party.

Regulation 7 – Form of Certificate

The International Sewage Pollution Prevention Certificate shall be drawn up in the form corresponding to the model given in appendix 1C to this technical regulation. If the official language is neither English, French or Spanish, the text shall contain a translation into one of these languages.

Regulation 8 – Duration and validity of Certificate

1 An International Sewage Pollution Prevention Certificate shall be issued for a period specified by the Administration which shall not exceed five years.

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2) Refer to the Guidelines for the authorization of organizations acting on behalf of the Administration, adopted by the Organization by resolution A.739 (18), and the Specifications on the survey and certification functions of recognized organizations acting on behalf of the Administration, adopted by the Organization by resolution A.789(19).

2.1 Notwithstanding the requirements of paragraph 1 of this regulation, when the renewal survey is completed within three months before the expiry date of the existing Certificate, the new Certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of expiry of the existing Certificate.

2.2 When the renewal survey is completed after the expiry date of the existing Certificate, the new Certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of expiry of the existing Certificate.

2.3 When the renewal survey is completed more than three months before the expiry date of the existing Certificate, the new Certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of completion of the renewal survey.

3 If a Certificate is issued for a period of less than five years, the Administration may extend the validity of the Certificate beyond the expiry date to the maximum period specified in paragraph 1 of this regulation.

4 If a renewal survey has been completed and a new Certificate cannot be issued or placed on board the ship before the expiry date of the existing Certificate, the person or organization authorized by the Administration may endorse the existing Certificate and such a Certificate shall be accepted as valid for a further period which shall not exceed five months from the expiry date.

5 If a ship at the time when a Certificate expires is not in a port in which it is to be surveyed, the Administration may extend the period of validity of the Certificate but this extension shall be granted only for the purpose of allowing the ship to complete its voyage to the port in which it is to be surveyed and then only in cases where it appears proper and reasonable to do so. No Certificate shall be extended for a period longer than three months, and a ship to which an extension is granted shall not, on its arrival in the port in which it is to be surveyed, be entitled by virtue of such extension to leave that port without having a new Certificate. When the renewal survey is completed, the new Certificate shall be valid to a date not exceeding five years from the date of expiry of the existing Certificate before the extension was granted.

6 A Certificate issued to a ship engaged on short voyages which has not been extended under the foregoing provisions of this regulation may be extended by the Administration for a period of grace of up to one month from the date of expiry stated on it. When the renewal survey is completed, the new Certificate shall be valid to a date not exceeding five years from the date of expiry of the existing Certificate before the extension was granted.

7 In special circumstances, as determined by the Administration, a new Certificate need not be dated from the date of expiry of the existing Certificate as required by paragraph 2.2, 5 or 6 of this regulation. In these special circumstances, the new Certificate shall be valid to a date not exceeding five years from the date of completion of the renewal survey.

8 A Certificate issued under regulation 5 or 6 shall cease to be valid in any of the following cases:

.1 if the relevant surveys are not completed within the periods specified under regulation 4.1; or

.2 upon transfer of the ship to the flag of another State. A new Certificate shall only be issued when the Government issuing the new Certificate is fully satisfied that the ship is in compliance with the requirements of regulations 4.7 and 4.8. In the case of a transfer between Parties, if requested within 3 months after the transfer has taken place, the Government of the Party whose flag the ship was formerly entitled to fly shall, as soon as possible, transmit to the Administration copies of the Certificate carried by the ship before the transfer and, if available, copies of the relevant survey reports.

Part 3 – Equipment and control of discharge

Regulation 9 – Sewage systems

1 Every ship which, in accordance with regulation 2, is required to comply with the provisions of this chapter shall be equipped with one of the following sewage systems:

.1 a sewage treatment plant which shall be of a type approved by the Administration, taking into account the standards and test methods developed by the Organization;[2] or

.2 a sewage comminuting and disinfecting system approved by the Administration. Such system shall be fitted with facilities to the satisfaction of the Administration, for the temporary storage of sewage when the ship is less than 3 nautical miles from the nearest land; or

.3 a holding tank of the capacity to the satisfaction of the Administration for the retention of all sewage, having regard to the operation of the ship, the number of persons on board and other relevant factors.[3] The holding tank shall be constructed to the satisfaction of the Administration and shall have a means to indicate visually the amount of its contents.

Regulation 10 – Standard discharge connections

1 To enable pipes of reception facilities to be connected with the ship's discharge pipeline, both lines shall be fitted with a standard discharge connection in accordance with the following table:

Standard dimensions of flanges for discharge connections

Description	**Dimension**
Outside diameter	210 mm
Inner diameter	According to pipe outside diameter
Bolt circle diameter	170 mm
Slots in flange	4 holes, 18 mm in diameter, equidistantly placed on a bolt circle of the above diameter, slotted to the flange periphery. The slot width to be 18 mm
Flange thickness	16 mm
Bolts and nuts: quantity and diameter	4, each of 16 mm in diameter and of suitable length
The flange is designed to accept pipes up to a maximum internal diameter of 100 mm and shall be of steel or other equivalent material having a flat face. This flange, together with a suitable gasket, shall be suitable for a service pressure of 600 kPa	

For ships having a moulded depth of 5 m and less, the inner diameter of the discharge connection may be 38 mm.

2 For ships in dedicated trades, i.e. passenger ferries, alternatively the ship's discharge pipeline may be fitted with a discharge connection which can be accepted by the Administration, such as quick-connection couplings.

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[2] Refer to the Recommendation on international effluent standards and guidelines for performance tests for sewage treatment plants adopted by the Marine Environment Protection Committee of the Organization by resolution MEPC.2(VI) on 3 December 1976. For existing ships, national specifications are acceptable. Guidelines on the type-testing and approval of systems for treating and storing sewage are stipulated as Appendix A.

[3] In Appendix B, guidelines on the capacity calculation of sewage are stipulated.

Regulation 11 – Discharge of sewage

Attention is drawn to the fact that the following regulation is the Danish Maritime Authority's translation of MARPOL. As regards Danish legislation, reference is made to the Ministry of the Environment.

1 Subject to the provisions of regulation 3, the discharge of sewage into the sea is prohibited, except when:

.1 the ship is discharging comminuted and disinfected sewage using a system approved by the Administration in accordance with regulation 9.1.2 at a distance of more than 3 nautical miles from the nearest land, or sewage which is not comminuted or disinfected at a distance of more than 12 nautical miles from the nearest land, provided that, in any case, the sewage that has been stored in holding tanks, or sewage originating from spaces containing living animals, shall not be discharged instantaneously but at a moderate rate when the ship is en route and proceeding at not less than 4 knots; the rate of discharge shall be approved by the Administration based upon standards developed by the Organization; or

.2 the ship has in operation an approved sewage treatment plant which has been certified by the Administration to meet the operational requirements referred to in regulation 9.1.1, and

.1 the test results of the plant are laid down in the ship's International Sewage Pollution Prevention Certificate; and

.2 additionally, the effluent shall not produce visible floating solids nor cause discoloration of the surrounding water.

2 The provisions of paragraph 1 shall not apply to ships operating in the waters under the jurisdiction of a State and visiting ships from other States while they are in these waters and are discharging sewage in accordance with such less stringent requirements as may be imposed by such State.

3 When the sewage is mixed with wastes or waste water covered by other chapters of this technical regulation, the requirements of those chapters shall be complied with in addition to the requirements of this chapter.

Part 4 – Reception facilities

Regulation 12 – Reception facilities

Attention is drawn to the fact that the following regulation is the Danish Maritime Authority's translation of MARPOL. As regards Danish legislation, reference is made to the Ministry of the Environment.

1 The Government of each Party to the Convention, which requires ships operating in waters under its jurisdiction and visiting ships while in its waters to comply with the requirements of regulation 11.1, undertakes to ensure the provision of facilities at ports and terminals for the reception of sewage, without causing delay to ships, adequate to meet the needs of the ships using them.

2 The Government of each Party shall notify the Organization, for transmission to the Contracting Governments concerned, of all cases where the facilities provided under this regulation are alleged to be inadequate.

Part 5 – Port State control

Regulation 13 – Port State control on operational requirements[4]

1 A ship when in a port or an offshore terminal of another Party is subject to inspection by officers duly authorized by such Party concerning operational requirements under this Annex, where there are clear grounds for believing that the master or crew are not familiar with essential shipboard procedures relating to the prevention of pollution by sewage.

2 In the circumstances given in paragraph (1) of this regulation, the Party shall take such steps as will ensure that the ship shall not sail until the situation has been brought to order in accordance with the requirements of this Annex.

3 Procedures relating to the port State control prescribed in article 5 of the MARPOL Convention shall apply to this regulation.

4 Nothing in this regulation shall be construed to limit the rights and obligations of a Party carrying out control over operational requirements specifically provided for in the MARPOL Convention.

[4] Refer to procedures for port State control adopted by the Organization by resolution A.787(19) and amended by resolution A.882(21).

Annex A – Guidelines for type testing and approval of sewage treatment systems

These guidelines are based on the "International Convention for the Prevention of Pollution from Ships, 1973, Annex IV" (MARPOL 73/78, Annex IV), "Recommendation on International Effluent Standards and Guidelines for Performance Tests for Sewage Treatment Plants" (IMO Resolution MEPC.2(VI) and "Recommendation concerning the Application by the Baltic Sea States of Guidelines for Type Testing and Approval of Sewage Treatment System" (HELCOM recommendation no. 1/5 adopted on 5 May 2980).

1 Application

The application of the these guidelines for the three different types of plants appears from the following table, where "yes" means that the paragraph in question applies, and "no" means that the paragraph in question does not apply.

Paragraph	***Sewage treatment plants***	***System for comminution and disinfection***	***Holding tanks***
2	*Yes*	*Yes (except 2.2.10)*	*No*
3	*Yes (except 3.7 and 3.8)*	*Yes (except 3.1)*	*No*
4	*Yes*	*Yes*	*No*
5	*Yes (except 5.7)*	*Yes*	*Yes (except 5.6)*
6	*Yes (except 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10 and 6.11)*	*Yes (except 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10 and 6.11)*	*Yes*
7	*Yes*	*Yes (except 7.3.6)*	*Yes (except 7.3.4, 7.3.5 and 7.3.6)*

2 Application for type approval

The application with enclosures shall be sent in duplicate to the Danish Maritime Authority.

2.1 The application shall comprise:

- *.1 Description of the plant's process and function, including schematic drawings.*
- *.2 Description of the materials forming part of the plant, including the materials that are in contact with the waste water and any chemicals.*
- *.3 Installation instructions.*
- *.4 Operating instructions.*
- *.5 Maintenance instructions.*
- *.6 List of the most important components for the treatment.*
- *.7 Possible documented operation experience from use of the plant in vessels.*
- *.8 Proposal for a test programme in accordance with those guidelines.*
- *.9 Name of the institution which is proposed by the applicant for carrying out the test.*
- *.10 Name of the laboratory which is proposed by the applicant for carrying out the analyses.*

2.2 The instructions required in 2.1.3, 2.1.4 and 2.1.5 shall be the normal instructions delivered together with the plant and shall, among others, contain information of:

- *.1 Type of waste water (black, grey, from water saving system).*
- *.2 Type of flushing water (fresh or salt).*
- *.3 Capacity of the plant: normal, maximum and minimum (number of persons, flow volume per unit per hour).*
- *.4 Maximum duration for maximum capacity.*
- *.5 Designed organic loading.*
- *.6 Which chemicals and which concentrations are used.*

.7 *Instructions and warnings in connection with the use of chemicals.*

.8 *Flow and electric diagram.*

.9 *Simple arrangements for a possible inboard effluent control.*

.10 *Instruction on the storage and/or treatment of excess sludge.*

3 Test for type approval

3.1 The test shall be carried out in accordance with the rules in IMO Resolution MEPC.2(VI).

3.2 The test programme shall be approved by the Danish Maritime Authority.

3.3 The installation of the plant shall be carried out in accordance with the manufacturer's instructions (2.1.3, 2.1.4 and 2.1.5) and to the satisfaction of the Danish Maritime Authority.

3.4 The testing and the analyses shall be carried out by an institute and a laboratory recognised by the Danish Maritime Authority.

3.5 All parts in the plant which will contain or in which there will be a flow through of waste water shall be pressure tested in accordance with the provisions of the Danish Maritime Authority.

3.6 When there are good reasons to question the suitability of a plant on board a vessel despite the fact that the plant has been successfully type tested in accordance with 3.1, the Danish Maritime Authority shall inspect the proper functioning after a sufficient period of time in service before type approval is given.

3.7 Systems to comminute and disinfect sewage or equivalent systems shall fulfil the following standards:

.1 *Faecal coliform bacteria may not exceed 1000/100 cm^3 M.P.N.*

.2 *When a sample of 1 litre has passed through a US Sieve No. 12 (with openings of 1.68 mm), the material retained on the screen shall be dried in an oven at 103 C until its weight is constant. The remaining material may not exceed 10% of the total suspended solids and shall not be more than 50 mg.*

3.8 Systems to comminute and disinfect sewage shall be tested in accordance with IMO Resolution MEPC.2(VI), Annex B, with the following modifications:

.1 *The test shall, insofar as possible, be carried out on board a vessel.*

.2 *The duration of the test shall be at least 2 days.*

.3 *10 effluent samples shall be taken.*

.4 *2.5 and 2.8 of the resolution shall not apply.*

4 Construction requirements

4.1 The plant shall be constructed to resist the mechanical and environmental influences to which it will be exposed during the operation on board a vessel.

4.2 The plant shall operate correctly at an angle of 15 C in any plane from the normal operational position.

4.3 The plant shall be equipped for automatic operation and fitted with an alarm for erroneous operation.

4.4 The plant shall be equipped with openings of suitable size for emptying, cleaning, inspection and maintenance.

4.5 The plant shall be equipped with connection for venting to the open air from all parts where malodorous or explosive gases may be released.

4.6 It shall be easy to take samples.

4.7 The electrical equipment shall be in accordance with the requirements of the Danish Maritime Authority.

4.8 The plant shall be provided with a durable plate giving information of the name of the manufacturer, model of the plant, serial number of the plant, hydraulic loading, date of manufacture and the name of the approving Administration.

5 Installation plan

5.1 An installation plan for every installation shall be forwarded to the Danish Maritime Authority for information and shall comprise the following information:

.1 Type of system.

.2 Kind of flushing water (fresh or salt).

.3 Capacity (normal, maximum and minimum loading as well as maximum duration for maximum loading).

.4 Number of persons to be served by the installation.

.5 Drawings of the installation, including diagrammatic plans for the piping system with all details necessary for checking.

.6 Manufacture and type of plant.

.7 Volume of holding tank.

6 Construction requirements to the installation

6.1 The installation shall be carried out in such a way that it is suitable for and resistant to the influences to which it will be exposed during the operation on board a vessel. (In accordance with national standards).

6.2 The vent pipe shall be provided with a flame arresting netting.

6.3 There shall be suitable space around the components of the plant requiring inspection.

6.4 The holding tank shall be able to resist the influences to which it will be exposed.

6.5 The holding tank and the connected components shall be capable of operating correctly at list of 15 and trim of 7 .

6.6 The holding tank shall be equipped with alarm devices, giving alarm in case of 3/4 and full tank.

6.7 The holding tank shall be manufactured of or protected by materials which are corrosion resistant to the waste water.

6.8 The holding tank shall be provided with openings of suitable size for emptying, cleaning, inspection and maintenance.

6.9 The holding tank shall be equipped with remedies for flushing and emptying.

6.10 The holding tank shall be equipped with vent pipes to the open air.

6.11 The holding tank shall be constructed for the maximum occurring pressure.

6.12 A pipeline and pump to discharge sewage to a reception facility ashore shall be fitted. The pipeline shall be fitted with a connecting flange of dimensions as stipulated in the technical regulation on the treatment and storage of sewage. Other connecting arrangements may be used on vessels engaged on regular and domestic voyages.

7 Survey

7.1 Every plant shall be pressure tested before it is put into operation, which pressure test shall be carried out in the presence of a representative of the Danish Maritime Authority or a person authorised by the Danish Maritime Authority. All parts in the plant which will contain or in which there will be a flow through of waste water shall be pressured tested.

7.2 The installed plant shall be surveyed by a representative of the Danish Maritime Authority or by a person authorised by same before the plant is put into operation and thereafter every fifth year.

7.3 The survey shall comprise the following:

.1 Ascertainment of the installation being in accordance with the installation plan and the manufacturer's instructions.

.2 Check of any cathode protection.

.3 Ascertainment of the correct function of the alarms.

.4 Ascertainment of the correct function of the most important components stated in the manufacturer's list (2.1.6).

.5 Ascertainment of the correct concentration of the disinfectant in the effluent.

.6 Ascertainment of possible concentration of other chemicals in the effluent.

8 Explanatory notes

8.1 The expression "survey" appearing in subparagraph 3.6 shall not normally be understood as including sampling for analysis.

8.2 When chlorine is used as a disinfectant, the residual in the treated effluent shall be as low as possible and may under no circumstances exceed 0.5 mg/l.

8.3 The angle of 15 specified for certain tests in subparagraphs 4.2 and 6.5 are in accordance with the IMO rules on sewage. It shall, however, be noted that the IMO rules for oil separating equipment is 22.5 .

8.4 Permanent ventilation of holding tanks should be considered in connection with future amendments of the rules, but it should be stressed that holding tanks with associated pipelines shall be thoroughly aired and that the atmosphere shall be checked before persons enter such tanks.

Annex B – Guidelines for capacity calculation of sewage systems

These guidelines shall be used for calculating the size of systems for the treatment and storage of sewage so that they meet the provisions of technical regulation no. 1 of 15 February 1990 issued by the Danish Maritime Authority. They are based on "Guidelines for Capacity Calculation of Sewage Systems on Board Passenger Ships" (HELCOM recommendation no. 11/10 as adopted on 14 February 1999).

The guidelines contain rules on both black and grey sewage. Black sewage is defined in part 1 of the above-mentioned technical regulation. Grey sewage is the term used for sewage from galleys, laundries, bathrooms, etc. Only black sewage is required to be treated according to the regulations, but since the sanitary systems of many vessels have been designed so that black and grey sewage is carried to the same system or tank, the table below also gives calculated values for such systems.

The most commonly used systems on board vessels are the conventional system and the vacuum system, but some vessels use recirculation systems.

The table below gives the litre per person per day for the three systems.

Systems	***Black water***	***Black/grey water***
Conventional	*70*	*230*
Vacuum	*25*	*185*
Recirculation	*2*	*-*

Deviations may be made from the figures given in connection with other toilet systems, if installed. Vessels equipped with plants for the communition and disinfection of sewage shall also be equipped with a suitable holding tank. Holding tanks shall in general be sufficiently large to contain sewage for one day's operation. Vessels engaged on voyages only during the day, such as sport fishing vessels, may be equipped with a tank capacity for 12 hours considering the circumstances. Passenger ships engaged on regular voyages between two ports shall have a tank capacity sufficient for at least one voyage out and home again.

Part 2 – Storage of sewage on small vessels

Regulation 1 – Application

These provisions shall apply to all kinds of vessels of less than 400 tons gross tonnage, or certified to carry fewer than 15 persons and equipped with a toilet and navigating the Baltic and the Danish sea territory.

Regulation 2 – Definitions

1 "New vessel" means a vessel the keel of which is laid or which is produced on or after 1 January 2000.

2 "Existing vessel" means a vessel that is not a new vessel.

3 "Sewage" means drainage and other wastes from toilets and urinals.

4 "Fixed toilet system" means a toilet system consisting of a lavatory bowl, holding tank with associated valves and pipes and/or hose connections as well as a shore connection.

5 "Portable toilet" means a toilet system consisting of a lavatory bowl with associated portable holding tank without any sea connection, where it is possible to empty the tank manually by tipping it.

6 "Shore connection" means a standard coupling through which it is possible to empty the holding tank via an external pump arrangement.

7 "Sea toilet" means a toilet system not fitted with a holding tank and with direct connection to the sea.

Regulation 3 – Requirements for new vessels

Fixed and portable toilet systems shall comply with the technical requirements contained in the most recent version of the standard ISO 8099 at the time of construction.

Regulation 4 – Requirements for existing vessels

1 Existing vessels shall comply with the provisions of regulation 3 from 1 January 2005, however

.1 existing portable toilet systems may be retained,

.2 existing, fixed toilet systems shall be retained if the system is fitted with a shore connection in accordance with the standard ISO 8099.

.3 existing sea toilets shall be retained if the toilet is fitted with a holding tank as well as a shore connection in accordance with the standard ISO 8099.

Regulation 5 – Use of products for disinfection and other purposes

Attention is drawn to the fact that the following regulation is the Danish Maritime Authority's translation of MARPOL. As regards Danish legislation in force, reference is made to the Danish Ministry for the Environment.

In all toilet systems, only products that are not harmful to the marine environment may be used for disinfection and other purposes.

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Chapter XXV
Prevention of pollution by garbage

Introduction

The provisions of chapter XXV (previously chapter XXIV) have been drawn up on the basis of annex V to the International Convention for the Prevention of Pollution from Ships – the 1973 MARPOL Convention – as amended.

The administration of the rules has been distributed so that the Danish Environmental Protection Agency is responsible for the rules on discharge, and the Danish Maritime Authority is responsible for the rules on the technical installations on board the ships, including records and plans. This distribution of responsibility has been indicated in the table of contents with an "M" for the Danish Environmental Protection Agency and an "S" for the Danish Maritime Authority.

In addition to the technical regulations contained in the sets of regulations issued by the Danish Maritime Authority, orders have been issued by the Danish Ministry of the Environment, which must be observed as well.

In the provisions, the IMO is referred to as the Organisation, MARPOL 73/78 is referred to as the Convention, and the Danish Environmental Protection Agency and the Danish Maritime Authority, respectively, are referred to as the Administration.

Regulation 1 – Definitions

For the purposes of this chapter:

1 "Garbage" means all kinds of victual, domestic and operational waste, excluding fresh fish and parts thereof, generated during the normal operation of the ship and liable to be disposed of continuously or periodically except those substances which are defined or listed in other annexes to the Convention.

2 “Nearest land”. The term "from the nearest land" means from the baseline from which the territorial sea of the territory in question is established in accordance with international law except that, for the purposes of these regulations, "from the nearest land" off the north-eastern coast of Australia shall mean from a line drawn from a point on the coast of Australia in:
latitude 11°00' S, longitude 142°08' E
to a point in latitude 10°35' S, longitude 141°55' E,
thence to a point latitude 10°00' S, longitude 142° 00' E,
thence to a point latitude 09°10' S, longitude 143° 52' E,
thence to a point latitude 09°00' S, longitude 144° 30' E,
thence to a point latitude 10°41' S, longitude 145° 00' E,
thence to a point latitude 13°00' S, longitude 145° 00' E,
thence to a point latitude 15°00' S, longitude 146° 00' E,
thence to a point latitude 17°30' S, longitude 147° 00' E,
thence to a point latitude 21°00' S, longitude 152° 55' E,
thence to a point latitude 24°30' S, longitude 154° 00' E,
thence to a point on the coast of Australia in latitude 24°42' S, longitude 153°15' E.

3 “Special area” means a sea area where for recognized technical reasons in relations to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by garbage is required. Special areas shall include those listed in regulation 5.

Regulation 2 – Application

Unless expressly provided otherwise, the provisions of this chapter shall apply to all ships.

M Regulation 3 – Disposal of garbage outside special areas

Attention is drawn to the fact that the following regulation is the Danish Maritime Authority’s translation of MARPOL. As regards Danish legislation, reference is made to the Ministry of the Environment.

1 Subject to the provisions of regulations 4, 5 and 6 of this chapter:
   a) the disposal into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets, plastic garbage bags and incinerator ashes from plastic products which may contain toxic or heavy metal residues, is prohibited;
   b) the disposal into the sea of the following garbage shall be made as far as practicable from the nearest land but in any case is prohibited if the distance from the nearest land is less than:
      1) 25 nautical miles for dunnage, lining and packing materials which will float;
      2) 12 nautical miles for food wastes and all other garbage including paper products, rags, glass, metal, bottles, crockery and similar refuse;
   c) disposal into the sea of garbage specified in subparagraph (b)(2) of this regulation may be permitted when it has passed through a comminuter or grinder and made as far as practicable from the nearest land but in any case is prohibited if the distance from the nearest land is less than 3 nautical miles. Such comminuted or ground garbage shall be capable of passing through a screen with openings no greater than 25 mm.

2 When the garbage is mixed with other discharges having different disposal or discharge requirements the more stringent requirements shall apply.

M Regulation 4 – Special requirements for disposal of garbage

Attention is drawn to the fact that the following regulation is the Danish Maritime Authority's translation of MARPOL. As regards Danish legislation, reference is made to the Ministry of the Environment.

1 Subject to the provisions of paragraph (2), the disposal of any materials regulated by this chapter is prohibited from fixed or floating platforms engaged in the exploration, exploitation and associated offshore processing of sea-bed mineral resources, and from all other ships when alongside or within 500 m of such platforms.

2 The disposal into the sea of food wastes may be permitted when they have been passed through a comminuter or grinder from such fixed or floating platforms located more than 12 nautical miles from land and all other ships when alongside or within 500 m of such platforms. Such comminuted or ground food wastes shall be capable of passing through a screen with openings no greater than 25 mm.

M Regulation 5 – Disposal of garbage within special areas

Attention is drawn to the fact that the following regulation is the Danish Maritime Authority's translation of MARPOL. As regards Danish legislation, reference is made to the Ministry of the Environment.

1 For the purposes of this chapter the special areas are the Mediterranean Sea area, the Baltic Sea area, the Black Sea area, the Red Sea area, the "Gulfs area", the North Sea area, the Antarctic area and the Wider Caribbean Region, including the Gulf of Mexico and the Caribbean Sea, which are defined as follows:

a) The Mediterranean Sea area means the Mediterranean Sea proper including the gulfs and seas therein with the boundary between the Mediterranean and the Black Sea constituted by the 41° N parallel and bounded to the west by the Straits of Gibraltar at the meridian 5°36' W.

b) The Baltic Sea area means the Baltic Sea proper with the Gulf of Bothnia and the Gulf of Finland and the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at 57°44.8' N.

c) The Black Sea area means the Black Sea proper with the boundary between the Mediterranean and the Black Sea constituted by the parallel 41° N.

d) The Red Sea area means the Red Sea proper including the Gulfs of Suez and Aqaba bounded at the south by the rhumb line between Ras si Ane (12°28.5' N, 43°19.6' E) and Husn Murad (12°40.4' N, 43°30.2' E).

e) The Gulfs area means the sea area located north-west of the rhumb line between Ras al Hadd (22°30' N, 59°48' E) and Ras al Fasteh (25°04' N, 61°25' E).

f) The North Sea area means the North Sea proper including seas therein with the boundary between:

1) the North Sea southwards of latitude 62° N and eastwards of longitude 4° W;

2) the Skagerrak, the southern limit of which is determined east of the Skaw by latitude 57°44.8' N; and

3) the English Channel and its approaches eastwards of longitude 5° W and northwards of latitude 48°30' N.

g) The Antarctic area means the sea area south of latitude 60° S.

h) The Wider Caribbean Region, as defined in article 2, paragraph 1 of the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena de Indias, 1983), means the Gulf of Mexico and Caribbean Sea proper including the bays and seas therein and that portion of the Atlantic Ocean within the boundary constituted by the 30° N parallel from Florida eastward to 77°30' W meridian, thence a rhumb line to the intersection of 20° N parallel and 59° W meridian, thence a rhumb line to the intersection of 7°20' N parallel and 50° W meridian, thence a rhumb line drawn southwesterly to the eastern boundary of French Guiana.

2 Subject to the provisions of regulation 6:

a) disposal into the sea of the following is prohibited:

1) all plastics, including but not limited to synthetic ropes, synthetic fishing nets, plastic garbage bags and incinerator ashes from plastic products which may contain toxic or heavy metal residues; and

2) all other garbage, including paper products, rags, glass, metal, bottles, crockery, dunnage, lining and packing materials;

b) except as provided in subparagraph (c) of this paragraph, disposal into the sea of food wastes shall be made as far as practicable from land, but in any case not less than 12 nautical miles from the nearest land;

c) disposal into the Wider Caribbean Region of food wastes which have been passed through a comminuter or grinder shall be made as far as practicable from land, but in any case not less than 3 nautical miles from the nearest land. Such comminuted or ground food wastes shall be capable of passing through a screen with openings no greater than 25 mm.

3 When the garbage is mixed with other discharges having different disposal or discharge requirements the more stringent requirements shall apply.

4 Reception facilities within special areas:

a) The Government of each Party to the Convention, the coastline of which borders a special area, undertakes to ensure that as soon as possible in all ports within a special area adequate reception facilities are provided in accordance with regulation 7, taking into account the special needs of ships operating in these areas.

b) The Government of each Party concerned shall notify the Organization of the measures taken pursuant to subparagraph (a) of this regulation. Upon receipt of sufficient notifications the Organization shall establish a date from which the requirements of this regulation in respect of the area in question shall take effect. The Organization shall notify all Parties of the date so established no less than twelve months in advance of that date.

c) After the date so established, ships calling also at ports in these special areas where such facilities are not yet available, shall fully comply with the requirements of this regulation.

5 Notwithstanding paragraph 4 of this regulation, the following rules apply to the Antarctic area:

a) The Government of each Party to the Convention at whose ports ships depart en route to or arrive from the Antarctic area undertakes to ensure that as soon as practicable adequate facilities are provided for the reception of all garbage from all ships, without causing undue delay, and according to the needs of the ships using them.

b) The Government of each Party to the Convention shall ensure that all ships entitled to fly its flag, before entering the Antarctic area, have sufficient capacity on board for the retention of all garbage while operating in the area and have concluded arrangements to discharge such garbage at a reception facility after leaving the area.

M Regulation 6 – Exceptions

Attention is drawn to the fact that the following regulation is the Danish Maritime Authority's translation of MARPOL. As regards Danish legislation, reference is made to the Ministry of the Environment.

Regulations 3, 4 and 5 shall not apply to:

a) the disposal of garbage from a ship necessary for the purpose of securing the safety of a ship and those on board or saving life at sea; or

b) the escape of garbage resulting from damage to a ship or its equipment provided all reasonable precautions have been taken before and after the occurrence of the damage, for the purpose of preventing or minimizing the escape; or

c) the accidental loss of synthetic fishing nets, provided that all reasonable precautions have been taken to prevent such loss.

M Regulation 7 – Reception facilities

Attention is drawn to the fact that the following regulation is the Danish Maritime Authority's translation of MARPOL. As regards Danish legislation, reference is made to the Ministry of the Environment.

1 The Government of each Party to the Convention undertakes to ensure the provision of facilities at ports and terminals for the reception of garbage, without causing undue delay to ships, and according to the needs of the ships using them.

2 The Government of each Party shall notify the Organization for transmission to the Parties concerned of all cases where the facilities provided under this regulation are alleged to be inadequate.

S Regulation 8 – Port State control on operational requirements[1]

1 A ship when in a port of another Party is subject to inspection by officers duly authorized by such Party concerning operational requirements, where there are clear grounds for believing that the master or crew are not familiar with essential shipboard procedures relating to the prevention of pollution by garbage.

2 In the circumstances given in paragraph 1, the Party shall take such steps as will ensure that the ship shall not sail until the situation has been brought to order in accordance with the requirements of this Annex.

3 Procedures relating to the port State control prescribed in article 5 of the MARPOL Convention shall apply to this regulation.

4 Nothing in this regulation shall be construed to limit the rights and obligations of a Party carrying out control over operational requirements specifically provided for in the MARPOL Convention.

[1] Refer to the Procedures for port State control adopted by the Organization by resolution A.787(19) and amended by A.882(21).

S Regulation 9 – Placards, garbage management plans and garbage record-keeping

1

a Every ship of 12 m or more in length overall shall display placards which notify the crew and passengers of the disposal requirements of regulations 3 and 5 of this chapter, as applicable. *Annex 2 to this chapter contains an example of such a placard.*

b The placards shall be written in the working language of the ship's personnel and, for ships engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention, shall also be in English, French or Spanish.

c The placard shall be placed in conspicuous places where passengers and crewmembers move about in general as well as in galleys where stores are unpacked, where garbage is sorted, stored and treated and in similar places.

2 Every ship of 400 tons gross tonnage and above, and every ship which is certified to carry 15 persons or more, shall carry a garbage management plan which the crew shall follow. This plan shall provide written procedures for collecting, storing, processing and disposing of garbage, including the use of the equipment on board. It shall also designate the person in charge of carrying out the plan. Such a plan shall be in accordance with the guidelines developed by the Organization[2] and written in the working language of the crew.

3 Every ship of 400 tons gross tonnage and above and every ship which is certified to carry 15 persons or more engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention and every fixed and floating platform engaged in exploration and exploitation of the sea-bed shall be provided with a Garbage Record Book. The Garbage Record Book, whether as a part of the ship's official log-book or otherwise, shall be in the form specified in the appendix to this Annex V of the MARPOL Convention *(not included here).*

a) each discharge operation, or completed incineration, shall be recorded in the Garbage Record Book and signed for on the date of the incineration or discharge by the officer in charge. Each completed page of the Garbage Record Book shall be signed by the master of the ship. The entries in the Garbage Record Book shall be at least in English, French or Spanish. Where the entries are also made in an official language of the State whose flag the ship is entitled to fly, these entries shall prevail in case of a dispute or discrepancy;

b) the entry for each incineration or discharge shall include date and time, position of the ship, description of the garbage and the estimated amount incinerated or discharged;

c) the Garbage Record Book shall be kept on board the ship and in such a place as to be available for inspection in a reasonable time. This document shall be preserved for a period of two years after the last entry is made on the record;

d) in the event of discharge, escape or accidental loss referred to in regulation 6 of this chapter an entry shall be made in the Garbage Record Book of the circumstances of, and the reasons for, the loss.

e) The Garbage Record Book shall be kept in an easily legible hand, and no page may be torn out. What has been recorded once may not be erased, crossed out or in any other way be made illegible. If it becomes necessary to correct anything in the record, the correction shall be added as a remark.

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[2] Reference is made to the Guidelines for the drafting of garbage management plans, as adopted by IMO by resolution MEPC.71(38).

4 The Administration may waive the requirements for Garbage Record Books for:

(i) any ship engaged on voyages of 1 hour or less in duration which is certified to carry 15 persons or more *(the Danish Maritime Authority shall in general waive the requirement of paragraph (i));* or

(ii) fixed or floating platforms while engaged in exploration and exploitation of the sea-bed.

5 The competent authority of the Government of a Party to the Convention may inspect the Garbage Record Book on board any ship to which this chapter applies while the ship is in its ports or offshore terminals and may make a copy of any entry in that book, and may require the master of the ship to certify that the copy is a true copy of such an entry. Any copy so made, which has been certified by the master of the ship as a true copy of an entry in the ship's Garbage Record Book and the taking of a certified copy by the competent authority under this paragraph shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

6 In the case of ships built before 1 July 1997, this regulation shall apply as from 1 July 1998.

7

(a) All ships shall be provided with storage facilities of a capacity sufficient to store solid garbage on board as well as food waste in consideration of the relevant ship's area of operation and sailing time to ports that are capable of receiving the garbage. The ships shall, as a minimum, be provided with storage facilities of a capacity as indicated in appendix 1.

(b) In all passenger ships, garbage containers shall be placed at suitable places in the galley and on open deck at a suitable distance from each other.

8 On ships built after 1 January 1997, garbage incinerators shall comply with the provisions of resolution MEPC.59(33), "Standard specification for shipboard incinerators".

Appendix 1: Guidelines for the capacity of garbage containers

Gross tonnage and number of persons	***Min. capacity of garbage containers (m^3)***
< 400 with up to ten persons	*0.1*
< 400 with up to 50 persons	*0.5*
400 - 1,600	*0.4*
1,600 - 4,000	*1.2*
4,000 - 10,000	*2.5*
10,000 and above	*5.0*
Ships carrying more than 50 persons	*1.0 m^3 per 100 persons a day*

The ships shall be provided with three garbage containers in accordance with the three garbage categories stipulated in the "Guidelines for the implementation of Annex V of MARPOL 73/78". In general, garbage may be expected to consist of 50 per cent glass, cardboard, paper, etc., 25 per cent plastic and 25 per cent foodstuffs.

The garbage container capacity may be reduced for ships that sail only on two ports or that have a short sailing time or that are provided with garbage incinerators or compactor and grinding plants.

Appendix 2: Guidelines for placards on the treatment of garbage on board

Example of the placard on the treatment of garbage required by regulation 9, paragraph 1.

Garbage from ships shall be sorted in accordance with the table below and shall be stored in containers on board. *All garbage from ships shall, insofar as possible, be delivered to reception facilities ashore.* *Legal discharge of garbage from ships into the sea may take place only in accordance with the table below and after permission from the ship's captain or officers.* *Illegal discharge of garbage into the sea will be punished.*		
Garbage	***Outside special sea areas***	***Special sea areas***
All types of plastics, including synthetic ropes and fishing nets as well as garbage bags	*Prohibited*	*Prohibited*
Floating dunnage, lining and packing materials	*25 nautical miles from the nearest land*	*Prohibited*
Paper, rags, glass, metal, bottles, crockery and similar materials	*12 nautical miles from the nearest land*	*Prohibited*
Food waste	*12 nautical miles from the nearest land*	*12 nautical miles from the nearest land*

Translation. Only the Danish document has legal validity. **14 December 2010**

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Chapter XXVI
Prevention of air pollution from ships

Introduction

The provisions of this chapter have been drawn up on the basis of annex VI to the International Convention for the Prevention of Pollution from Ships – the 73/78 MARPOL Convention – as adopted by the 1997 Protocol at the International Conference for the Parties to MARPOL 73/78 in September 1997.

The administration of the rules has been distributed so that the Danish Environmental Protection Agency is responsible for the rules on discharge, while the Danish Maritime Authority is responsible for the technical installations on board the ships, including the records and plans. This distribution of responsibility has been indicated in the list of content with either an "M" for the Danish Environmental Protection Agency or an "S" for the Danish Maritime Authority.

In connection with the implementation of the provisions of the MARPOL Convention in Denmark, orders have been issued by the Danish Ministry of the Environment in addition to the technical regulations of the Danish Maritime Authority, which shall be followed as well.

In the provisions, the IMO is referred to as the Organization, MARPOL 73/78 is referred to as the Convention and the Danish Environmental Protection Agency and the Danish Maritime Authority, respectively, are referred to as the Administration.

The chapter is issued with similar wording in the regulations Notice B, D, E and F of the DMA, and may consequently be inserted in each of the mentioned regulations.

Part 1 – General

Regulation 1 – Application

The provisions of this Chapter shall apply to all ships, except where expressly provided otherwise in regulations 3, 5, 6, 13, 15, 16 and 18 of this Chapter. *The regulations shall not apply to ships registered in Greenland.*

Regulation 2 – Definitions

For the purpose of this Chapter:

1. "Chapter" means Chapter VI to the International Convention for the Prevention of Pollution from Ships 1973 (MARPOL), as modified by the Protocol of 1978 relating thereto, and as modified by the Protocol of 1997, as amended by the Organization, provided that such amendments are adopted and brought into force in accordance with the provisions of article 16 of the MARPOL Convention.
2. A "similar stage of construction" means the stage at which:

2.1. construction identifiable with a specific ship begins; and

2.2. assembly of that ship has commenced comprising at least 50 tons or one per cent of the estimated mass of all structural material, whichever is less.

3. "Anniversary date" means the day and the month of each year which will correspond to the date of expiry of the International Air Pollution Prevention Certificate.
4. "Auxiliary control device" means a system, function, or control strategy installed on a marine diesel engine that is used to protect the engine and/or its ancillary equipment against operating conditions that could result in damage or failure, or that is used to facilitate the starting of the engine. An auxiliary control device may also be a strategy or measure that has been satisfactorily demonstrated not to be a defeat device.
5. "Continuous feeding" is defined as the process whereby waste is fed into a combustion chamber without human assistance while the incinerator is in normal operating conditions with the combustion chamber operative temperature between 850°C and 1200°C.
6. "Defeat device" means a device which measures, senses, or responds to operating variables (e.g., engine speed, temperature, intake pressure or any other parameter) for the purpose of activating, modulating, delaying or deactivating the operation of any component or the function of the emission control system such that the effectiveness of the emission control system is reduced under conditions encountered during

normal operation, unless the use of such a device is substantially included in the applied emission certification test procedures.

7. "Emission" means any release of substances, subject to control by this Chapter, from ships into the atmosphere or sea.

8. "Emission control area" means an area where the adoption of special mandatory measures for emissions from ships is required to prevent, reduce and control air pollution from NO_x or SO_x and particulate matter or all three types of emissions and their attendant adverse impacts on human health and the environment. Emission control areas shall include those listed in, or designated under, regulations 13 and 14 of this Chapter.

9. "Fuel oil" means any fuel delivered to and intended for combustion purposes for propulsion or operation on board a ship, including distillate and residual fuels.

10. "Gross tonnage" means the gross tonnage calculated in accordance with the tonnage measurement regulations contained in Annex I to the International Convention on Tonnage Measurements of Ships, 1969 or any successor Convention.

11. "Installations" in relation to regulation 12 of this Chapter means the installation of systems, equipment including portable fire-extinguishing units, insulation, or other material on a ship, but excludes the repair or recharge of previously installed systems, equipment, insulation, or other material, or the recharge of portable fire-extinguishing units.

12. "Installed" means a marine diesel engine that is or is intended to be fitted on a ship, including a portable auxiliary marine diesel engine, only if its fuelling, cooling, or exhaust system is an integral part of the ship. A fuelling system is considered integral to the ship only if it is permanently affixed to the ship. This definition includes a marine diesel engine that is used to supplement or augment the installed power capacity of the ship and is intended to be an integral part of the ship.

13. "Irrational emission control strategy" means any strategy or measure that, when the ship is operated under normal conditions of use, reduces the effectiveness of an emission control system to a level below that expected on the applicable emission test procedures.

14. "Marine diesel engine" means any reciprocating internal combustion engine operating on liquid or dual fuel, to which regulation 13 of this chapter applies, including booster/compound systems if applied.

15. "NO_x Technical Code" means the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines adopted by resolution 2 of the 1997 MARPOL Conference, as amended by the Organization, provided that such amendments are adopted and brought into force in accordance with the provisions of article 16 of the MARPOL Convention.

16. "Ozone-depleting substances" means controlled substances defined in paragraph 4 of article 1 of the Montreal Protocol on Substances that Deplete the Ozone Layer, 1987, listed in Annexes A, B, C or E to the said Protocol in force at the time of application or interpretation of this Chapter.

    Ozone-depleting substances that may be found on board ship include, but are not limited to:

    Halon 1211 Bromochlorodifluoromethane

    Halon 1301 Bromotrifluoromethane

    Halon 2402 1,2-Dibromo-1,1,2,2-tetrafluoroethane (also known as Halon 114B2)

    CFC-11 Trichlorofluoromethane

CFC-12	Dichlorodifluoromethane
CFC-113	1,1,2-Trichloro-1,2,2-trifluoroethane
CFC-114	1,2-Dichloro-1,1,2,2-tetrafluoroethane
CFC-115	Chloropentafluoroethane

17. "Shipboard incineration" means the incineration of wastes or other matter on board a ship, if such wastes or other matter were generated during the normal operation of that ship.
18. "Shipboard incinerator" means a shipboard facility designed for the primary purpose of incineration.
19. "Ships constructed" means ships the keels of which are laid or which are at a similar stage of construction.
20. "Sludge oil" means sludge from the fuel oil or lubricating oil separators, waste lubricating oil from main or auxiliary machinery, or waste oil from bilge water separators, oil filtering equipment or drip trays.
21. "Tanker" means an oil tanker as defined in regulation 1 of Notice from the Danish Maritime Authority B, chapter XXI, or a chemical tanker as defined in regulation 1 of Notice from the Danish Maritime Authority B, chapter XXII.

Regulation 3 – Exceptions and exemptions

General

1. Regulations of this Chapter shall not apply to:
1.1. any emission necessary for the purpose of securing the safety of a ship or saving life at sea; or
1.2. any emission resulting from damage to a ship or its equipment:
1.2.1. provided that all reasonable precautions have been taken after the occurrence of the damage or discovery of the emission for the purpose of preventing or minimizing the emission; and
1.2.2. except if the owner or the master acted either with intent to cause damage, or recklessly and with knowledge that damage would probably result.

Trials for ship emission reduction and control technology research

2. The Administration of a Party may, in co-operation with other Administrations as appropriate, issue and exemption from specific provisions of this chapter for a ship to conduct trials for the development of ship emission reduction and control technologies and engine design programmes. Such an exemption shall only be provided if the applications of specific provisions of the chapter or the revised NO_x Technical Code 2008 could impede research into the development of such technologies or programmes. A permit for such an exemption shall only be provided to the minimum number of ships necessary and be subject to the following provisions:
2.1. for marine diesel engines with a per cylinder displacement up to 30 litres, the duration of the sea trial shall not exceed 18 months. If additional time is required, a permitting Administration or Administrations may permit a renewal for one additional 18-month period; or
2.2. for marine diesel engines with a per cylinder displacement at or above 30 litres, the duration of the ship trial shall not exceed 5 years and shall require a progress review by the permitting Administration or Administrations at each intermediate survey. A permit may be withdrawn based on this review if the testing has not adhered to the conditions of permit or if it is determined that the technology or programme

is not likely to produce effective results in the reduction and control of ship emissions. If the reviewing Administration or Administrations determine that additional time is required to conduct a test of a particular technology or programme, a permit may be renewed for an additional time period not to exceed five years.

Emissions from sea-bed mineral activities

3.1 Emissions directly arising from the exploration, exploitation and associated offshore processing of sea-bed mineral resources are, consistent with article 2(3)(b)(ii) of the MARPOL Convention, exempt from the provisions of this chapter. Such emissions include the following:

3.1.1 emissions resulting from the incineration of substances that are solely and directly the result of exploration, exploitation and associated offshore processing of sea-bed mineral resources, including but not limited to the flaring of hydrocarbons and the burning of cuttings, muds, and/or stimulation fluids during well completion and testing operations, and flaring arising from upset conditions;

3.1.2 the release of gases and volatile compounds entrained in drilling fluids and cuttings;

3.1.3 emissions associated solely and directly with the treatment, handling, or storage of sea-bed minerals; and

3.1.4 emissions from marine diesel engines that are solely dedicated to the exploration, exploitation and associated offshore processing of sea-bed mineral resources.

3.2 The requirements of regulation 18 of this chapter shall not apply to the use of hydrocarbons which are produced and subsequently used on site as fuel, when approved by the Administration.

M/S Regulation 4 – Equivalents

1. The Administration of a Party may allow any fitting, material, appliance or apparatus to be fitted in a ship or other procedures, alternative fuel oils, or compliance methods used as an alternative to that required by this Chapter if such fitting, material, appliance or apparatus or other procedures, alternative fuel oils, or compliance methods are at least as effective in terms of emissions reductions as that required by this Chapter, including any of the standards set forth in regulations 13 and 14.
2. The Administration of a Party which allows a fitting, material, appliance or apparatus or other procedures, alternative fuel oils, or compliance methods used as an alternative to that required by this Chapter shall communicate to the Organization for circulation to the Parties particulars thereof, for their information and appropriate action, if any.
3. The Administration of a Party should take into account any relevant guidelines developed by the Organization pertaining to the equivalents provided for in this regulation.
4. The Administration of a Party which allows the use of an equivalent as set forth in paragraph of this regulation shall endeavour not to impair or damage its environment, human health, property, or resources or those of other States.

Part II – Survey, certification and means of control

S Regulation 5 – Surveys

1. Every ship of 400 gross tonnage and above and every fixed and floating drilling rig and other platforms shall be subject to the surveys specified below:

1.1. An initial survey before the ship is put into service or before the certificate required under regulation 6 of this Chapter is issued for the first time. This survey shall be such as to ensure that the equipment, systems, fittings, arrangements and material fully comply with the applicable requirements of this Chapter;

1.2. A renewal survey at intervals specified by the Administration, but not exceeding five years, except where regulation 9.2, 9.5, 9.6 or 9.7 of this Chapter is applicable. The renewal survey shall be such as to ensure that the equipment, systems, fittings, arrangements and material fully comply with applicable requirements of this Chapter;

1.3. An intermediate survey within three months before or after the second anniversary date or within three months before or after the third anniversary date of the certificate which shall take the place of one of the annual surveys specified in paragraph 1.4 of this regulation. The intermediate survey shall be such as to ensure that the equipment and arrangements fully comply with the applicable requirements of this Chapter and are in good working order. Such intermediate surveys shall be endorsed on the certificate issued under regulation 6 or 7 of this Chapter;

1.4. An annual survey within three months before or after each anniversary date of the certificate, including a general inspection of the equipment, systems, fittings, arrangements and material referred to in paragraph 1.1 of this regulation to ensure that they have been maintained in accordance with paragraph 4 of this regulation and that they remain satisfactory for the service for which the ship is intended. Such annual surveys shall be endorsed on the certificate issued under regulation 6 or 7 of this Chapter; and

1.5. An additional survey either general or partial, according to the circumstances, shall be made whenever any important repairs or renewals are made as prescribed in paragraph 4 of this regulation or after a repair resulting from investigations prescribed in paragraph 5 of this regulation. The survey shall be such as to ensure that the necessary repairs or renewals have been effectively made, that the material and workmanship of such repairs or renewals are in all respects satisfactory and that the ship complies in all respects with the requirements of this Chapter.

2. In the case of ships of less than 400 gross tonnage, the Administration may establish appropriate measures in order to ensure that the applicable provisions of this Chapter are complied with.

3. Surveys of ships as regards the enforcement of the provisions of this chapter shall be carried out by officers of the Administration.

3.1. The Administration may, however, entrust the surveys either to surveyors nominated for the purpose or to organizations recognized by it. Such organizations shall comply with the guidelines adopted by the Organization;[1)]

3.2. The survey of marine diesel engines and equipment for compliance with regulation 13 of this Chapter shall be conducted in accordance with the revised NO_X Technical Code 2008;

3.3. When a nominated surveyor or recognized organization determines that the condition of the equipment does not correspond substantially with the particulars of the certificate, they shall ensure that corrective action is taken and shall in due course notify the Administration. If such corrective action is not taken, the

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1) Refer to the Guidelines for the authorization of organizations acting on behalf of the Administration, adopted by the Organization by resolution A.739 (18), as may be amended by the Organization, and the Specifications on the survey and certification functions of recognized organizations acting on behalf of the Administration, adopted by the Organization by resolution A.789(19), as may be amended by the Organization.

certificate shall be withdrawn by the Administration. If the ship is in a port of another Party, the appropriate authorities of the port State shall also be notified immediately. When an officer of the Administration, a nominated surveyor or recognized organization has notified the appropriate authorities of the port State, the Government of the port State concerned shall give such officer, surveyor or organization any necessary assistance to carry out their obligations under this regulation; and

3.4. In every case, the Administration concerned shall fully guarantee the completeness and efficiency of the survey and shall undertake to ensure the necessary arrangements to satisfy this obligation.

4. The equipment shall be maintained to conform with the provisions of this Chapter and no changes shall be made in the equipment, systems, fittings, arrangements, or material covered by the survey, without the express approval of the Administration. The direct replacement of such equipment and fittings with equipment and fittings that conform with the provisions of this Chapter is permitted.

5. Whenever an accident occurs to a ship or a defect is discovered which substantially affects the efficiency or completeness of its equipment covered by this Chapter, the master or owner of the ship shall report at the earliest opportunity to the Administration, a nominated surveyor, or recognized organization responsible for issuing the relevant certificate.

S Regulation 6 – Issue or endorsement of a Certificate

1. An International Air Pollution Prevention Certificate shall be issued, after an initial or renewal survey in accordance with the provisions of regulation 5 of this Chapter, to:

1.1. any ship of 400 gross tonnage and above engaged in *domestic* voyages *or* to ports or offshore terminals under the jurisdiction of other Parties; and

1.2. platforms and drilling rigs engaged in *domestic* voyages *or* to waters under the sovereignty or jurisdiction of other Parties.

2. A ship constructed before 19 May 2005 shall be issued with an International Air Pollution Prevention Certificate in accordance with paragraph 1 of this regulation no later than the first scheduled dry-docking after 19 May 2005, but in no case later than 19 May 2008.

3. Such certificate shall be issued or endorsed either by the Administration or by any person or organization duly authorized by it. In every case, the Administration assumes full responsibility for the certificate.

S Regulation 7 – Issue of a Certificate by another Party

1. A Party may, at the request of the Administration, cause a ship to be surveyed and, if satisfied that the provisions of this Chapter are complied with, shall issue or authorize the issuance of an International Air Pollution Prevention Certificate to the ship, and where appropriate, endorse or authorize the endorsement of that certificate on the ship, in accordance with this Chapter.

2. A copy of the certificate and a copy of the survey report shall be transmitted as soon as possible to the requesting Administration.

3. A certificate so issued shall contain a statement to the effect that it has been issued at the request of the Administration and it shall have the same force and receive the same recognition as a certificate issued under regulation 6 of this Chapter.

4. No International Air Pollution Prevention Certificate shall be issued to a ship which is entitled to fly the flag of a State which is not a Party.

S Regulation 8 – Form of Certificate

The International Air Pollution Prevention Certificate shall be drawn up in a form corresponding to the model given in appendix I to this Chapter *(see appendix 1C to Notice B from the DMA)* and shall be at least in English, French or Spanish. If an official language of the issuing country is also used, this shall prevail in case of a dispute or discrepancy.

S Regulation 9 – Duration and validity of Certificate

1. An International Air Pollution Prevention Certificate shall be issued for a period specified by the Administration, which shall not exceed five years.
2. Notwithstanding the requirements of paragraph 1 of this regulation:

2.1. when the renewal survey is completed within three months before the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of expiry of the existing certificate;

2.2. when the renewal survey is completed after the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of expiry of the existing certificate; and

2.3. when the renewal survey is completed more than three months before the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of completion of the renewal survey.

3. If a certificate is issued for a period of less than five years, the Administration may extend the validity of the certificate beyond the expiry date to the maximum period specified in paragraph 1 of this regulation, provided that the surveys referred to in regulations 5.1.3 and 5.1.4 of this Chapter applicable when a certificate is issued for a period of five years are carried out as appropriate.
4. If a renewal survey has been completed and a new certificate cannot be issued or placed on board the ship before the expiry date of the existing certificate, the person or organization authorized by the Administration may endorse the existing certificate and such a certificate shall be accepted as valid for a further period which shall not exceed five months from the expiry date.
5. If a ship, at the time when a certificate expires, is not in a port in which it is to be surveyed, the Administration may extend the period of validity of the certificate but this extension shall be granted only for the purpose of allowing the ship to complete its voyage to the port in which it is to be surveyed, and then only in cases where it appears proper and reasonable to do so. No certificate shall be extended for a period longer than three months, and a ship to which an extension is granted shall not, on its arrival in the port in which it is to be surveyed, be entitled by virtue of such extension to leave that port without having a new certificate. When the renewal survey is completed, the new certificate shall be valid to a date not exceeding five years from the date of expiry of the existing certificate before the extension was granted.
6. A certificate issued to a ship engaged on short voyages which has not been extended under the foregoing provisions of this regulation may be extended by the Administration for a period of grace of up to one

month from the date of expiry stated on it. When the renewal survey is completed, the new certificate shall be valid to a date not exceeding five years from the date of expiry of the existing certificate before the extension was granted.

7. In special circumstances, as determined by the Administration, a new certificate need not be dated from the date of expiry of the existing certificate as required by paragraph 2.1.5 or 6 of this regulation. In these special circumstances, the new certificate shall be valid to a date not exceeding five years from the date of completion of the renewal survey.

8. If an annual or intermediate survey is completed before the period specified in regulation 5 of this Chapter, then:

8.1. the anniversary date shown on the certificate shall be amended by endorsement to a date which shall not be more than three months later than the date on which the survey was completed;

8.2. the subsequent annual or intermediate survey required by regulation 5 of this Chapter shall be completed at the intervals prescribed by that regulation using the new anniversary date; and

8.3. the expiry date may remain unchanged provided one or more annual or intermediate surveys, as appropriate, are carried out so that the maximum intervals between the surveys prescribed by regulation 5 of this Chapter are not exceeded.

9. A certificate issued under regulation 6 or 7 of this Chapter shall cease to be valid in any of the following cases:

9.1. if the relevant surveys are not completed within the periods specified under regulation 5.1 of this Chapter;

9.2. if the certificate is not endorsed in accordance with regulation 5.1.3 or 5.1.4 of this Chapter;

9.3. upon transfer of the ship to the flag of another State. A new certificate shall only be issued when the Government issuing the new certificate is fully satisfied that the ship is in compliance with the requirements of regulation 5.4 of this Chapter. In the case of a transfer between Parties, if requested within three months after the transfer has taken place, the Government of the Party whose flag the ship was formerly entitled to fly shall, as soon as possible, transmit to the Administration copies of the certificate carried by the ship before the transfer and, if available, copies of the relevant survey reports.

S Regulation 10 – Port State control on operational requirements

1. A ship, when in a port or an offshore terminal under the jurisdiction of another Party, is subject to inspection by officers duly authorized by such Party concerning operational requirements under this Chapter, where there are clear grounds for believing that the master or crew are not familiar with essential shipboard procedures relating to the prevention of air pollution from ships.

2. In the circumstances given in paragraph 1 of this regulation, the Party shall take such steps as to ensure that the ship shall not sail until the situation has been brought to order in accordance with the requirements of this Chapter.

3. Procedures relating to the port State control prescribed in article 5 of the MARPOL Convention shall apply to this regulation.

4. Nothing in this regulation shall be construed to limit the rights and obligations of a Party carrying out control over operational requirements specifically provided for in the MARPOL Convention.

S/M Regulation 11 – Detection of violations and enforcement

1. Parties shall co-operate in the detection of violations and the enforcement of the provisions of this Chapter, using all appropriate and practicable measures of detection and environmental monitoring, adequate procedures for reporting and accumulation of evidence.
2. A ship to which this Chapter applies may, in any port or offshore terminal of a Party, be subject to inspection by officers appointed or authorized by that Party for the purpose of verifying whether the ship has emitted any of the substances covered by this Chapter in violation of the provision of this Chapter. If an inspection indicates a violation of this Chapter, a report shall be forwarded to the Administration for any appropriate action.
3. Any Party shall furnish to the Administration evidence, if any, that the ship has emitted any of the substances covered by this Chapter in violation of the provisions of this Chapter. If it is practicable to do so, the competent authority of the former Party shall notify the master of the ship of the alleged violation.
4. Upon receiving such evidence, the Administration so informed shall investigate the matter, and may request the other Party to furnish further or better evidence of the alleged contravention. If the Administration is satisfied that sufficient evidence is available to enable proceedings to be brought in respect of the alleged violation, it shall cause such proceedings to be taken in accordance with its law as soon as possible. The Administration shall promptly inform the Party which has reported the alleged violation, as well as the Organization, of the action taken.
5. A Party may also inspect a ship to which this Chapter applies when it enters the ports or offshore terminals under its jurisdiction, if a request for an investigation is received from any Party together with sufficient evidence that the ship has emitted any of the substances covered by the Chapter in any place in violation of this Chapter. The report of such investigation shall be sent to the Party requesting it and to the Administration so that the appropriate action may be taken under the present Convention.
6. The international law concerning the prevention, reduction, and control of pollution of the marine environment from ships, including that law relating to enforcement and safeguards, in force at the time of application or interpretation of this Chapter, applies, mutatis mutandis, to the rules and standards set forth in this Chapter.

Part III – Requirements for control of emissions from ships

M Regulation 12 – Ozone-depleting substances

Attention is drawn to the fact that the following regulation is only the Danish Maritime Authority's translation of MARPOL. As regards Danish legislation, reference is made to the Ministry of the Environment.

1. This regulation does not apply to permanently sealed equipment where there are no refrigerant charging connections or potentially removable components containing ozone depleting substances.
2. Subject to the provisions of regulation 3.1, any deliberate emissions of ozone-depleting substances shall be prohibited. Deliberate emissions include emissions occurring in the course of maintaining, servicing, repairing or disposing of systems or equipment, except that deliberate emissions do not include minimal releases associated with the recapture or recycling of an ozone-depleting substance. Emissions arising

from leaks of an ozone-depleting substance, whether or not the leaks are deliberate, may be regulated by Parties.

3.1 Installations which contain ozone-depleting substances, other than hydro-chlorofluorocarbons, shall be prohibited:

3.1.1 on ships constructed on or after 19 May 2005; or

3.1.2 in the case of ships constructed before 19 May 2005, which have a contractual delivery date of the equipment to the ship on or after 19 May 2005 or, in the absence of a contractual delivery date, the actual delivery of the equipment to the ship on or after 19 May 2005.
This exception shall not apply to ships registered in Denmark. [2)]

3.2 Installations which contain hydro-chlorofluorocarbons shall be prohibited:

3.2.1 on ships constructed on or after 1 January 2020; or

3.2.2 in the case of ships constructed before 1 January 2020, which have a contractual delivery date of the equipment to the ship on or after 1 January 2020 or, in the absence of a contractual delivery date, the actual delivery date of the equipment to the ship on or after 1 January 2020.

4 The substances referred to in this regulation, and equipment containing such substances, shall be delivered to appropriate reception facilities when removed from ships.

5 Each ship subject to regulation 6.1 shall maintain a list of equipment containing ozone depleting substances.[1]

6 Each ship subject to regulation 6.1 which has rechargeable systems that contain ozone depleting substances shall maintain an Ozone Depleting Substance Record Book. This Record Book may form part of an existing log-book or electronic recording system as approved by the Administration.

7 Entries in the Ozone Depleting Substances Record Book shall be recorded in terms of mass (kg) of substance and shall be completed without delay on each occasion, in respect of the following:

7.1 recharge, full or partial, of equipment containing ozone depleting substances;

7.2 repair or maintenance of equipment containing ozone depleting substances;

7.3 discharge of ozone depleting substances to the atmosphere:

7.3.1 deliberate; and

7.3.2 non-deliberate;

7.4 discharge of ozone depleting substances to land-based reception facilities; and

7.5 supply of ozone depleting substances to the ship.

S Regulation 13 – Nitrogen oxides (NO_x)

Application

1.

1.1. This regulation shall apply to:

1.1.1. each marine diesel engine with a power output of more than 130 kW which is installed on a ship; and

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[2)] *HCFC is no longer allowed in EU flagged ships, cf. EC Regulation no. 2037/2000 on substances that deplete the ozone layer.*

[1] See Appendix I, Supplement to International Air Pollution Prevention Certificate (IAPP Certificate), section 2.1.

1.1.2. each marine diesel engine with a power output of more than 130 kW which undergoes a major conversion on or after 1 January 2000, except when demonstrated to the satisfaction of the Administration that such engine is an identical replacement to the engine which it is replacing and is otherwise not covered under paragraph 1.1.1 of this regulation.

1.2. This regulation does not apply to:

1.2.1. a marine diesel engine intended to be used solely for emergencies, or solely to power any device or equipment intended to be used solely for emergencies on the ship on which it is installed, or a marine diesel engine installed in lifeboats intended to be used solely for emergencies; and

1.2.2. a marine diesel engine installed on a ship solely engaged in voyages within waters subject to the sovereignty or jurisdiction of the State the flag of which the ship is entitled to fly, provided that such engine is subject to an alternative NO_x control measure established by the Administration.

1.3. Notwithstanding the provisions of subparagraph 1.1 of this paragraph, the Administration may provide an exclusion from the application of this regulation for any marine diesel engine which is installed on a ship constructed, or for any marine diesel engine which undergoes a major conversion before 19 May 2005, provided that the ship on which the engine is installed is solely engaged in voyages to ports or offshore terminals within the State the flag of which the ship is entitled to fly.

Major conversion

2.

2.1. For the purpose of this regulation, major conversion means a modification on or after 1 January 2000 of a marine diesel engine that has not already been certified to the standards set forth in paragraph 3, 4, or 5.1.1 of this regulation where:

2.1.1. the engine is replaced by a marine diesel engine or an additional marine diesel engine is installed, or

2.1.2. any substantial modification, as defined in the revised NO_x Technical Code 2008, is made to the engine, or

2.1.3. the maximum continuous rating of the engine is increased by more than 10% compared to the maximum continuous rating of the original certification of the engine.

2.2. For a major conversion involving the replacement of a marine diesel engine with a non-identical marine diesel engine or the installation of an additional marine diesel engine, the standards in this regulation in force at the time of the replacement or addition of the engine shall apply. On or after 1 January 2016, in the case of replacement engines only, if it is not possible for such a replacement engine to meet the standards set forth in paragraph 5.1.1 of this regulation (Tier III), then that replacement engine shall meet the standards set forth in paragraph 4 of this regulation (Tier II). Guidelines are to be developed by the Organization to set forth the criteria of when it is not possible for a replacement engine to meet the standards in subparagraph 5.1.1 of this regulation.

2.3. A marine diesel engine referred to in paragraph 2.1.2 or 2.1.3 shall meet the following standards:

2.3.1. for ships constructed prior to 1 January 2000, the standards set forth in paragraph 3 of this regulation shall apply; and

2.3.2. for ships constructed on or after 1 January 2000, the standards in force at the time the ship was constructed shall apply.

Tier I

3. Subject to regulation 3 of this Chapter, the operation of a marine diesel engine which is installed on a ship constructed on or after 1 January 2000 and prior to 1 January 2011 is prohibited, except when the emission of nitrogen oxides (calculated as the total weighted emission of NO_2) from the engine is within the following limits, where n = rated engine speed (crankshaft revolutions per minute):

3.1. 17.0 g/kWh when *n* is less than 130 rpm;

3.2. 45.0 x $n^{(-0.2)}$ g/kW·h when *n* is 130 or more but less than 2000 rpm;

3.3. 9.8 g/kWh when *n* is 2000 rpm or more.

Tier II

4. Subject to regulation 3 of this Chapter, the operation of a marine diesel engine which is installed on a ship constructed on or after 1 January 2011 is prohibited, except when the emission of nitrogen oxides (calculated as the total weighted emission of NO_2) from the engine is within the following limits, where n = rated engine speed (crankshaft revolutions per minute):

4.1. 14.4 g/kWh when *n* is less than 130 rpm;

4.2. 44 x $n^{(-0.23)}$ g/kW·h when *n* is 130 or more but less than 2000 rpm;

4.3. 7.7 g/kWh when *n* is 2000 rpm or more.

Tier III

5.

5.1. Subject to regulation 3 of this Chapter, the operation of a marine diesel engine which is installed on a ship constructed on or after 1 January 2016:

5.1.1. is prohibited, except when the emission of nitrogen oxides (calculated as the total weighted emission of NO_2) from the engine is within the following limits, where n = rated engine speed (crankshaft revolutions per minute):

5.1.1.1. 3.4 g/kWh when *n* is less than 130 rpm;

5.1.1.2. 9 x $n^{(-0.2)}$ g/kWh when *n* is 130 or more but less than 2000 rpm;

5.1.1.3. 2.0 g/kWh when *n* is 2000 rpm or more.

5.1.2. is subject to the standards set forth in subparagraph 5.1.1 of this paragraph when the ship is operating in an Emission Control Area designated under paragraph 6 of this regulation; and

5.1.3. is subject to the standards set forth in paragraph 4 of this regulation when the ship is operating outside of an Emission Control Area designated under paragraph 6 of this regulation.

5.2. Subject to the review set forth in paragraph 10 of this regulation, the standards set forth in paragraph 5.1.1 of this regulation shall not apply to:

5.2.1. a marine diesel engine installed on a ship with a length (L), as defined in regulation 1.19 of Annex I to the MARPOL Convention, less than 24 metres when it has been specifically designed, and is used solely, for recreational purposes; or

5.2.2. a marine diesel engine installed on a ship with a combined nameplate diesel engine propulsion power of less than 750 kW if it is demonstrated, to the satisfaction of the Administration, that the ship cannot

comply with the standards set forth in paragraph 5.1.1 of this regulation because of design or construction limitations of the ship.

Emission Control Area

6. For the purpose of this regulation, an Emission Control Area shall be any sea area, including any port area, designated by the Organization in accordance with the criteria and procedures set forth in appendix III to this chapter.

Marine diesel engines installed on a ship constructed prior to 1 January 2000

7.

7.1. Notwithstanding paragraph 1.1.1 of this regulation, a marine diesel engine with a power output of more than 5,000 kW and a per cylinder displacement at or above 90 litres installed on a ship constructed on or after 1 January 1990 but prior to 1 January 2000 shall comply with the emission limits set forth in subparagraph 7.4 of this paragraph, provided that an Approved Method for that engine has been certified by an Administration of a Party and notification of such certification has been submitted to the Organization by the certifying Administration. Compliance with this paragraph shall be demonstrated through one of the following:

7.1.1. installation of the certified Approved Method, as confirmed by a survey using the verification procedure specified in the Approved Method File, including appropriate notation on the ship's International Air Pollution Prevention Certificate of the presence of the Approved Method; or

7.1.2. certification of the engine confirming that it operates within the limits set forth in paragraph 3, 4, or 5.1.1 of this regulation and an appropriate notation on the engine certification on the ship's International Air Pollution Prevention Certificate.

7.2. Subparagraph 7.1 shall apply no later than the first renewal survey that occurs 12 months or more after deposit of the notification in subparagraph 7.1. If a shipowner of a ship on which an Approved Method is to be installed can demonstrate to the satisfaction of the Administration that the Approved Method was not commercially available despite best efforts to obtain it, then that Approved Method shall be installed on the ship no later than the next annual survey of that ship which falls after the Approved Method is commercially available.

7.3. With regard to a ship with a marine diesel engine with a power output of more than 5,000 kW and a per cylinder displacement at or above 90 litres installed on a ship constructed on or after 1 January 1990 but prior to 1 January 2000, the International Air Pollution Prevention Certificate shall, for a marine diesel engine to which paragraph 7.1 of this regulation applies, indicate that either an Approved Method has been applied pursuant to paragraph 7.1.1 of this regulation or the engine has been certified pursuant to paragraph 7.1.2 of this regulation or that an Approved Method does not yet exist or is not yet commercially available as described in subparagraph 7.2 of this regulation.

7.4. Subject to regulation 3 of this chapter, the operation of a marine diesel engine described in subparagraph 7.1 is prohibited, except when the emission of nitrogen oxides (calculated as the total weighted emission of NO_2) from the engine is within the following limits, where n = rated engine speed (crankshaft revolutions per minute):

7.4.1. 17.0 g/kWh when *n* is less than 130 rpm;

7.4.2. 45 x $n^{(-0.2)}$ g/kWh when *n* is 130 or more but less than 2000 rpm;

7.4.3. 9.8 g/kWh when *n* is 2000 rpm or more.

7.5. Certification of an Approved Method shall be in accordance with chapter 7 of the revised NO_x Technical Code 2008 and shall include verification:

7.5.1. by the designer of the base marine diesel engine to which the Approved Method applies that the calculated effect of the Approved Method will not decrease engine rating by more than 1.0%, increase fuel consumption by more than 2.0% as measured according to the appropriate test cycle set forth in the revised NO_x Technical Code 2008, or adversely affect engine durability or reliability; and

7.5.2. that the cost of the Approved Method is not excessive, which is determined by a comparison of the amount of NO_x reduced by the Approved Method to achieve the standard set forth in subparagraph 7.4 of this paragraph and the cost of purchasing and installing such Approved Method.[2]

Certification

8. The revised NO_x Technical Code 2008 shall be applied in the certification, testing and measurement procedures for the standards set forth in this regulation.

9. The procedures for determining NO_x emissions set out in the revised NO_x Technical Code 2008 are intended to be representative of the normal operation of the engine. Defeat devices and irrational emission control strategies undermine this intention and shall not be allowed. This regulation shall not prevent the use of auxiliary control devices that are used to protect the engine and/or its ancillary equipment against operating conditions that could result in damage or failure or that are used to facilitate the starting of the engine.

Review

10. Beginning in 2012 and completed no later than 2013, the Organization shall review the status of the technological developments to implement the standards set forth in paragraph 5.1.1 of this regulation and shall, if proven necessary, adjust the time periods set forth in that subparagraph.

S/M Regulation 14 – Sulphur oxides (SO_x) and particulate matter

Attention is drawn to the fact that the following regulation is only the Danish Maritime Authority's translation of MARPOL. As regards Danish legislation, reference is made to the Danish Ministry of the Environment.

General requirements

1. (M) The sulphur content of any fuel oil used on board ships shall not exceed the following limits:

1.1. 4.5% m/m prior to 1 January 2012;

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[2] The cost of an Approved Method shall not exceed 375 Special Drawing Rights/metric ton NO_x calculated in accordance with the Cost-Effectiveness formula below:

$$Ce = \frac{\text{Cost of Approved Method x } 10^6}{\text{P(kW) x } 0.768 \text{ x } 6000(\text{hours/year}) \text{ x } 5 \text{ (years) x } \Delta \text{ NO}_x (g / kWh)}$$

1.2. 3.50% m/m on and after 1 January 2012; and

1.3. 0.50% m/m on and after 1 January 2020.

2. (M) The world-wide average sulphur content of residual fuel oil supplied for use on board ships shall be monitored taking into account guidelines to be developed by the Organization.[3]

Requirements within emission control areas

3. (M) For the purpose of this regulation, emission control areas shall include:

3.1. the Baltic Sea area as defined in regulation 1.11.2 of Chapter XXI, the North Sea area as defined in regulation 5(1)(f) of Chapter XXV; and

3.2. any other sea area, including port areas, designated by the Organization in accordance with criteria and procedures set forth in appendix III to this Chapter.

4. (M) While ships are operating within an emission control area, the sulphur content of fuel oil used on board ships shall not exceed the following limits:

4.1. (M) 1.5% m/m prior to 1 July 2010;

4.2. (M) 1.00% m/m on and after 1 July 2010; and

4.3. (M) 0.10% m/m on and after 1 January 2015.

5. (M) The sulphur content of fuel oil referred to in paragraph 1 and paragraph 4 of this regulation shall be documented by its suppliers as required by regulation 18 of this Chapter.

6. (M) Those ships using separate fuel oils to comply with paragraph 4 of this regulation and entering or leaving an Emission Control Area set forth in paragraph 3 of this regulation shall carry a written procedure showing how the fuel oil change-over is to be done, allowing sufficient time for the fuel oil service system to be fully flushed of all fuel oils exceeding the applicable sulphur specified in paragraph 4 of this regulation prior to entry into an emission control area. The volume of low-sulphur fuel oils in each tank as well as the date, time, and position of the ship when any fuel-oil-change-over operation is completed, shall be recorded in such log-book as prescribed by the Administration.

7. (M) During the first 12 months immediately following an amendment designating a specific emission control area under paragraph 3.2 of this regulation, ships operating in that emission control area are exempt from the requirements in paragraphs 4 and 6 of this regulation and from the requirements of paragraph 5 of this regulation insofar as they relate to paragraph 4 of this regulation.

Review provision

8. A review of the standard set forth in subparagraph 1.3 of this regulation shall be completed by 2018 to determine the availability of fuel oil to comply with the fuel oil standard set forth in that paragraph and shall take into account the following elements:

8.1. the global market supply and demand for fuel oil to comply with paragraph 1.3 of this regulation that exist at the time that the review is conducted;

8.2. an analysis of the trends in fuel oil markets; and

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[3] Refer to resolution MEPC.82(43), Guidelines for monitoring the world-wide average sulphur content of residual fuel oils supplied for use on board ships.

8.3. any other relevant issue.

9. The Organization shall establish a group of experts, comprising of representatives with the appropriate expertise in the fuel oil market and appropriate maritime, environmental, scientific, and legal expertise, to conduct the review referred to in paragraph 8 of this regulation. The group of experts shall develop the appropriate information to inform the decision to be taken by the Parties.

10. The Parties, based on the information developed by the group of experts, may decide whether it is possible for ships to comply with the date in paragraph 1.3 of this regulation. If a decision is taken that it is not possible for ships to comply, then the standard in that subparagraph shall become effective on 1 January 2025.

M Regulation 15 – Volatile organic compounds

Attention is drawn to the fact that the following regulation is only the Danish Maritime Authority's translation of MARPOL. As regards Danish legislation in force, reference is made to the Danish Ministry of the Environment.

1. If the emissions of volatile organic compounds (VOCs) from a tanker are to be regulated in a port or ports or a terminal or terminals under the jurisdiction of a Party, they shall be regulated in accordance with the provisions of this regulation.

2. A Party regulating tankers for VOC emissions shall submit a notification to the Organization. This notification shall include information on the size of tankers to be controlled, the cargoes requiring vapour emission control systems, and the effective date of such control. The notification shall be submitted at least six months before the effective date.

3. A Party which designates ports or terminals at which VOC emissions from tankers are to be regulated shall ensure that vapour emission control systems, approved by that Party taking into account the safety standards for such systems developed by the Organization,[4] are provided in any designated port and terminal and are operated safely and in a manner so as to avoid undue delay to a ship.

4. The Organization shall circulate a list of the ports and terminals designated by the Parties to other Parties and Member States of the Organization for their information.

5. A tanker to which paragraph 1 of this regulation applies shall be provided with a vapour emission collection system approved by the Administration taking into account the safety standards for such systems developed by the Organization[5], and shall use this system during the loading of relevant cargoes. A port or terminal which has installed vapour emission control systems in accordance with this regulation may accept tankers which are not fitted with vapour collection systems for a period of three years after the effective date identified in paragraph 2 of this regulation.

6. A tanker carrying crude oil shall have on board and implement a VOC Management Plan approved by the Administration. Such a plan shall be prepared taking into account the guidelines developed by the Organization. The plan shall be specific to each ship and shall at least:

6.1. provide written procedures for minimizing VOC emissions during the loading, sea passage and discharge of cargo;

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4 Refer to resolution MEPC.130(53), "Guidelines for on-board exhaust gas SOx cleaning systems."

5 Refer to MSC/Circ.585, "Standards for vapour emission control systems".

6.2. give consideration to the additional VOC generated by crude oil washing;

6.3. identify a person responsible for implementing the plan; and

6.4. for ships on international voyages, be written in the working language of the master and officers, and, if the working language of the master and officers is not English, French, or Spanish, include a translation into one of these languages.

7. This regulation shall apply to gas carriers only if the type of loading and containment systems allow safe retention of non-methane VOCs on board or their safe return ashore.[6]

S/M Regulation 16 – Shipboard incineration

Attention is drawn to the fact that the following regulation is only the Danish Maritime Authority's translation of MARPOL. As regards Danish legislation in force, reference is made to the Danish Ministry of the Environment.

1. (M) Except as provided in paragraph 4 of this regulation, shipboard incineration shall be allowed only in a shipboard incinerator.

2. (M) Shipboard incineration of the following substances shall be prohibited:

2.1. residues of cargoes subject to Annex I, II or III of the MARPOL Convention or related contaminated packing materials;

2.2. polychlorinated biphenyls (PCBs);

2.3. garbage, as defined by Annex V of the MARPOL Convention, containing more than traces of heavy metals;

2.4. refined petroleum products containing halogen compounds;

2.5. sewage sludge and sludge oil either of which are not generated on board the ship; and

2.6. exhaust gas cleaning system residues.

3. (M) Shipboard incineration of polyvinyl chlorides (PVCs) shall be prohibited, except in shipboard incinerator for which an IMO Type Approval Certificate[7] has been issued.

4. (M) Shipboard incineration of sewage sludge and sludge oil generated during normal operation of a ship may also take place in the main or auxiliary power plant or boilers, but in those cases, shall not take place inside ports, harbours and estuaries.

5.

5.1. (M) Nothing in this regulation affects the prohibition in, or other requirements of, the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972, as amended, and the 1996 Protocol thereto.

5.2. (S) Nothing in this regulation precludes the development, installation and operation of alternative design shipboard thermal waste treatment devices that meet or exceed the requirements of this regulation.

6. (S)

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6 Refer to resolution MSC.30(61), International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, chapter 5.

7 Type Approval Certificates issued in accordance with resolution MEPC.59(33) or MEPC.76(40).

6.1. Except as provided in subparagraph 6.2 of this paragraph, each incinerator on a ship constructed on or after 1 January 2000 or incinerator which is installed on board a ship on or after 1 January 2000 shall meet the requirements contained in appendix IV to this Chapter. Each incinerator subject to this subparagraph shall be approved by the Administration taking into account the standard specifications for shipboard incinerators developed by the Organization;[8] or

6.2. The Administration may allow exclusion from the application of subparagraph 6.1 of this paragraph to any incinerator which is installed on board a ship before 19 May 2005, provided that the ship is solely engaged in voyages within waters subject to the sovereignty or jurisdiction of the State the flag of which the ship is entitled to fly.

7. (S) Incinerators installed in accordance with the requirements of paragraph 6.1 of this regulation shall be provided with a manufacturer's operating manual which is to be retained with the unit and which shall specify how to operate the incinerator within the limits described in paragraph 2 of appendix IV of this Chapter.

8. (S) Personnel responsible for the operation of an incinerator installed in accordance with the requirements of paragraph 6.1 of this regulation shall be trained to implement the guidance provided in the manufacturer's operating manual as required by paragraph 7 of this regulation.

9. (S) For incinerators installed in accordance with the requirements of paragraph 6.1 of this regulation the combustion chamber gas outlet temperature shall be monitored at all times the unit is in operation. Where that incinerator is of the continuous-feed type, waste shall not be fed into the unit when the combustion chamber gas outlet temperature is below 850°C. Where that incinerator is of the batch-loaded type, the unit shall be designed so that the combustion chamber gas outlet temperature shall reach 600°C within five minutes after start-up and will thereafter stabilize at a temperature not less than 850°C.

(M) Regulation 17 – Reception facilities

Attention is drawn to the fact that the following regulation is only the Danish Maritime Authority's translation of MARPOL. As regards Danish legislation in force, reference is made to the Danish Ministry of the Environment.

1. Each Party undertakes to ensure the provision of facilities adequate to meet the:

1.1. needs of ships using its repair ports for the reception of ozone-depleting substances and equipment containing such substances when removed from ships;

1.2. needs of ships using its ports, terminals or repair ports for the reception of exhaust gas cleaning residues from an approved exhaust gas cleaning system,
without causing undue delay to ships, and

1.3. needs in ship breaking facilities for the reception of ozone depleting substances and equipment containing such substances when removed from ships.

2. If a particular port or terminal of a Party is – taking into account the guidelines to be developed by the Organization – remotely located from, or lacking in, the industrial infrastructure necessary to manage and process those substances referred to in paragraph 1 of this regulation and therefore cannot accept such

[8] Refer to resolution MEPC.76(40), Standard specification for shipboard incinerators.

substances, then the Party shall inform the Organization of any such port or terminal so that this information may be circulated to all Parties and Member States of the Organization for their information and any appropriate action. Each Party that has provided the Organization with such information shall also notify the Organization of its ports and terminals where reception facilities are available to manage and process such substances.

3. Each Party shall notify the Organization for transmission to the Members of the Organization of all cases where the facilities provided under this regulation are unavailable or alleged to be inadequate.

S/M Regulation 18 – Fuel oil availability and quality

Attention is drawn to the fact that the following regulation is only the Danish Maritime Authority's translation of MARPOL. As regards Danish legislation in force, reference is made to the Danish Ministry of the Environment.

Fuel oil availability

1. Each Party shall take all reasonable steps to promote the availability of fuel oils which comply with this chapter and inform the Organization of the availability of compliant fuel oils in its ports and terminals.

2.

2.1. If a ship is found by a Party not to be in compliance with the standards for compliant fuel oils set forth in this chapter, the competent authority of the Party is entitled to require the ship to:

2.1.1. present a record of the actions taken to attempt to achieve compliance; and

2.1.2. provide evidence that it attempted to purchase compliant fuel oil in accordance with its voyage plan and, if it was not made available where planned, that attempts were made to locate alternative sources for such fuel oil and that despite best efforts to obtain compliant fuel oil, no such fuel oil was made available for purchase.

2.2. The ship should not be required to deviate from its intended voyage or to delay unduly the voyage in order to achieve compliance.

2.3. If a ship provides the information set forth in subparagraph 2.1 of this paragraph, a Party shall take into account all relevant circumstances and the evidence presented to determine the appropriate action to take, including not taking control measures.

2.4. A ship shall notify its Administration and the competent authority of the relevant port of destination when it cannot purchase compliant fuel oil.

2.5. A Party shall notify the Organization when a ship has presented evidence of the non-availability of compliant fuel oil.

Fuel oil quality

3. (M) Fuel oil for combustion purposes delivered to and used on board ships to which this Chapter applies shall meet the following requirements:

3.1. except as provided in sub-paragraph 3.2:

3.1.1. the fuel oil shall be blends of hydrocarbons derived from petroleum refining. This shall not preclude the incorporation of small amounts of additives intended to improve some aspects of performance;

3.1.2. the fuel oil shall be free from inorganic acid; and

3.1.3. the fuel oil shall not include any added substance or chemical waste which:

3.1.3.1. jeopardizes the safety of ships or adversely affects the performance of the machinery, or

3.1.3.2. is harmful to personnel, or

3.1.3.3. contributes overall to additional air pollution.

3.2. fuel oil for combustion purposes derived by methods other than petroleum refining shall not:

3.2.1. exceed the sulphur content set forth in regulation 14 of this Chapter;

3.2.2. cause an engine to exceed the applicable NO_x emission limit set forth in paragraphs 3, 4, 5.11 and 7.4 of regulation 13;

3.2.3. contain inorganic acid; or

3.2.4.

3.2.4.1. jeopardize the safety of ships or adversely affect the performance of the machinery, or

3.2.4.2. be harmful to personnel, or

3.2.4.3. contribute overall to additional air pollution.

4. (M) This regulation does not apply to coal in its solid form or nuclear fuels. Paragraphs 5, 6, 7.1, 7.2, 8.1, 8.2, 9.2, 9.3 and 9.4 of this regulation do not apply to gas fuels such as Liquefied Natural Gas, Compressed Natural Gas or Liquefied Petroleum Gas. The sulphur content of gas fuels delivered to a ship specifically for combustion purposes on board that ship shall be documented by the supplier.

5. (M) For each ship subject to regulations 5 and 6 of this Chapter, details of fuel oil for combustion purposes delivered to and used on board shall be recorded by means of a bunker delivery note which shall contain at least the information specified in appendix V to this Chapter.

6. (S) The bunker delivery note shall be kept on board the ship in such a place as to be readily available for inspection at all reasonable times. It shall be retained for a period of three years after the fuel oil has been delivered on board.

7. (S)

7.1. The competent authority of a Party may inspect the bunker delivery notes on board any ship to which this Chapter applies while the ship is in its port or offshore terminal, may make a copy of each delivery note, and may require the master or person in charge of the ship to certify that each copy is a true copy of such bunker delivery note. The competent authority may also verify the contents of each note through consultations with the port where the note was issued.

7.2. The inspection of the bunker delivery notes and the taking of certified copies by the competent authority under this paragraph shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

8.

8.1. (M) The bunker delivery note shall be accompanied by a representative sample of the fuel oil delivered taking into account guidelines to be developed by the Organization[9]. The sample is to be sealed and signed by the supplier's representative and the master or officer in charge of the bunker operation on completion

[9] Refer to MEPC.96(47), "Guidelines for the sampling of fuel oil for determination of compliance with Annex VI of MARPOL 73/78".

of bunkering operations and retained under the ship's control until the fuel oil is substantially consumed, but in any case for a period of not less than 12 months from the time of delivery.

8.2. If an Administration requires the representative sample to be analysed, it shall be done in accordance with the verification procedure set forth in appendix VI to determine whether the fuel oil meets the requirements of this chapter.

9. (M) Parties undertake to ensure that appropriate authorities designated by them:

9.1. maintain a register of local suppliers of fuel oil;

9.2. require local suppliers to provide the bunker delivery note and sample as required by this regulation, certified by the fuel oil supplier that the fuel oil meets the requirements of regulations 14 and 18 of this Chapter;

9.3. require local suppliers to retain a copy of the bunker delivery note for at least three years for inspection and verification by the port State as necessary;

9.4. take action as appropriate against fuel oil suppliers that have been found to deliver fuel oil that does not comply with that stated on the bunker delivery note;

9.5. inform the Administration of any ship receiving fuel oil found to be non-compliant with the requirements of regulations 14 or 18 of this Chapter; and

9.6. inform the Organization for transmission to Parties and Member States of the Organization of all cases where fuel oil suppliers have failed to meet the requirements specified in regulations 14 or 18 of this Chapter.

10. (M) In connection with port State inspections carried out by Parties, the Parties further undertake to:

10.1. inform the Party or non-Party under whose jurisdiction a bunker delivery note was issued of cases of delivery of noncompliant fuel oil, giving all relevant information; and

10.2. ensure that remedial action as appropriate is taken to bring noncompliant fuel oil discovered into compliance.

11. For every ship of 400 gross tonnage and above on scheduled services with frequent and regular port calls, an Administration may decide after application and consultation with affected States that compliance with paragraph 6 of this regulation may be documented in an alternative manner which gives similar certainty of compliance with regulations 14 and 18 of this chapter.

Appendix 1
Form of International Air Pollution Prevention (IAPP) Certificate (regulation 8)

Reference is made to Annex 1C of Notice B.

Appendix II

Test cycles and weighting factors (regulation 13)

The following test cycles and weighting factors should be applied for verification of compliance of marine diesel engines with the applicable NO_x limit in accordance with regulation 13 of this Chapter using the test procedure and calculation method as specified in the revised NO_x Technical Code 2008.

1. For constant-speed marine engines for ship main propulsion, including diesel-electric drive, test cycle E2 shall be applied;
2. For controllable-pitch propeller sets test cycle E2 shall be applied.
3. For propeller-law-operated main and propeller-law-operated auxiliary engines the test cycle E3 shall be applied.
4. For constant-speed auxiliary engines test cycle D2 shall be applied.
5. For variable-speed, variable-load auxiliary engines, not included above, test cycle C1 shall be applied.

Test cycle for "constant-speed main propulsion application" (including diesel-electric drive or variable-pitch propeller installations)

Test cycle type E2	Speed	100%	100%	100%	100%
	Power	100%	75%	50%	25%
	Weighting factor	0.2	0.5	0.15	0.15

Test cycle for "propeller-law-operated main and propeller-law-operated auxiliary engine" application

Test cycle type E3	Speed	100%	91%	80%	63%
	Power	100%	75%	505	25%
	Weighting factor	0.2	0.5	0.15	0.15

Test cycle for "constant-speed auxiliary engine" application

Test cycle type D2	Speed	100%	100%	100%	100%	100%
	Power	100%	75%	50%	25%	10%
	Weighting factor	0.05	0.25	0.3	0.3	0.1

Test cycle for "variable-speed and load auxiliary engine" application

Test cycle type C1	Speed	Rated				Intermediate			Idle
	Torque	100%	75%	50%	10%	100%	75%	50%	0%
	Weighing factor	0.15	0.15%	0.15%	0.1	0.1	0.1	0.1	0.15

Appendix III
Criteria and procedures for designation of emission control areas
(regulation 13.6 and regulation 14.3)

1. Objectives

1.1. The purpose of this appendix is to provide the criteria and procedures to Parties for the formulation and submission of proposals for the designation of Emission Control Areas and to set forth the factors to be considered in the assessment of such proposals by the Organization.

1.2. Emissions of NO_x, SO_x and particulate matter from ocean-going ships contribute to ambient concentrations of air pollution in cities and coastal areas around the world. Adverse public health and environmental effects associated with air pollution include premature mortality, cardiopulmonary disease, lung cancer, chronic respiratory ailments, acidification and eutrophication.

1.3. An Emission Control Area should be considered for adoption by the Organization if supported by a demonstrated need to prevent, reduce, and control emissions of NO_x or SO_x and particulate matter or all three types of emissions (hereinafter emissions) from ships.

2. **Process for the designation of emission control areas**

2.1. A proposal to the Organization for designation of an Emission Control Area for NO_x or SO_x and particulate matter or all three types of emissions may be submitted only by Parties. Where two or more Parties have a common interest in a particular area, they should formulate a coordinated proposal.

2.2. A proposal to designate a given area as an Emission Control Area should be submitted to the Organization in accordance with the rules and procedures established by the Organization.

3. **Criteria for designation of an Emission Control Area**

3.1. The proposal shall include:

3.1.1. a clear delineation of the proposed area of application, along with a reference chart on which the area is marked;

3.1.2. the type or types of emission(s) that is or are being proposed for control (i.e. NO_x or SO_x and particulate matter or all three types of emissions);

3.1.3. a description of the human populations and environmental areas at risk from the impacts of ship emissions;

3.1.4. an assessment that emissions from ships operating in the proposed area of application are contributing to ambient concentrations of air pollution or to adverse environmental impacts. Such assessments shall include a description of the impacts of the relevant emissions on human health and the environment, such as adverse impacts to terrestrial and aquatic ecosystems, areas of natural productivity, critical habitats, water quality, human health, and areas of cultural and scientific significance, if applicable. The sources of relevant data including methodologies used shall be identified;

3.1.5. relevant information pertaining to the meteorological conditions in the proposed area of application to the human populations and environmental areas at risk, in particular prevailing wind patterns, or to topographical, geological, oceanographic, morphological, or other conditions that contribute to ambient concentrations of air pollution or adverse environmental impacts;

3.1.6. the nature of the ship traffic in the proposed Emission Control Area, including the patterns and density of such traffic;

3.1.7. a description of the control measures taken by the proposing Party or Parties addressing land-based sources of NO_x, SO_x and particulate matter emissions affecting the human populations and environmental areas at risk that are in place and operating concurrent with the consideration of measures to be adopted in relation to provisions of regulations 13 and 14 of chapter XXVI; and

3.1.8. the relative costs of reducing emissions from ships when compared with land-based controls, and the economic impacts on shipping engaged in international trade.

3.2. The geographical limits of an Emission Control Area will be based on the relevant criteria, outlined above, including emissions and deposition from ships navigating in the proposed area, traffic patterns and density, and wind conditions.

4. **Procedures for the assessment and adoption of Emission Control Areas by the Organization**

4.1. The Organization shall consider each proposal submitted to it by a Party or Parties.

4.2. In assessing the proposal, the Organization shall take into account the criteria which are to be included in each proposal for adoption as set forth in section 3 above.

4.3. An Emission Control Area shall be designated by means of an amendment to this chapter, considered, adopted and brought into force in accordance with article 16 of the MARPOL Convention.

5. **Operation of Emission Control Areas**

5.1. Parties which have ships navigating in the area are encouraged to bring to the Organization any concerns regarding the operation of the area.

Appendix IV
Type approval and operating limits for shipboard incinerators (regulation 16)

1. Ships incinerators described in regulation 16.6.1 on board shall possess an IMO type approval certificate for each incinerator. In order to obtain such certificate, the incinerator shall be designed and built to an approved standard as described in regulation 16.6.1. Each model shall be subject to a specified type approval test operation at the factory or an approved test facility, and under the responsibility of the Administration, using the following standard fuel/waste specification for the type approval test for determining whether the incinerator operates within the limits specified in paragraph 2 of this appendix:

Sludge oil consisting of:	75% sludge oil from HFO; 5% waste lubricating oil; and 20% emulsified water
Solid waste consisting of:	50% food waste 50% rubbish containing approx. 30% paper, approx. 40% card-board, approx. 10% rags, approx. 20% plastic The mixture will have up to 50% moisture and 7% incombustible solids.

2. Incinerators described in regulation 16.6.1 shall operate within the following limits:

O_2 in combustion chamber:	6-12%
CO in flue gas maximum average:	200 mg/MJ
Soot number maximum or average:	Bacharach 3 or Ringelman 1 (20% opacity) (A higher soot number is acceptable only during very short periods such as starting up)
Unburned components in ash residues:	Maximum 10% by weight
Combustion chamber flue gas outlet temperature range:	850-1200°C

Appendix V
Information to be included in the bunker delivery note (regulation 18(5))

Name and IMO number of receiving ship

Port

Date of commencement of delivery

Name, address, and telephone number of marine fuel oil supplier

Product name(s)

Quantity (metric tons)

Density [10]at 15°C (kg/m^3)

Sulphur content[11)] (% m/m)

A declaration signed and certified by the fuel oil supplier's representative that the fuel oil supplied is in conformity with the applicable subparagraph of regulation 14.1 or 14.4 and regulation 18.3 of this chapter.

[10] Fuel oil shall be tested in accordance with ISO 3675:1998 or ISO 12185:1996.
[11)] Fuel oil shall be tested in accordance with ISO 8754:2003.

Appendix VI
Fuel verification procedure for MARPOL Annex VI. Fuel oil samples
(regulation 18.8.2)

The following procedure shall be used to determine whether the fuel oil delivered to and used on board ships is compliant with the sulphur limits required by regulation 14 of chapter XXVI.

1. General requirements

1.1. The representative fuel oil sample, which is required by paragraph 8.1 of regulation 18 (the "MARPOL sample") shall be used to verify the sulphur content of the fuel oil supplied to a ship.

1.2. An Administration, through its competent authority, shall manage the verification procedure.

1.3. The laboratories responsible for the verification procedure set forth in this appendix shall be fully accredited for the purpose of conducting the tests.

2. **Verification procedure stage 1**

2.1. The MARPOL sample shall be delivered by the competent authority to the laboratory.

2.2. The laboratory shall:

2.2.1. record the details of the seal number and the sample label on the test record;

2.2.2. confirm that the condition of the seal on the MARPOL sample has not been broken; and

2.2.3. reject any MARPOL sample where the seal has been broken.

2.3. If the seal of the MARPOL sample has not been broken, the laboratory shall proceed with the verification procedure and shall:

2.3.1. ensure that the MARPOL sample is thoroughly homogenized;

2.3.2. draw two sub-samples from the MARPOL sample; and

2.3.3. reseal the MARPOL sample and record the new reseal details on the test record.

2.4. The two sub-samples shall be tested in succession, in accordance with the specified test method referred to in appendix V. For the purposes of this verification procedure, the results of the test analysis shall be referred to as "A" and "B":

2.4.1. If the results of "A" and "B" are within the repeatability (r) of the test method, the results shall be considered valid.

2.4.2. If the results of "A" and "B" are not within the repeatability (r) of the test method, both results shall be rejected and two new sub-samples should be taken by the laboratory and analysed. The sample bottle should be resealed in accordance with paragraph 2.3.3 above after the new sub-samples have been taken.

2.5. If the test results of "A" and "B" are valid, an average of these two results should be calculated thus giving the result referred to as "X":

2.5.1. If the result of "X" is equal to or falls below the applicable limit required by chapter XXVI, the fuel oil shall be deemed to meet the requirements.

2.5.2. If the result of "X" is greater than the applicable limit required by chapter XXVI, Verification Procedure Stage 2 should be conducted; however, if the result of "X" is greater than the specification limit by 0.59R (where R is the reproducibility of the test method), the fuel oil shall be considered non-compliant and no further testing is necessary.

3. Verification Procedure Stage 2

3.1. If Stage 2 of the verification procedure is necessary in accordance with paragraph 2.5.2 above, the competent authority shall send the MARPOL sample to a second accredited laboratory.

3.2. Upon receiving the MARPOL sample, the laboratory shall:

3.2.1. record the details of the reseal number applied in accordance with 2.3.3 and the sample label on the test record;

3.2.2. draw two sub-samples from the MARPOL sample; and

3.2.3. reseal the MARPOL sample and record the new reseal details on the test record.

3.3. The two sub-samples shall be tested in succession, in accordance with the test method specified in appendix V. For the purposes of this verification procedure, the results of the test analysis shall be referred to as “C” and “D”:

3.3.1. If the results of “C” and “D” are within the repeatability (r) of the test method, the results shall be considered valid.

3.3.2. If the results of “C” and “D” are not within the repeatability (r) of the test method, both results shall be rejected and two new sub-samples shall be taken by the laboratory and analysed. The sample bottle should be resealed in accordance with paragraph 3.2.3 after the new sub-samples have been taken.

3.4. If the test results of “C” and “D” are valid, and the results of “A”, “B”, “C” and “D” are within the reproducibility (R) of the test method then the laboratory shall average the results, which is referred to as “Y”:

3.4.1. If the result of “Y” is equal to or falls below the applicable limit required by chapter XXVI, the fuel oil shall be deemed to meet the requirements.

3.4.2. If the result of “Y” is greater than the applicable limit required by chapter XXVI, then the fuel oil fails to meet the standards required by chapter XXVI.

3.5. If the result of “A”, “B”, “C” and “D” are not within the reproducibility (R) of the test method then the Administration may discard all of the test results and, at its discretion, repeat the entire testing process.

3.6. The results obtained from the verification procedure are final.

Notice E from the Danish Maritime Authority

Technical regulation on the construction and equipment, etc. of fishing vessels

Attachment

Certificates, forms and records of equipment

CERTIFICATE OF COMPLIANCE

This certificate of compliance shall be accompanied by a record of equipment

(authority's stamp) (country)

for a new/existing [1] fishing vessel

issued pursuant to

_____

(designation of the Member State's relevant legal provisions)

by way of confirmation that the ships listed below fulfil the provisions contained in Council Directive 97/../EC on the establishment of harmonised safety provisions for fishing vessels of 24 metres and over

in accordance with authorisation from the Government of _____

(full official designation of the Member State)

of _____

(full official designation of the competent organisation recognised pursuant to the provisions contained in Council Directive 94/57/EC)

Name of the ship	Distinctive number or letters	Home port	Length [2]

Date of contract for building or major rebuilding [3]: _____

Date when the keel was laid or the ship was at an equivalent stage of construction[3] _____

Date of delivery or completion of major rebuilding[3] _____

1 Delete as applicable, cf. the definitions in article 2, paras. 2 and 3.

2 Length as defined in article 2, para. 6.

3 Cf. the definitions in article 2, para. 2.

(reverse of certificate)

Initial survey

IT IS HEREBY CERTIFIED:

1. that the ship has been surveyed in accordance with Rule I/6, para. 1, letter a) of the Annex to the Torremolinos Protocol of 1993
2. that the survey showed:
    1. that the ship fulfils all the requirements contained in Council Directive 97/70/EC, and
    2. that the maximum permitted draught under all load conditions has been entered in the stability log by _____;
3. that an exemption certificate has/has not[1] been issued.

This certificate is valid until _____, subject to surveys undertaken in accordance with the regulations contained in I/6, para. 1, letter b), nos. ii) and iii) and letter c).

Issued at _____, on _____

(place of issue of the certificate) (date of issue)

_____

(signature of the person issuing the certificate)
and/or
(stamp of the issuing authority)

If the declaration is signed, the following sentence is added:

The undersigned declares that he/she has appropriate authorisation from the specified Member State to issue this certificate.

_____

(signature)

1 Delete as applicable.

(next page of certificate)

Endorsement of extension of the certificate's period of validity, where Rule I/11, para. 1 is applicable

This certificate shall, pursuant to Rule I/11, para. 1, be recognised as valid until _____

Signature: _____

(signature of the person entitled to make the endorsement)

Place: _____

Date:_____

_____

(signature and/or stamp of the issuing authority)

Endorsement of extension of certificate's period of validity until the ship reaches the port where it shall be surveyed, where Rule 1,11, para. 2 or 4, is applicable

This certificate shall, pursuant to Rule I/11, para. 1, be recognised as valid until _____

Signature:_____

(signature of the person entitled to make the endorsement)

Place:_____

Date: _____

_____

(signature and/or stamp of the issuing authority)

(next page of certificate)

Endorsement of new survey

Survey of equipment

IT IS HEREBY CERTIFIED that the ship has been surveyed as required in Rule I/6, para. 1, letter b), no. ii), and that the survey showed that the ship fulfils all the relevant requirements.

Signature:_____

(signature of the person entitled to make the endorsement)

Place:_____

Date: _____

_____

(signature and/or stamp of the issuing authority)

Radio survey

IT IS HEREBY CERTIFIED that the ship has been surveyed as required in Rule I/6, para. 1, letter b), no. iii), and that the survey showed that the ship fulfils all the relevant requirements.

Signature:_____

(signature of the person entitled to make the endorsement)

Place:_____

Date: _____

_____

(signature and/or stamp of the issuing authority)

(next page of certificate)

2nd periodical radio survey

Signature:_____

(signature of the person entitled to make the endorsement)

Place:_____

Date: _____

_____

(signature and/or stamp of the issuing authority)

3rd periodical radio survey

Signature:_____

(signature of the person entitled to make the endorsement)

Place:_____

Date: _____

_____

(signature and/or stamp of the issuing authority)

Endorsement concerning intermediate survey

IT IS HEREBY CERTIFIED that the ship has been surveyed as required in Rule I/6, para. 1, letter b), no. iii), and that the survey showed that the ship fulfils all the relevant requirements.

Signature:_____

(signature of the person entitled to make the endorsement)

Place:_____

Date: _____

_____

(signature and/or stamp of the issuing authority)

EXEMPTION CERTIFICATE

(authority's stamp) (country)

for a new/existing[1] fishing vessel

issued pursuant to

_____

(designation of the Member State's relevant legal provisions)

by way of confirmation that the ships listed below fulfil the provisions contained in Council Directive 97/70/EC on the establishment of harmonised safety provisions for fishing vessels of 24 metres and over

in accordance with authorisation from the Government of _____

(full official designation of the Member State)

of _____

(full official designation of the competent organisation recognised pursuant to the provisions contained in Council Directive 94/57/EC)

Name of the ship	Distinctive number or letters	Home port	Length[2]

1 Delete as applicable, cf. the definitions in article 2, paras. 2 and 3.

2 Length as defined in article 3, para. 6.

(next page of certificate)

IT IS HEREBY CERTIFIED

that the ship, pursuant to Rule _____

is exempt from the requirements regarding :_____

_____

_____

Condition for granting of exemptions:

_____

_____

This certificate is valid until _____, provided that the certificate of compliance with which this certificate is associated continues to be valid.

Issued at _____, on _____

(place of issue of the certificate) (date of issue)

_____

(signature of the person issuing the certificate) and/or (stamp of the issuing authority)

If the declaration is signed, the following sentence is added:

The undersigned declares that he/she has appropriate authorisation from the specified Member State to issue this certificate.

_____

(signature)

(next page of certificate)

Endorsement of extension of the certificate's period of validity, where Rule I/11, para. 1 is applicable

This certificate shall, pursuant to Rule I/11. Para. 1, be recognised as valid until

_____

Signature: _____

(signature of the person entitled to make the endorsement)

Place: _____

Date:_____

_____

(signature and/or stamp of the issuing authority)

Endorsement of extension of certificate's period of validity until the ship reaches the port where it shall be surveyed, where Rule 1,11, para. 2 or 4, is applicable

This certificate shall, pursuant to Rule I/11. Para. 1, be recognised as valid until

_____

Signature:_____

(signature of the person entitled to make the endorsement)

Place:_____

Date: _____

_____

(signature and/or stamp of the issuing authority)

(supplementary form to the certificate of compliance)

RECORD OF EQUIPMENT

Relating to the certificate of compliance

This record shall be permanently attached to the certificate of compliance

Record of equipment for compliance with Council Directive 97/70/EC on the establishment of harmonised safety provisions for fishing vessels with a length of 24 metres and over

1. Particulars of ship

Name of the ship	Distinctive number or letters	Home port	Length[1]

2. Details of life_saving appliances

1 Total number of persons for which life_saving appliances are provided		
	Port side	Starboard side
2 Total number of lifeboats		
2.1 Total number of persons accommodated by them		
2.2 Number of partially enclosed lifeboats (Rule VII/18)		
2.3 Number of totally enclosed lifeboats (Rule VII/19)		
3. Number of rescue boats		
3.1 Number of boats which are included in the total lifeboats shown above		
4. Life_rafts		
4.1 Life_rafts with approved launching appliances		
4.1.1 Number of life_rafts		
4.1.2 Number of persons accommodated by them		
4.2 Life_rafts for which approved launching appliances are not required		
4.2.1 Number of life_rafts		

1 Length as defined in article 3, para. 6.

4.2.2 Number of persons accommodated by them 5. Number of lifebuoys 6. Number of life_jackets 7. Immersion suits 7.1 Total number 7.2 Number of immersion suits complying with the requirements for life_jackets 8. Number of thermal protective appliances(1) 9. Radio installations used in life_saving appliances 9.1 Number of radar transponders 9.2 Number of two_way VHF radiotelephone apparatus		
(1) Except those required in Regulation VII/17, para. 8, no. xxi) and VII/20, para. 5, a), no. xxiv).		

3. Details of radio facilities

Designation	Actual equipment
1. Primary systems	_____
1.1 VHF radio installation	_____
1.1.1 DSC encoder	_____
1.1.2 DSC watch receiver	_____
1.1.3 Radiotelephony	_____
1.2 MF radio installation	_____
1.2.1 DSC encoder	_____
1.2.3 Radiotelephony	_____
1.3 MF/RF radio installation	_____
1.3.1 DSC encoder	_____
1.3.2 DSC watch receiver	_____
1.3.4 Direct_printing radiotelegraphy	_____
1.4 INMARSAT ship earth station	_____
2. Secondary means of alerting	_____
3. Facilities for reception of maritime safety information	_____
3.1 NAVTEX receiver	_____
3.2 EGC receiver	_____
3.3 Direct_printing RF receiver	_____
4. Satellite EPIRB	_____

Designation	Actual equipment
4.1 COSPAS_SARSAT	_____
4.2 INMARSAT	_____
5. VHF EPIRB	_____
6. Ship's radar transponder	_____
7. 2,182 kHz watch receiver (1)	_____
8. Device for generating the radiotelephone alarm signal on 2,182 kHz (2)	_____
(1) Unless another date has been decided by the IMO's Maritime Safety Committee, this point does not need to appear in the list accompanying certificates issued after 1 February 1999.	
(2) This point does not need to appear in the list accompanying certificates issued after 1 February 1999.	

4. Methods used to ensure availability of radio facilities

4.1 Duplication of equipment:_____

4.2 Shore_based maintenance:_____

4.3 At_sea maintenance capability:_____

IT IS HEREBY CERTIFIED that this record of equipment is correct in all respects.

Issued at _____, on _____

(place of issue of the certificate) (date of issue)

_____

(signature of the person issuing the certificate)
and/or
(stamp of the issuing authority)

If the declaration is signed, the following sentence is added:

The undersigned declares that he/she has appropriate authorisation from the specified Member State to issue this certificate.

_____

(signature)

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Annex 2
Council Directive 97/70/EC of 11 December setting up a harmonised safety regime for fishing vessels of 24 metres in length and over
(left out here)

Notice E from the Danish Maritime Authority

Technical regulation on the construction and equipment, etc. of fishing vessels

Annex 3

ADOPTION OF THE FINAL PROTOCOL AND OTHER INSTRUMENTS, RECCOMMANDATIONS AND RESOLUTIONS RESULTING FROM THE WORK OF THE CONFERENCE

TEXT OF THE TORREMOLINOS PROTOCOL OF 1993 RELATING TO THE TORREMOLINOS INTERNATIONAL CONFERENCE ON THE SAFETY OF FISHING VESSELS, 1977

Annex 3

ADOPTION OF THE FINAL PROTOCOL AND OTHER INSTRUMENTS, RECCOMMANDATIONS AND RESOLUTIONS RESULTING FROM THE WORK OF THE CONFERENCE

TEXT OF THE TORREMOLINOS PROTOCOL OF 1993 RELATING TO THE TORREMOLINOS INTERNATIONAL CONFERENCE ON THE SAFETY OF FISHING VESSELS, 1977

as adopted by the conference

1. As provided by resolution A.369(IX) of 14 November 1975, adopted by the General Assembly of the Intergovernmental Consultative Maritime Organization, the council decided to convene a diplomatic conference with a view to contemplate the adoption of a convention on the safety of fishing vessels.

PARTIES TO THE PRESENT PROTOCOAL,

RECOGNIZING THE SIGNIFICANT CONTRIBUTION WHICH CAN BE MADE BY THE Torremolinos International Convention for the Safety of Fishing Vessels, 1977, to the safety of ships in general and to the safety of fishing vessels in particular,

ACKNOWLEDGING HOWEVER that certain provisions of the Torremolinos International Convention for the Safety of Fishing Vessels, 1977, have given rise to difficulties in their implementation by the number of States with substantial fishing fleets under their flags, and that this has prevented the entry into force of the Torremolinos International Convention for the Safety of Fishing Vessels, 1977, and consequently the implementation of the regulations contained therein,

DISIRING to establish a common agreement containing the highest practicable standards for the safety of fishing vessels that can be implemented by all States concerned,

CONSIDERING that this objective may best be achieved by the conclusion of a Protocol relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977,

HAVE AGREED as follows:

ARTICLE 1 General obligations in compliance with the convention

(1) The Parties to the present Protocol shall give effect to the provisions of:

(a) the articles of the present Protocol; and

(b) the regulations contained in the Annex to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977 (hereinafter referred to as "the Convention"), subject to the modifications set out in the Annex to the present Protocol.

(2) The articles of the present Protocol and the regulations of the Annex to the Convention shall, subject to the modifications set out in the Annex to the present Protocol, be read and interpreted as one single instrument.

(3) The Annex to the present Protocol shall constitute an integral part of the Protocol and a reference to the present Protocol shall constitute at the same time a reference to the Annex hereto.

ARTICLE 2 Definitions

For the purpose of the present Protocol, unless expressly provided otherwise, the following provisions apply:

(a) "Party" means a State for which the present Protocol has entered into force;

(b) "Fishing vessel" or "vessel" means any vessel used commercially for catching fish, whales, seals, walrus or other living resources of the sea;

(c) "Organization" means the International Maritime Organization;

(d) "Secretary-General" means the Secretary-General of the Organization;

(e) "Administration" means the Government of the State whose flag the vessel is entitled to fly;

(f) "Regulations" means the regulations contained in the Annex to the Convention as modified by the present Protocol.

ARTICLE 3 Application

(1) The present Protocol shall apply to seagoing fishing vessels including vessels also processing their catch entitled to fly the flag of a Party.

(2) The provisions of the Annex shall not apply to vessels exclusively used:

(a) for sport or recreation;

(b) for processing fish or other living resources of the sea;

(c) for research and training: or

(d) as fish carriers.

(3) Unless expressly provided otherwise, the provisions of the Annex shall apply to fishing vessels of 24 metres in length and over.

(4) In a case where a limit of the vessel's length is prescribed as greater than 24 metres in a chapter for the application of that chapter, the Administration shall determine which regulations of that chapter should apply, wholly or in part, to a fishing vessel of 24 metres in length and over but less than the length limit prescribed in that chapter and entitled to fly the flag of that State, having regard to the type, size and mode of operation of such a vessel.

(5) Parties shall endeavour to establish, as a matter of high priority, uniform standards to be applied by Administrations to fishing vessels referred to in paragraph (4), which operate in the same region, taking into account the mode of operation, sheltered nature and climatic conditions in such region. Such uniform regional standards shall be communicated to the Organization for circulation to other Parties for information.

ARTICLE 4 Certification and Port State control

(1) Every vessel required to hold a certificate in accordance with the provisions of the regulations is subject, when in a port of another Party, to control by officers duly authorized by the Government of that Party in so far as this control is directed towards verifying that the certificate issued under the provisions of the relevant regulations is valid.

(2) Such certificate, if valid, shall be accepted unless there are clear grounds for believing that the condition of the vessel or of its equipment does not correspond substantially with the particulars of that certificate or that the vessel and its equipment are not in compliance with the provisions of the relevant regulations.

(3) In the circumstances given in paragraph (2)or where a certificate has expired or ceased to be valid, the officer carrying out the control shall take steps to ensure that the vessel shall not sail until it can proceed to sea or leave the port for the purpose of proceeding to the appropriate repair yard without danger to the vessel or persons on board.

(4) In the event of this control giving rise to an intervention of any kind, the officer carrying out the control shall forthwith inform, in writing, the Consul or, in his absence, the nearest diplomatic representative of the State whose flag the vessel is entitled to fly, of all the circumstances in which intervention was deemed necessary. In addition, nominated surveyors or recognized organizations responsible for the issue of the certificates shall also be notified. The facts concerning the intervention shall be reported to the Organization.

(5) If the port State authority concerned is unable to take steps as specified in paragraph (3)or if the vessel has been allowed to proceed to the next port of call, the port State authority concerned shall notify all relevant information about the vessel to the Party mentioned in paragraph (4)and to the authorities of the next port of call.

(6) When exercising control under this article, all possible efforts shall be made to avoid a vessel being unduly detained or delayed. If a vessel is thereby unduly detained or delayed, it shall be entitled to compensation for any loss or damage suffered.

(7) With respect to vessels of non-parties to the present Protocol, Parties shall apply the requirements of the present Protocol as may be necessary to ensure that no more favourable treatment is given to such vessels.

ARTICLE 5 Force majeure

(1) A vessel which is not subject to the provisions of the present Protocol or which is not required to hold a certificate in accordance with the provisions of the present Protocol at the time of its departure on any voyage shall not become subject to such provisions on account of any deviation from its intended voyage due to stress of weather or any other cause of force majeure.

(2) Persons who are on board a vessel by reason of force majeure or in consequence of the obligation to carry shipwrecked or other persons shall not be taken into account for the purpose of ascertaining the application to the vessel of any provisions of the present Protocol.

ARTICLE 6 Communication of information

(1) The Parties shall communicate to the Organization:

(a) the text of laws, orders, decrees, regulations and other instruments which have been promulgated on the various matters within the scope of the present Protocol;

(b) a list of non-governmental agencies which are authorized to act on their behalf in matters relating to the design, construction and equipment of vessels in accordance with the provisions of the present Protocol; and

(c) a sufficient number of specimens of their certificates issued under the provisions of the present Protocol.

(2) The Organization shall notify all Parties of the receipt of any communication under paragraph (l)(a) and shall circulate to them any information communicated to it under paragraphs (l)(b) and (l)(c)

ARTICLE 7 Casualties to fishing vessels

(1) Each Party shall arrange for an investigation of any casualty occurring to any of its vessels subject to the provisions of the present Protocol, when it judges that such an investigation may assist in determining what changes in the present Protocol might be desirable.

(2) Each Party shall supply the Organization with pertinent information concerning the findings of such investigations for circulation to all Parties. No reports or recommendations of the Organization based upon such information shall disclose the identity or nationality of the vessels concerned or in any manner fix or imply responsibility upon any vessel or person.

ARTICLE 8 Other treaties and interpretations

Nothing in the present Protocol shall prejudice the present or future claims and legal views of any State concerning the law of the sea and the nature and extent of coastal and flag State jurisdiction.

ARTICLE 9 Signature, ratification, acceptance, approval and accession

(1) The present Protocol shall remain open for signature at the Headquarters of the Organization from 1 July 1993 until 30 June 1994 and shall thereafter remain open for accession. All States may become Parties to the present Protocol by:

(a) signature without reservation as to ratification, acceptance or approval; or

(b) signature subject to ratification, acceptance or approval, followed by ratification, acceptance or approval; or

(c) accession.

(2) Ratification, acceptance, approval or accession shall be effected by the deposit of an instrument to that effect with the Secretary-General.

(3) Each State which has either signed the present Protocol without reservation as to ratification, acceptance or approval or has deposited the requisite instruments of ratification, acceptance, approval or accession in accordance with this article shall transmit to the Secretary-General, at the time of deposit of the above instrument and by the end of each year, information on the aggregate number of fishing vessels of 24 metres in length and over entitled to fly the flag of that State.

ARTICLE 10 Entry into force

(1) The present Protocol shall enter into force twelve months after the date on which not less than fifteen States have either signed it without reservation as to ratification, acceptance or approval or have deposited the requisite instruments of ratification, acceptance, approval or accession in accordance with article 9, the aggregate number of whose fishing vessels of 24 metres in length and over is not less than 14,000.

(2) For States which have deposited an instrument of ratification, acceptance, approval or accession in respect of the present Protocol after the requirements for entry into force thereof have been met but prior to the date of entry into force, the ratification, acceptance, approval or accession shall take effect on the date of entry into force of the present Protocol or three months after the date of deposit of the instrument, whichever is the later date.

(3) For States which have deposited an instrument of ratification, acceptance, approval or accession after the date on which the present Protocol entered into force, the present Protocol shall become effective three months after the date of deposit of the instrument.

(4) After the date on which an amendment to the present Protocol is deemed to have been accepted under article 11, any instrument of ratification, acceptance, approval or accession deposited shall apply to the present Protocol as amended.

ARTICLE 11 Amendments

(1) The present Protocol may be amended by either of the procedures specified in this article.

(2) Amendment after consideration within the Organization:

(a) Any amendment proposed by a Party shall be submitted to the Secretary-General, who shall then circulate it to all Members of the Organization and to all the Parties at least six months prior to its consideration.

(b) Any amendment proposed and circulated as above shall be referred to the Maritime Safety Committee of the Organization for consideration.

(c) Parties whether or not Members of the Organization shall be entitled to participate in the proceedings of the Maritime Safety Committee for the consideration and adoption of amendments.

(d) Amendments shall be adopted by a two-thirds majority of the Parties present and voting in the Maritime Safety Committee expanded as provided for in paragraph (2)(c) (hereinafter referred to as "the expanded Maritime Safety Committee") on condition that at least one third of the Parties shall be present at the time of voting.

(e) The Secretary-General to all the Parties shall communicate amendments adopted in accordance with paragraph (2)(d).

(f) (i) An amendment to an article shall be deemed to have been accepted on the date on which it is accepted by two thirds of the Parties.

(ii) An amendment to the Annex shall be deemed to have been accepted:

(aa) at the end of two years from the date of adoption; or

(bb) at the end of a different period, which shall not be less than one year, if so determined at the time of its adoption by a two-thirds majority of the Parties present and voting in the expanded Maritime Safety Committee.

However, if within the specified period either more than one third of the Parties or Parties the aggregate number of whose fishing vessels is not less than sixty-five per cent of the number of fishing vessels of 24 metres in length and over of all the Parties, notify the Secretary-General that they object to the amendment, it shall be deemed not to have been accepted.

(g) (i) An amendment to an article shall enter into force, with respect to those Parties which have accepted it, six months after the date on which it is deemed to have been accepted and, with respect to each Party which accepts it after that date, six months after the date of that Party's acceptance.

(ii) An amendment to the Annex shall enter into force with respect to all Parties, except those which have objected to the amendment under paragraph (2)(f)(ii) and which have not withdrawn such objections, six months after the date on which it is deemed to have been accepted. However, before the date set for entry into force any Party may give notice to the Secretary-General that it exempts itself from giving effect to that amendment for a period not longer than one year from the date of its entry into force, or for such longer period as may be determined by a two-thirds majority of the Parties present and voting in the expanded Maritime Safety Committee at the time of the adoption of the amendment.

(3) Amendment by a Conference:

(a) Upon the request of a Party concurred with by at least one third of the Parties, the Organization shall convene a Conference of the Parties to consider amendments to the present Protocol.

(b) Every amendment adopted by such a Conference by a two-thirds majority of the Parties present and the Secretary-General to all the Parties for acceptance shall communicate voting.

(c) Unless the Conference decides otherwise, the amendment shall be deemed to have been accepted and shall enter into force in accordance with the procedures specified in paragraphs (2)(f) and (2)(g) respectively, provided that references in those paragraphs to the expanded Maritime Safety Committee shall be taken to mean references to the Conference.

(4) (a) A Party, which has accepted an amendment to the Annex which has entered into force, shall not be obliged to extend the benefit of the present Protocol in respect of the certificates issued to a vessel entitled to fly the flag of a State the Government of which, pursuant to the provisions of paragraph (2)(f)(ii) of this article, has objected to the amendment and has not withdrawn such an objection, but only to the extent that such certificates relate to matters covered by the amendment in question.

(b) A Party, which has accepted an amendment to the Annex which has entered into force, shall extend the benefit of the present Protocol in respect of certificates issued to a vessel entitled to fly the flag of a State the Government of which, pursuant to the provisions of paragraph (2)(g)(ii) of this article, has notified the Secretary-General of the Organization that it exempts itself from giving effect to the amendment.

(5) Unless expressly provided otherwise, any amendment to the present Protocol which relates to the structure of a vessel shall apply only to vessels for which, on or after the date of entry into force of the amendment:

(a) the keel is laid; or

(b) construction identifiable with a specific vessel begins: or

(c) assembly has commenced comprising at least 50 tonnes or one per cent of the estimated mass of all structural material, whichever is less.

(6) Any declaration of acceptance of, or objection to, an amendment or any notice given under paragraph (2)(g)(ii) shall be submitted in writing to the Secretary-General who shall inform all the Parties of any such submission and of the date of its receipt.

(7) The Secretary-General shall inform all the Parties of any amendments, which enter into force under this article together with the date on which each such amendment enters into force.

ARTICLE 12 Denunciation

(1) The present Protocol may be denounced by any Party at any time after the expiry of five years from the date on which the present Protocol enters into force for that Party.

(2) Denunciation shall be effected by notification in writing to the Secretary-General.

(3) A denunciation shall take effect twelve months after receipt of the denunciation by the Secretary-General or after the expiry of any longer period, which may be indicated in the notification.

ARTICLE 13 Depository

(1) The present Protocol shall be deposited with the Secretary-General of the Organization (hereinafter referred to as "the Depositary").

(2) The Depositary shall:

(a) inform the Governments of all States which have signed the present Protocol or acceded thereto of:

(i) each new signature or deposit of an instrument of ratification, acceptance, approval or accession, together with the date thereof;

(ii) the date of entry into force of the present Protocol;

(iii) the deposit of any instrument of denunciation of the present Protocol together with the date on which it was received and the date on which the denunciation takes effect;

(b) transmit certified true copies of the present Protocol to the Governments of all States which have signed the present Protocol or acceded thereto.

(3) As soon as the present Protocol enters into force, a certified true copy thereof shall be transmitted by the Secretary-General to the Secretary-General of the United Nations for registration and publication in accordance with Article 102 of the Charter of the United Nations.

ARTICLE 14 Languages

The present Protocol is processed in one single original in the Arabic, Chinese, English, French, Russian and Spanish languages, each text being equally authentic.

IN WITNESS WHEREOF the undersigned, being duly authorized by their respective Governments for that purpose, have signed the present Protocol.

DONE AT Torremolinos 2 April 1993.

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Attachment 2

1993 Torremolinos Protocol to the Torremolinos Convention, 1977,

Resolutions by the Conference

Resolution 1 AVOIDANCE OF A SITUATION IN WHICH TWO CONFLICTING TREATY REGIMES ARE OPERATIONAL

THE CONFERENCE,

HAVING ADOPTED the Torremo*li*nos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977 (1993 Torremolinos Protocol),

CONSIDERING that the entry into force of the 1993 Torremo*li*nos Protocol as well as the Torremolinos International Convention for the Safety of Fishing Vessels, 1977 (1977 Torremolinos Convention), would create an undesirable situation in which two conflicting regimes would become operational,

RECOGNIZING that States, which decided to become Party to an updated regime of fishing vessels' safety, need only to express their consent to be bound by the 1993 Torremolinos Protocol without also taking any action in respect of the 1977 Torremolinos Convention,

DESIRRING TO bring the 1993 Torremolinos Protocol into force with minimum delay in order to bring the updated regime of safety of fishing vessels into o*p*eration as soon as possible

1. INVITES all States to give early and urgent consideration to the 1993 Torremolinos Protocol with a view to their acceptance thereof at an early date;

2. URGES all States which decide to become Party to the updated regime of safety of fishing vessels to deposit the appropriate instruments with the Secretary-General of the International Maritime Organization (IMO) as soon as possible;

3. APPEALS to all States, which decide to become Party to the updated regime to ensure that they deposit instruments only in respect of the 1993 Torremolinos Protocol and without any references to the 1977 Torremolinos Convention;

4. REQUESTS the Secretary-General of IMO to bring this resolution, in particular the appeal in paragraph 3 above, to the attention of all States entitled to become Party to the 1993 Torremolinos Protocol;

5. FURTHER REQUESTS the Secretary-General of IMO to provide an possible advice and assistance to States considering becoming Party to the 1993 Torremolinos Protocol, in order to ensure that the action taken by the States shall be in accordance with this resolution;

6. AUTHORIZES AND REQUESTS the Secretary-General, in his capacity as Depositary of the Protocol, to give every assistance in conformity with the law of treaties and the depositary practice of IMO and the United Nations, so that all instruments deposited by States after the adoption of the 1993 Torremolinos Protocol will facilitate the entry into force of that Protocol only and will not contribute to fulfil the conditions for the entry into force of the 1977 Torremolinos Convention.

Resolution 2 CERTAIN TREATY LAW ISSUES RELATING TO STATES WHICH HAVE EXPRESSED THEIR CONSENT TO BE BOUND BY THE TORREMOLINOS INTERNATIONAL CONVENTION FOR THE SAFETY OF FISHING VESSELS, 1977

THE CONFERENCE,

HAVING ADOPTED the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels 1977 (1993 Torremolinos Protocol),

NOTING that a number of States deposited instruments of ratification, acceptance, approval or accession in respect of the Torremolinos i International Convention for the Safety of Fishing Vessels, 1977 (1977 Torremolinos Convention), prior to the adoption of the 1993 Torremolinos Protocol,

NOTING ALSO that the 1977 Torremolinos Convention has not entered into force and that it is unlikely that the conditions for entry into force will be met following the adoption of the 1993 Torremolinos Protocol, which is intended to replace the 1977 Torremolinos Convention,

RECOGNIZING that there is the possibility in theory that the 1977 Torremolinos Convention might enter into force even after the entry into force of the 1993 Torremolinos Protocol,

BEARING IN MIND that the States which have consented to be bound by the 1977 Torremolinos Convention might face difficulties if they were to become Parties to the 1993 Torremolinos Protocol should the 1977 Torremolinos Convention enter into force,

CONSIDERING that it is desirable that the States which have consented to be bound by the 1977 Torremolinos Convention and which also wish to become Parties to the 1993 Torremolinos Protocol should take measures to avoid the situation in which two regimes on safety of fishing vessels would be in force concurrently,

CONVINCED that action by the States to bring the 1993 Torremolinos Protocol into force will help to promote the object and purpose for which the 1977 Torremolinos Convention was adopted,

1 . INVITES the States which have already expressed their consent to be bound by the 1977 Torremolinos Convention and which wish to become Parties to the 1993 Torremolinos Protocol to take appropriate measures to avoid being faced with a situation in which two regimes on safety of fishing vessels would be in force concurrently;

2. REQUESTS the Secretary-General of the International Maritime Organization (IMO), as the Depositary of he 1977 Torremolinos Convention and the 1993 Torremolinos Protocol, to bring this resolution to the attention of all States entitled to become Party to the 1977 Torremolinos Convention and the 1993 Torremolinos Protocol;

3. FURTHER. REQUESTS the Secretary-General of IMO to take all necessary and appropriate steps to advise and assist the States concerned which wish to act in accordance with this resolution.

Resolution 3 **CO-OPERATION AMONG STATES ON THE EARLY ENTRY INTO FORCE AND EFFECTIVE IMPLEMENTATION OF THE TORREMOLINOS PROTOCOL 1993 RELATING TO THE TORREMOLINOS INTERNATIONAL CONVENTION FOR THE SAFETY OF FISHING VESSELS, 1977**

THE CONFERENCE,

HAVING ADOPTED the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977 (1993 Torremolinos Protocol),

BELIEVING that the 1993 Torremolinos Protocol will eliminate difficulties encountered by a number of States with substantial fishing fleets in implementing the Torremolinos International Convention for the Safety of Fishing Vessels, 1977, and will provide international standards for the safety of fishing vessels, which could be implemented by all States concerned,

BELIEVING FURTHER that the entry into force and implementation of the 1993 Torremolinos Protocol will make a significant contribution to the safety of ships in general and to the safety of fishing vessels in particular,

RECOGNIZING the importance of global co-operation to promote the early entry into force of the Protocol and its effective implementation by as many States as possible, particularly developing countries,

1. URGES States to become Party to the 1993 Torremolinos Protocol as soon as possible to facilitate its early entry into force and to co-operate with each other to achieve this end;

2. INVITES States to promote, in consultation with the International Maritime Organization (IMO), support for those States which request technical assistance for the acceptance and implementation of the 1993 Torremolinos Protocol, including all necessary action to facilitate the formulation of regional standards for all areas as called for in article 3(5) of the 1993 Torremolinos Protocol;

3. FURTHER INVITES States to initiate action in accordance with this resolution without awaiting the entry into force of the Protocol.

Resolution 4 **DEVELOPMENT OF REGIONAL STANDARDS FOR FISHING VESSELS AS CALLED FOR IN ARTICLE 3(5) OF THE TORREMOLINOS PROTOCOL OF 1993 RELATING TO THE TORREMOLINOS INTERNATIONAL CONVENTION FOR THE SAFETY OF FISHING VESSELS, 1977**

THE CONFERENCE,

HAVING ADOPTED the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977 (1993 Torremolinos Protocol),

NOTING that the 1993 Torremolinos Protocol does not contain specific requirements for certain safety equipment for fishing vessels of less than 45 metres in length, such as life-saving appliances,

NOTING ALSO the initiatives taken by certain States to develop uniform regional standards as called for in article 3(5) of the 1993 Torremolinos Protocol to ensure that the safety of fishing vessels covered by article 3(4) thereof is maintained at an acceptable level by determining which regulations contained in the annex to the 1993 Torremolinos Protocol should apply, wholly or in part, to such vessels,

NOTING FURTFIER that the International Maritime Organization (IMO) has included in its work programme a revision of the FAO/ILO/IMO Code of Safety for Fishermen and Fishing Vessels, Part A and Part B,

RECOGNIZING that the said Code of Safety, as may be revised, may provide guidance for the development of regional standards,

1. URGES all States, in view of the inherent risks involved in the operation of fishing vessels, to consider the requirements for safety equipment when deciding, in accordance with article 3(4) of the Protocol, which regulations they should apply, wholly or in part, to fishing vessels of 24 metres in length and over but less than the applicable length criteria of the chapter in question;

2. FURTHER URGES States to develop uniform regional standards as called for in article 3(5) of the Protocol as soon as possible, without awaiting the entry into force of the Protocol;

3. REQUESTS IMO to revise, as a matter of priority, the FAO/ILO/ IMO Code of Safety for Fishermen and Fishing Vessels, Part A and Part B.

Resolution 5 APPLICATION OF REGIONAL STANDARDS FOR FISHING VESSELS AS CALLED FOR IN ARTICLE 3(5) OF THE TORREMOLINOS PROTOCOL OF 1993 RELATING TO THE TORREMOLINOS INTERNATIONAL CONVENTION FOR THE SAFETY OF FISHING VESSELS, 1977

THE CONFERENCE,

HAVING ADOPTED the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977 (1993 Torremolinos Protocol),

NOTING article 3(5) of the 1993 Torremolinos Protocol which prescribes that Parties shall endeavour to establish uniform regional standards for fishing vessels referred to in article 3(4) thereof,

NOTING FURTHER that different views were expressed as to whether Parties, which have entered into arrangements establishing uniform regional standards, may apply these standards to fishing vessels of 24 metres in length and over but less than 45 metres entitled to fly the flag of States not participating in such regional arrangements,

BEARING IN MIND that a number of States could not support a proposal that, only after adoption by the Organization, such established regional standards shall be applicable to fishing vessels referred to in article 3(4) but not entitled to fly the flag of a State which is bound by the regional standards and operating in such regions,

RECOGNIZING that a number of States have expressed their concern that they would have difficulties in ratifying the Protocol unless all fishing vessels operating in the regions concerned were subject to the uniform safety standards established for such regions,

DESIRING to avoid a situation whereby the early entry into force of the Protocol would be jeopardized,

REQUESTS the Secretary-General of the International Maritime Organization to invite the appropriate bodies of the Organization to examine with high priority whether, and, if so, under which rules and procedures, the uniform regional standards referred to in article 3(5) may be applied to fishing vessels entitled to fly the flag of States not bound by these standards and operating in the regions concerned.

Resolution 6 FISHING VESSEL SUBDIVISION AND DAMAGE STABILITY

THE CONFERENCE,

HAVING ADOPTED the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977 (1993 Torremolinos Protocol),

NOTING that regulation 14 of chapter Ill of the annex to the 1993 Torremolinos Protocol together with recommendation 5 of attachment 3 to the Final Act of the 1993 Conference set a level of survival capability after damage for fishing vessels of 100 metres in length and over based on deterministic principles,

BEENG AWARE of the recent inclusion in the International Convention for the Safety of Life at Sea, 1974, of subdivision and damage stability requirements for cargo ships based on probabilistic principles,

FURTHER RECOGNIZING the intent of the Maritime Safety Committee of the International Maritime Organization (IMO) to harmonize requirements on survival capability after damage in all relevant IMO instruments by applying the probabilistic principle,

INVITES the Maritime Safety Committee of IMO to include in its work programme consideration of the subdivision and damage stability provisions in the 1993 Torremolinos Protocol with the aim of transforming them into those using the probabilistic concept while, at the same time, keeping the general level of survival capability presently contained in the 1993 Torremolinos Protocol.

Resolution 7 FISHING VESSELS SUBDIVISION AND DAMAGE STABILITY

THE CONFERENCE,

HAVING ADOPTED he Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977 (1993 Torremolinos Protocol),

NOTING that chapter VII of the said Protocol uses the term “fire-retardant” with regard to materials for the construction of the hull and rigid cover of lifeboats in regulation 17 thereof in a way similar to that contained in regulation 111/41 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended,

NOTING FURTHER that here is no definition of fire-retardant materials either in the 1993 Torremolinos Protocol or in the 1974 SOLAS Convention,

INVITES the Maritime Safety Committee of the International Maritime Organization to develop an appropriate definition of fire-retardant materials for the construction of lifeboats together with corresponding criteria related to the said definition as well as fire test procedures aimed at assessing compliance with the criteria for such materials.

Resolution 8 IMPLEMENTATION OF GMDSS REQUIREMENTS ON EXISTING FISHING VESSELS

THE CONFERENCE,

HAVING ADOPTED the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977 (1993 Torremolinos Protocol), introducing, inter alia, the requirements on radiocommunications for the Global Maritime Distress and Safety System (GMDSS),

NOTING that the corresponding requirements of the 1993 Torremolinos Protocol will apply to existing fishing vessels on 1 February 1999 or the date of the entry into force of the Protocol, whichever occurs later,

RECOGNIZING that non-compliance of existing fishing vessels to the relevant GMDSS requirements would create, in terms of safety levels, an undesirable difference between new and existing fishing vessels on one side, and between existing fishing vessels and other ship types on the other,

1. URGES Parties to the 1993 Torremolinos Protocol to implement the GMDSS requirements in respect of existing fishing vessels not later than 1 February 1999 without awaiting the entry into force of the 1993 Torremolinos Protocol;

2. INVITES the International Maritime Organization (IMO), in consultation or association with other United Nations specialized agencies and intergovernmental organizations concerned as appropriate, to undertake necessary steps to implement the GMDSS requirements in respect of existing 5shing vends as recommended above;

3. RECOMMENDS that the Maritime Safety Committee of IMO should consider, in due course, any issues related to the GMIDSS, which are specific for fishing vessels, with a view to developing appropriate standards to ensure the safety of these vessels and their crew.

Resolution 9 EARLY INTRODUCTION OF SATELLITE EMERGENCY POSITION INDICATING RADIO BEACONS (EPIRBs) ON EXISTING FISHING VESSELS

THE CONFERENCE,

HAVING ADOPTED the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977 (1993 Torremolinos Protocol),

NOTING that the requirement under regulation IX/6(1) of the 1993 Torremolinos Protocol for existing fishing vessels to carry satellite emergency position-indicating radio beacons (EPIRBs) will not enter into force until 1 February 1999,

RECOGNIZING that the satellite EPIRB is a successful means of transmitting a distress message and assisting in the rapid location of vessels in distress,

RECOGNIZING FURTHER hat the early carriage of satellite EPIRBs will improve safety at sea,

RECOMMENDS Governments to encourage the fitting of existing fishing vessels with satellite EPIRBs at the earliest possible date, prior to the entry into force of the 1993 Torremolinos Protocol.

Resolution 10 SHIPBORNE NAVIGATIONAL EQUIPMENT AND ARRANGEMENTS

THE CONFERENCE,

HAVING ADOPTED the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977 (1993 Torremolinos Protocol),

NOTING that chapter X of the 1993 Torremolinos Protocol sets out independent regulations for fishing vessels' shipborne navigational equipment and arrangements,

NOTING FURTHER that, at present, requirements for shipborne navigational equipment in the existing chapter V of the International Convention for the Safety of Life at Sea (SOLAS), 1974, apply also to fishing vessels,

DESIRING to avoid a situation, whereby fishing vessels which comply with the requirements of the 1993 Torremolinos Protocol would be obliged to comply also with the requirements of SOLAS 1974 concerning shipborne navigational equipment and arrangements,

INVITES the Maritime Safety Committee of the International Maritime Organization to adopt, by the time of the entry into force of the 1993 Torremolinos Protocol, an amendment to SOLAS chapter V so that the requirements for shipborne navigational equipment and arrangements applicable to fishing vessels contained therein should not apply to fishing vessels required to comply with chapter X of the Protocol.

Resolution 11 APPRECIATION TO THE GOVERNMENT AND PEOPLE OF SPAIN

TILE CONFERENCE,

GREATLY APPRECIATING the kind invitation of the Government of Spain to hold the Conference in Torremolinos,

CONSCIOUS of the efforts of the Government of Spain to contribute towards the adoption of an international instrument aimed at improving the safety of fishing vessels and fishermen as evidenced by the holding of two international conferences on safety of fishing vessels in Torremolinos in 1977 and 1993,

RECOGNIZING with appreciation the excellent arrangements made by the Government of Spain for the Conference and the warm hospitality bestowed on the participants by the Government and people of Spain,

EXPRESSES its profound gratitude to the Government and people of Spain for their contribution to the success of the Conference;

2. DECIDES, in grateful recognition of this contribution, to designate the Protocol adopted by the Conference as the Torremohnos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977.

Notice E from the Danish Maritime Authority
Technical regulation on the construction and equipment, etc. of fishing vessels

Attachment 3

1993 Torremolinos Protocol to the Torremolinos Convention, 1977

Recommendations by the Conference

(References to regulations are references to regulations in the annex to the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977)

1 Guidance on a method of calculation of the effect of water on deck (regulation III/6)

(1) The ability of the vessel to withstand the heeling effect due to the presence of water on deck should be demonstrated by a quasi-static method, with reference to figure 1, when the following condition is satisfied with the vessel in the worst operating condition:

Ratio Cwod = areab / areaa should not be less than unity.

(2) The angle which limits areab should be equal to the flooding angle Of or 40^o whichever is the less.

(3) The value of the heeling moment Mwod (or the corresponding heeling ann) due to the presence of water on deck should be determined assuming that the deck well is filled to the top of the bulwark at its lowest point and the vessel heeled up to the angle at which this point is immersed. For the determination of Mwod the following formula should be used:

Mwod = K Mw

where:

Mw = static heeling moment due to water on deck

K = coefficient

(a) If Mwod is determined by a static approach, K = 1.0 may be applied.

(b) If Mwod is determined by a quasi-static approach, K may take into account the rolling period of the vessel and the dynamic effect of the water flow, including the effect of the disposition and configuration of deck wells and deckhouses. The value of K should be satisfactory, taking into account the type of vessel, area of operation, em. For vessels where the angle of deck edge immersion ΘD is less than 10^o to 15^o, or the angle of bulwark top immersion ΘB is less than 20^o to 25^o a value for K greater than 1.0 may be applied. When ΘD is greater than 20^o or ΘB greater than 30^o a value for K less than 1.0 may be applied.

(4) When calculating Mw. the following assumptions should be made:

(a) at the beginning the vessel is in the upright condition;

(b) during heeling, trim and displacement are constant and equal to the values for the vessel without the water on deck;

(c) the effect of freeing ports should be ignored.

(5) The above provisions may be adjusted, taking into account the seasonal weather conditions and sea states in the areas in which the vessel will operate, the type of vessel and its mode of operation.

(6) Other methods for the calculation of the effect of water on deck using the dynamic approach may be adopted.

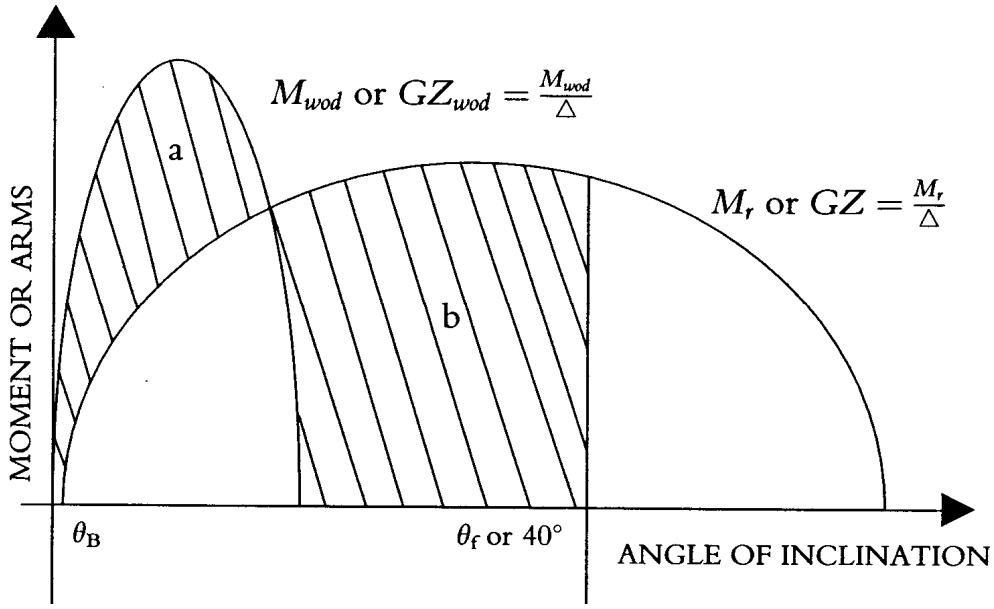

Figure 1 - Water on deck

2 Guidance relating to ice accretion (regulation III/8)

In the application of regulation III/8 the following icing areas should apply:

(1) (a) The area north of latitude 65°30 - N, between longitude 28° W and the west coast of Iceland; north of the north coast of Iceland; north of the rhumb line running from latitude 66° N, longitude 15° W to latitude 73°30 - N, longitude 15° E, north of latitude 73° 30-N between longitude 15° E and 35° E, and east of longitude 35° E, as well as north of latitude 56° N in the Baltic Sea.

(b) The area north of latitude 43° N bounded in the west by the North American coast and the east by the rhumb line running from latitude 43° N longitude 4M to latitude 63° N longitude 2M and thence along longitude 2M.

(c) All sea areas north of the North American continent, west of the areas defined in subparagraphs (a) and (b) of this paragraph.

(d) The Bering and Okhotsk Seas and the Tartary Strait during the icing season.

(e) South of latitude 60° S.

A chart to illustrate the areas is attached.

(2) For vessels operating in areas where ice accretion may be expected:

(a) Within the areas defined in paragraph (1)(a), (c), (d) and (e) known to having icing conditions significantly different from those in regulation III/8(1), ice accretion requirements of one-half to twice the required allowance may be applied.

(b) Within the area defined in paragraph (1)(b) where ice accretion in excess of twice the allowance required by regulation III/8(1) may be expected, more severe requirements

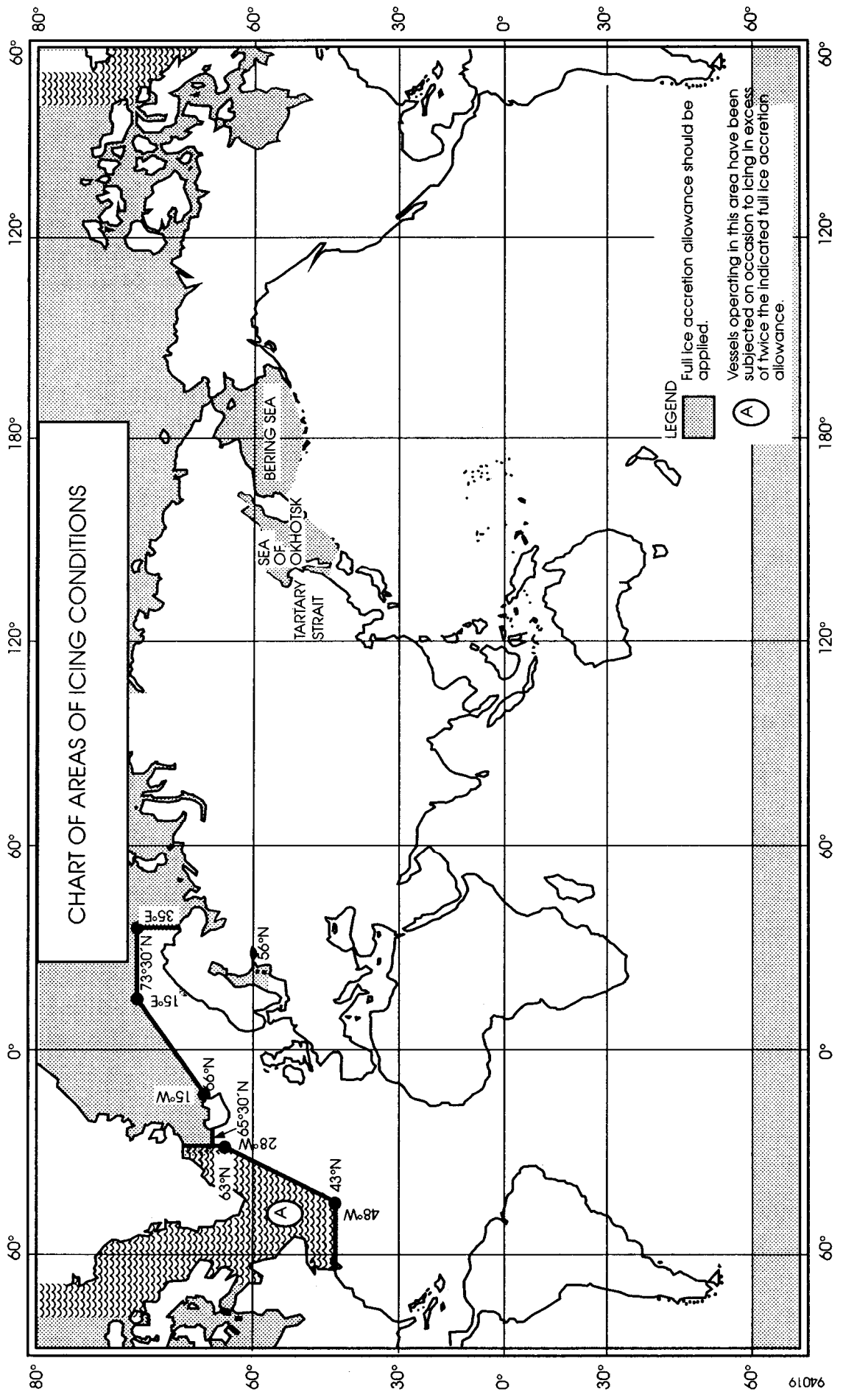
CHART OF AREAS OF ICING CONDITIONS
LEGEND
Full ice accretion allowance should be applied.
Vessels operating in this area have been subjected on occasion to icing in excess of twice the indicated full ice accretion allowance.
A
BERING SEA
SEA OF OKHOTSK
TARTARY STRAIT
80°
60°
30°
0°
30°
60°
120°
180°
35°E
73°30'N
15°E
56°N
66°N
15°W
65°30'N
28°W
63°N
43°N
48°W
94019

3 Guidance on stability information (regulation III/10)

Stability information provided for the vessel should include:

(1) (a) stability calculations including GZ curves of operating conditions required by regulation III/7;

(b) instructions warning of conditions critical from a stability standpoint. As an example, instructions to keep the ballast tanks full when necessary for adequate stability;

(c) maximum permissible operating draught associated with each operating condition; and

(d) when appropriate, minimum required operating draught.

(2) Information as required by the following alternatives having regard to the type of vessel, intended service, etc:

(a) If GZ calculations are intended:

(i) information for determination of weights, positions of centres of gravity, the free surface effects of tanks*, fish-holds and pounds;

(ii) information relating to form stability and hydrostatic parameters; and

(iii) displacement and disposition of centre of gravity of light ship condition, with regard to permanent ballast.

(b) When rolling tests are used:

(i) information for the determination of metacentric height GM,, by means of a rolling test**; and

(ii) information giving required minimum metacentric height GM,, for the practical range of draughts.

(c) Simplified information:

Supplementary or alternative information which permits safe operation without recourse to calculations or rolling tests.

(3) (a) Instructions for filling and emptying of tanks with free liquid surfaces;

(b) information on the proper use and control of any antirolling devices; and

(c) information on the weight and arrangement of permanent ballast.

(4) For vessels to which regulation III/14 applies:

(a) information on the use of ballast and other liquid systems to correct heel and trim;

(b) forms for recording daily tank statements; and

(c) instructions for loading in order to maintain the vessel afloat after flooding.

4 Guidance on a method of calculation of bow height (regulation III/12)

(1) The bow height is defined as the minimum vertical distance from the deepest waterline to the top of the highest exposed deck measured at the forward perpendicular.

* See appendix 1(13) of the Recommendation on Intact Stability of Fishing Vessels adopted by the Organization by resolution A.168(ES.IV).

** See appendix IV of the Recommendation on Intact Stability of Fishing Vessels adopted by the Organization by resolution A.168(ES.IV).

(2) The determination of the bow height (HB) required may be based upon the following formula:

HB = K1 L (1 + L / K2)

when:

L is the length of the vessel in metres as defined in regulation I/2(5); and

K1 and K2 are the coefficient depending upon areas of operation and L as follows:

Area of operation	L	K1	K2
Extreme conditions with significant wave height of up to and including 8 m	24 m <= L < 110 m	0.09	-270
	L >= 110 m	4.959 / L	600
Extreme conditions with significant wave height above 8 m	24 m <= L < 110 m	0.117	-220
	L >= 110 m	5.991 / L	1,484

The Administration should stipulate either of the above or other standard, considering expected sea and weather conditions in particular fishing areas.

(3) Where the bow height required is obtained by sheer, this should extend from the stem for a length of at least 0.15L abaft of the forward perpendicular. Where it is obtained by fitting a forecastle, such forecastle should extend from the stem at least 0.07L abaft the forward perpendicular. However, where the length of the forecastle exceeds 0.15L due consideration should be given to the fitting of a bulkhead with adequate closing appliances. If no such bulkhead is fitted adequate arrangements should be provided for removing water from the open forecastle.

(4) Where a bulwark is fitted this may be taken into account for a height of 1 metre provided that the bulwark extends from the stem to a point at least 0.15L abaft the forward perpendicular.

(5) When a vessel is always trimmed by the stem in service conditions, the minimum trim may be allowed in the calculation The bow height.

5 Guidance on subdivision and damage stability calculations (regulation III/14)

(1) Conditions of equilibrium

(a) The final waterline after damage to any one compartment should be either:

(i) to the line of openings at which progressive flooding to spaces below would occur and to the requirements of the Administration; or

(ii) to the after end of the top of the poop superstructure deck at the centreline, subject to paragraph (3)(a) below.

(b) Unsymmetrical flooding shall be kept to a minimum consistent with efficient arrangements. Where it is necessary to correct large angles of heel, the means adopted shall, where practicable, be self-acting.

(2) Damage assumptions

The following assumed damage should apply:

(a) The vertical extent of damage in all cases is assumed to be from the base line upwards without limit.

(b) The transverse extent of damage is equal to B15 m, measured inboard from the side of the vessel perpendicularly to the centreline at the level of the deepest operating waterline, where B (in metres) is as defined in regulation 1/2(7).

(c) If damage of a lesser extent than specified in subparagraphs (a) and (b) above results in a more severe condition, such lesser extent should be assumed.

(d) The flooding should be restricted to any single compartment between adjacent transverse bulkheads. If there are steps or recesses in a transverse bulkhead of not more than 3.05 m in length located within the transverse extent of assumed damage as defined in subparagraph (b) above, such transverse bulkhead may be considered intact and the adjacent compartments may be floodable singly. Where there exists a step or recess within the transverse extent of assumed damage of more than 3.05 m in length in a transverse bulkhead, the two compartments adjacent to this bulkhead should be considered as flooded. The step formed at the junction of the afterpeak bulkhead and the afterpeak tank top should not be regarded as a step.

(e) Where a main transverse bulkhead is situated within the transverse extent of assumed damage and is stepped in way of a double bottom or side tank by more than 3.05 m, the double bottom or side tanks adjacent to the stepped portion of the main transverse bulkhead should be considered as flooded simultaneously.

(f) Main transverse watertight bulkheads should be spaced at least (l/3) $L^{2/3}$ m apart, where L (in metres) is as defined in regulation I/2(5). Where transverse bulkheads are spaced at a lesser distance, one or more of these bulkheads should be assumed as non-existent in order to achieve the minimum spacing between bulkheads.

(g) If pipes, ducts or tunnels are situated within the assumed extent of damage penetration as defined in subparagraph (b) above, arrangements are to be made so that progressive flooding cannot thereby extend to compartments other than those assumed to be floodable in the calculation for each case of damage.

(h) Where operating experience has shown that other values for subparagraphs (b) and (0 above are more appropriate, those values should be used.

(3) Survival assumptions

The vessel is considered to survive the conditions of damage specified in paragraph (2) above provided the vessel remains afloat in a condition of stable equilibrium and satisfies the following stability criteria:

(a) The stability in the final condition of flooding may be regarded as sufficient if the righting lever curve has a minimum range of 20^{o} beyond the position of equilibrium in association with a residual righting lever of at least 100 mm. The area under the righting lever curve within this range should be not less than 0.0175 m-rad. Consideration should be given to the potential hazard presented by protected or unprotected openings which may become temporarily immersed within the range of residual stability. The unflooded volume of the poop superstructure around the machinery space casing, provided the machinery casing is watertight at this level, may be taken into consideration in which case the damage waterline should not be above the after end of the top of the poop superstructure deck at the centreline.

(b) The angle of heel in the final condition of flooding should not exceed 20^{o}.

(c) The initial metacentric height of the damaged vessel in the final condition of flooding for the upright position should be positive and not less than 50 mm.

(d) Relaxation from the damage stability requirements should be permitted only if the proportions, arrangements and other characteristics of the vessel are more favourable to stability after damage.

(4) Permeabilities

The permeabilities employed are to be those as calculated or estimated for the individual spaces in question.

(5) Initial condition of loading

The subdivision and stability calculation should be carried out in the worst operating condition in respect of the residual buoyancy and stability in the non-icing condition.

6 Guidance for precautions against freezing of fire mains (part B and part C of chapter V)

In considering the problem of the freezing of fire mains in vessels, the possible solutions of the problem are:

(a) the recirculation of a sufficient quantity of water, if necessary from a heated reservoir;

(b) the use of a dry system of fire main such that there is no water in the line until a control valve in an accessible space protected from frost (on the rising main) is opened;

(c) the use of a leak-off system in which a sufficient quantity of water is allowed to escape from the ends of the fire main; and

(d) the use of a heating system whereby steam, electrical or hot water heating is used to maintain the water in the fire main in a liquid state. The use of insulation may be incorporated in this system in order to avoid heat loss. Heating may also be effective in reducing the quantity of circulating water referred to in paragraphs (a) and (c) of this recommendation.

In any case, the provisions of effective drainage to the fire main and the proper use of the drains by the crew is imperative if freezing of the fire main is to be avoided in low ambient temperatures.

7 Guidance concerning the use of certain plastic materials (regulations V/11 and V/31)

In considering the problem concerning the use of certain plastic materials, particularly in accommodation and service spaces and control stations, the Administration should note that such materials are flammable and may produce excessive amounts of smoke and other toxic products under fire conditions.

8 Guidance on a method of calculation of the minimum distance from the deepest operating waterline to the lowest point of the top of the bulwark or to the edge of the working deck (regulation VI/3)

(1) The minimum vertical distance from the deepest operating waterline to the lowest point of the top of the bulwark or to the edge of the working deck if guard rails are fitted, referred to in regulation V1/3, should be determined for each vessel, taking into account the probability of shipping water on the deck when the vessel is in moderate beam seas when fishing. This probability should not be greater than 5%. The calculations should take account of the damping coefficient associated with the presence of bilge keels or any other roll damping arrangements.

(2) Where no national practice exists, this distance may be determined by means of the following formulae, based upon the regression analysis of results of the calculations of the probability of shipping water on deck, which is assumed to be 5% when the vessel is fishing in beam seas with the significant wave heights of about 2.9 m and about 1.4 m respectively:

$$H = 0.53 + 0.11\,B - 0.32\,(2.60 - B / d) + 0.85\,(CB - 0.60) + 0.61\,(GM - 0.70) \text{ metres}$$

for vessels which are intended to stop their fishing operations at the significant wave heights of more than 2.9 m, and

$$H = 0.80 + 0.23\,(2.60 - B / d) + 0.52\,(CB - 0.60) + 0.62(CM - 0.70) \text{ metres}$$

for vessels which are intended to stop their fishing operations at the significant wave heights of 1.4 m; if the significant wave heights are between 2.9 m and 1.4 m the values of H should be determined by linear interpolation. In the above formulae:

B = maximum breadth of the vessel, measured amidships to the moulded line of the frame in a vessel with a metal shell and to the outer surface of the hull in a vessel with a shell of any other material (metres)

d = maximum permissible moulded draught (metres)

CB = block coefficient

GM = initial metacentric height (metres)

All dimensions correspond to the deepest operating waterline.