

REGULATION No. 122/2004  
ON THE SAFETY OF FISHING VESSELS  
OF 15 METRES IN LENGTH OVERALL AND OVER,  
AS AMENDED

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**REGULATION No. 122/2004**  
**on the safety of fishing vessels of 15 metres in length overall and over, as amended**

Article 1

Aims

The purpose of this Regulation is to lay down safety standards for fishing vessels of 15 m in length overall and over, both new and existing.

Article 2

Definitions

For the purpose of this Regulation:

"Fishing vessel" or "vessel" means any vessel equipped or used commercially for catching fish, whales, seals, walrus or other living resources of the sea.

"Torremolinos Protocol" means the 1993 Torremolinos Protocol relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1997, together with amendments thereto.

"Length overall" is the total length of a vessel as defined in Regulation No. 527/1997 on tonnage measurement of ships with a length of up to 24 m.

"The Directive" is Council Directive 97/70/EC setting up a harmonised safety regime for fishing vessels of 24 m in length and over, as amended.<sup>1</sup>

In addition to the above definitions the definitions in regulation 2 of Chapter I in Annex I to this Regulation.

Article 3

Scope

Unless expressly provided otherwise in Annex I to this Regulation, the provisions of the Regulation shall apply to new and existing fishing vessels 15 m in length overall and over, including vessels processing their catch on board.

Furthermore, this Regulation applies, as appropriate, to vessels, which are solely used for processing fish or other living resources of the sea and/or for research and training.

This Regulation neither applies to recreation craft engaged in fishing, provided that the fishing is not commercial, nor vessels exclusively used for carrying fish.

The provisions of the Torremolinos Protocol are contained in Annex I to this Regulation as well as the Icelandic national provisions and the specific provisions pursuant to Council Directive 97/70/EC setting up a harmonised safety regime for fishing vessels of 24 m in length and over and Council Directive 93/103/EC concerning the minimum health and safety requirements for work on board fishing vessels, taken into account and referred to in Article 8, but they are indicated in the Annex as specific European provisions.

The Annexes to this Regulation shall constitute an integral part of the Regulation and a reference to the present Regulation shall constitute at the same time a reference to the Annexes hereto.

A copy of this Regulation shall be kept on board every vessel, to which this Regulation applies.

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<sup>1</sup> Council Directive 97/70/EC has been amended by Commission Directive 1999/19/EC, 2002/35/EC and 2002/84/EC.



#### Article 4

##### Shipborne marine equipment

Unless expressly provided otherwise, all shipborne marine equipment as listed in Annex A.1 of Regulation 988/2000, as amended, and complying with the provisions of that Regulation shall automatically be in accordance with the provisions of this Regulation when the equipment is placed on board a fishing vessel. This is equally applicable to provisions requiring that the equipment is approved and subject to tests to the satisfaction of the Administration and provisions where such requirements are not made. However, this provision does not apply to shipborne marine equipment if specially required in Iceland under Annex I of this Regulation.

Certificates of Approval shall come with all equipment registered in Annex A.1 of Regulation 988/2000 and are required on board in accordance with this Regulation. If any special Icelandic requirements apply to the equipment it shall be stated in the Certificate of Approval in question.

#### Article 5

##### Implementation

This Regulation shall be enforced by the Icelandic Maritime Administration.

#### Article 6

##### Further implementation of the provisions of the annexes to this Regulation

Where in the annexes to this Regulation there is a reference to the rules of recognized organizations, it is considered permissible to use equivalent rules to the satisfaction of the Icelandic Maritime Administration.

Where, in annexes to this Regulation, the Administration is empowered to evaluate or is given authority to further implement the provisions on the construction or equipment or anything else, to which this Regulation applies, the Minister may, on the basis of proposals received from the Icelandic Maritime Administration, issue further Regulations on such provisions.

#### Article 7

##### Penalties

Chapter VII of the Ship Survey Act, No. 47/2003 shall apply with regard to violations of the provisions of this Regulation.

#### Article 8

##### Entry into force

This Regulation is issued in accordance with Act No. 47/2003 on ship survey and having regard to 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, as amended, and Council Directive 93/103/EC of 23 November 1993, concerning the minimum health and safety requirements for work on board fishing vessels (thirteenth specific Directive within the meaning of Article 16(1) of Directive 89/391/EEC).

This Regulation has been notified in accordance with the provisions of Directive 98/34/EC laying down a procedure for the provision of information in the field of technical standards and regulations.

The Regulation shall enter into force immediately.

The following rules are revoked:

- Regulation No. 26/2000 on the safety of fishing vessels of 24 metres in length and over, *cf.* 90/2003.
- Rules No. 553/1975, *cf.* 124/1988, 275/1989, 54/1998 and 189/2003, on the stability and safety of fishing vessels.
- Rules No. 242/1963 on the loading of herring fishing vessels during the winter season.
- Rules No. 414/1995 on the safety at work on board fishing vessels of 15 metres in length and over.
- Rules No. 185/1995 on accommodations, safety and working conditions in work and processing spaces on board fishing vessels.
- Regulation No. 785/1998 concerning minimum safety and health requirements for work on board fishing vessels.
- Rules No. 11/1953, *cf.* 553/1975, 327/1977 and 521/1984, on ship survey and safety.
- Rules on the safety of Icelandic ships in the Barents Sea (The Loophole) (letter from the Minister of Transport and Communications dated 26.10.1994).

At the same time the provisions of the following rules, which apply to new and existing fishing vessels of 15 metres in length overall and over, are revoked:

- Regulation No. 53/2000 on Ships' Radio Equipment and Radiocommunications.
- Rules on live-saving appliances and safety equipment of Icelandic ships No. 189/1994, see advertisements Nos. 14/1995, 714/1995, 18/1996, 395/1996, 705/1996, 337/1997, 530/1997, 2/1998, 314/1998, 744/1998, 522/1999, 891/1999, 147/2000 and 667/2001.
- Rules No. 179/1985 on the maximum noise levels on board Icelandic ships, 179/1985.

The provisions of this regulation on toxic substance protective clothing, emergency breathing apparatus and manual on safety at work on board enter into force immediately and the provisions on toxic substance protective clothing and emergency breathing apparatus shall be complied with not later than on the date of the first periodical survey in 2005 and the provisions on the manual on safety at work on board shall be complied with not later than on the date of the first equipment survey in 2006.

The Ministry of Transport and Communications, 10 February 2004.

**ANNEX I**  
**REGULATIONS ON THE CONSTRUCTION AND EQUIPMENT**  
**OF FISHING VESSELS**

**CHAPTER I**  
**GENERAL PROVISIONS**

Regulation 1

Application

(1) Unless otherwise specified, the provisions of this Annex shall apply to new *and existing* vessels.<sup>2</sup>

*(2) Notwithstanding the provisions of paragraph 1 existing vessels may keep the structural arrangements covered by chapter V and XI of this Annex as well as equipment and arrangements covered by chapters II, IV, V, VI and VII of this Annex, provided that the structural arrangements and/or equipment and its arrangements have been pursuant to older rules, is maintained and it has not been altered in any way by 1 January 2004 or later. In case of any repairs, alterations and modifications of a major character following the entry into force of the Regulation comprising such structural arrangements and/or equipment and its arrangements, the relevant provisions of this Regulation shall apply, in particular the provisions of regulation 5.*

Regulation 2

Definitions

*The following definitions apply in addition to the definitions specified in Article 2 of the Regulation:*

- (1) "New vessel" is a vessel to which the following applies:
- (A) *Vessels of 24 m in length and over:*
    - (a) the building or major conversion contract has been placed on or after 1 January 2000; or
    - (b) the building or major conversion contract has been placed before 1 January 2000, and which is delivered 1 January 2002 or later; or
    - (c) in the absence of a building contract, on or after 1 January 2000:
      - (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.<sup>(1)</sup>
  - (B) *Fishing vessel of less than 24 m:*
    - (a) the building or major conversion contract is placed on or after 1 January 2004; or
    - (b) the building or major conversion contract has been placed before 1 January 2004, and which is delivered 1 January 2007 or later; or
    - (c) in the absence of a building contract 1 January 2004 or later:
      - (i) the keel is laid; or
      - (ii) construction identifiable with a specific vessel begins; or

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<sup>2</sup> A part of this paragraph is a specific Icelandic provision.

(iii) assembly has commenced comprising at least 50 tonnes or 1% of the estimated mass of all structural material, whichever is less.<sup>3</sup>

- (2) "Existing vessel" is a fishing vessel which is not a new vessel.
- (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 draught.
- (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:

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<sup>3</sup> A part of this paragraph is a specific Icelandic provision.

- (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 the 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 0.04 B.
- (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 *in a new vessel*:

- (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 0.05L and not more than 0.05L plus 1.35 m for vessels of less than 45 m in length;
  - (iii) in no case less than 2.0 m *for vessels of 24 m in length and over and not less than 1.0 m for vessels of less than 24 m in length*;
- (b) Where any part of the underwater body extends forward of the forward perpendicular, e.g. a bulbous bow, the distance stipulated in subparagraph (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 sup-paragraph (a).<sup>4</sup>

(23) *"operating" means catching or catching and processing fish, whales, seals, walrus or other living resources of the sea.*

(24) *"Organization" is the International Maritime Organization (IMO).*

(25) *"Administration" is The Icelandic Maritime Administration, unless expressly provided otherwise.*

(26) *"Member" is a state within the EEA Area or a state where the Torremolinos Protocol has entered into force.*

(27) *"Certificate" is the certificate of compliance specified in Regulation 7.*

(28) *"Recognized organization" is an organisation (classification society) recognized by the maritime administration in accordance with Article 4 of Council Directive 94/57/EC of 22 November 1994 on common rules and standards for ship inspection and survey organisations and for the relevant activities of maritime administrations.*

(29) *"Northern region" is a the waters north of the boundary as illustrated on the chart attached to Annex II of this Regulation, 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*

(30) *"Southern region" The Mediterranean sea and the coastal areas, within 20 miles from the Atlantic 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, as amended.*

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<sup>4</sup> A part of this paragraph is a specific European provision and partly Icelandic.

(31) "Heavy drift ice" is drift ice covering 8/10 or more of the sea surface.

(32) "European special provisions" is a special provision of the Torremolinos Protocol pursuant to Council Directive 97/70/EC or Council Directive 93/103/EEC when such a provision applies to vessels falling under the scope of the Torremolinos Protocol.

### 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 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 a vessel of 24 m in length and over and comes within the applicability of the Torremolinos Protocol any exemption under this regulation after the Protocol has entered into force, shall communicate to the Organization particulars of the same to the extent necessary to confirm that the level of safety is adequately maintained and the Organization shall circulate such particulars to the Parties for their information.<sup>5</sup>

### Regulation 4

#### Equivalent

(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, 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, if it is satisfied by trial thereof or otherwise that such fitting, material, appliance or apparatus, or type thereof, or provision, is at least as effective as that required by the present regulations.

(2) The Administration which so allows, in substitution, a fitting, material, appliance or apparatus, or type thereof, or provision, for a vessel of 24 m in length and over and comes within the applicability of the Torremolinos Protocol after the Protocol

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<sup>5</sup> A part of this paragraph is a specific Icelandic provision.

*has entered into force*, shall communicate to the Organization particulars thereof, together with a report on any trials made and the Organization shall circulate such particulars to other Parties for the information of their officers.<sup>6</sup>

#### 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) *Under repairs, alterations and modifications of a major character is understood, by way of example:*

(a) *any change that substantially alters the dimensions of a vessel.*

*Example - Lengthening by adding new midbody;*

(b) *any change that substantially increases the efficiency of a vessel and/or prolonging the vessel's service life.*

*Example - renewal of more than 50% of crew accommodations; renewal of propulsion machinery; renewal of wheelhouse; renewal of deck machinery and/or winch system; renewal of fish processing equipment; renewal of refrigeration systems for the preservation of the catch.<sup>7</sup>*

#### Regulation 6

##### Surveys.

(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

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<sup>6</sup> A part of this paragraph is a specific Icelandic provision.

<sup>7</sup> This paragraph is a specific Icelandic provision.



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. As provided for in Regulation 11 paragraph (1) the interval between surveys may be extended for one year provided the vessel has been surveyed internally or externally as far as is reasonable and practicable;
  - (ii) two years with regard to the shipboard marine equipment of the vessel referred to in Chapters II, III, IV, V and VI., VII and X; and
  - (iii) one year with regard to the radio installations, including those used in life-saving appliances, and the radio direction-finder of the vessel referred to in chapters VII, IX and X.

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 regulations 7 or 8 is extended as specified in regulation 11(2) or (4), the intervals of the survey 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 for vessels constructed of material other than wood and at intervals of one year 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.<sup>8</sup>
- (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.
- (e) *In addition to the periodical survey required in subparagraph (b)(ii) of this regulation, additional survey with regard to life-saving appliances and safety equipment at an interval of one year.*<sup>9</sup>
- (f) *Surveys prescribed by subparagraph (b)(i) may be carried out until three months before the anniversary date of 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 each anniversary date of the document of compliance.*<sup>10</sup>
- (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.
- (a.1) *Notwithstanding the provisions of paragraph (g) the Post and Telecommunication Administration is responsible for the inspection of*

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<sup>8</sup> A part of this paragraph is a specific European provision and partly Icelandic.

<sup>9</sup> This paragraph is a specific Icelandic provision.

<sup>10</sup> This paragraph is a specific Icelandic provision.

*radio installations and issues licences for the use of telecommunications apparatus. The Post and Telecommunication Administration may entrust the inspections and surveys of radio installations to parties, provided that they fulfil the requirements set by the Ministry of Transport, Telecommunications and Tourism regarding education and training as well as requirements on necessary equipment. After that inspection a safety certificate for the radio installations shall be issued which is valid for 12 months. However, the validity may be 14 months if the inspection takes place two months before the prescribed time limits.<sup>11</sup>*

- (b) An Administration nominating surveyors or recognizing organizations to conduct inspections and surveys as set forth in paragraph (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.
  - (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 or 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.
  - (d) In every case the Administration concerned fully guarantees the completeness and efficiency of the survey and the inspection. Furthermore, the Administration 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 master 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

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<sup>11</sup> This paragraph is a specific Icelandic provision.

State and the nominated surveyor or recognized organization shall ascertain that such a report has been made.<sup>12</sup>

#### Regulation 7

##### Issue or endorsement of certificates

- (1)
  - (a) A certificate of compliance shall be issued after survey to a vessel which complies with the applicable requirements of this Annex.
  - (b) When an exemption is granted to a vessel under, and in accordance with, the provisions of this Annex, an exemption certificate shall be issued in addition to the certificate prescribed in subparagraph (a).
  - (c) *A special inspection document shall be issued and additional survey, as required in regulation 6 (e)(i), to a vessel which complies with the applicable requirements of this Annex shall be entered into the document.*<sup>13</sup>

(2) The Certificates referred to in paragraph (1) shall be issued or endorsed either by the Administration or organization duly authorized by the Administration. *This shall be carried out for vessels of 24 m in length and over after an initial survey by a surveyor who works solely for the Administration, recognized organization or the authorities of an other party, empowered by the Administration to conduct surveys pursuant to regulation 24 (6)(a).* In every case, the Administration shall assume full responsibility for the issuance of the certificates.<sup>14</sup>

#### 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. If satisfied that the requirements of this Annex are complied with, a Party 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 the 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 Annex V to the Directive*. The text in the certificate and the record shall be in Icelandic with a translation into English. *The Administration may, however, allow the text to be in English only.*<sup>15</sup>

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<sup>12</sup> On the investigation of marine casualties Act No. 68/2000 applies. Pursuant to Article 6 of the Act, if the skipper, the owner, the Mandatory Ship Reporting System of Icelandic Ships, the Icelandic Coast Guard, police authorities or other parties become aware of this they must report and ensure that the Commission of Enquiry into Accidents at Sea is properly informed of the accident.

<sup>13</sup> This paragraph is a specific Icelandic provision.

<sup>14</sup> A part of this paragraph is a specific European provision.

<sup>15</sup> A part of this regulation is a specific Icelandic provision.

Regulation 10  
Availability of certificates

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

Regulation 11  
Duration and validity of certificates

(1) A certificate of compliance 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 exemption certificate shall not be valid longer than the period of validity of the certificate of compliance.

(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 regulations 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.

*Regulation 12<sup>16</sup>*  
Notifications on newbuildings, drawings and other documents

*(1) Every new building of a vessel intended to be registered on the Icelandic Register of Ships shall be reported to the Administration in accordance with the provisions of the Registration of Ships Act No. 115/1985, as amended, as soon as a building contract has been signed. The notifications shall be written on a form provided by the Administration.*

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<sup>16</sup> This regulation is a specific Icelandic provision.

(2) Drawings and other data relating to a newbuilding, conversion or repair of vessels shall be submitted to the Administration for approval in accordance with the list in Annex III to this Regulation.

(3) The Administration shall immediately be notified if a building contract or contract alteration is denounced, with the result that the vessel in question will not be registered on the Icelandic Register of Ships. Additionally the Administration and a recognized organization, empowered by the Administration to conduct surveys pursuant to regulation 6 (1)(a), shall be notified on all alterations made on the design of the vessel.

*Regulation 13<sup>17</sup>*  
Request for survey

(1) The owner of a vessel, operator or skipper shall submit a request for a survey to the Administration with a suitable notice prior to the survey. The survey request must be in writing stating which particular survey is requested as well as the time and place of the survey.

(2) Before the initial survey of the newbuilding or an existing vessel, which is purchased or leased from abroad for registration on the Icelandic Register of Ships, takes place, drawings and other documents shall be submitted to the Administration for approval in accordance with the list in Annex III to this Regulation, as appropriate. If a vessel is classified by a recognized organisation its rules are considered sufficient regarding drawings relating to items covered by the classification.

(3) The owner of a vessel, operator and skipper, and any other person acting on their behalf, must provide an inspector with all necessary assistance in connection with the survey and submit all necessary information on the vessel as may be called for and can be provided.

*Regulation 14<sup>18</sup>*  
Survey reports

Survey reports relating to surveys in connection with the issue or endorsement of the certificate, issued under regulation 7 or 8, and relating to other surveys pursuant to these regulations, shall be readily available on board for examination at all times. Such reports shall be kept available on board the vessel, at least until the certificate has been renewed.

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<sup>17</sup> This regulation is a specific Icelandic provision.

<sup>18</sup> This regulation is a specific Icelandic provision.

## 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. To fulfil the provisions of this paragraph the following shall apply:*

*In addition to the requirements provided for in these regulations vessels shall be designed and maintained in accordance with the regulations of a recognized organization. Furthermore, vessels shall be maintained in accordance with the rules of a recognized organization or Icelandic rules considered equivalent.<sup>19</sup>*

*In determining the scantlings the draught, which is the same as the depth as defined in regulation 2 of Chapter I shall be used.<sup>20</sup>*

(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.

(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. 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 *and, if appropriate, asdic equipment spaces*. Such bulkheads shall be extended up to the working deck. *The area of the spaces containing asdic equipment must not be larger than necessary to service the equipment*. In vessels constructed of wood such bulkheads, which as far as practicable shall be watertight, shall also be fitted.<sup>21</sup>

(4) *In new vessels* 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. *In new and existing vessels* no door, manhole, ventilation duct or any other opening shall be fitted in the collision bulkhead below the working deck.<sup>22</sup>

(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.<sup>23</sup>

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<sup>19</sup> Regarding Icelandic rules considered comparable, reference is made to the following rules or regulations as far as they may apply:

.1 Rules No. 327/1977, *cf.* No. 481/1989 and No. 521/1984 on the construction of fishing vessels of less than 50 m in length constructed of steel. (Only for vessels constructed before 1 January 2004);

.2 Rules on the construction of wooden vessels No. 28/1977 and No. 516/1979 (Only for vessels constructed before 1 January 2004); and

.3 Rules on Electric Energy and Wiring No. 260/1947, *cf.* No. 159/1967 (Only for vessels constructed before 1 January 2004).

<sup>20</sup> A part of this paragraph is a specific European provision and partly Icelandic.

<sup>21</sup> A part of this paragraph is a specific Icelandic provision.

<sup>22</sup> A part of this paragraph is a specific Icelandic provision.

<sup>23</sup> A part of this paragraph is a specific Icelandic provision.

(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.

(7) *In new* 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 *and in a new vessel shall comply with the rules of a recognized organization*. Watertight doors shall be of an equivalent strength to the adjacent unpierced structure.<sup>24</sup>

(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. They 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 *new* 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 vessels; 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. *Exemptions from the provisions of paragraph (a) shall be subject to the procedure of Article 4 of the Directive.*<sup>25</sup>

(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 and in *new* 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) Equipment, such as *indicator lights*, shall be at remote operating positions *and in the wheelhouse* when a sliding door is open or closed.<sup>26</sup>

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<sup>24</sup> A part of this paragraph is a specific European provision.

<sup>25</sup> A part of this paragraph is a specific European provision.

<sup>26</sup> A part of this paragraph is a specific Icelandic provision.

### 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. *The strength of wood hatchway covers shall be as specified in paragraph 2 of regulation 6.*<sup>27</sup>

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<sup>27</sup> A part of this paragraph is a specific Icelandic provision.



(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 of the International Convention on Load Lines 1966.*<sup>28 29</sup>

#### 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<sup>2</sup> for vessels of *less than* 24 m in length;
- (b) 17.0 kN/m<sup>2</sup> 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).

(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.

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<sup>28</sup> The International Convention on Load Lines of 1966, concluded by the International Conference on Load Lines on 5 April 1966 and adopted by the International Maritime Organization with resolution A.133(V) on 25 October 1967.

<sup>29</sup> A part of this paragraph is a specific European provision.

(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.

#### 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. *In new vessels 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.*<sup>30</sup>

(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.

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<sup>30</sup> A part of this paragraph is a specific European provision.

## 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) *In new vessels* 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. *Where readings are made on a sounding device, clear markings shall be provided as to the names of the spaces where liquid level is to be measured.*<sup>31</sup>

## 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.
- (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 1000 mm above the deepest operating waterline shall be of the fixed type.
- (4) *In new vessels*, sidescuttles, together with their glasses and deadlights shall be of an approved construction.<sup>32</sup> Those prone to be damaged by fishing gear shall be suitably protected.
- (5) *In new vessels*, toughened safety glass or its equivalent shall be used for the wheelhouse windows

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<sup>31</sup> A part of this paragraph is a specific Icelandic provision.

<sup>32</sup> Windows and sidescuttles, including material and glass, shall fulfil the requirement of an internationally recognized technical standard, e.g. British Standard BS MA 24 "Ship side scuttles" or BS MA 25 "Ship windows".

(6) The Administration 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. The rules of a recognised organization based upon the relevant ISO standards shall be applied.<sup>33</sup>

### Regulation 13

#### Inlets and discharges

(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.

(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. The Administration may, however, in spaces other than machinery spaces of vessels constructed of material other than steel 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 m, 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:

$$(a) A = K \times l$$

where  $K = 0.07$  l for vessels of 24 m in length and over; and

$K = 0.05$  l for vessels of 12 m in length.

For lengths between 12 m and 24 m the value of K shall be determined by linear interpolation.

(l need not be taken as greater than 0.7 L).

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

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<sup>33</sup> A part of this paragraph is a specific European provision.

(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) 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). This is, however, subject to the approval of the Administration.

(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. The space between the bars shall not be more than 230 mm nor less than 150 mm. Instead of bars freeing ports may be provided with other suitable protective arrangements. Freeing port covers, if fitted, shall be of approved construction.

(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

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 in accordance with the provisions of Annex IV, recommended practice for anchor and mooring equipment. In addition to these provisions such equipment must comply with the rules of a recognised organisation.*<sup>34</sup>

## Regulation 16<sup>35</sup>

### Enclosed working deck (production deck and winch spaces)

#### (1) *Drainage system*

*In vessels built January 1 2004 and later, production decks shall be provided with an effective bilge system having a capacity sufficient to remove production and washing water as well as water that may enter the vessel through openings in the vessel's sides or stern or in the side plating or deckhead. Such bilge systems shall be arranged as follows:*

#### (a) *Bilge sumps*

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<sup>34</sup> A part of this regulation is a specific European provision and partly Icelandic.

<sup>35</sup> A part of this regulation is a specific European provision and partly Icelandic.

*Drainage shall be ensured by separate pumps in bilge sumps located inboard at the lowest point of the deck. Where the length of the space exceeds nine m, bilge sumps shall be arranged in the forward and after edge of the space. Where the breadth of the space exceeds half the vessel's breadth (B/2), bilge pumps shall correspondingly be arranged on both sides of the space. In spaces of autoline vessels where line reels are located, a bilge sump shall be arranged with a pump at the forward edge of the space by the line washing point. If the space exceeds nine m, it shall be provided with two bilge sumps.*

*The volume (V) of each bilge sump in litres shall be at least:*

$$V = 0.5 A_s l B$$

*where:*

*A<sub>s</sub> = area of drag hatches (and any other similar hatches) or stern hatches in m<sup>2</sup>*

*l = length of space in m*

*B = breadth of vessel in m*

*V shall be not less than 150 litres. The depth of each bilge sump shall be at least 0.35 m. The bilge sumps shall be so designed and arranged as to ensure effective drainage of waste water and a suction side that is not fouled by hooks, fish offal, etc. On enclosed working decks a level alarm connected to the wheelhouse shall be arranged. The alarm shall be activated when the bilge sumps on deck are full.*

*(b) Stand alone bilge-pump:*

*Drainage shall be ensured by separate pumps in each bilge sump as required in paragraph (a).*

*The capacity of each pump in such bilge sumps, Q in m<sup>3</sup>/h shall at least be the greater of the following:*

*(i)  $Q = 4 B A_s$*

*where:*

*B = breadth of vessel in m*

*A<sub>s</sub> = area of drag hatches (and any other similar hatches) or stern hatches in m<sup>2</sup>*

*(ii) 1.25 x maximum wash water capacity in the working space.*

*The bilge pumps shall be fitted with manual start and stop controls. Each pump shall be capable of being started and stopped locally. The bilge pumps shall be so designed as to enable fish offal to be pumped overboard together with the bilge water. Overboard outlets shall be in accordance with paragraph (c).*

- (c) *Overboard outlets (overboard scuppers on sides) from bilge pumps:*  
 Openings for drainage by pumps from bilge pumps, pounds, etc. shall be provided with a flap valve capable of being closed and operated from an easily accessible position (about 1.5 m above deck). The outboard end or alternatively the top of the pipe coil shall be arranged 0.02 L or at least 700 mm above the deepest operating waterline. When pipes are fitted between the vessel's side skin and overboard outlets, these pipes shall at least be of the same gauge as the shell plating.
- (d) *Fish offal chutes:*  
 The inboard end of chutes for fish offal disposal shall be located at least 700 mm above the deepest operating waterline. The inboard end shall be fitted with a weathertight cover with means enabling a crew member to close them quickly and effectively. The cover shall be marked in accordance with sub-paragraph (j). The outboard end shall be fitted with a flap capable of being closed and operated (locally) from a position about 1.5 m above the deck in vessels of 45 m in length and over but above the superstructure deck in vessels of less than 45 m in length. The arrangement shall as far as practicable be self-cleaning and easily accessible for maintenance and inspection.
- (e) *Bilge flaps:*  
 In addition to the drainage arrangement referred to in paragraph (1)(d), bilge sumps may be permitted to be fitted with bilge flaps leading water directly overboard from bilge sumps on enclosed working decks if there is a need for such an arrangement. In such cases, the freeboard measured from the lowest point of the working deck shall be not less than 350 mm. Such bilge flaps shall be kept to a minimum in terms of both their number and size and shall be fitted into the hull to avoid damage. The bilge flaps shall be so designed as to be self-cleaning and provided with adequate seal faces. The bilge flaps shall be easily accessible for cleaning and inspection. They shall be capable of being closed by manual operation (locally) from a place about 1.5 m above the deck. Additionally each bilge flap shall be capable of being closed by remote operation from the wheelhouse. A panel in the wheelhouse shall indicate which bilge flaps are open or closed.
- (f) *Freeing ports:*  
 As an alternative to the drainage arrangement referred to in paragraph a and b, ordinary freeing port openings without flaps or with easily movable flaps hinged by their upper edge and which cannot be locked may be permitted on enclosed decks. The freeboard, measured from the lowest point of the working deck, shall be not less than 500 mm. When calculating a vessel's stability the space within the freeing ports shall not be included in the vessel's buoyancy. For freeing port area requirements, refer to the provisions of regulation 14.
- (g) *Means of closure for inner openings from parts of the enclosed deck within fishing hatches and other outer openings in the vessel's side and stern to spaces below deck or to an enclosed superstructure, which is fully included in the buoyancy when calculating stability shall be in accordance with regulation 4. The means of closure shall be kept closed when not used for entry. The means of closure that separate the forward and after parts of the enclosed working deck*

*shall be monitored from the wheelhouse by means of closed-circuit television, delayed alarm or indicator lights showing whether the openings are open or closed.*

*(2) Side and stern hatches*

*In new and existing vessels outer openings are not allowed unless they are necessary for fishing operations. All such openings shall be provided with means enabling a crew member to close them quickly and effectively. Side and stern hatches shall be arranged as follows:*

- (a) The number and size of hatches shall be limited to what is absolutely necessary.*
- (b) The lower edge of hatch openings shall normally be positioned not lower than one metre above the working deck.*
- (c) Their means of closure shall at least have the same strength as the vessel's side skin and the hatches shall be capable of being closed weathertight.*
- (d) The power-operated equipment for opening and closure shall be capable of being operated locally and remote-operated from an operating panel in the wheelhouse. Additionally each bilge hatch shall be capable of being closed manually by one person without the use of any tools.*
- (e) In ships built 1 January 2004 or later hatches shall also be capable of being closed from an operating panel in the wheelhouse under a dead ship condition (in this connection the vessel's emergency source of power is considered to be operative insofar as the system's capacity is sufficient to meet all other emergency power supply requirements pursuant to regulation 17 (2) of Chapter IV).*
- (f) The hatches shall be operative at all times without any kind of preparation. The effectiveness of the equipment shall not be hampered by objects such as nets, line reels, etc. Hatch equipment may not be "locked" in the open position by cordage or similar objects.*
- (g) Each hatch shall be capable of being closed within 25 seconds.*
- (h) Good visual monitoring of hatch areas from the operating panel in the wheelhouse shall be ensured, for instance by means of closed-circuit television system.*
- (i) Audible and visual alarms shall be arranged at the hatches, immediately activated when the hatches are set in motion. In addition, a panel on the bridge shall indicate whether the hatch is open or closed. When the hatch is open a red light is visible and a green light when the hatch is closed and and battened down.*
- (j) The hatches shall be clearly marked by signs with the following text: "At sea this hatch shall never be kept open except during fishing operations. Never leave the hatch unattended while in the open position".*



(k) *Hatches on vessels with freeing ports pursuant to paragraph e(1) are subject to the approval of the Administration in every case.*

(3) *Winch spaces*

*In vessels built January 1 2004 and later, trawl winch spaces beneath the trawl deck and which are intended to be kept open at sea, shall be provided with an effective bilge system having a capacity sufficient to remove production and washing water as well as water that may enter the vessel through wire openings on the deck above. Such bilge systems shall be arranged as provided for in paragraph (1)(a), (b) and (c). Means of closure for inner openings to the winch spaces shall fulfil the provisions of paragraph (1)(g). Wire openings shall be capable of being closed when a wire is not leading through the opening. Wire opening hatches shall be arranged as follows:*

(a) *The number and size of hatches shall be limited to what is absolutely necessary.*

(b) *Their means of closure shall at least have the same strength as the vessel's side skin and the hatches shall be capable of being closed weathertight.*

(c) *Each hatch shall be capable of being closed manually by one person without the use of any tools.*

*Electrical installations are prohibited in winch spaces if their malfunction can cause power outage in winches.*

*Steering gear is prohibited in these trawl winch spaces.*

(4) *Spaces for processing fish*

(a) *In the event that the catch is brought into such spaces for handling or processing, the catch shall be placed in a pound. Such pounds shall comply with the requirements of regulation 11 in Chapter III. An efficient drainage system shall be fitted. In new vessels means shall be provided for effective protection against unintended ingress of water to the deck on which the pound is located.*

(b) *There shall be at least two exits from such spaces for processing fish.*

(c) *The clear headroom in the working space shall at all points be not less than two m*

(d) *A ventilation system shall be arranged ensuring at least six exchanges of air per hour.*

*Regulation 17<sup>36</sup>*

*Draught marks*

(1) *In new vessels draught marks shall be placed on each side and stem and stern at an interval of 0.10 m. Numbers and letters shall be in accordance with to ISO standard 3098/2 - 2000.*

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

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<sup>36</sup> A part of this regulation is a specific European provision and partly Icelandic.

*Regulation 18<sup>37</sup>*

Refrigerated seawater tanks (RSW or CSW tanks)

(1) *Where refrigerated seawater tanks or comparable tanks are fitted they shall be equipped with fixed system to enable them to be filled and emptied easily and that the system is separated from other on board systems.*

(2) *If such tanks are to be used for carrying dry cargo the tanks shall be fitted with a bilge system and satisfactory equipment to prevent water from flowing from the bilge system to the tanks.*

*Regulation 19<sup>38</sup>*

Spaces for ASDIC equipment

(1) *Openings to spaces for ASDIC equipment shall be fitted with covers permanently attached thereto and capable of being closed watertight and of strength equivalent to the adjacent structures. Such covers shall always be kept closed and battened down when the vessel is at sea. A suitable alarm device shall be connected to such covers and shall initiate an audible and visual alarm in the wheelhouse when the cover is open.*

(2) *Bilges in ASDIC 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 wheelhouse.*

*Regulation 20<sup>39</sup>*

Protection against flooding

1) Bilge sumps by the after bulkhead of the fish-holds or on the after bulkhead itself around 20 cm from the bottom of the hold 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. This provision does not, however, apply to fishing vessels fitted with cargo tanks, such as capelin and herring fishing vessels.

2) Bilges in machinery spaces forward and aft 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.

3) The controls of any valve serving a sea inlet, a discharge below the waterline or a bilge injection system shall be accessible.

4) The functionality of the high level alarm shall be verified at a periodical annual survey.

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<sup>37</sup> This regulation is a specific European provision.

<sup>38</sup> This regulation is a specific Icelandic provision.

<sup>39</sup> This regulation is a specific Icelandic provision.

## CHAPTER III – STABILITY AND ASSOCIATED SEAWORTHINESS

### 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 pursuant to the Code on Intact Stability for all types of ships.*<sup>40</sup> *The same database shall be used to calculate stability and tonnage.*<sup>41</sup>

### Regulation 2

#### Stability criteria

(1) The following minimum stability criteria shall be met unless the Administration is satisfied that operating experience justifies departures therefrom. *Any departure from the required minimum stability criteria allowed by the Administration for a vessel constructed on 1 January 2003 or later and which is 24 m in length and over shall be subject to the procedure in Article 4 of the Directive.*<sup>42</sup>

- (a) The area under the righting lever curve (GZ curve) shall not be less than 0.055 metre-radians up to 30° angle of heel and not less than 0.090 metre-radians up to 40° or the angle of flooding  $\theta$  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  $\theta$ , if this angle is less than 40° shall not be less than 0.030 metre-radians.  $\theta$  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°. *In vessels of less than 24 m in length, the righting lever may be less but the decrease may never be less than 2(24-L)%.*
- (c) The maximum righting lever GZ<sub>max</sub> shall occur at an angle of heel preferably exceeding 30° but not less than 25°.
- (d) The initial metacentric height GM shall not be less than 350 mm for single deck vessels. In vessels with icing according to the provisions of regulation 8 metacentric height may be reduced to the satisfaction of the Administration but not less than 300 mm. *In vessels with complete superstructure less metacentric height may be allowed by the Administration but in no case shall it be less than 150 mm. Reduction allowed by the Administration in the required metacentric height for a vessel 24 m in length and over and constructed on or after 1 January 2003, shall be subject to the procedure in Article 4 of the Directive.*<sup>43</sup>

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<sup>40</sup> The Code on Intact Stability for all types of ships covered by IMO instruments and adopted by the International Maritime Organization with resolution A.749(18) 4 November 1993 as amended by resolution MSC.75(69).

<sup>41</sup> A part of this regulation is a specific European provision.

<sup>42</sup> 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 may be considered as equivalent to the stability criteria in regulation 2(1)(a) to (c). This equivalence can only be applied, subject to satisfaction of the Administration, for fishing vessels with a hull form which is similar to that of offshore supply vessels.

<sup>43</sup> A part of this paragraph is a specific European provision and partly Icelandic.

(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 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.*<sup>44</sup>

(4) *In loading condition (g), as defined in regulation 7 (1), vessels shall be fitted with ASDIC equipment, instead of fulfilling the stability criteria of regulation 2 (1), fulfil the following stability criteria:*

(a) *The area under the righting lever curve (GZ curve) shall not be less than 0.040 metre-radians up to 30° angle of heel.*

(b) *The initial metacentric height GM shall not be less than 0.35 m.*

*The initial metacentric height and the righting lever curve shall be corrected for the free surface effect of liquids in the ASDIC space relative to the maximum moment of inertia of the liquid surface. The volume of the space shall be calculated to the watertight bulkheads, the inner plane of the shell plating and the lower plane of the deck and/or the upper edge of the hatch coaming, respectively*<sup>45</sup>.

(5) *Notwithstanding the provisions of paragraph 1 the Administration may permit reduced stability criteria for a vessel constructed before 5 December 1975, provided that such a vessel has not been purchased or chartered from abroad for Icelandic registration after the entry into force of these regulations. However, the following minimum requirements apply to the stability of such vessels:*

(a) *The area under the righting lever curve (GZ curve) shall not be less than 0.040 metre-radians up to 30° angle of heel in the operating conditions referred to in regulation 7.*

(b) *The initial metacentric height GM shall not be less than 350 mm for single deck vessels in the operating conditions referred to in regulation 7. In vessels with icing according to the provisions of regulation 8 metacentric height may be reduced to the satisfaction of the Administration but not less than 300 mm. In vessels with complete superstructure, less metacentric height may be allowed by the Administration but in no case shall it be less than 150 mm.*<sup>46</sup>

(6) *A vessel constructed before 5 December 1975 may not be altered unless the stability increases after the alteration from what it was before the alteration. However, the vessel is not required to fulfil the stability criteria exceeding the requirements provided for in paragraph (1). In case of changes to the hull of a vessel affecting the hydrostatic curves or crosscurves the changes are not permitted unless stability after*

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<sup>44</sup> A part of this paragraph is a specific European provision.

<sup>45</sup> This paragraph is a specific Icelandic provision.

<sup>46</sup> This paragraph is a specific Icelandic provision.

*the changes meets the stability criteria specified in paragraph (1) in all loading conditions.*<sup>47</sup>

### Regulation 3

#### Flooding of fish-holds

In new vessels, 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

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.

*Vessels engaged in beam trawling shall comply with the following increased stability criteria:*

- (a) The criteria for the area under the righting lever and for the righting lever as given in regulation 2 (1)(a) and (b) shall be increased by 20%;*
- (b) The metacentric height shall not be less than 500 mm;*
- (c) The criteria as given under (a) shall be applicable only to vessels with an installed propulsion power not exceeding the value in kilowatts (kW) as given in the following formulas:*  
$$N = 0.6 L_s^2 \text{ for vessels with a length of 35 m or less; and}$$
$$N = 0.7 L_s^2 \text{ for vessels with a length of 37 m and over.}$$

*At intermediate length of the vessel the coefficient for  $L_s$  has to be obtained by interpolation in between 0.6 and 0.7.*

*$L_s$  is the overall length according to the Tonnage Certificate.*

*If the installed propulsion power exceeds the values for the standard propulsion power as given in the above formulas the criteria shall be increased directly proportional to the higher propulsion power.*

*The Administration shall be satisfied that the above increased stability criteria for beam trawlers are met in the operating conditions mentioned under regulation 7(1) of this chapter.*

*For the calculation of the stability, the beams shall be assumed to be hoisted up to an angle of 45° with the horizontal.*<sup>48</sup>

### Regulation 5

#### Severe wind and rolling

*Vessels built 1 January 2003 or later, and are 24 m in length and over, 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*

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<sup>47</sup> This paragraph is a specific Icelandic provision.

<sup>48</sup> A part of this regulation is a specific European provision.

carried out in accordance with the IMO Code on Intact Stability for all Types of Ships.<sup>49</sup>

#### Regulation 6

##### Water on deck

Vessels built 1 January 2003 or later, and are 24 m in length and over, 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.<sup>50) 51</sup>

#### 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:

- (a) departure for the fishing grounds with full fuel, stores, ice, fishing gear, etc.;
- (b) upon leaving a fishing ground with fishing gear, no catch and 30% stores, fuel, etc.<sup>17)</sup>
- (c) arrival at home port with full catch and 10% stores, fuel, etc.;
- (d) arrival at home port with 10% stores, fuel, etc. and a minimum catch which shall normally be 20% of full catch but may be up to 40% provided the Administration is satisfied that operating patterns justify such a value.
- (e) for vessels operating in the Northern region or other sea areas where ice accretion is likely to occur: loading conditions (b), (c) or (d), which produce the lowest values of the stability parameters contained in regulation 2, ice accretion according to the provisions of regulation 8 shall be expected.<sup>52</sup>
- (f) for purse seiners operating in the Northern region or other sea areas where ice accretion is likely to occur: upon leaving a fishing ground with fishing gear, no catch and 30% stores, fuel, etc., with ice accretion in accordance with the provisions of regulation 8.<sup>53</sup>
- (g) for vessels fitted with ASDIC equipment: vessels with full catch and 100% of provisions, etc. and ASDIC spaces filled with sea water.<sup>54</sup>

(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. The Administration shall also be satisfied 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.

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<sup>49</sup> A part of this regulation is a specific European provision and partly Icelandic.

<sup>50</sup> See the Guidance on a Method of Calculation of the Effect of Water on Deck contained in recommendation 1 of attachment 3 to the Final Act of the Conference.

<sup>51</sup> A part of this paragraph is a specific Icelandic provision.

<sup>52</sup> This paragraph is a specific European provision.

<sup>53</sup> This paragraph is a specific European provision.

<sup>54</sup> This paragraph is a specific Icelandic provision.-

(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 (1)(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

*Notwithstanding the guidelines of recommendation 2<sup>55</sup> the Administration is not allowed to provide for lower values for ice accretion than those specified below.<sup>56</sup>*

(1) For vessels operating in areas where ice accretion is likely to occur the following icing allowance shall be made in the stability calculations:

- (a) 30 kg/m<sup>2</sup> on exposed weather decks and gangways;
- (b) 7.5 kg/m<sup>2</sup> 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%.

*(1a) For a vessel operating in the Northern region or in other sea areas where ice accretion is likely to occur, the following applies:*

*The requirements of this regulation and the specific guidance given in recommendation No. 2 by the Torremolinos Conference, shall be applied within the region concerned, i.e. also outside the boundaries shown in the chart accompanying the said recommendations.*

*Notwithstanding the provisions of paragraph (1) (a) and (b) the stability calculations for ships operating in an area north of latitude 63°N, between meridians 28°W and 11°W allow for ice accretion as follows:*

- (a) 40 kg/m<sup>2</sup> on exposed weather decks and gangways;*
- (b) 10 kg/m<sup>2</sup> for projected lateral area of each side of the vessel above the water plane.<sup>57</sup>*

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<sup>55</sup> For sea areas where ice accretion may occur and modifications of the icing allowance are suggested, see the Guidance Relating to Ice Accretion contained in recommendation 2 of attachment 3 to the Final Act of the Conference.

<sup>56</sup> This sentence is a specific Icelandic provision.

<sup>57</sup> A part of this paragraph is a specific European provision.

(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. *To fulfil this provision vessels shall be fitted with ice axes as follows:*
  - (i) 10 ice axes in vessels 45 m in length and over;
  - (ii) 8 ice axes in vessels of less than 45 m in length.<sup>58</sup>

#### 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.

(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 vessels stability margins, be reinclined 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 that 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.

(4) *The inclining test and determination of conditions required by paragraph (1) shall be performed at least every 10 years.*<sup>59</sup>

#### 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. 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 booklet shall be sent to the Administration for approval.*<sup>60</sup> *In vessels of 24 m in length and over the information shall also be in English. In new vessels, and vessel where the stability booklet is renewed, the information shall be in Icelandic. In vessels of 24 m in length and over the information shall also be in English. The stability information shall be according to IMO's MSC/Circ. 920.*

(2) 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. *In new vessels, and vessels where the stability information is revised, the information shall be in Icelandic. In vessels of 24 m in length and over the table of summary shall also be in English. When special actions*

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<sup>58</sup> A part of this paragraph is a specific Icelandic provision.

<sup>59</sup> A part of this regulation is a specific European provision.

<sup>60</sup> See the Code of Practice concerning the Accuracy of Stability Information for Fishing Vessels adopted by the Organization by resolution A.267(VIII).



*are required to maintain the stability of a vessel this shall be specified in the table of summary.*

(3) Where alterations are made to a vessel affecting its light ship condition the stability information shall be revised and communicated to the Administration for approval. If the Administration decides that the stability information be revised the new information shall be submitted to the skipper and the obsolete ones shall be removed.<sup>61</sup>

#### 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.<sup>62</sup>

#### Regulation 12

##### Bow height

The bow height shall be sufficient, to prevent the excessive shipping of water. *For new vessels operating in restricted areas not more than 10 miles from the coast, the minimum bow height shall be to the satisfaction of the Administration and be determined taking into account the seasonal weather conditions, the sea states in which the vessel will operate, the type of the vessel and its mode of operation.*

*For new vessels operating in all other areas:*

- (1) *Where, during the fishing operations, the catch has to be stowed into the fish holds via hatchways, which are situated on a 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 Torremolinos Protocol.*
- (2) *Where the catch has to be stowed into the fish holds via a hatchway, which is situated on an exposed working deck, protected by a deckhouse or superstructure, the minimum bow height shall be calculated in accordance with regulation 39 of Annex I of the International Load Line Convention 1966, but shall not be less than 2000 mm. In this respect the maximum permissible operating draught is to be regarded in place of the assigned summer freeboard.<sup>63</sup>*

#### Regulation 13

##### Maximum permissible operating draught

(1) *In a vessel constructed on 1 January 2004 or later 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.*

(2) *In a vessel constructed on 1 January 2004 or later the maximum permissible operating draught marks should be marked amidships on each side of the vessel. Deck*

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<sup>61</sup> A part of this regulation is a specific European provision and partly Icelandic.

<sup>62</sup> See appendix V of the Recommendation on Intact Stability of Fishing Vessels adopted by the Organization by resolution A.168(ES.IV) as amended by resolution A.268(VIII).

<sup>63</sup> A part of this regulation is a specific European provision.

*lines shall be placed amidships parallel with the main deck. These lines shall be horizontal, 300 mm in length and 25 mm in breadth. The letters I and H shall be placed above the load line. The height of the letters shall be around 115 mm in height and 75 mm in breadth. The location of the maximum permissible operating draught mark and the working deck line shall be indicated on one of the certificates of compliance of the vessel.*<sup>64</sup>

#### Regulation 14

##### Subdivision and damage stability

*New vessels of 100 m in length and over, where the total number of persons carried is 100 or more, shall be capable, to the satisfaction of the Administration, 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.<sup>65</sup> Calculations shall be made in accordance with the guidance as mentioned in the footnote.<sup>66</sup>*

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<sup>64</sup> This paragraph is a specific Icelandic provision.

<sup>65</sup> See the Guidance on Subdivision and Damage Stability contained in recommendation 5 of attachment 3 to the Final Act of the Conference.

<sup>66</sup> A part of this regulation is a specific European provision.

**CHAPTER IV**  
**MACHINERY AND ELECTRICAL INSTALLATIONS AND PERIODICALLY**  
**UNATTENDED MACHINERY SPACES**

**PART A - GENERAL**

Regulation 1

Scope

*Unless expressly provided otherwise, the provisions of the Chapter shall apply to new and existing fishing vessels.<sup>67</sup>*

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  $0.18 \text{ N/mm}^2$  ( $1.8 \text{ kg/cm}^2$ ).
- (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,

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<sup>67</sup> A part of this regulation is a specific European provision and partly Icelandic.

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 Provisions

Machinery installations:

(1) In *new vessels* the following equipment and systems shall be designed, constructed, tested and installed *according to the rules of a recognised organization*: Main propulsion, control, steam pipe, fuel oil, *high pressure pipes*, 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. *Furthermore, vessels shall be maintained in accordance with the rules of a recognized organization or Icelandic rules considered equivalent.*<sup>68</sup> 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. *Plastic piping shall not be used for any purpose in the machinery spaces where its destruction by fire would present a safety hazard.*<sup>69</sup>

(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. *In new vessels, the space between main engine and auxiliary machinery and main switchboard shall be at least 600 mm.* Such spaces shall be adequately ventilated.

(2a) *If the vessel's engines are solely controlled from the engine room they shall be controlled from a sound and temperature proof space separated from the engine room itself and accessible without walking through the engine room.*<sup>70</sup>

(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;

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<sup>68</sup> Regarding Icelandic rules considered comparable, reference is made to Rules on Electrical Energy and Wiring No. 28/1977 and 516/1979, as far as they may apply. (Only for vessels constructed before 1 January 2004).

<sup>69</sup> A part of this paragraph is a specific European provision and partly Icelandic.

<sup>70</sup> This paragraph is a specific European provision.

- 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° either way under static conditions and up to 22 ½° either way under dynamic conditions, i.e. when rolling either way and simultaneously pitching (inclined dynamically) up to 7½° 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 recognized organization*.<sup>71</sup> *However, it is permitted to maintain existing vessels in accordance with Icelandic rules which are considered equivalent.*<sup>72 73</sup>

Periodically unattended machinery spaces:

(8) Regulations 19 to 24 shall apply, in addition to regulations 3 to 18 and regulations V/1 to V/58, *as appropriate*, for vessels with periodically unattended machinery spaces.

(9) *In new vessels*, measures shall be taken to the satisfaction of the Administration to ensure that all equipment is functioning in a reliable manner in all operating

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<sup>71</sup> Reference is also made to the standardization proposals by the International Electrotechnical Commission, especially its publication No. 92 on ship borne electrical system.

<sup>72</sup> Regarding Icelandic rules considered comparable, reference is made to Rules on Electrical Energy and Wiring No. 28/1977 and 516/1979, as far as they may apply. (Only for vessels built before 1 January 2004).

<sup>73</sup> A part of this paragraph is a specific European provision.

<sup>74</sup> A part of this paragraph is a specific European provision.

<sup>75</sup> A part of this paragraph is a specific European provision.

conditions, including manoeuvring, and that arrangements *in accordance with the rules of a recognized organization* are made for regular inspections and routine tests to ensure continuous reliable operation. *Existing vessels shall fulfil these provisions, as far as practicable.*<sup>74</sup>

(10) Vessels shall be provided with documentary evidence to the satisfaction of the Administration of their fitness to operate with periodically unattended machinery spaces. *New vessels of 24 m in length and over, shall in this context fulfil the rules of a recognized organization.*<sup>75</sup>

## **PART B - MACHINERY INSTALLATIONS**

### **(See also regulation 3)**

#### 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) *In new vessels*, internal combustion engines of a cylinder diameter of 200 mm, or a crankcase volume of 0.6 m<sup>3</sup> and above shall be provided with crankcase explosion relief valves of a suitable type with sufficient relief area.<sup>76</sup>

(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) *In new vessels of 24 m in length and over*, the main propulsion machinery and auxiliary machinery shall be provided with automatic shut-off arrangements in the case of failures, *due to lubricating oil supply failure, cooling water temperature failure or overspeed* which could lead rapidly to damage, complete breakdown or explosion. In addition, 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.<sup>77</sup>

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<sup>76</sup> A part of this paragraph is a specific European provision.

<sup>77</sup> A part of this paragraph is a specific Icelandic provision.

Regulation 5  
Means of going astern<sup>78</sup>

- (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 any 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 new vessels such equipment shall be in accordance with the rules of a recognized organization.*<sup>79</sup>
- (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.
- (2a) *Every oil-fired steam boiler which is intended to operate without manual supervision shall have safety arrangements which shut off the fuel supply.*<sup>80</sup>
- (3) The Administration shall give special consideration to steam boiler installations and *unfired steam installations* to ensure that feed systems, monitoring devices, and safety provisions are adequate in all respects to ensure the safety of boilers, *unfired steam generators*, steam pressure vessels and steam piping arrangements.<sup>81</sup>

Regulation 7  
Communication between the wheelhouse and machinery space

*In new vessels*, two separate means of communication between the wheelhouse and the machinery space control platform shall be provided, one of which shall be an engine room telegraph. *In new vessels of less than 45 m in length, where the propulsion machinery is directly controlled from the wheelhouse, the administration may accept other means of communication. In new vessels of less than 24 m in length, only one means of communication may be accepted.*<sup>82</sup>

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

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<sup>78</sup> For new vessels of 24 m in length and over, reference is made to IMO resolution A.601(15) "Recommendation on the Provision and the Display of Manoeuvring Information on Board Ships".

<sup>79</sup> A part of this paragraph is a specific European provision and partly Icelandic.

<sup>80</sup> A part of this paragraph is a specific Icelandic provision.

<sup>81</sup> A part of this paragraph is a specific Icelandic provision.

<sup>82</sup> A part of this paragraph is a specific European provision and partly Icelandic.

- fully controllable from the wheelhouse.
- (b) *In new vessels*, the remote control referred to in sub-paragraph (a) shall be performed by means of a control *device which complies with the rules of a recognized organization* with, where necessary, means of preventing overload of the propulsion machinery.<sup>83</sup>
  - (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 sub-paragraph (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. *In new vessels of less than 45 m in length and in existing vessels 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.*<sup>84</sup>
  - (e) Indicators shall be fitted in the wheelhouse for:
    - (i) propeller *or main engine* speed and direction of rotation in the case of fixed pitch propellers;
    - (ii) propeller *or main engine* speed and pitch position in the case of controllable pitch propellers; and
    - (iii) advance alarm as required in regulation 4(5);<sup>85</sup>
  - (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) *In new vessels* 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.

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<sup>83</sup> A part of this paragraph is a specific European provision

<sup>84</sup> A part of this paragraph is a specific European provision.

<sup>85</sup> A part of this paragraph is a specific Icelandic provision.



## 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°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°C. Provided that the Administration may permit the general use of fuel oil having a flashpoint of not less than 43°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°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. *In new vessels, valves and taps on fuel oil pipes shall be in*

*accordance with the rules of a recognized organization.*<sup>86</sup>

(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 *or with a backflow piping to the oil tank in use*. Where fuel oil tanks are alternatively used as liquid ballast tanks, proper means shall be provided to isolate the fuel oil and ballast systems.<sup>87</sup>

(6) *In new vessels*, no oil tank shall be situated where spillage or leakage therefrom can constitute a hazard by falling on heated surfaces. In new vessels precautions shall be taken 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. However, restricted use of flexible pipes may be permitted. Such flexible pipes and end attachments shall be of adequate strength and shall, *in accordance with the rules of a recognized organization, be constructed of approved fire-resistant materials or have fire-resistant coatings. The coupling device for such a flexible pipe shall be in accordance with IMO circular MSC/Circ.647 - Guidance to minimize leaks from systems containing flammable liquids.*

(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. *In new vessels, fuel pipes of internal combustion engines shall be of steel or other equivalent material and preferably of a jacketed design. The number of joints in piping systems shall be kept to a minimum*<sup>88</sup>.

(8) In new vessels, 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. 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°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) *In new vessels*, the arrangements for the storage, distribution and use of oil employed in pressure lubrication systems shall *in accordance with the rules of a*

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<sup>86</sup> A part of this paragraph is a specific Icelandic provision.

<sup>87</sup> A part of this paragraph is a specific Icelandic provision.

<sup>88</sup> A part of this paragraph is a specific Icelandic provision.

*recognized organization*. 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 (2) and (4), where it is necessary, *in accordance with the rules of a recognized organization*. 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.<sup>89</sup>

(11) *In new vessels*, 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 recognized organization*. 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.<sup>90</sup>

(12) *In vessels, delivered on 1 January 1980 or later*, fuel oil, lubricating oil and other flammable oils shall not be carried in forepeak tanks.<sup>91</sup>

#### 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. *The capacity of the bilge pumps shall in no case be less than the capacity of the installed fire pumps.*
- (b) Power bilge pumps shall be capable of giving a speed of water of at least 2 m per second 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

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<sup>89</sup> A part of this paragraph is a specific European provision

<sup>90</sup> A part of this paragraph is a specific European provision

<sup>91</sup> A part of this paragraph is a specific Icelandic provision.

- length only one bilge pump need be provided with a *direct bilge suction*.
- (d) *In new and existing vessels of 24 m in length and over*, the inside diameter of bilge suction shall never be 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.<sup>92</sup>
- (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.<sup>93</sup>
- (5) *In new vessels*, 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) *In new vessels*, 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. 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

- (1) *General requirements.*  
Measures shall be taken to reduce the effects of noise upon personnel in machinery spaces. *Additionally, measures shall be taken to reduce noise in accommodation, control spaces and in working in places, as far as practicable.*
- (2) *Maximum noise levels.*  
(a) *In new vessels of 24 m in length and over, maximum noise levels shall be according to the provisions of IMO resolution A.468(XII).<sup>94</sup>*  
(a) *In new vessels of less than 24 m in length, the following maximum noise levels shall apply:*  
*Sleeping rooms, crew messroom and other crew accommodation 65 dB (A)*  
(b) *In existing vessels of 24 m in length and over built before 1 January 1986 or*

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<sup>92</sup> A part of this paragraph is a specific Icelandic provision.

<sup>93</sup> Reference is made to regulation II/16.

<sup>94</sup> Reference is made to IMO resolution A.468(XII) "The Code on Noise Levels on Board Ships".

later the following maximum noise levels shall apply:

<i>Machinery spaces with control room</i>	<i>110 dB (A)</i>
<i>Machinery spaces without control room</i>	<i>100 dB (A)</i>
<i>Control room in machinery spaces</i>	<i>80 dB (A)</i>
<i>Workshop</i>	<i>85 dB (A)</i>
<i>Wheelhouse</i>	<i>65 dB (A)</i>
<i>Bridge wing, when operating crane or winches</i>	<i>70 dB (A)</i>
<i>Sleeping rooms, crew messroom and other crew accommodation</i>	<i>70 dB (A)</i>
<i>Working deck</i>	<i>80 dB (A)</i>

(3) *Implementing measurements.*

*Noise level measurements shall be carried out after the building of a vessel or alteration of major character and after a vessels has been purchased or leased from abroad for Icelandic registration after the entry into force of this regulation. Also, noise level measurements may be carried out in other vessels if there is reason to believe that the noise level on board is above the maximum noise level specified in paragraph (2). Measurements shall be carried out in accordance with the guidance laid down in IMO resolution A.468(XII). If noise levels are above the maximum noise levels specified in paragraph (2) an octave band measurement shall be carried out. When measuring noise levels, approved measuring device shall be used.*

(4) *Personal ear protectors/alarm.*

*In spaces where noise levels are above 85 dB (A), approved personal ear protectors shall be used. The following safety inscription shall be placed on entrance doors to spaces where noise levels can reach more than 85 dB (A):*

**HAZARD  
HIGH NOISE LEVELS  
USE PERSONAL EAR PROTECTORS**

or comparable markings.<sup>95</sup>

**Regulation 13**

**Steering gear**

(1) Vessels shall be provided with a main steering gear and auxiliary means of activating the rudder. *In new vessels this equipment shall be in accordance with the rules of a recognized organization.* 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.<sup>96</sup>

(2) *In new vessels,* 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.

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<sup>95</sup> A part of this paragraph is a specific European provision and partly Icelandic.

<sup>96</sup> A part of this paragraph is a specific European provision

(4) *In new vessels and existing vessels of 24 m in length and over built 1 January 1978, in the event of failure of any of the steering gear units an alarm shall be given in the wheelhouse.*<sup>97</sup>

(5) *In new vessels and existing vessels of 45 m in length and over, the following applies:*

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.<sup>98</sup>

(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° on one side to 35° on the other side with the vessel running ahead at maximum service speed. *In new vessels*, the rudder shall be capable of being put over from 35° on either side to 30° on the other side in not more than 28 seconds, 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) *In new vessels*, the auxiliary means for actuating the rudder shall be capable of putting the rudder over from 15° on one side to 15° on the other side in not more than 60 seconds 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.*<sup>99</sup>

(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.

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<sup>97</sup> A part of this paragraph is a specific Icelandic provision.

<sup>98</sup> A part of this paragraph is a specific Icelandic provision.

<sup>99</sup> A part of this paragraph is a specific European provision.

Regulation 14  
Engineers' alarm

In new 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.

Regulation 15

Refrigeration systems for the preservation and processing 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 refrigerants held in quantities or concentrations, which are hazardous to human health or to the environment, and shall be to the satisfaction of the Administration. *In new vessels with refrigeration systems, where ammonia is used as the refrigerant, as well as in existing vessels where such new systems are being installed, refrigeration systems shall in addition to the provisions of this regulation together with annex V also comply with the rules of a recognized organization.*<sup>100 101</sup>
- (2) Refrigerants for use 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) *In new vessels*, 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) *In new vessels*, 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 *in new vessels* the space shall also be provided with an independent ventilation system.
- (b) *Spaces containing condensers, gas tanks and refrigerating machinery utilizing toxic refrigerants, such as ammonia, shall be provided with an independent water spray system.*<sup>102</sup>
- (c) In new vessels, 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.

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<sup>100</sup> A part of this paragraph is a specific Icelandic provision.

<sup>101</sup> Additionally, reference is made to Regulation No. 586/2002 on Ozone-depleting Substances.

<sup>102</sup> This paragraph is a specific Icelandic provision.

(5) *In new vessels*, alarms in refrigerating machinery spaces and refrigerating rooms 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 these 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. Where ammonia is used as the refrigerant, at least two sets of ammonia protective clothing complying with the rules of a recognized organization shall be carried.<sup>103</sup>

(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.

## **PART C - ELECTRICAL INSTALLATIONS.**

**(See also regulation 3)**

### Regulation 16

#### Main source of electrical power

- (1) (a) *In new vessels and existing vessels of 24 m in length and over* in which the electrical power is the only power for maintaining the auxiliary services essential for the propulsion and 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 recognized organization*, other arrangements having equivalent electrical capability may be accepted.<sup>104</sup>
- (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 m 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.*<sup>105</sup>
- (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) *In new vessels and existing vessels of 24 m in length and over*, where transformers constitute an essential part of the supply system required by

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<sup>103</sup> A part of this paragraph is a specific Icelandic provision.

<sup>104</sup> A part of this paragraph is a specific European provision

<sup>105</sup> A part of this paragraph is a specific European provision.



this paragraph, the system shall be so arranged as to ensure continuity of the supply.

(2) *In new vessels and existing vessels of 24 m in length and over built 1 January 1978 or later, the following applies:*

- (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) *In new vessels and existing vessels of 24 m in length and over built 1 January 1978 or later navigation lights, if solely electrical, shall be supplied through their own separate switchboard. Adequate means for the monitoring of such lights shall be provided.*<sup>106</sup>

#### Regulation 17

##### Emergency source of electrical power

(1) *In new vessels and existing vessels of 24 m in length and over, built 1 January 1978 or later, a self-contained emergency source of electrical power located, to the satisfaction of the Administration, outside the machinery spaces shall be provided and so arranged as to ensure its functioning in the event of fire or other causes of failure of the main electrical installations.*

(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 eight hours in new vessels of 45 m in length and over and at least three hours in existing vessels and new vessels of less than 45 m in length.*

- (a) The VHF radio installation required by regulation 6(1)(a) and (b), and if applicable:
  - (i) the MF radio installation required by regulation IX/8(1)(a) and (b) and 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 as well as the STK equipment;<sup>107</sup>
- (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-holds*, fish handling and fish processing spaces; and
- (d) the operation of the emergency fire pump, if any.<sup>108</sup>

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<sup>106</sup> A part of this paragraph is a specific European provision.

<sup>107</sup> The Icelandic Mandatory ship Reporting System.

(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 new vessels, and existing vessels of 24 m in length and over built 1 January 1978 or later*, 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 paragraphs (2)(b) and (c). *In new vessels* 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) *In new vessels, and existing vessels of 24 m in length and over built 1 January 1978 or later*, 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) *In new vessels and existing vessels of 24 m in length and over, the following applies:*

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 a 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.<sup>109</sup>

(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

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<sup>108</sup> A part of this paragraph is a specific European provision and partly Icelandic.

<sup>109</sup> A part of this paragraph is a specific European provision.

upright and when rolling up to an angle of  $22\frac{1}{2}^{\circ}$  either way and simultaneously pitching  $10^{\circ}$  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<sup>110</sup>

- (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 55 V direct current or 55 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) The hull return system of distribution shall be used for power, heating or lighting in vessels of 75 m in length and over.
- (b) The requirement of sub-paragraph (a) does not preclude, under conditions approved by the Administration, the use of:
- (i) impressed current cathodic protective systems;
  - (ii) limited and locally earthed systems; or
  - (iii) insulation level monitoring devices provided the circulation current does not exceed 30 mA under the most unfavourable conditions.
- (c) Where the hull return system is used, all final sub-circuits (all circuits fitted after the last protective device) shall be two wire and special precautions shall be taken to the satisfaction of the Administration.

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<sup>110</sup> Reference is made to regulation 23, "Precautions against shock, fire and other hazards of electric origin" in IMO resolution A.325(IX) "Recommendation concerning Regulations for Machinery and Electrical Installation in Passenger and Cargo Ships".

- (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. *In existing vessels it is permitted, in stead of having a device capable of continuously monitoring the insulation level to earth, to have a device for monitoring the insulation value of a system, which may be earth lamps equipped with a push button on an earth wire or voltage meter. If a device for monitoring the insulation level is used, one device may be used for more than one isolated system provided it is fitted with a switch for monitoring each system separately.*
- (b) *In new vessels*, where the distribution system is in accordance with subparagraph (a) and a voltage exceeding 55 V direct current or 55 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 sub-paragraph (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.
- (c) Cables and wiring serving essential for 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 shall 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) *In new vessels*, 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 considerations 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. Other equipment which treats flammable liquids automatically, e.g. oil fuel purifiers, which, whenever practicable,

shall be installed in a special space reserved for purifiers and their heaters, shall have arrangements to prevent overflow spillages.

(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 2500 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.<sup>111</sup>

(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., shall be to the satisfaction of the Administration.

## 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

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<sup>111</sup> Reference is made to recommendation 6 of the Torremolinos Protocol on "Guidance for Precautions Against Freezing of Fire Mains".

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.

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 m in length the Administration may permit the system to be capable of sounding and indicating visually each separate alarm function in the wheelhouse only.*<sup>112</sup>
  - (b) *In vessels of 45 m 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.*<sup>113</sup>
  - (c) *In vessels of 45 m in length and over, an engineers' alarm and an alarm to the wheelhouse for persons on watch to be activated if an alarm function has not received attention within a limited period as specified by the Administration.*<sup>114</sup>
  - (d) Audible and visual alarms shall be activated in the wheelhouse for any situation requiring action by the responsible person on watch or which shall be brought to his attention.
  - (e) The alarm system shall as far as is 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 supply; 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.

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<sup>112</sup> A part of this paragraph is a specific European provision.

<sup>113</sup> A part of this paragraph is a specific European provision.

<sup>114</sup> A part of this paragraph is a specific European provision.

## 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. This generator shall be 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 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 sheddings, 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, where appropriate, 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 and 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.



CHAPTER V – FIRE PROTECTION, FIRE DETECTION, FIRE EXTINCTION  
AND FIRE FIGHTING  
(see regulation IV/19)

**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 services 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<sup>2</sup>. However, the Administration may increase this area for public spaces area up to 75 m<sup>2</sup>.

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. *Notwithstanding the provisions of these regulations, in vessels in which Method IF or Method IIIF is adopted, an automatic fire alarm and fire detection system shall be installed as required in vessels where Method IIIF is adopted. Additionally, all vessels to which these regulations apply, shall have smoke detectors in corridors and sleeping rooms.*<sup>115</sup>

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 shall be determined by an established test procedure in accordance with the *IMO Fire Test Procedures Code*. Any other material is a combustible material.<sup>116</sup>
- (2) "A standard fire test" is one in which specimens of the relevant bulkheads or decks are exposed in a test furnace to temperatures corresponding approximately to the standard time-temperature curve.
  - (a) *In vessels built 1 January 2003 or later, the test methods shall be in accordance with the IMO Fire Test Procedures Code.*
  - (b) *In vessels built 1 January 2000 or later but before 1 January 2003 the following applies:  
The specimen shall have an exposed surface of not less than 4.65 m<sup>2</sup> and a height (or length of deck) of 2.44 m. The specimens shall be resembling as closely as*

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<sup>115</sup> A part of this regulation is a specific European provision and partly Icelandic.

<sup>116</sup> A part of this paragraph is a specific European provision.

possible the intended construction and including where appropriate at least one joint. The standard time-temperature curve is defined by a smooth curve drawn through the following temperature points measured above the initial furnace temperature:

initial internal furnace temperature	20°C
at the end of the first 5 minutes	556°C
at the end of the first 10 minutes	659°C
at the end of the first 15 minutes	659°C
at the end of the first 30 minutes	659°C
at the end of the first 60 minutes	659°C <sup>117</sup>

(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 minutes
Class "A-30"	30 minutes
Class "A-15"	15 minutes
Class "A-0"	0 minutes

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 Fire Test Procedures Code*.<sup>118</sup>

(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 minutes
Class "B-0"	0 minutes; 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 bulkhead or deck to ensure that it meets the above requirements for integrity and temperature rise in accordance with the *IMO Fire Test*

<sup>117</sup> A part of this paragraph is a specific European provision.

<sup>118</sup> A part of this paragraph is a specific European provision.

<sup>119</sup> A part of this paragraph is a specific European provision.

<sup>120</sup> A part of this paragraph is a specific European provision

<sup>121</sup> A part of this paragraph is a specific European provision

<sup>122</sup> A part of this paragraph is a specific European provision.

(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 bulkhead or deck to ensure that it meets the above requirements for integrity and temperature rise in accordance with the *IMO Fire Test Procedures Code.*<sup>120</sup>

(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 will adequately restrict the spread of flame, this being determined by a fire test in accordance with *IMO Fire Test Procedures Code.*<sup>121</sup>

(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.

(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 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 kW,<sup>122</sup>  
or which contain any oil-fired boiler or fuel oil unit.

(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, steering gear, 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 OVER**

### Regulation 3

#### Structure

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

(2) *In new vessels*, 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) *In new vessels*, 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) In new vessels, 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 1 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<sup>2</sup>, except in individual cases where "C" class bulkheads are required in accordance with table 1 in regulation 7. However, the Administration may increase this area for public spaces up to 75 m<sup>2</sup>.<sup>123</sup>

#### Regulation 5

##### Protection of stairways and lift trunks in accommodation spaces, service spaces and control stations in vessels built 1 January 1970 or later

(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 door frames in "A" class divisions shall be constructed of steel. Doors in "B" class division 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<sup>2</sup>. 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.

#### Regulation 7

##### Fire integrity of bulkheads and decks in new vessels

(1) 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 1 and table 2 of this regulation.

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

- (a) Tables 1 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

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<sup>123</sup> A part of this paragraph is a specific European provision.

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 regulations 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.
- (v) Service spaces of low fire risk (5)  
Lockers and store-rooms having areas of less than 2 m<sup>2</sup>, 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.
- (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<sup>2</sup> or more, and workshops other than those forming part of the machinery spaces.
- (x) Open decks (10)  
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 (1)	A <sup>-e</sup>	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 <sup>c</sup>	B-0	A-60	A-0	A-0	A-0	*
Accommodation spaces (3)			C <sup>a,b</sup>	B-0 A-0 <sup>c</sup>	B-0	A-60	A-0	A-0	A-0	*
Stairways (4)				B-0 A-0 <sup>c</sup>	B-0 A-0 <sup>c</sup>	A-60	A-0	A-0	A-0	*
Service spaces of low fire risk (5)					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 <sup>d</sup>	A-0	A-0	*
Cargo spaces (8)								*	A-0	*
Service spaces of high fire risk (9)									A-0 <sup>d</sup>	*
Open decks (10)										-

**Table 2 - FIRE INTEGRITY OF DECKS SEPARATING ADJACENT SPACES**

Space below ↓	Space above →	(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	*
Accommodation spaces	(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 <sup>d</sup>	*
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 m<sup>2</sup> 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 <sup>d</sup> 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.
- \* 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 electric cables, pipes and ventilation ducts penetrate more than a single deck, such*



*penetrations shall be adequately sealed to prevent the spread of fire and smoke.*<sup>124</sup>

- (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 in new vessels

- (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 qualities of resistance to the propagation of flame *defined in accordance with the IMO Fire Test Procedures Code*. In spaces where penetration of oil products is possible, the surface of insulation shall be impervious to oil or oil vapour.<sup>125</sup>
  - (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

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<sup>124</sup> A part of this paragraph is a specific European provision

<sup>125</sup> A part of this paragraph is a specific European provision.

direction, such spaces, including those behind linings of stairways, trunks, etc., shall be closed at each deck.

## Regulation 9

### Ventilation systems

- (1) *In new vessels, the following applies:*
- (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<sup>2</sup> need not be non-combustible, subject to the following conditions:
    - (i) These ducts shall be of a material which has a low fire risk, *defined in accordance with the IMO Fire Test Procedures 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.<sup>126</sup>
  - (b) Where the ventilation ducts with a free cross-sectional area exceeding 0.02 m<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> 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 0.075 m<sup>2</sup> shall be fitted with fire dampers in addition to the requirements of sub-paragraph (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 arranged 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 arranged to preserve the integrity of the divisions.
  - (e) Where ventilation ducts with a free cross-sectional area exceeding 0.02 m<sup>2</sup> pass through "B" class bulkheads the openings shall be lined with steel sheet

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<sup>126</sup> A part of this paragraph is a specific European provision.

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 lower end of the duct;
  - (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 shall 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 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<sup>127</sup>

(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-spread characteristics.<sup>128</sup> Exposed surfaces of ceilings in accommodation and service spaces and control stations shall have low flame-spread characteristics.

(2) In new vessels, paints, varnishes and other finishes used on exposed interior surfaces shall not be capable of producing excessive quantities of smoke and toxic products steams, vapours *defined in accordance with the IMO Fire Test Procedures Code*.<sup>129</sup>

(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.<sup>130</sup>

(4) *In new vessels*, 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.

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<sup>127</sup> See the Guidance concerning the Use of Certain Plastic Materials contained in recommendation 7 of attachment 3 to the Final Act of the Conference.

<sup>128</sup> 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).

<sup>129</sup> A part of this paragraph is a specific European provision.

<sup>130</sup> See the Recommendation on Fire Test Procedures for Ignitability of Primary Deck Coverings adopted by the Organization by resolution A.687(17).

- (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 *in locations where tobacco smoking is allowed, and in other locations where the waste can pose fire risk*, shall be of non-combustible materials. No openings shall be on their sides or bottom. *Waste receptacles in machinery spaces and workshops shall have lids.*<sup>131</sup>
- (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.
- (10) 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

- (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 be properly secured.
- (2) Cylinders containing flammable or other dangerous gases and expended cylinders shall be stored, properly secured, on open decks. 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).
- (3) Spaces containing highly flammable liquids, such as volatile paints, paraffin, benzol, 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. *Spaces containing the above materials shall have appropriate identification markings on doors.*<sup>132</sup>
- (4) Except as necessary for service within the space, electrical wiring and fittings shall not

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<sup>131</sup> A part of this paragraph is a specific Icelandic provision.

<sup>132</sup> A part of this paragraph is a specific Icelandic provision.

be permitted within compartments used for the storage of highly flammable liquids or liquefied gases. Where such electrical fittings are installed, they *shall be of an approved and safe type and fulfil the appropriate provisions of the international IEC standard No 79*. 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".<sup>133</sup>

(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) *In new vessels*, a corridor or a part of a corridor from which there is only one route of escape shall preferably not exceed 7 m in length; and
- (e) The continuity of the means of escape shall be to the satisfaction of the Administration. *Stairways and corridors used as means for 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 not be less than 700 mm in clear width.*<sup>134</sup>

(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 new ships, 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 of category "A-60" and be provided with a self-closing steel door of category "A-60" at the lower end; or<sup>135</sup>

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<sup>133</sup> A part of this paragraph is a specific European provision.

<sup>134</sup> A part of this paragraph is a specific European provision.

<sup>135</sup> A part of this paragraph is a specific European provision.

- (b) One steel ladder leading to a door in the upper part of the space from which access is provided to the open deck. *In new vessels*, 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.

*Notwithstanding the provisions of paragraph (a) and (b) the Administration may in existing vessels permit only one means of escape from machinery spaces of category A, provided they do not have combustion engines for propulsion, 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.*

- (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.

- (5) *Emergency escape breathing devices shall comply with the Fire Safety Systems Code. Vessels of 24 m in length and over shall carry at least one emergency escape breathing device within spaces containing refrigerating machinery utilizing ammonia as a refrigerant.*<sup>136</sup>

#### Regulation 14

##### Automatic sprinkler and fire alarm and fire detection systems in new vessels

##### (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. *All systems* shall be installed and 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.<sup>137</sup>

- (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. 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. 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.

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<sup>136</sup> A part of this paragraph is a specific Icelandic provision.

<sup>137</sup> A part of this paragraph is a specific European provision.

- (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.
  - (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 per m<sup>2</sup>/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 sub-paragraph 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 sea-water 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<sup>2</sup> 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-

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<sup>138</sup> A part of this paragraph is a specific European provision.



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 sea-water 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 subparagraph (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.<sup>138</sup>

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. Such systems shall operate at a temperature not greater than 78°C when the temperature increase to those levels is not more than 1°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. *In new vessels*, systems which are sensitive to smoke concentration shall operate on the reduction of the intensity of a transmitted light beam. *In new vessels, 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.<sup>139</sup>

(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. 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<sup>2</sup> 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.

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<sup>139</sup> A part of this paragraph is a specific European provision.

(6a) *Notwithstanding the provisions of paragraph (6), in existing vessels the greatest deck area for smoke detectors may be approximately 74 m<sup>2</sup> and the distance between them up to 11 m.*

(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 *or by other equivalent means* at detector positions. *Detection systems shall be examined and tested annually.*<sup>140</sup>

(9) Spare detector heads shall be provided for each section of detectors to the satisfaction of the Administration.

#### Regulation 16

##### Fixed fire-extinguishing arrangements in cargo spaces of high fire risk

*In new vessels*, 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.

#### Regulation 17

##### Fire pumps

(1) At least two fire pumps shall be provided.

(2) *In new vessels*, 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 0.25 N/mm<sup>2</sup> minimum pressure.*<sup>141</sup>

(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<sup>2</sup>, with a total capacity (Q) of at least:

$$Q = (0.15 * \sqrt{L * (B + D)} + 2.25)^2 \text{ m}^3/\text{h}$$

where L, B and D are in metres.

However, the total required capacity of the fire pumps need not exceed 180 m<sup>3</sup>/h.

(b) Each of the required fire pumps other than any emergency pump shall have a

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<sup>140</sup> A part of this paragraph is a specific Icelandic provision.

<sup>141</sup> A part of this paragraph is a specific European provision.

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 may be expected.<sup>142</sup>
- (2) (a) *In new vessels*, 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<sup>3</sup>/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) of this paragraph, through any adjacent hydrants, the minimum pressure of 0.25 N/mm<sup>2</sup> shall be maintained at all hydrants.

#### Regulation 19

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<sup>142</sup> See the Guidance for Precautions Against Freezing of Fire Mains contained in recommendation 6 of attachment 3 to the Final Act of the Conference.

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.

Regulation 20  
Fire extinguishers<sup>143</sup>

- (1) 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 13.5 l fluid extinguisher and shall not be less

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<sup>143</sup> Reference is made to IMO resolution A.602(15) on "Revised Guidelines for Marine Portable Fire Extinguishers".

than the fire-extinguishing equivalent of a 9 litre fluid extinguisher. The Administration shall determine the equivalents of fire extinguishers.

(2) (a) *For each type of fire extinguisher carried, capable of being recharged on board, at least 100% spare charges for the first 10 extinguishers shall be provided and 50% for the remaining extinguishers but not more than 60.*

(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.*<sup>144</sup>

(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.*<sup>145</sup> *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.*<sup>146</sup>

(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) (a) For each type of fire extinguisher carried, capable of being recharged on board, at least 100% spare charges for the first 10 extinguishers shall be provided and 50% for the remaining extinguishers but not more than 60.

(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.<sup>147</sup>

#### Regulation 22

##### Fire-extinguishing appliances in machinery spaces

(1) (a) Spaces containing oil-fired boilers or fuel oil units shall be provided with one of the following fixed fire-extinguishing systems, to the satisfaction of the

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<sup>144</sup> A part of this paragraph is a specific European provision.

<sup>145</sup> Refer to "Rules No. 170/1990 on the Surveillance and Maintenance of Portable Fire Extinguishers".

<sup>146</sup> A part of this paragraph is a specific European provision.

<sup>147</sup> A part of this paragraph is a specific European provision.

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
- (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 in each boiler room. These extinguishers shall be provided with hoses on reels suitable for reaching any part of the boiler room. The Administration may relax the requirements of this sub-paragraph, 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. The Administration may relax the requirements of this provision, having regard to the size of the space. *Notwithstanding these provisions, the Administration may relax the requirements of a 45 l foam extinguisher in existing vessels.*

(3) 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) 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

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<sup>148</sup> A part of this paragraph is a specific European provision.

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 sub-paragraph 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. 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 *in new vessels* 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.

(7) *Notwithstanding the provisions of paragraphs (1) to (6), a fixed fire-extinguishing system shall be fitted in all machinery spaces of category A.*<sup>148</sup>

### 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:

Characteristics	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 pieces, 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<sup>2</sup> 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<sup>2</sup>



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

##### Fireman's outfits

(1) At least two fireman's outfits shall be provided. *The fireman's outfits shall be in accordance with the IMO Fire Safety Systems Code, Chapter 3, regulations 2.1, 2.1.1 and 2.1.2. Two spare charges shall be provided for each required breathing apparatus.*<sup>149</sup>

(2) The fireman's outfits shall be stored so as to be readily accessible and available for use. The fireman's outfits shall be stored in widely separated positions.<sup>150</sup>

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<sup>149</sup> A part of this paragraph is a specific European provision.

<sup>150</sup> A part of this regulation is a specific European provision.

Regulation 25  
Safety- and fire control plan<sup>151</sup>

*(1) A safety- and fire control plan, approved by the Administration, showing the location of fire prevention- and lifesaving appliances shall be permanently exhibited in a central position on board where it is easily readable. The plan shall be in a suitable scale giving a clear picture of the installation of appliances. The symbols specified in the plan shall be in accordance with IMO resolutions A.654(16) and A.756(18).*

*(2) The safety- and fire control plan shall contain information for every deck on the following, including location and the numbers, as appropriate:*

- (a) Entrances and exits from various spaces, decks, etc., including means of escape;*
- (b) Fire alarms and controls for fixed gas fire-extinguishing system in machinery spaces. Additionally, locations from which remote controlled fuel oil valves, machinery, power ventilation systems, fire dampers and fire pumps are controlled are specified in the plan;*
- (c) Fire hoses, fire-extinguishing appliances and fireman's outfit;*
- (d) The international shore connection and information of all kinds are considered important in the event of fire;*
- (e) Spare charges for fire-extinguishing appliances;*
- (f) Lifejackets and immersion suits;*
- (g) Lifebuoys and equipment for recovering a person from the sea;*
- (h) Survival craft and rescue boats;*
- (i) Line-throwing appliances;*
- (j) Distress signals;*
- (k) Emergency ladders;*
- (l) Launching appliances for survival craft;*
- (m) Radio life-saving appliances;*
- (n) Radar transponders;*
- (o) Emergency electrical power supply, emergency switchboard.*

*(3) In existing vessels a safety- and fire control plan is permitted although it does not fulfil completely the provisions of paragraph (1) and (2), provided that it has been approved by the Administration before the entry into force of this Regulation and that no alterations have been made of on-board arrangements or equipment making the alteration or renewal necessary.*

Regulation 26  
Ready availability of fire-extinguishing appliances

Fire-extinguishing appliances shall be kept in good order and be 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.

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<sup>151</sup> A part of this regulation is a specific European provision and partly Icelandic.

**PART C - FIRE SAFETY MEASURES IN VESSELS OF 24 METRES  
IN LENGTH AND OVER BUT LESS THAN 60 METRES<sup>152</sup>**

Regulation 28

Structural fire protection for new vessels<sup>153</sup>

- (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 tables 1 and 2* in regulation 7 of this Chapter. However, 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 a part of the wheelhouse.*<sup>154</sup>
- (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 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 sub-paragraph (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

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<sup>152</sup> A part of this regulation is a specific European provision.

<sup>153</sup> A part of this regulation is a specific Icelandic provision.

<sup>154</sup> A part of this paragraph is a specific European provision.

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-15“.

(b) In vessels, the hull of which is constructed of non-combustible materials, the decks and bulkheads referred to in sub-paragraph (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 a 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 sub-paragraph (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<sup>2</sup>. When such opening is cut in a door it shall be fitted with a grille made of non-combustible material.

(4) *In new vessels*, 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.

(5) *In new vessels*, 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) *In new vessels* 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<sup>2</sup> 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).<sup>155</sup>

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<sup>155</sup> A part of this paragraph is a specific Icelandic provision.

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 9 of Chapter II 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.
- (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 32.

Regulation 31  
Miscellaneous items<sup>156</sup>

- (1) *In new vessels*, 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 shall be defined in accordance with the *IMO Fire Test Procedures Code*.<sup>157</sup>
- (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) *In new vessels*, paints, varnishes and other finishes used on exposed interior surfaces shall not be capable of producing excessive quantities of smoke and toxic products steams, vapours defined in accordance with the *IMO Fire Test Procedures Code*.<sup>158</sup>

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<sup>156</sup> See the Guidance concerning the Use of Certain Plastic Materials contained in recommendation 7 of attachment 3 to the Final Act of the Conference.

<sup>157</sup> A part of this paragraph is a specific European provision.

<sup>158</sup> A part of this paragraph is a specific European provision.

(4) *In new vessels*, 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.<sup>159</sup>

(5) *In new vessels, the following applies:*

(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) All waste receptacles in locations *where tobacco smoking is allowed, and in other locations where the waste can pose fire risk*, shall be of non-combustible materials. No openings shall be on their sides or bottom. *Waste receptacles in machinery spaces and workshops shall have lids.*<sup>160</sup>

(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 be properly secured.

(2) *In new vessels*, cylinders containing flammable or other dangerous gases and expended cylinders shall be stored, properly secured, on open decks. 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).

(3) *In new vessels*, spaces containing highly flammable liquids, such as volatile paints, paraffin, benzol, 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. *Spaces in new and existing vessels, where the above materials are*

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<sup>159</sup> See the Guidelines on the Evaluation of Fire Hazard Properties of Materials adopted by the Organization by resolution A.166(ES.IV) 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).

<sup>160</sup> A part of this paragraph is a specific Icelandic provision.

*stored shall have appropriate identification markings on the doors.*<sup>161</sup>

(4) *In new vessels*, electrical wiring and fittings shall not be permitted within compartments used for the storage of highly flammable liquids or liquefied gases, except as necessary for service within the space. Where such electrical fittings are installed, they shall *be of an approved and safe type and fulfil the appropriate provisions of the international IEC standard No. 79*. 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".<sup>162</sup>

(5) *In new vessels*, 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) *In new vessels*, 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. *Existing vessels shall fulfil these provisions, as far as practicable*. 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 a 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. *In new vessels, stairways and corridors used as means for 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 not be less than 700 mm in clear width.*

(2) Two means of escape shall be provided from every machinery space of category A, *and from other machinery spaces as far as practicable*, 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

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<sup>161</sup> A part of this paragraph is a specific Icelandic provision.

<sup>162</sup> A part of this paragraph is a specific European provision.



special consideration shall be given to the remaining exit. *Reference is made to regulation I/1(2) regarding existing ships.*

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

(5) *Emergency escape breathing devices shall comply with the Fire Safety Systems Code. Vessels of 24 m in length and over shall carry at least one emergency escape breathing device within spaces containing refrigerating machinery utilizing ammonia as a refrigerant<sup>163</sup>.*

#### 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 flamespread characteristics of the installed furniture.

#### Regulation 35

##### Fire pumps

(1) *At least two fire pumps shall be provided.<sup>164</sup>*

(2) *In new vessels, the following applies:*

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 non-return 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.

(5) When 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:

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<sup>163</sup> A part of this paragraph is a specific Icelandic provision.

<sup>164</sup> A part of this paragraph is a specific European provision.

$$Q = (0.15 * \sqrt{L * (B + D)} + 2.25)^2 \text{ m}^3/\text{h}$$

where L, B and D are in m.

(8) *In new vessels*, 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<sup>3</sup>/h, whichever is the greatest.<sup>165</sup>

(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<sup>2</sup>.

(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 and 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.<sup>166</sup>

### 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. *In new vessels*, 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.

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<sup>165</sup> A part of this paragraph is a specific European provision.

<sup>166</sup> See the Guidance for Precautions Against Freezing of Fire Mains contained in recommendation 6 of attachment 3 to the Final Act of the Conference.

- (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 38  
Fire extinguishers<sup>167</sup>

- (1) 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 13.5 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)
  - (a) *Except in the cases mentioned under (b) 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.*
  - (b) *For vessels with a length of less than 45 m and 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.*<sup>168</sup>
- (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.*<sup>169</sup>
- (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

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<sup>167</sup> Refer to "Rules No. 170/1990 on the Surveillance and Maintenance of Portable Fire Extinguishers".

<sup>168</sup> A part of this paragraph is a specific European provision.

<sup>169</sup> A part of this paragraph is a specific European provision.

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) (a) *Except in the cases mentioned under (b) 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.*
- (b) *For vessels with a length of less than 45 m and 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.*<sup>170</sup>

#### Regulation 40

##### Fire-extinguishing appliances in machinery spaces

(1) *In a new vessel, existing vessel, purchased or leased from abroad for Icelandic registration, in an existing vessel built 15 August 1984 or later and an existing vessel built before 15 August 1984 after the renewal of a combustion engine, which constitutes a part of the propulsion machinery, the following applies:*

- (a) Spaces containing oil-fired boilers, fuel oil units or internal combustion machinery having a total power output of not less than 375 kW 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.<sup>171</sup>
- (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 system referred to in paragraph (1). *Notwithstanding the provisions of this sub-paragraph, CO<sub>2</sub> fire-extinguishing systems are prohibited in vessels constructed of wood.*<sup>172</sup>

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<sup>170</sup> A part of this paragraph is a specific European provision.

<sup>171</sup> A part of this paragraph is a specific European provision.

<sup>172</sup> A part of this paragraph is a specific Icelandic provision.

(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 kW, 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. However, *in machinery spaces of existing vessels, portable extinguishers need not be more than three.*

(6) *Notwithstanding the provisions of paragraphs (1) to (5), a fixed fire-extinguishing system shall be fitted in all machinery spaces of category A.*<sup>173</sup>

#### Regulation 41 Fireman's outfits

(1) *In a new vessel, at least two firefighter's outfits shall be carried and stored in readily accessible, 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 3, regulations 2.1, 2.1.1 and 2.1.2. Two spare charges shall be provided for each required breathing apparatus.*

(2) *In an existing vessel, at least two breathing apparatus shall be carried together with the equipment as specified in the IMO Fire Safety System Code, Chapter 3, regulations 2.1.1.3, 2.1.1.4, 2.1.1.5, 2.1.2 and 2.1.3.*<sup>174</sup>

#### Regulation 42 Safety- and fire control plan<sup>175</sup>

(1) *A safety- and fire control plan, approved by the Administration, showing the location of fire prevention- and lifesaving appliances shall be permanently exhibited in a central position on board where it is easily readable. The plan shall be in a suitable scale giving a clear picture of the installation of appliances. The symbols specified in the plan shall be in accordance with IMO resolutions A.654(16) and A.756(18). In vessels of less than 45 m in length the Administration may dispense with this requirement.*

(2) *The safety- and fire control plan shall contain information for every deck on the following, including location and the numbers, as appropriate:*

- (a) *Entrances and exits from various spaces, decks, etc., including means of escape;*
- (b) *Fire alarms and controls for fixed gas fire-extinguishing system in machinery spaces. Additionally, locations from which remote controlled fuel oil valves, machinery, power ventilation systems, fire dampers and fire pumps are controlled are specified in the plan;*
- (c) *Fire hoses, fire-extinguishing appliances and fireman's outfit;*
- (d) *The international shore connection and information of all kinds are considered important in the event of fire.*

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<sup>173</sup> A part of this paragraph is a specific European provision.

<sup>174</sup> A part of this regulation is a specific European provision.

<sup>175</sup> A part of this regulation is a specific European provision and partly Icelandic.

- (e) *Spare charges for fire-extinguishing appliances;*
- (f) *Lifejackets and immersion suits;*
- (g) *Lifebuoys and equipment for recovering a person from the sea;*
- (h) *Survival craft and rescue boats;*
- (i) *Line-throwing appliances;*
- (j) *Distress signals;*
- (k) *Emergency ladders;*
- (l) *Launching appliances for survival craft;*
- (m) *Radio life-saving appliances;*
- (n) *Radar transponders;*
- (o) *Emergency electrical power supply, emergency switchboard.*

*(3) In existing vessels a safety- and fire control plan is permitted although it does not fulfil completely the provisions of paragraph (1) and (2), provided that it has been approved by the Administration before the entry into force of this Regulation and that no alterations have been made of on-board arrangements or equipment making the alteration or renewal necessary.*

#### Regulation 43

##### Ready availability of fire-extinguishing appliances

Fire-extinguishing appliances shall be kept in good order and be 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.

## CHAPTER VI EQUIPMENT AND MEASURES FOR THE PROTECTION OF THE CREW<sup>176</sup>

### 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. *Suitable safety equipment to prevent falling, for example safety belts, shall be provided on board vessels for work in high places.*

(1a) *Stern trawlers of less than 60 m in length shall be fitted with the following safety devices:*

- (a) *Within reach on both sides of the stern ramp door a wire rope shall be set up and tightened and to which the lifelines of safety belts can be attached and move freely;*
- (b) *At least 5 safety belts together with lifelines of an approved type shall be provided for use on board stern trawlers for work on open decks. Arrangements for lifelines shall be such as not to impede work near or in a stern ramp; and*
- (c) *Lifelines shall be so designed that their slack automatically withdraws and they shall be fitted with safety hooks on both ends for easy hooking to lashings, such as safety wire and safety belts.*

(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. *The height of such equipment, when installed, shall be at least 900 mm.* The Administration may grant exceptions from this provision with regard to small openings which are only open for a short period at a time, e.g. where fish flaps are located.

(3) Skylights, and 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) *In new vessels*, the surface of all decks shall be so designed or treated as to minimize the possibility of personnel slipping. In particular, decks of working spaces, such as in machinery spaces, in galleys, at winches, *in fish holds and in other places* where fish is handled as well as at the foot and head of ladders and in front of doors, shall be provided with anti-skid surfaces. Existing vessels shall fulfil these provisions, as far as practicable.

- (5) *In case of deck cargoes they shall always be arranged as not to impede:*
- (a) *the work of the crew and access to accommodation or machinery space;*
  - (b) *runoff water from deck;*
  - (c) *the control of closing arrangements, control valves, etc.; and*
  - (d) *access to safety equipment, life-saving appliances or fire-extinguishing appliances, including access to emergency cut-off switches; and*
  - (e) *means of escape.*

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<sup>176</sup> A part of this chapter is a specific Icelandic provision. This applies to regulations 1 to 4, partly, and regulations 5 to 13, in their entirety.

Regulation 2  
Deck openings

- (1) Hinged covers of hatchways, manholes and other openings shall be protected against accidental closing, *including after a power failure*. In particular, heavy covers on escape hatches, *requiring more than 160 N of force to open*, shall be equipped with counterweights, and so constructed as to be capable of being opened from each side of the cover.
- (2) *In new vessels*, the dimensions of access hatches shall not be less than 600 mm by 600 mm or 600 mm in diameter. *Existing vessels shall fulfil these provisions, as far as practicable. In existing vessels, dimensions of access hatches shall, however, not be less than 450 mm by 600 mm.*
- (3) Where practicable, hand-holds shall be provided above the level of the deck over escape openings.
- (4) *Appropriate instructions on safety arrangements shall be placed near hatches and other openings, e.g. by setting up markings on escape routes and markings near openings which shall be kept closed when the vessel is at sea.*

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. A lesser height may be approved by the Administration in vessels built before 5 December 1975.
- (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, built 1 January 2003 or later and are 24 m in length and over 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.<sup>177</sup> For vessels with sheltered working decks, which are so arranged that water will not enter the sheltered working spaces no minimum freeboard other than the one corresponding with the maximum permissible draught is required.<sup>178</sup>*
- (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. The Administration may permit other clearance values in vessels built before 5 December 1975. In a vessel with rounded gunwales, guard rail supports shall be placed on the flat of the deck. Rails shall be free

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<sup>177</sup> See also regulation III/13.

<sup>178</sup> A part of this paragraph is a specific European provision.



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. *Appropriate instructions on such equipment shall be set up in conspicuous positions.*

(5) Stern trawlers shall be equipped with *hydraulic or electric stern ramp gates at the same height as the adjacent bulwark or guard rails. It shall be a steel bulkhead which fits into a trunk below the deck or other arrangements considered equivalent to the satisfaction of the Administration. The stern ramp gate shall only be in open position when shooting the fishing gear or when they are taken on board.*

#### 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 *and in new vessels they shall be constructed in accordance with relevant ISO standards.*<sup>179</sup>

(2) *In new vessels, stairways and ladders to go between decks, to masts and other high locations, in cargo spaces, fuel spaces or other similar spaces, shall be permanently fixed. Stairways more than 1 m in height shall be fitted with rails and guard rails on both sides. Ladders more than 5 m in height shall be fitted with guard rails extending from 2.2 m above deck or intermediate platform, where provided, and as far up as necessary, or other equally efficient means. Ladders shall be constructed with as much angle as possible from the vertical.*

(3) *In new vessels, fixed vertical ladders shall be so situated as to be protected from damage and shall be so fitted as to provide clearance of 150 mm behind. The rungs of steel vertical ladders shall be made of square section steel bars with the sharp edge upwards. Steps shall be at least 450 mm wide, where practicable. Where ladders are constructed with stringers, the rungs shall pass through the stringers. Handholds shall be provided where rungs or stringers are not suitable for this purpose.*

(4) *Ladders which are a part of the emergency means of escape shall be fixed. In existing vessels, they may be portable provided that they are stowed adjacent to the escape and that they can be secured in place when required without tools or mechanical aids.*

#### Regulation 5

##### Accommodation ladders and gangways

(1) *To ensure sufficiently safe and convenient access to the vessel from a berth or between two vessels lying side by side an accommodation ladder, gangway or similar appliances shall be provided. Such equipment shall not necessarily be a part of the vessel's equipment unless expressly provided otherwise in this regulation.*

(2) *Vessels of 45 m in length and over shall be fitted with a fixed accommodation*

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<sup>179</sup> A part of this paragraph is a specific European provision.

*ladder on each side.*

*(3) In vessels with complete superstructure, built on 1 January 2004 or later, a fixed ladder shall be fitted on each side reaching at least from the upper edge of the bulwark on the superstructure deck down to the waterline in the lightest seagoing condition. Such ladders shall comply with the appropriate provisions on ladders in regulation 4 (3).*

*(4) In vessels with complete superstructure, not fitted with a fixed ladder according to paragraph (3), and where it is impractical to fit an accommodation ladder, shall have a pilot ladder complying with the relevant provisions of the International Convention for the Safety of Life at Sea, 1974 (SOLAS 1974).*

*(5) Accommodation ladders and gangways shall be of reliable material, good construction and adequate strength, and be securely installed. In vessels with complete superstructure a suitable lighting and lifebuoy shall be provided in the vicinity of accommodation ladders and gangways. A safety net shall be fitted under the accommodation ladder and gangways.*

*(6) Accommodation ladders and gangways shall be at least 550 mm wide and be fitted with railings at least 1 m high measured perpendicularly to the appliance on both sides. The railing shall consist of two rails or taut ropes, wires or chains about 500 mm apart. The stanchions shall not be more than 2 m apart. They shall be designed to be secured against inadvertent dislodgement.*

*(7) Accommodation ladders shall be provided with hooks or other suitable fastenings for adequate support and securing against displacement or slipping.*

*(8) When a fixed tread accommodation ladder is fitted, cleated duck boards shall be provided which can be secured over the front edges of ladder steps to form a gangway when the ladder angle is low enough to require this for safety.*

*(9) Gangways shall be fitted with cleats (transverse treads) at suitable stepping intervals and for the full width of the gangway.*

*(10) Turntables of gangways which pivot or swivel horizontally on a platform shall be adequately protected by railings or ropes.*

*(11) The lower end of accommodation ladders or gangways shall have suitable angle plates or guards to cover wheels or rollers and to serve as a runway to the landing surface.*

*(12) Where the shipboard ends of the means of access rest on the top of the bulwark, steps shall be provided which can be secured between the top of the bulwark and the vessel's deck. The step shall be equipped with at least one handrail of 900 mm in height.*

## *Regulation 6*

### *Galley*

- (1) Adequate grab rails shall be fitted in galleys.*
- (2) Dangerous parts of food-processing machinery shall be fitted with permanent safety guards.*
- (3) Cooking stoves shall be fitted with guards to retain cooking utensils.*
- (4) In new vessels, galley floor areas shall be adequately drained. The anti skid surface referred to in regulation 1 (4) shall be designed to facilitate drainage.*
- (5) Machinery, such as pumps and domestic refrigeration compressor units situated in the galley shall be fitted with permanent safety guards.*

## *Regulation 7*

### *Deck machinery, tackle and lifting gear*

#### *General*

- (1) In new vessels, the following applies:*

*All elements of a fishing gear system, including warping heads, winches, warps, wires, tackle, nets, etc., shall be designed, arranged and installed to provide safe and convenient operation. In so far as is possible, such components shall be of a suitable strength so that in the event of an overload strain the failure will occur on the designated weak link in the system (overload protection). All crew members shall be made aware of the designated weak link in the system.*

- (2) Warp guards shall be fitted where practicable between warp lead rollers.*
- (3) Sheaves and rollers as well as hydraulic piping shall be guarded where practicable.*
- (4) Chains or other suitable devices shall be provided for "stoppering off", for instance when changing wires and while hooking or unhooking shackles from trawl boards. Adequate platforms shall be provided for crew members while hooking or unhooking shackles from trawl boards.*
- (5) Wires, including warps, provided shall be of adequate strength for the anticipated loads.*
- (6) Where practicable, provision shall be made to stop trawl boards swinging inboard, such as the fitting of a portable prevention bar at the gallows aperture or other equally effective means.*
- (7) Lifting and running parts of the fishing gear shall be of adequate strength for the anticipated loads.*
- (8) Provision shall be made for the stowage of bulky netting to allow for drainage and to prevent lateral movement. The stowage area shall be of adequate dimensions to keep the centre of gravity of the stowed net to a minimum and to allow for the crew to*

*work in safety when flaking down nets.*

(9) *Moving parts of winches, including line and net hauling equipment and of warp and chain leads which may present a hazard, shall be as far as practicable adequately guarded and fenced.*

(10) *In new vessels, the following applies:*

*Controls of winches, line and net hauling equipment, shall be so placed that winch operators have ample room for their unimpeded operation and have as unobstructed a view as possible of the working space. Where possible, control handles shall be arranged to return to the stop position when released and be provided, where necessary, with a suitable locking device in the stop/neutral position, to prevent accidental movements or displacement or unauthorized use. In case of winches intended to be used for a prolonged time, e.g. line and net hauling equipment, however, control handles that can be fastened in a particular position may be used, provided that an approved safety device for emergency cut-off is fitted. In general, winches and hauling equipment shall be fitted with safety devices designed to prevent accidents. Besides control valves there shall be markings specifying the purpose and functionality of each control valve. Existing vessels shall fulfil these provisions, as far as practicable.*

(11) *Quick release devices shall preferably be fitted in the case of beam trawling and in purse seining that can be activated in an emergency from the wheelhouse and at the main control station if not in the wheelhouse.*

(12) *In new vessels, the design and construction of winches, including line and net hauling equipment, shall ensure that the maximum effort necessary for operating handwheels, handles, crank handles, levers, etc. shall not exceed 160 N and in the case of pedals not exceed 320 N.*

#### *Winches*

(13) *The design of winch systems shall ensure that when power is supplied to the winch, the control valves and levers, would always be in the stop/neutral position.*

(14) *Winches shall be provided with means to prevent overhoisting and to prevent the accidental release of a load if power supply fails. The use of warping heads to handle fishing gear. All falls shall have a special drum winch. Stern trawlers shall be fitted with grand rope winches or other equivalent arrangements.*

(15) *Winches shall be equipped with brakes capable of effectively arresting and holding the safe working load (SWL). Brakes shall be proof tested to at least 1.5 in excess of the designated safe working load (SWL). Brakes and blocking arrangements 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.*

(16) *Where manually operated "guiding on" gear is installed the operating wheels shall be without open spokes or protrusions that could cause injury to the operator and shall be capable of being disengaged when the warps are paying out. Preferably the "guiding on" gear shall be capable of being disengaged when the warps are paying out.*

(17) *Where practicable, winches shall be reversible. Winches shall be fitted with devices to ensure hoisting when the control lever of the winch is pulled.*

(18) *Winch barrels shall be provided with means for fastening wire ends, for instance clamps, shackles or other equally effective method which shall be so designed as to prevent kinking of the wires.*

(19) *Where a fishing winch is provided with local and remote controls, these shall be so arranged as to prevent simultaneous operation. The operator shall have a clear view of the winches and adjacent area from either position. Other media may be applied for this purpose, for instance by means of closed-circuit television system, provided that with this medium the operator has equally clear and unobstructed view of the winches and adjacent area. An emergency cut-off shall be provided in at least two locations on deck, at the remote station as well as in the wheelhouse. The same person is not permitted to simultaneously command the vessel and operate deck winches.*

#### *Line and net hauling equipment*

(20) *Line and net hauling equipment shall be fitted with devices to ensure that the designated safe working load (SWL) is not exceeded. Such devices shall be tested to the satisfaction of the Administration.*

(21) *Where line and net hauling equipment is intended to be blocked or braked in the stop position, the arrangements shall be tested to the satisfaction of the Administration. The arrangement of the safety devices shall ensure that an emergency stop is activated if a person is pulled towards a line or net hauling equipment. Such devices shall be tested to the satisfaction of the Administration.*

(22) *Where line and net hauling equipment is controlled from the wheelhouse or from a position remote from the equipment, means shall be provided at the equipment to stop hauling and/or shooting in an emergency. In like manner, when the main controls are at the equipment, means shall be provided in the wheelhouse to stop it in an emergency.*

(23) *The arrangement of the safety devices shall also ensure that an emergency stop would be activated immediately if a person is pulled towards a line or net hauling equipment.*

#### *Lifting gear*

(24) *Cranes shall be well constructed of sound material and the design of cranes on board a vessel after the entry into force of the Regulation shall comply with the appropriate provisions in ILO Convention 152 and the rules of a recognized organization. They shall be tested to the satisfaction of the Administration and the crane shall be marked with the designated maximum safe working load (SWL). In the case of a crane fitted with an extendable jib, or equivalent arrangement, the safe working load (SWL) at various radii shall be clearly marked as close as practical to the operating controls.*

(25) *In general, cranes adapted to carry net hauling equipment shall be so designed that in the fail safe condition, the hanging point of the jib shall not be too high or*

*extend so far beyond the bulwark that retrieval of fishing gear or equipment would endanger the crew.*

*(26) The braking or blocking arrangements of a crane shall be tested to at least 1.5 times the designated safe working load (SWL) to the satisfaction of the Administration.*

*(27) Lifting and hoisting appliances, as well as derricks and similar equipment including all parts of the working gear thereof, whether fixed or movable, and all plant shall be of good construction, reliable material, adequate strength and free from patent defect. They shall be adequately and suitably anchored, supported or suspended having regard to the purpose for which they are used and shall be marked with the safe working load (SWL). They shall have easy access for maintenance. Suitable guards shall be provided to prevent any undesirable movement of lifted or hoisted parts, such as codend or fishing gear, which could present danger to the crew.*

*(28) In new vessels, the following applies:  
Lifting and hoisting appliances, as well as derricks, shall be protected from overhoisting. Cranes used for discharging and loading shall be equipped with an end-stop which stops the hook at a safe distance from the derrick end.*

*(29) The Administration shall ensure that lifting and hoisting appliances, as well as derricks, shall be tested at least every year and the results entered in the crane record of the vessel.*

*(30) No such appliance of a kind referred to in paragraph (25) nor any part or working gear thereof, shall be taken into use for the first time or after it has undergone any substantial repair unless it has been tested and the result entered in the crane record of the vessel.*

#### *Lifts*

*(31) Service lifts between holds and fish processing spaces shall be well constructed of sound material. They shall be tested to the satisfaction of the Administration. Service lifts shall be fitted in closed shafts with closing devices and shall be so arranged as to prevent access to the lift or space except from the deck where the lift is located each time. The lift shall not be capable of being set in motion except when the lift doors are in a closed position. The height above deck of door sills at lift openings shall be at least 380 mm at the processing space deck. Lift control switches shall be outside the lift opening, both on processing decks and in holds. In addition, equipment for emergency stop and alarm bells shall be fitted there. It is prohibited to use service lifts for the transportation of personnel.*

#### *Regulation 8*

##### *Lighting in working spaces and areas*

- (1) (i) All companion-ways, door or other normal access openings shall be provided with electric lighting on both sides of the opening to facilitate safe passage.*
- (ii) In all passageways and working spaces electric lighting shall be provided to the satisfaction of the Administration. Particular attention shall be paid to rule 20(b) of the International Regulations for Preventing Collisions at Sea, 1972.*

- (2) *Glare, dazzle or sudden contrasts of illumination shall be eliminated to the extent possible taking into consideration the need for effective lighting for the safety of the crew working on deck.*
- (3) *Provision shall be made for some form of emergency lighting which is independent of the normal power supply.*
- (4) *Portable lights shall be provided as necessary and fitted with heavy-duty cables, bulb guards and lanyards. Portable lights for use in spaces which may contain explosive gases shall be either explosive proof or otherwise intrinsically safe to the satisfaction of the Administration.*
- (5) *Where necessary to prevent danger, electric lamps shall be protected by guards.*
- (6) *Lighting in working spaces shall be sufficient to enable personnel to see small items in connection with the work being carried out. General lighting in working spaces shall be at least 200 lux and over working desks and conveyor belts and in the vicinity of control installations at least 400 lux.*

#### *Regulation 9*

##### *Ventilation in working and storage spaces*

- (1) *Enclosed working spaces, machinery spaces and spaces used for storage, in particular, of paints, oils, solvents and wet batteries shall be adequately ventilated. In new vessels, enclosed working spaces shall be fitted with a permanent ventilation system ensuring at least 6 exchanges of air per hour.*
- (2) *Where this is necessary due to occupational safety of personnel, working spaces and spaces used for storage shall have sufficient heating and/or cooling.*

#### *Regulation 10*

##### *Dangerous areas*

- (1) *Dangerous spaces or entrances thereto shall be properly illuminated and marked and have warning signs prominently posted. Warning signs for holds containing fish for reduction, anchor chain lockers and other badly ventilated spaces shall contain guidance on for instance precautions and safety equipment in such spaces. Retro-reflective and fluorescent materials may be used to increase the conspicuousness. A notice with information on medical first-aid shall be posted when applicable.*
- (2) *A notice shall be prominently displayed below radar and radio aerials warning of danger, with an instruction that the authority of a responsible officer shall be obtained before work is done in the vicinity. A notice shall also be prominently displayed at or near the operating controls of radar and radio equipment warning that before starting up the equipment it shall be ascertained that no one is working aloft near the aerials.*

#### *Regulation 11*

##### *Fish processing equipment*

- (1) *Arrangement of fish processing equipment shall ensure free access for inspection, operation and sanitary treatment of the equipment. In new vessels, working*

*spaces in way of processing equipment shall be not less than 750 mm wide. In new and existing vessels the width of main walking spaces in fish processing spaces shall be not less than 500 mm and the width of other walking spaces shall be not less than 450 mm. Adequate grab rails or railings shall be fitted in working spaces and walking spaces in the vicinity of fish processing equipment. The arrangement of work areas with regard to working postures and body postures shall not endanger the safety and health of persons.*

*(2) In new vessels, materials used to insulate fish processing equipment, including piping, shall be non-combustible, durable and stable under conditions of vibration and shall not have an external surface temperature harmful to personnel on contact. The insulation shall be securely fastened.*

*(3) In new vessels, the following applies:  
Machinery and installations operating under pressure shall comply with the appropriate requirements of regulation IV/6. Fish processing machinery shall be designed to prevent the installations from accidentally starting after having been shut off for cleaning, maintenance and the like.*

*(4) In new vessels, machinery and other installations from which vapour, gas, dust or other harmful substance may readily escape or be emitted during operation shall be fitted with exhaust devices. Suction ends of these devices shall be located as near as possible to the sources of vapour, gas, dust or other harmful substance. Piping shall be so arranged that discharged products will not constitute a hazard to personnel.*

*(5) Where several conveyors are working in one line emergency switches shall be provided at intervals of not more than 10 m for stopping all conveyors working in the line. Where the length of the conveyors is 15 m or more, sound or light signals shall be provided for giving warning when the conveyor starts.*

*(6) Dampers, cocks, valves and other stopping devices shall be positioned so that they are readily accessible and safe for operation.*

*(7) Machinery and equipment in working spaces shall be fitted on strong and rigid foundations securely connected to the vessel's structure.*

*(8) Moving parts of machinery and other equipment or installations, as well as gear wheels, which may present a hazard, shall be adequately guarded. Emergency switches for stopping such machinery shall be fitted in a suitable place near the installation. Provision shall be made to prevent danger arising due to boxes, trays, plates or pans and other loose objects in the working spaces.*

*(9) Machinery and installations which require routine servicing at a height of more than 2 m shall be equipped with platforms of 600 mm in width and guarded with rails not less than 1 m in height.*

*(10) Fish processing equipment operating with water shall be provided with effective drainage systems, having regard to their extra susceptibility to clogging.*

*(11) Adequate drainage shall be provided to prevent the accumulation of water in*



*enclosed spaces as a consequence of fish handling or fish processing.*

*(12) Loading and unloading devices for fish processing machinery and equipment, shall be arranged at a safe and convenient height for operation.*

*(13) Steam or vapour outlets from machinery and equipment such as liver or fish oil boilers, shall be arranged as high as possible. Outlet pipes shall be at least 50 mm in diameter and lead into open air. Vapour from outlets shall not obscure visibility.*

*(14) Filling openings of machinery and other equipment, such as liver or fish oil boilers, shall be within easy reach of personnel. Such openings shall be fitted with lids with suitable means of closing so as to prevent steam, hot water or vapour escaping into the working space. The lids shall also be counterbalanced or provided with other safe means of securing the lid in the open position.*

#### *Regulation 12*

##### *Medicine chest*

*(1) The provisions of Regulation No. 365/1998 on health care service, pharmaceuticals and medical equipment aboard Icelandic vessels apply regarding medicine chests.*

#### *Regulation 13*

##### *Miscellaneous*

*(1) Safety working equipment such as gloves, goggles, ear protectors, respirators, safety helmets, special footwear, explosive gas and oxygen sufficiency indicators shall be provided as appropriate to prevent injury or illness to personnel.*

*(2) Pound boards shall be so constructed that they can be locked in position when in use and shall not hamper the discharge of shipped water.*

*(3) In designing and installing new machinery and equipment in vessels, measures shall be taken to reduce the effect of noise and vibration upon personnel to levels satisfactory to the Administration.*

*(4) Equipment for testing whether refrigeration systems leak shall be provided on board.*

*(5) Between accommodations and spaces for processing fish a space shall be provided for storing and drying working clothes of the persons who work there. This space may be in the space where oilskins are stored. Spaces for processing fish shall have sufficient sanitary facilities, wherever practicable, such facilities shall be provided as follows*

- (i) one water-closet for every 12 persons or less;*
- (ii) one urinal for every 12 persons or less;*
- (iii) one basin for every six person or less.*

*Provided that when the number of persons exceeds an even multiple of the specified number by less than one half of the specified number, this surplus may be ignored for the purpose of this paragraph. The number of changing-rooms shall be adequate. Water closet doors may not directly open into work and processing spaces and store-rooms.*

*Near washbasins there shall be equipment for washing and drying hands in order to fulfil sanitary requirements. In vessels engaged in onboard processing of the catch, cranes may not be hand-operable. Sanitary facilities of spaces for processing fish may be located in or close to a space for storing and drying working clothes.*

*(6) A reliable communication system shall be employed for communication between the wheelhouse and the working deck. Responsible watchkeeping shall at all times be kept in the wheelhouse and the crew shall be warned of imminent danger from breaking seas during fishing operations or when other operation are being performed on deck.<sup>180</sup>*

*(7) A manual on safety at work on board shall be provided in each crew messroom and recreation room or in each crew cabin. The manual on safety at work on board, which may comprise several volumes, shall contain instructions and information, in easily understood terms illustrated wherever possible, , on equipment and material on board the vessel relating to safety at work and general precautions. 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:*

- (a) Use of all deck machinery and hauling equipment;*
- (b) Use of all fish processing equipment, such as conveyors, head cutting machines, filleting machines, flatfish trimmers, skinning machines and mashing machines.*
- (c) Description of workspaces;*
- (d) Use of all protective clothing and safety working equipment;*
- (e) Use of detergents and other dangerous substances; and*
- (f) All other relevant precautions to prevent accidents or illness.*

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<sup>180</sup> This paragraph is a specific Icelandic provision.

**CHAPTER VII**  
**LIFE-SAVING APPLIANCES AND ARRANGEMENTS**  
**PART A - GENERAL**

Regulation 1

Application

- (1) Unless expressly provided otherwise, this chapter shall apply to new *and existing vessels*.
- (2) Regulations 13 and 14 shall apply to new and existing vessels *of 24 m in length and over*.

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 marshal 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.
- (10) *„Automatic releasing and launching appliances" are appliances which release inflatable liferaft from a vessel, launch it and trigger its inflation automatically.*<sup>181</sup>

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<sup>181</sup> This paragraph is a specific Icelandic provision.

### Regulation 3

#### Evaluation, testing and 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) *In new vessels, and existing vessels, where life-saving appliance is renewed, the Administration shall, before accepting life-saving appliances and arrangements ensure that such life-saving appliances and arrangements fulfil the provisions of this Chapter, in accordance with Regulation No. 988/2000 on Marine Equipment, as amended<sup>182</sup>, which also includes IMO recommendation on the testing of life-saving appliances.<sup>183</sup>*
- (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 have been evaluated and tested in accordance with the recommendations of the Organization<sup>184</sup>; 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.
- (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.
- (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 account detailed information on such appliances in Chapter III of the 1974 SOLAS Convention 1974 as amended by the IMO Code on Life-saving Appliances (LSA Code)*.<sup>185</sup>

### 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.

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<sup>182</sup> Refer also to Article 4 of this Regulation

<sup>183</sup> A part of this paragraph is a specific European provision

<sup>184</sup> See the Recommendation on Testing of Life-Saving Appliances adopted by the Organization by resolution 689(17).

<sup>185</sup> A part of this paragraph is a specific European provision

(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 14 of chapter III 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 suitable survival craft which is capable of being recovered after the rescue operation.

(3) *Vessels of less than 45 m in length but less than 75 m in length* shall comply with the following:

- (a) *In new vessels*, survival craft of sufficient aggregate capacity to accommodate at least the total number of persons on board shall be provided;
- (a1) *In existing vessels*, survival craft of sufficient aggregate capacity to accommodate at least double the total number of persons on board shall be provided, and they shall be as evenly distributed on each side of the vessel as possible; 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 less than 45 m in length shall comply with the following:*

- (a) *In new vessels*, 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;
- (a1) *In existing vessels*, of 24 m in length and over but less than 45 m in length, survival craft of sufficient aggregate capacity to accommodate at least double the number of persons on board shall be provided, and they shall be as evenly distributed on each side of the vessel as possible;
- (a2) *In existing vessels of less than 24 m in length*, survival craft of sufficient aggregate capacity to accommodate on each side of the vessel at least double the total number of persons on board shall be provided; and
- (b) *Rescue boats shall be provided, unless the vessel is provided with a suitable survival craft which is capable of being recovered after the rescue operation. This requirement does not, however, apply to vessels of less than 30 m in length.*<sup>186</sup>

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<sup>186</sup> A part of this paragraph is a specific European provision and partly Icelandic.

(3b) *In new vessels, notwithstanding the provisions of (2)(b), (3)(b), and (3a), for fishing vessels whose hull 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), the rescue boat/lifeboat required in (2)(b), (3)(b) or (3a)(b) shall at least be partially covered (as defined in regulation 18) and shall have sufficient capacity to accommodate all persons on board.*<sup>187</sup>

(4) In lieu of meeting the requirements of *paragraphs (2)(a), (3)(a) and (3a)(a)* vessels may carry one or more free-fall lifeboats in the stern of the vessel, of sufficient capacity to accommodate the total number of persons on board, as well as liferafts to accommodate the total number of persons on board.<sup>188</sup>

(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) *In new vessels*, 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, *including liferafts which comply with the provisions of paragraph (4)(h)*, shall be capable of being davit launched with a full complement of persons or be provided with equivalent approved means of embarkation.<sup>189</sup>

(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) *Every survival craft shall be stored:*

- *in such a way that neither the survival craft nor its method of storage interferes the operation of any other survival craft or rescue boat;*

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<sup>187</sup> This paragraph is a specific European provision.

<sup>188</sup> A part of this paragraph is a specific European provision

<sup>189</sup> A part of this paragraph is a specific Icelandic provision.

- *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 preparations for embarkation and launching in less than 5 minutes;*
  - *fully equipped as required by this chapter;*<sup>190</sup>
- (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. In this respect the Administration shall give special consideration to the strength of the davits.
- (d) *In new vessels*, the method of launching and recovering of rescue boats 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. *In a new vessel*, 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<sup>191</sup>
- (e) In new vessels, launching and embarkation appliances shall comply with the requirements of regulation.
- (f) *In new vessels of 24 m in length and over, the following applies:*
- (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. This provision does not apply to lashings for liferafts under sub-paragraph (h).<sup>192</sup>
- (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

<sup>190</sup> A part of this paragraph is a specific European provision.

<sup>191</sup> A part of this paragraph is a specific Icelandic provision.

<sup>192</sup> A part of this paragraph is a specific Icelandic provision.

arrangements adequate for the service for which it is intended. The Administration which has allowed alternative launching and recovery arrangements under this subparagraph, for a new vessel which is 24 m in length and over and comes within the applicability of the Torremolinos Protocol after the Protocol has entered into force, shall inform the Organization of the particulars of such arrangements for circulation to other Parties.<sup>193</sup>

- (h) *Every vessel shall be provided with release and launching appliance on each side for at least one inflatable liferaft capable of accommodating at least 50% of the total number of persons on board. Such appliances shall comply with the requirements of regulation 34. In vessels of less than 24 m in length, it is permitted to deviate from the provisions on position of one liferaft and that this liferaft is without launching appliance in accordance with regulation 34, provided that the safety of the crew is thus better ensured, to the satisfaction of the Administration. Inflatable liferafts required by this paragraph may be used to comply with the requirements of regulation 5.*<sup>194</sup>

#### 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. In existing vessels, it may be permitted that the ladder, required under regulation VI/5(3), complies with this provision.
- (b) means for illuminating the stowage position of survival craft and their launching appliances during preparation for and the process of launching, and *in new vessels* also for illuminating the water into which the survival craft are launched until the process of launching is completed, the power for which 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) *in new vessels*, means for preventing any discharge of water into the survival craft shall be provided.

#### 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.

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<sup>193</sup> A part of this paragraph is a specific Icelandic provision.

<sup>194</sup> This paragraph is a specific Icelandic provision.



## Regulation 9

### Immersion suits and thermal protective aids

(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. *For vessels operating in the Southern region the number of immersion suits need not be greater than two.*<sup>195</sup>

(2) Vessels complying with the requirements of regulation 5(2) and (3) shall carry immersion suits complying with the requirements of regulation 25 for every person on board not accommodated in:

- (a) lifeboats; or
- (b) davit-launched liferafts; or
- (c) liferafts served by equivalent approved appliances which do not require entry into the water to board the liferaft.

(3) In addition to paragraph 2(a), vessels shall carry for each lifeboat at least three immersion suits complying with the requirements of regulation 25.

In addition to the thermal protective aids required by regulation 17(8)(xxxi), vessels shall carry thermal protective aids complying with the requirements of regulation 26 for persons to be accommodated in the lifeboats and not provided with immersion suits.

These immersion suits and thermal protective aids need not be required if the vessel is equipped with either totally enclosed lifeboats of such aggregate capacity as to accommodate on each side of the vessel at least the total number of persons on board or a free-fall lifeboat of sufficient capacity to accommodate the total number of persons on board.

(4) The requirements of paragraphs (2) and (3) above do not apply to vessels constantly engaged in warm climates, where, in the opinion of the Administration, immersion suits and thermal protective aids are unnecessary.

(5) The immersion suits required by paragraph (2) and (3) may be applied to comply with paragraph 1.

(6) *Notwithstanding the provisions of paragraph (2) to (5), an approved immersion suit of an appropriate size shall be provided for each man on board a vessel operating in the Northern region, complying with the requirements of regulation 25, as well as specific provisions for this regulation applicable for the same sea area. The immersion suits required by this paragraph may be applied to comply with paragraph (1).*<sup>196</sup>

(7) *The immersion suits required by this regulation shall be stored above the uppermost complete deck of a vessel, where practicable, and where they are always readily available.*<sup>197</sup>

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<sup>195</sup> A part of this paragraph is a specific European provision

<sup>196</sup> A part of this paragraph is a specific European provision and partly Icelandic.

<sup>197</sup> This paragraph is a specific Icelandic provision.

## Regulation 10

### Lifebuoys and equipment for recovering a person from the sea<sup>198</sup>

(1) At least the following number of lifebuoys complying with the requirements of regulation 27(1) shall be provided:

- (a) 8 lifebuoys in vessels of 75 m in length and over;
- (b) 6 lifebuoys in vessels of 45 m in length and over but less than 75 m in length;
- (c) 4 lifebuoys in vessels of 24 m in length and over but less than 45 m in length;
- (d) 3 lifebuoys in vessels of 17 m in length and over but less than 24 m in length.
- (e) 2 lifebuoys in vessels of less than 17 m in length.<sup>199</sup>

(2) *In vessels of 24 m in length and over, at least half of the number of lifebuoys referred to in paragraph (1) be provided with self-igniting lights complying with the requirements of regulation 27 (2). In vessels of less than 24 m in length, at least one lifebuoy shall be provided with such a light.*

(3) *In vessels of 45 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, where practicable, be capable of quick release from the navigating bridge. In vessels, of less than 45 m in length, at least one of the lifebuoys provided with self-igniting lights in accordance with paragraph (2) shall be provided with such a self-activating smoke signal.*<sup>200</sup>

(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. Such lifebuoys shall not have self-igniting lights. *Notwithstanding the provisions of this paragraph, in vessels of less than 24 m in length, only one lifebuoy needs to be equipped with a buoyant lifeline.*

(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.

(6) *Notwithstanding the provisions of paragraph (1) and (4), a recognized safety belt may be used in stead of one lifebuoy with a buoyant lifeline.*<sup>201</sup>

(7) *In vessels of 24 m in length and over, in addition to the lifebuoys required by paragraph (1), and at a suitable position on the after part of the deck near the stern ramp door two lifebuoys shall be located on each side of the stern ramp door, provided with self-igniting lights complying with the provisions of regulation. Such lifebuoys may*

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<sup>198</sup> A part of this regulation is a specific Icelandic provision.

<sup>199</sup> A part of this regulation is a specific Icelandic provision.

<sup>200</sup> A part of this paragraph is a specific European provision.

<sup>201</sup> This paragraph is a specific Icelandic provision.

*be provided with self-activating smoke signals complying with the requirements of regulation 27 (3) in addition to the self-igniting light.*<sup>202</sup>

(8) *Lifebuoys shall be marked with the vessel's registration number.*

(9) *On board every vessel there shall be at least one piece of equipment for recovering a person from the sea. The relevant provisions of paragraph (5) shall apply to the placement of the equipment. Equipment for recovering a person from the sea shall comply with the requirements of regulation 33.*<sup>203</sup>

#### Regulation 11

##### Line-throwing appliances

Every vessel shall carry a line-throwing appliance of an approved type, complying with the requirements of regulation 28.

#### 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. This equipment shall include 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 replaced in accordance with the manufacturer's instructions. However, the distress signals shall not be replaced later than 48 months after the date of manufacture.*<sup>204</sup>

#### Regulation 13

##### Radio life-saving appliances

All vessels shall be fitted with portable VHF radiotelephone apparatus for radio telephony. Their number shall be:

- (a) *not less than three in vessels of 45 m in length and over;*
- (b) *not less than two in new vessels of 24 m in length and over but less than 45 m in length;*
- (c) *not less than one in existing vessels of 24 m in length and over but less than 45 m in length; and*
- (d) *not less than one in vessels of less than 24 in length engaged on voyages outside sea area STK and A1.*

Such apparatus shall conform to performance standards not inferior to those adopted by the Organization.<sup>205</sup> If a fixed two-way VHF radiotelephone apparatus is fitted in a survival craft it shall conform to performance standards not inferior to those adopted by the Organization.<sup>206</sup>

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<sup>202</sup> This paragraph is a specific Icelandic provision.

<sup>203</sup> This paragraph is a specific Icelandic provision.

<sup>204</sup> This paragraph is a specific Icelandic provision.

<sup>205</sup> See the Recommendation on Performance Standards for Survival Craft Portable Two-Way VHF Radiotelephone Apparatus adopted by the Organization by resolution A.605(15).

<sup>206</sup> A part of this regulation is a specific European provision.

Regulation 14  
Radar transponders

At least one radar transponder shall be carried on each side of every vessel *of 45 m in length and over*. Such radar transponders shall conform to performance standards not inferior to those adopted by the Organization.<sup>207</sup> The radar transponders<sup>208</sup> shall be stowed in such locations that they can be rapidly placed in any survival craft. Alternatively one radar transponder shall be stowed in each survival craft.<sup>209</sup>

Regulation 15  
Retro-reflective materials on life-saving appliances

All survival craft, rescue boats, lifejackets, *immersion suits* and lifebuoys shall be fitted with retro-reflective material in accordance with the recommendations of the Organization.<sup>210 211</sup>

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.

(3) Maintenance of falls.

Falls used in launching shall be turned end for end at intervals of not more than 30 months. Falls shall be renewed when necessary due to their deterioration or at intervals of not more than 5 years.

(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:

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<sup>207</sup> See the Recommendation on Performance Standards for Survival Craft adopted by the Organization by resolution A.697(17).

<sup>208</sup> One of these may be the radar transponder required by regulation IX/6(1)(c).

<sup>209</sup> A part of this paragraph is a specific Icelandic provision.

<sup>210</sup> See the Recommendation on the Use and Fitting of Retro-Reflective Materials on Life-saving Appliances adopted by the Organization by resolution A.658(16).

<sup>211</sup> A part of this paragraph is a specific Icelandic provision.

- (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/*maintenance manual of lifesaving appliances*.

(7) Servicing of inflatable liferafts, inflatable lifejackets and inflated rescue boats:

- (a) Every inflatable liferaft and inflatable lifejacket 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.<sup>212</sup>
- (b) All repairs and maintenance of inflated rescue boats shall be carried out in accordance with the manufacturer's instructions. Emergency repairs may be carried out on board the vessel; however, permanent repairs shall be effected at an approved servicing station.

(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.

(10) All immersion suits shall be serviced at intervals of not more than 5 years.<sup>213</sup>

(11) *Release and launching appliance shall be serviced annually in accordance with rules by the Administration. The Administration may allow specialized bodies to inspect and maintain release and launching appliance.*<sup>214</sup>

<sup>212</sup> See the Recommendation on Conditions for the Approval of Servicing Stations for Inflatable Liferafts adopted by the Organization by resolution A.693(17).

<sup>213</sup> This paragraph is a specific Icelandic provision.

## PART C - LIFE-SAVING APPLIANCES REQUIREMENTS

### Regulation 17

#### General requirements for lifeboats<sup>215</sup>

- (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 per second 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 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 24.

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<sup>214</sup> This paragraph is a specific Icelandic provision.

<sup>215</sup> See also regulation 3 in Part A.

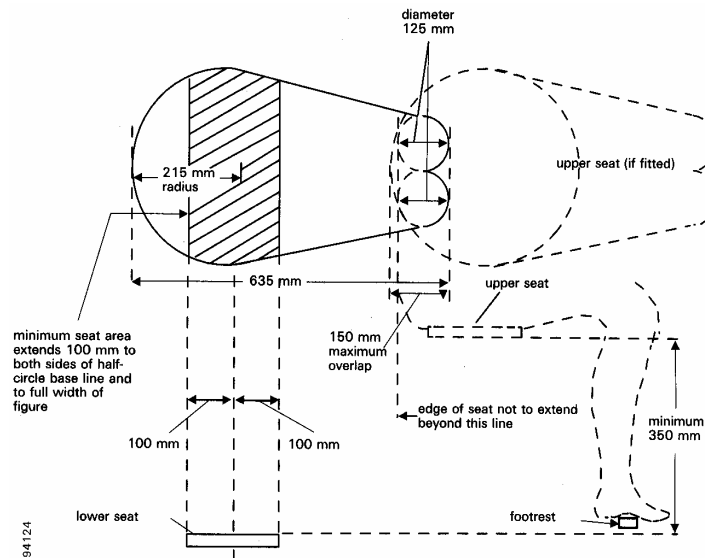


Figure 1

- (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.
- (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 minutes 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.

The buoyancy shall be 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 combustion 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 minutes 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 minutes 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 centre line 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. 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. The drain valve 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. 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 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 shall be fitted to the top of the cover or enclosure. The lamp shall be 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. 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.
- (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 rescue boat equipment shall be as small and of as

little mass as possible and shall be packed in suitable and 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. 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.<sup>216</sup>
- (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. Their length shall be 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) of regulation 17 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. The 1 l per person may be replaced by a de-salting apparatus capable of producing an equal amount of fresh water in 2 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;
- (xiv) Six hand flares complying with the requirements of regulation;
- (xv) Two buoyant smoke signals complying with the requirements of regulation;
- (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 (SOLAS), on a waterproof card or in a waterproof container;

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<sup>216</sup> See the Instructions for Action in Survival Craft adopted by the Organization by resolution A.657(16).

- (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;
- (xxxii) Thermal protective aids complying with the requirements of regulation 26 sufficient for all of the persons the lifeboat is permitted to accommodate;<sup>217</sup>
- (xxxiii) 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;
- (xxxiiii) *For all vessels of 24 m in length and over operating in the Northern region: Approved emergency radio beacon (COSPAS/SARSAT) operating on frequency 406 and/or 121 MHz.*<sup>218</sup>

(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<sup>219</sup>

- (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.

<sup>217</sup> A part of this paragraph is a specific Icelandic provision.

<sup>218</sup> A part of this paragraph is a specific Icelandic provision.

<sup>219</sup> See also regulation 3 in Part A.

(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 after-most 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 minutes;
  - (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 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 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 per second.
  - (b) The lifeboat shall be automatically self-bailing.

Regulation 19  
Totally enclosed lifeboats<sup>220</sup>

- (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;

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<sup>220</sup> See also regulation 3 in Part A.

- (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 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 metres per second.

(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<sup>221</sup>

(1) Construction of liferafts.

- (a) Every liferaft shall be so constructed as to be capable of withstanding exposure for at least 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 to wind and sea. The canopy 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 *inflatable* air gap or other equally efficient means. Means shall be provided to prevent accumulation of water in the air gap. *Liferafts, which are built before 1 January 2004 and are fitted in existing vessels need not comply with the provision on inflatable air gaps provided that such a vessel has not been bought or leased from abroad for Icelandic registration after the entry into force of this regulation.*<sup>222</sup>
  - (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;

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<sup>221</sup> See also regulation 3 in Part A.

<sup>222</sup> A part of this paragraph is a specific Icelandic provision.



- (iii.1) *Notwithstanding the provisions of this regulation, entrances in a canopy of a liferaft intended for throw over board launching shall be circular in shape. Liferafts accommodating more than eight persons shall have at least two diametrically opposite entrances. The entrances shall be at least 80 cm in diameter. Liferafts accommodating eight persons shall have one entrance at least 70 cm in diameter. The canopy material shall extend down to the main buoyancy chamber and be glued to it all the way around the liferaft. The entrance opening shall be provided with sleeve for closing, at least 65 cm long, and fitted with an approved door closing by string or similar, operated from the inside. All new liferafts shall be fitted with the above closing arrangements, except where the Administration specially approves other types from the manufacturer. The entrance of davit-launched liferafts, according to paragraph (4), shall be approved, as appropriate, provided that the strength and watertightness of the canopy and the closing arrangements is equivalent to a circular entrance;*<sup>223</sup>
- (iv) It shall admit sufficient air for the occupants at all times, even with the entrances closed. *To comply with this provision of the regulation two special vents, not less than 20 cm<sup>2</sup> in area, positioned on the top of the canopy of each liferaft, and so arranged that they can remain open but it shall be possible to decrease the vents and close them;*<sup>224</sup>
- (v) It shall be provided with at least one viewing port;
- (v.1) *When the liferaft is fitted with an entrance or entrances in accordance with paragraph (e)(iii.1) the Administration may dispense with the requirement of a viewing port;*<sup>225</sup>
- (vi) It shall be provided with means for collecting rain water;
- (vii) It shall have sufficient headroom for sitting occupants under all parts of the canopy.
- (2) Minimum carrying capacity and mass of liferafts.
- (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. *Existing vessels, of less than 24 m in length, may be fitted with liferafts with a carrying capacity of less than six persons, provided that they were fitted before the entry into force of this Regulation.*
- (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.

<sup>223</sup> This paragraph is a specific Icelandic provision.

<sup>224</sup> A part of this paragraph is a specific Icelandic provision.

<sup>225</sup> This paragraph is a specific Icelandic provision.

- (b) The liferaft shall be fitted with an efficient painter. Its length shall be 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.
  - (c) *Each liferaft shall be provided with bilge pumping arrangements structured so as to be operable whether the canopy is open or closed.*<sup>226</sup>
- (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 per second 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 minutes 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 the sea-anchor, 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. The sea anchors shall be of a type which is unlikely to turn inside-out between its shroud lines. *The sea anchors shall fulfil the provisions of Annex VI – Requirements for main sea anchors for inflatable liferafts.*<sup>227</sup>
    - (vi) Two buoyant paddles;
    - (vii) Three tin-openers. Safety knives containing special tin-opener blades are satisfactory for this requirement;

<sup>226</sup> This paragraph is a specific Icelandic provision.

<sup>227</sup> A part of this paragraph is a specific Icelandic provision.

- (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;
  - (xi) Six hand flares complying with the requirements of regulation;
  - (xii) Two buoyant smoke signals complying with the requirements of regulation;
  - (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 16 of chapter V of the International Convention for the Safety of Life at Sea, 1974 (SOLAS), 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;
  - (ix) Watertight receptacles containing a total of 1.5 l of fresh water for each person the lifeboat is permitted to accommodate. The 0.5 l per person may be replaced by a de-salting apparatus capable of producing an equal amount of fresh water in 2 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.<sup>228</sup>
  - (xxiii) Instructions for immediate action.<sup>229</sup>
  - (xxiv) Thermal protective aids complying with the requirements of regulation 26. Their number shall be sufficient for 10% of the number of persons the liferaft is permitted to accommodate or two, whichever is the greater. *Notwithstanding this provision, liferafts in existing vessels may be fitted with thermal protective aids which were on board before the entry into force of this Regulation, provided that they are in working order;*
  - (xxv) *For all vessels of 24 m in length and over operating in the Northern region: Approved emergency radio beacon (COSPAS/SARSAT) operating on frequency 406 and/or 121 MHz.*<sup>230</sup>
- (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.

<sup>228</sup> See Instructions for Action in Survival Craft adopted by the Organization by resolution A.657(16).

<sup>229</sup> See Instructions for Action in Survival Craft adopted by the Organization by resolution A.657(16).

<sup>230</sup> A part of this paragraph is a specific Icelandic provision.

- (c) Where appropriate the equipment shall be stowed in a container which, if it is not an integral part of, or permanently attached to, the liferaft, shall be stowed and secured inside the liferaft. This container shall be capable of floating in water for at least 30 minutes without damage to its contents.
- (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 arrangement, 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  $2.2 \pm 0.4$  kN.
  - (c) Hydrostatic release units.  
If a hydrostatic release unit is used in the float-free arrangements, it shall:
    - (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<sup>231</sup>

- (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

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<sup>231</sup> See also regulation 3 in Part A.

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 minute at an ambient temperature of between 18°C and 20°C and within a period of 3 minutes 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 3 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. The liferaft shall be fitted with strain gauge that that plugging topping-up pump or required by., strain gauge that that upkeep working pressure.

(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 m<sup>3</sup>, 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 m<sup>2</sup> (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 the ladder shall be situated not less than 0.5 m below the liferaft's bottom. *The three lowest steps shall be of rigid quickly sinking material. In addition, two steps on and within the buoyancy chambers shall be of a rigid permanent material. Fastenings*

*shall be fitted on the outside of the buoyancy chambers of the liferaft for keeping the ladder stretched;*<sup>232</sup>

- (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 shall be fitted to the top of the cover or enclosure of the liferaft. The lamp shall be 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. 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 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:

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<sup>232</sup> A part of this paragraph is a specific Icelandic provision.

- (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) the marking "SFV".<sup>233</sup> *Notwithstanding this provision containers for inflatable liferafts, equipped in accordance with the specific requirements in regulation 20 (1)(e)(i), (iii.1) and (iv), (3)(c) and regulation 21 (4)(b) shall be marked with "SFV - ICELAND". Notwithstanding the provisions of this paragraph, containers for liferafts in existing vessels shall be marked in accordance with the approval of the inflatable liferaft;*<sup>234</sup>
- (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. The markings shall be over each entrance in characters not less than 100 mm in height of a colour contrasting with that of the liferaft.

(9) Davit-launched 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  $20 \pm 3^{\circ}\text{C}$  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  $-30^{\circ}\text{C}$  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.

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<sup>233</sup> 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 the liferafts marked with SFV.

<sup>234</sup> A part of this paragraph is a specific Icelandic provision.

- (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(a)(ii) shall be safety knives.

Regulation 22  
Rigid liferafts<sup>235</sup>

(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 m<sup>3</sup> 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 m<sup>2</sup>, 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 the ladder 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.

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<sup>235</sup> See also regulation 3 in Part A.



- (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 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.
- (b) A manually controlled lamp shall be fitted to the top of the cover or enclosure of the liferaft. The lamp shall be 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. 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. The markings shall be over each entrance in characters not less than 100 mm in height of a colour contrasting with that of the liferaft;
- (vi) the marking "SFV".<sup>236</sup> *Notwithstanding this provision rigid rigid liferafts, equipped in accordance with the specific requirements in regulation 20 (1)(e) (i), (iii.1) and (iv), (3)( c) shall be marked with "SFV - ICELAND";*<sup>237</sup>
- (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.

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<sup>236</sup> 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 the liferafts marked with SFV.

<sup>237</sup> A part of this paragraph is a specific Icelandic provision.

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 4 times the mass of its full complement of persons and equipment.

Regulation 23  
Rescue boats<sup>238</sup>

- (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.
  - (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 in length and not over 8.5 m in length, *except in vessels of less than 45 m in length where it is unreasonable or impracticable to fit such boats due to the size of the vessel or of other causes, but in these cases the Administration may approve boats of less sizes but, however, not less than 3.3 m in length;*
    - (ii) be capable of carrying at least five seated persons and a person lying down. *A rescue boat in a vessel of less than 45 m in length, if it is less than 3.8 m in length, shall be capable of carrying at least four seated persons and a person lying down.*<sup>239</sup>
  - (c) The number of persons which a boat shall be permitted to accommodate shall be determined by the Administration *by conducting a seat test. Minimum carrying capacity shall be as prescribed in regulation 23 (b)(ii). A seat, except for the helmsman, may be placed in the bottom of the boat. It is prohibited to place any part of the seats on the bulwark or on inflated buoyancy tubes on the boat's sides.*<sup>240</sup>
  - (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. 15% of longitudinal direction aft ex post facto.
  - (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.

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<sup>238</sup> See also regulation 3 in Part A.

<sup>239</sup> A part of this paragraph is a specific European provision.

<sup>240</sup> A part of this paragraph is a specific European provision.

- (i) Arrangements for towing shall be permanently fitted in rescue boats and shall be sufficiently strong to marshal or tow liferafts as required by subparagraph (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 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. Their number shall be sufficient for 10% of the number of persons the liferaft is permitted to accommodate or two, whichever is the greater;
    - (xiv) *For all vessels of 24 m in length and over operating in the Northern region: Approved emergency radio beacon*

*(COSPAS/SARSAT) operating on frequency 406 and/or 121 MHz.*<sup>241</sup>

- (c) In addition to the equipment required by subparagraph (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 subparagraph (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  $20^{\circ}\text{C} \pm 3^{\circ}\text{C}$  with all relief valves inoperative; and
    - (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  $-30^{\circ}\text{C}$ , 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  $0.17 \text{ m}^3$  for each person the rescue boat is permitted to accommodate.

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<sup>241</sup> A part of this paragraph is a specific Icelandic provision.

- (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.
- (4) *Instead of complying with the requirements of paragraph (1) to (3) rescue boats already on board existing vessels before the entry into force of this Regulation shall at least comply with the following provisions:*
- (a) *Rescue boats may be either of rigid or inflated construction or a combination of both and they shall be capable of carrying at least five persons;*
  - (b) *Rescue boats shall be fitted with an inboard or outboard motor. If it is fitted with an outboard motor, the rudder and tiller may form part of the engine;*
  - (c) *every rescue boat shall be fitted with:*
    - (i) *buoyant oars in all crutches and one spare oar;*
    - (ii) *boat-hook;*
    - (iii) *bailer;*
    - (iv) *one buoyant rescue quoit, attached to 30 m of line;*
    - (v) *painter, at least 10 m long;*
    - (vi) *six hand flares.*

Regulation 24  
Lifejackets<sup>242</sup>

- (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 seconds.
  - (b) A lifejacket shall be so constructed that:
    - (i) after demonstration, a person can correctly don it within a period of 1 minute 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) *In a new vessel and an existing vessel, which is bought or leased from abroad for Icelandic registration, a lifejacket shall have sufficient buoyancy and stability in calm fresh water to:*

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<sup>242</sup> See also regulation 3 in Part A.

- (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 seconds.<sup>243</sup>
- (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.
- (g) *In addition to other provisions of this paragraph each lifejacket shall be provided with a crutch strap to prevent the person in the water from slipping loose from it.*<sup>244</sup>

(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. It shall also be provided with a device to permit inflation by a single manual motion. Also it shall 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 paragraphs (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 candela;
  - (ii) have a source of energy capable of providing a luminous intensity of 0.75 candela 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 candela.

Regulation 25  
Immersion suits<sup>245</sup>

(1) General requirements for immersion suits.

- (a) The immersion suit shall be constructed with waterproof materials such that:

<sup>243</sup> A part of this paragraph is a specific Icelandic provision.

<sup>244</sup> This paragraph is a specific Icelandic provision.

<sup>245</sup> See also regulation 3 in Part A.

(i) it can be unpacked and donned without assistance within 2 minutes 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 seconds;

(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; and

(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 hour 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.

(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 seconds.

(4) *Provisions on immersion suits for vessels operating in the Northern region.*

*Notwithstanding the provisions of paragraph (1) to (3), all immersion suits required by regulation 9 (6) shall be single unit suits with inherent insulation and comply with the requirements of paragraph (1) (c) of regulation 24 on buoyancy. Each immersion suit of that type shall be fitted with a lifting harness and buddy-line, which is at least 1 m in length, as well as a carabine hook. The wear resistance of the lifting harness and the buddy-line shall be at least 1 kN. Furthermore, other relevant provisions in paragraph (1) to (3) shall be complied with.*<sup>246</sup>

Regulation 26

Thermal protective aids<sup>247</sup>

(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 minutes, 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<sup>248</sup>

(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. Also, the use of any air compartment which depends on inflation for buoyancy is prohibited;

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<sup>246</sup> A part of this paragraph is a specific European provision and partly Icelandic.

<sup>247</sup> See also regulation 3 in Part A.

<sup>248</sup> See also regulation 3 in Part A.



- (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 seconds;
- (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 4 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 candela 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 minutes 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 seconds;
- (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<sup>249</sup>

- (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.

*(1a) Notwithstanding the provisions of paragraph (1) vessel of less than 24 m in length shall have two projectiles each capable of carrying the line at least 230 m in calm weather having a breaking strength of not less than 2 kN.*

- (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<sup>250</sup>

- (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 candela;
  - (iii) have a burning period of not less than 40 seconds;
  - (iv) have a rate of descent of not more than 5 m per second;
  - (v) not damage its parachute or attachments while burning.

Regulation 30  
Hand flares<sup>251</sup>

- (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;

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<sup>249</sup> See also regulation 3 in Part A.

<sup>250</sup> See also regulation 3 in Part A.

<sup>251</sup> See also regulation 3 in Part A.

- (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 candela;
  - (iii) have a burning period of not less than 1 minute;
  - (iv) continue to burn after having been immersed for a period of 10 seconds under 100 mm of water.

Regulation 31  
Buoyant smoke signals<sup>252</sup>

- (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 minutes 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 seconds under 100 mm of water.

Regulation 32  
Launching and embarkation appliances<sup>253</sup>

- (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. A launching mechanism shall be capable of launching the survival craft or rescue boat whether they are fully loaded or 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 with the survival craft or rescue boat. The survival craft shall be visible to the person on deck operating the launching mechanism.

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<sup>252</sup> See also regulation 3 in Part A.

<sup>253</sup> See also regulation 3 in Part A.

- (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.
  - (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:  

$$S = 0.4 + (0.02 \times H)$$
 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.
  - (d) *In lieu of meeting the requirements of paragraphs (b) and (c) the ladder may be the permanent ladder referred to in regulation IV/5(3) if the safety of the crew is at least the same that manner, to the satisfaction of the Administration.*<sup>254</sup>

### *Regulation 33*

#### *Equipment for recovering a person from the sea*

- (1) *Equipment for recovering a person from the water shall:*
- (a) *have at least 100 N buoyant force in fresh water for 24 h;*
  - (b) *be fitted with a buoyant lifeline equal in length to not less than 30 m connected to buoyant throwing equipment. Other lines connected to the equipment shall also be buoyant lines;*
  - (c) *be so arranged that it can be applied up to 5 m from vessel's sides;*
  - (d) *be made to withstand the weight of two persons, weighing a total of at least 150 kg, lifted simultaneously from the water on board a vessel;*
  - (e) *have short instructions or diagram permanently fitted to its container clearly illustrating the use of the equipment.*
- (2) *Equipment for recovering a person from the water shall:*
- (a) *be so arranged that the person being lifted can be safely fastened to the equipment;*
  - (b) *be so arranged so that a helpless person can readily be strapped to the equipment;*
  - (c) *be so arranged that it is easy to employ, both with manual effort and boom/crane or comparable equipment.*

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<sup>254</sup> This paragraph is a specific Icelandic provision.

Regulation 34<sup>255</sup>

Automatic releasing and launching appliances of inflatable liferafts

(1) *General requirements.*

*Each releasing and launching appliance, required in regulation 6 (4), shall:*

- (a) be so arranged that the liferaft can be released from the vessel with one manual movement at the stowage position of the liferaft;*
- (b) be so arranged that the liferaft can be released from the vessel with one manual movement from the wheelhouse or another suitable place;*
- (c) launch the liferaft and automatically initiate its inflation.*

(2) *Testing requirements.*

(a) *General.*

*Releasing and launching appliances shall be classified and tested pursuant to test method NT MEC 032 in accordance with changes in test procedures, dated 3 February 1998. A test assessment is an evaluation of the need for testing, where, inter alia, previously conducted tests shall be taken into account and whether the test method is to be applied in its entirety or whether the equipment gives reason to variation. The test assessment is contained in a check list with the test and approval requirements. The manufacturers of releasing and launching appliance shall inform the Administration of the testing party. The testing party shall be an approved testing party which decides the test method in consultation with the Administration.*

(b) *Classification and checking.*

*A test shall be carried out according to a test method with an additional filling out of a check list and a decision on the scope of the tests which are necessary to be carried out. It shall be ensured that the appliances have the functionality set out in applicable rules.*

(c) *(Strength test.*

*A strength test shall be carried out in accordance with the test method and the results of a test assessment. Furthermore, the remote controlled release appliance shall be strength-tested from the release handle with a 2.2 x 200 N load for 5 minutes. Whereas the purpose of a test is to simulate the loads in real use, the test shall be implemented in such a way that the appliance is activated once and made to carry out the work that it is made for with a liferaft container model of 2.2 x the weight of the largest liferaft for which the appliance is made. The weight distribution of the liferaft container model shall be equivalent to the reference liferaft. After the test the appliance is inspected and no signs of deformation, damage or other changes may be visible.*

(d) *Function test*

*The test shall be carried out in accordance with a test method at an ambient temperature ranging from 18°C to 20°C. The appliance shall function properly in all tests and the forces and movements shall be entered in the test reports in accordance with the test method and be within the limits described there. Remote controls shall be tested in accordance with a test method. One out of 5 tests may show a maximum of 220 N strain, but reference is made to the test methods. On vessels of less than 15 m in length the activation of inflation may be connected to a remotely controlled or automatic release. If the inflation of a liferaft is*

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<sup>255</sup> This regulation is a specific Icelandic provision.

*connected to a remotely controlled release and activation it shall be function tested in accordance with a test method.*

*(i) Releasing and launching appliances:*

*Manual activation shall be tested 10 times but remote activation 5 times in accordance with the test method. Inflation activation equipment of the inflatable liferaft shall not reduce other functions of the remote control and/or automation of the equipment. This arrangement shall not prevent traditional launching of the inflatable liferaft or lead to a dangerous situation during traditional launching.*

*(ii) Test of automatic release appliances from the stowed position:*

*Manual release shall be tested 10 times in accordance with the test method.*

*(iii) Launching arrangement:*

*Manual activation shall be tested 10 times but remote activation 5 times in accordance with the test method.*

*(e) Temperature cycle test.*

*A temperature cycle test shall be carried out in accordance with the test method and the results of a test assessment. The appliance is considered to have passed the temperature cycle test if it has functioned properly in all tests and the forces and movements needed to carry out the function test are within the definitions of one manual pull in a similar manner as in the function test. The test is performed according to the test method if the test assessment warrants so. However, testing the function of the equipment 5 times may be omitted after testing at +65°C. The appliance shall stand overnight at room temperature after having been tested at +65°C before it is tested at -30°C.*

*(f) Launch path measurement.*

*(i) Measurements above sea level.*

*Above sea level measurements shall be carried out in accordance with a test method. Launch paths shall be measured at angles of heel 0° and +20°. Furthermore, the appliance shall be activated at angles of heel +60°, -60° and +90° but launch path measurements are not required for these three angles of heel. In these 3 tests the appliance shall carry out all the work that it was made to do, i.e. to release the liferaft from its stowed position, move it from its seat and activate the inflation of the liferaft. The appliance shall work as it is supposed to do in all tests within normal time limits. In evaluating paths from this test and launch path measurements with inflation to determine the function and location of the appliance, the following shall be fulfilled: That the outermost edge of the liferaft container is never closer to the side of the vessel than 0.2 m at the beginning of the test. That lowest edge of the liferaft container is at least 0.3 m above the gunwale or the edge of the deck when it is thrown over the side of the vessel and that the speed and force of the container is adequate to deliver the liferaft down to the sea level although the vessel has a list of 20° to the opposite side and that the sea level is 4 m below the place where the liferaft goes over the side of the vessel. The requirement is that the liferaft and/or its container reaches the sea level. This is regardless of whether the liferaft or its container touches the side of the vessel on its way to the sea level. The launch path measurements are implemented in accordance with a test method at angles of heel of 0° and 20°. Five measurements are carried out at each angle of heel and the paths estimated in accordance with instructions set out in the*



*test method. Also, the appliances is function tested at angles of heel of +60°, -60° and +891°, three times at each angle of heel. At the time of activation the appliance shall always operate as expected within normal time limits. The manufacturer shall submit "launch path coordinates (x;y)" for each type of appliance in accordance with the following specifications:*

*(ii) Measurements below sea level.*

*The appliance shall be function tested below sea level in these circumstances and as often as described in this part of the test method. The Administration does not require launch path measurements below sea level but requires that the appliance carries out the work that it was made to do, i.e. to release the liferaft from its stowed position, move it from its seat and activate the inflation of the liferaft. Activation below the waterline shall be carried out at all angles of heel in accordance with the test method. Activation shall take place three times at each angle of heel.*

*(iii) Launch path measurement with inflation.*

*Launch path measurement with inflation shall only be carried out above sea level. Conclusions of these measurements shall be evaluated in the same manner as specified in the measurement above sea level. Launch path measurement with inflation shall be carried out in accordance with the test method once above sea level. The measurement may be carried out at the same time as the measurement above sea level at the angle of heel 0° where the same line-up is used. Launch path measurement with inflation below sea level is not required.*

*(g) Icing test.*

*Testing of release and launching appliances shall be carried out in accordance with a test method. The appliance shall work properly during this test. If the appliance has not operated as it is supposed to do within 3 minutes from the time of activation the test shall be discontinued and appliance is then considered to have failed the test.*

*(h) Corrosion test.*

*If the conclusion at the time of classification and control is that the appliance shall be subjected to a corrosion test such a test shall be carried out in accordance with test methods and the conclusions of the test assessment. A part of the appliance may be tested if the test assessment warrants so.*

*(i) Vibration test.*

*If the conclusion of the classification and control according to a test method is that the appliance shall be subjected to a vibration test such a test shall be carried out in accordance with test methods and the conclusions of the test assessment. A part of the appliance may be tested if an assessment according to specifications warrants so.*

*(j) Test of automatic functions.*

*If the appliance is automatic the test of automatic functions shall be carried out in accordance with a test method and the conclusions of a test assessment. If a hydrostatic release unit is a part of an appliance it shall be tested as well. If the appliance is hydrostatically controlled it shall release the liferaft before the appliance reaches the depth of 4 m. If the appliance is dependent on other parameters than sea pressure it shall release the liferaft within 15 seconds from the time that the appliance is submerged in the sea. If an inflatable liferaft is connected to automatic release it shall be subjected to a test of automatic function and the activation equipment shall operate properly in all the tests.*

(k) *Special tests.*

*Tests shall be carried out according to a test method as warranted by the appliance in question. The Administration may require other tests to be carried out on the appliance in question if considered necessary. Tests pursuant to this paragraph shall be carried out in accordance with the appropriate test methods.*

(3) *Certification requirements.*

(a) *Quality control.*

*The manufacturer of an application shall, before production commences, have set up a recognized quality standards system and shall inform the Administration on the monitoring system and who is responsible for its monitoring. The quality standards system shall ensure that the appliances comply with the requirements provided for in accordance with the certified prototype at the time of final inspection. The manufacturer shall, before certification, submit for certification the guidance on inspection for the appliance specifying the items to be inspected, how they shall be inspected and how they shall be remarked. Each appliance shall come with a manufacturer's certificate as well as its technical specifications. Furthermore, each appliance shall come with an inspection book.*

(b) *Basic requirements on appliances already in use.*

*Release and launching appliance shall be inspected annually. The appliance shall be inspected in accordance with approved guidance on inspection supplied by the manufacturer. At intervals not exceeding 5 years the launching appliance shall be function tested along with a liferaft container of the same weight as the liferaft belonging to the appliance. Manufacturers or their representatives shall annually collect and send to the Administration information on the inspections of appliances manufactured by them. An inspector shall preserve inspection certificates for 5 years from the time of inspection.*

(c) *Guidance on inspection.*

*The guidance on inspection shall contain as appropriate:*

(i) *Guidance on inspection procedures.*

(ii) *List of tools need to carry out the inspection.*

(iii) *List of spare parts for the appliance.*

(iv) *Instructions on repair.*

(v) *Checklist for inspection.*

(vi) *The instructions and rules considered necessary by the Administration.*

*Manufacturers shall be responsible for providing the inspectors, duly approved by the Administration, with the information on the inspection of the appliance and on any changes made.*

(4) *Location and arrangements.*

(a) *Placement.*

*Generally, survival craft shall be accessible. Life-saving appliances shall be placed as close to accommodation spaces as possible and where the crew is normally at work. Survival craft shall be so placed as to be readily launched from the place of stowage and as to prevent damage resulting from normal operation of the vessel. Neither stanchions, stays nor other obstacles shall in any way prevent the release and launching of survival*

*craft. Appropriate measures shall be taken to prevent danger arising from openings in bulwarks and guard rails for the stowage of survival craft. Care shall be taken to prevent survival craft from ending up below decks or become jammed behind guard rails or mast stays on their way into the water.*

- (b) *Approval for placement and arrangements on board vessels. Placement and arrangements of release and launching appliance is subject to the approval of the Administration. Before installation commences an approval from the Administration on the intended placement of the appliance on board the vessel shall be available. Release and launching appliances and their fittings shall be installed in accordance with the approval of the appliances and the results of launch path measurements shall be taken into account. Release and launching appliances shall be placed so as to be readily accessible for use, inspection and maintenance. Nothing relating to the installation and placement of the appliance shall prevent the effectiveness of the appliance to launch a liferaft against a trim of up to 10° and a list of up to 20° either way. Furthermore, the liferaft shall be capable of being launched with manual effort. The appliance shall be so placed and installed as to prevent hazard from its use. Appliances having arms which fall over passages and equivalent equipment shall be arranged in such a way that the minimum height from the passageway to the arm in the final position is at least. In placing the appliance it shall be ensured that the sufficient space for unimpeded operation is at least 0.35 m in front of and behind the liferaft for launching it with manual effort. The containers of each liferaft shall have a sticker containing information on the arrangement of the painter system.*

## CHAPTER VIII – EMERGENCY PROCEDURES, MUSTERS AND DRILLS

### Regulation 1

#### Application

The regulations of this chapter shall apply to new and existing vessels.

### Regulation 2

#### General emergency alarm system, muster list and emergency instructions

- (1) *In new vessels of 24 m in length and over*, 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 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 when this alarm is sounded
- (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. *Life-saving appliances and safety equipment and other fire-extinguishing appliances and portable firefighting equipment shall always be checked before the vessel leaves port.*<sup>256</sup>
- (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.

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<sup>256</sup> A part of this paragraph is a specific European provision.

(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.

(10) *The muster list and the safety and fire control plan referred to in chapter V, the instructions in the use of the life-saving appliances referred to in chapter VII, including the instruction on board survival craft as well as other safety instructions on board the vessel, shall be in Icelandic and in English as well if any members of the crew do not understand Icelandic. All markings required by these regulations shall be clear and indelible. All equipment, means of escape and other items specified in the safety and fire control plan shall bear internationally approved markings or other appropriate designation in Icelandic and in English as well if any members of the crew do not understand Icelandic.*<sup>257</sup>

### 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. The drills of the crew shall take place within 24 hours 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. The Administration may accept other arrangements that are at least equivalent for those classes of vessel for which this is impracticable.<sup>258</sup>
  - (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 life-jackets 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 life-saving appliances;
    - (iv) checking of relevant communication equipment;
    - (v) checking the operation of watertight doors, fire doors, fire dampers and means of escape;

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<sup>257</sup> This paragraph is a specific Icelandic provision.

<sup>258</sup> A part of this paragraph is a specific Icelandic provision.

- (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 3 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 3 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, shall be given as soon as possible but not later than 2 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 2 weeks after the time of first joining the vessel.
  - (b) Instructions 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 2 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 4 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 such log-book as may be prescribed by the Administration. If a full muster, drill or training session is not held at the appointed time, an entry shall be made in the log-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 life-jackets 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, such as emergency position-indicating radio beacons, transponders, rocket parachute flares and hand flares, etc.;
- (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 paragraph (a). However, appropriate safety information shall be carried on board.

## Regulation 4

### Training in emergency procedures

Each crew member shall be 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 and spare life-jackets;
  - (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 life-jacket; 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 sea-water;
- (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.

Regulation 5  
Control of drills

The Administration may require that abandon ship drills and fire drills be held on board vessels and have their representatives observe the drills. After such drills the Administration may require that the muster list of the vessel in question be altered or request other measures to be taken if they are considered necessary for the safety of the vessel.<sup>259</sup>

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<sup>259</sup> This regulation is a specific Icelandic provision.

CHAPTER IX – RADIOCOMMUNICATIONS  
PART A - SCOPE AND DEFINITIONS

Regulation 1

Application

(1) Unless expressly provided otherwise, this chapter shall apply to *new and existing vessels*.<sup>260</sup>

(1a) *This chapter shall also apply to new vessels of 24 m in length and over, operating in the Southern region, provided that the region where they operate is appropriately serviced by a coastal station operating in accordance with an "IMO master plan."*<sup>261</sup>

(2) No provisions of this chapter shall prevent vessels, survival craft or persons in an emergency use all available means to attract attention or give their position and seek assistance.

Regulation

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 Radio Consultative Committee (CCIR).
- (d) "Direct printing telegraphy" means automated telegraphy techniques which comply with the relevant recommendations of the International Radio Consultative Committee (CCIR).
- (e) "General radiocommunications" means operational and public correspondence traffic, other than distress, urgency and safety messages, conducted by radio.
- (f) "*INMARSAT*" means the Organization established by the Convention on the International Maritime Satellite Organization (*INMARSAT*) adopted on 3 September 1976.
- (g) "International NAVTEX Service" means the co-ordinated broadcast and automatic reception on 518 kHz of maritime safety information by

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<sup>260</sup> A part of this paragraph is a specific European provision.

<sup>261</sup> This paragraph is a specific European provision.

means of narrow band direct printing telegraphy using the English language.<sup>262</sup>

- (h) "Locating" means the finding of ships, vessels, aircraft, units or persons in distress.
- (i) "Maritime safety information" means navigational and meteorological warnings, meteorological forecasts and other urgent safety related messages broadcast to vessels.
- (j) "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 (EPIRBs) (COSPAS/SARSAT) and which provides their position.
- (k) "Radio Regulations" means the Radio Regulations annexed to, or regarded as being annexed to, the most recent International Telecommunication Convention which may be in force at any time.
- (k1) "*Sea area STK*" means an area within the radiotelephone coverage of the Automatic Mandatory Ship Reporting System of Icelandic Ships (STK) on VHF.<sup>263</sup>
- (l) "Sea area A1" means an area within the radiotelephone coverage of a VHF coast station in which continuous DSC alerting is available.<sup>264</sup>
- (m) "Sea area A2" means an area, excluding sea area STK and/or A1, within the radiotelephone coverage of an MF coast station in which continuous DSC alerting is available.<sup>265</sup>
- (n) "Sea area A3" means an area, excluding sea areas STK, A1 and A2, within the coverage of an INMARSAT geostationary satellite in which continuous alerting is available, i.e. between 70°N og 70°S.
- (o) "Sea area A4" means an area outside sea areas STK, A1, A2 and A3.
- (p) "Group call system", group call when a simultaneous call is made to a particular group of vessels.<sup>266</sup>

(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) It is 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; 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 vessels.

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<sup>262</sup> See the "NAVTEX MANUAL" approved by the Organization (publication IMO-951E).

<sup>263</sup> This paragraph is a specific Icelandic provision.

<sup>264</sup> See resolution A.704(17), "Provision of Radio Services for the Global Maritime Distress and Safety System (GMDSS).

<sup>265</sup> See resolution A.704(17), "Provision of Radio Services for the Global Maritime Distress and Safety System (GMDSS)

<sup>266</sup> This paragraph is a specific Icelandic provision.

- (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.

For the application of a requirement of this chapter.

Regulation 4  
Functional requirements

Every vessel's radio installations, while at sea, shall be capable:

- (a) except as provided in regulations 7(1)(a) and 9(1)(d)(iii), 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;<sup>267</sup>
- (g) of transmitting and receiving<sup>268</sup> maritime safety information;
- (h) of transmitting and receiving general radiocommunications to and from shore based radio systems or networks subject to regulation.; 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. Unless exempted under regulation 3, the radio installations shall comply with the requirements of regulation 6. As appropriate for the sea area or areas through which it will pass during its intended voyage, the requirements of either regulation 7, 8, 9 or

*(1a) Drawings indicating the location and arrangements of the radio installations with explanatory notes on the type and manufacturer, as well as a drawing of the arrangements of antennae, shall be sent to the Administration for approval in accordance with the provisions of regulation I/6 (1)(1a).<sup>269</sup>*

- (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;

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<sup>267</sup> See resolution A.614(15), "Carriage of Radar Operating in the Frequency Band 9,300-9,500 MHz".

<sup>268</sup> It should be noted that vessels may have a need for reception of certain maritime safety information while in port.

<sup>269</sup> This paragraph is a specific Icelandic provision

- (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 call sign, the ship station identity and other codes as applicable for the use of the radio installation. *Guidance providing clear picture of emergency radio communications processes shall be visible from the position of operation of radio communications.*<sup>270</sup>

(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. Additionally, facilities shall be available to permit radiocommunications from the wings of the navigating bridge. Portable VHF equipment may be used to meet the latter provision.

#### Regulation 6

##### Radio equipment - general

- (1) *For new vessels of 24 m in length and over and existing vessels of 45 m in length and over the following applies:* Except as provided in regulation 9(4) every vessel shall be provided with:<sup>271</sup>
- (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. *Vessels solely operating in sea area STK are not required to fulfil the requirement on DSC on VHS channel;* 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 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;
  - (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;
  - (e) radio installations for receiving maritime safety information for seafarers, from the INMARSAT Enhanced Group Call SafetyNET,<sup>272</sup> if the vessel is engaged on voyages in any area of INMARSAT coverage

<sup>270</sup> A part of this paragraph is a specific Icelandic provision.

<sup>271</sup> A part of this paragraph is a specific European provision

<sup>272</sup> See "Carriage of Inmarsat Enhanced Group Call SafetyNET Receivers under the Global Maritime Safety System (GMDSS)" adopted by the Organization resolution A.701(17).

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;<sup>273</sup>

- (f) subject to the provisions of regulation 7(3), a satellite emergency position-indicating radio beacon (satellite EPIRB<sup>274</sup>) which shall be:
    - (i) capable of transmitting a distress alert either through the polar orbiting satellite service operating in the 406/121.5 MHz (COSPAS/SARSAT) 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;<sup>275 276</sup>
    - (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.
  - (g) *radio installations for the automatic mandatory ship reporting system of Icelandic ships (STK), cf. Act No. 40/1977 on the Mandatory Reporting System of Icelandic Ships, as amended.*<sup>277</sup>
- (2) *Each existing vessel of 24 m in length and over and less than 45 m in length shall be fitted with:*
- (a) *VHF radio installation in accordance with paragraph (1)(a)(ii);*
  - (b) *receiver capable of receiving international NAVTEX service broadcasts in accordance with paragraph (1)(d);*
  - (c) *radio installations for receiving maritime safety information for seafarers, from the INMARSAT Enhanced Group Call SafetyNET in accordance with paragraph (1)(e);*
  - (d) *EPIRB in accordance with paragraph (1)(f); and*
  - (e) *radio installations for the automatic mandatory reporting system of Icelandic ships in accordance with paragraph (1)(g).*
- (3) *Each vessel of less than 24 m in length shall be fitted with:*
- (a) *VHF radio installation in accordance with paragraph (1)(a)(ii);*
  - (b) *radio installations for the automatic mandatory reporting system of Icelandic ships in accordance with paragraph (1)(g); and*
  - (c) *radio receiver for the reception of weather reports.*

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<sup>273</sup> See "Promulgation of Maritime Safety Information" adopted by the Organization resolution A.616(15).

<sup>274</sup> See "Search and rescue homing capability" adopted by the Organization by resolution A.615(15).

<sup>275</sup> Subject to the availability of appropriate receiving and processing ground facilities for each ocean region covered by Inmarsat satellites.

<sup>276</sup> A part of this paragraph is a specific Icelandic provision.

<sup>277</sup> This paragraph is a specific Icelandic provision.

## Regulation 7

### Radio equipment - Sea area A1

(1) In addition to meeting the requirements of regulation 6, every *new or existing vessel of 24 m in length and over* and is engaged on voyages exclusively in sea areas *STK* and *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, operating either. The equipment shall either operate:

- (a) on VHF channel using digital selective calling (DSC). this requirement may be fulfilled by the EPIRB prescribed by paragraph (3), either by installing the EPIRB close to, or by remote activation from, the position from which the vessel is normally navigated; or
- (b) through the polar orbiting satellite service on 406/121.5 MHz (*COSPAS/SARSAT*). 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<sup>278</sup>
- (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) Inmarsat ship-earth station<sup>279</sup>; or
  - (ii) the satellite EPIRB (INMARSAT), 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) Vessels engaged on voyages exclusively in sea area A1 may carry, in lieu of the satellite EPIRB required by regulation 6(1)(f), an EPIRB which shall be:

- (a) capable of transmitting a distress alert using DSC on VHF channel 70 and providing for locating by means of a radar transponder operating in the 9 GHz band;
- (b) installed in an easily accessible position;
- (c) ready to be manually released and capable of being carried by one person into a survival craft;
- (d) capable of floating free if the vessel sinks and being automatically activated when afloat; and
- (e) capable of being activated manually.

(4) *Notwithstanding the provisions of regulation 4 (a) the Administration may exempt a new vessel of of 24 m in length and over but less than 45 m in length and*

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<sup>278</sup> A part of this paragraph is a specific Icelandic provision

<sup>279</sup> This requirement may be fulfilled by Inmarsat ship earth stations capable of two-way communications, such as Standard-A (resolution A.698(17)) or Standard-C (resolution A.663(16)) ship-earth stations. Unless otherwise specified, this footnote applies to all requirements for an Inmarsat ship earth station prescribed by this chapter.

*engaged on voyages in sea area A1 from the requirement of regulation 6 (1)(f) and regulation 7 (3), provided that they are fitted with a VHF radio installation in accordance with regulation 6 (1)(a) and additionally a VHF radio installation with digital selective calling (DSC) for ship-to-shore distress alerts in accordance with regulation 7 (1)(a).*<sup>280</sup>

(5) Notwithstanding the provisions of paragraph (1)(a), (1)(b), (1)(c) and (1)(d) existing vessels of less than 45 m in length and which are engaged on voyages in sea area A1 are not required to be fitted with equipment using digital selective calling (DSC).

#### Regulation 8

##### Radio equipment - Sea areas A1 and A2

(1) In addition to meeting the requirements of regulation 6, every *new or existing vessel of 24 m in length and over* engaged on voyages beyond sea area STK and A1, 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 operating either:
  - (i) through the polar orbiting satellite service on 406/121.5 MHz (COSPAS/SARSAT). 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<sup>281</sup>
  - (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.

(2) It shall be possible to initiate transmission of distress alerts by the radio installations specified in paragraphs (1)(a) and (1)(c) from the position from which the vessel is normally navigated.

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<sup>280</sup> This paragraph is a specific European provision.

<sup>281</sup> A part of this paragraph is a specific Icelandic provision.



- (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) Inmarsat ship-earth station.
- (4) *For new vessels of 24 m in length and over and existing vessels of 45 m in length and over the following applies:* 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.<sup>282</sup>
- (5) *Each vessel of less than 24 m in length shall be fitted with:*
- (a) *an MF radio installation in accordance with paragraph (1)(a)(i) and (1)(a)(ii);*
  - (b) *a radio installation capable of maintaining a continuous listening watch in accordance with paragraph (1)(b);*
  - (c) *an EPIRB on 406/121.5 MHz in accordance with paragraph (1)(c)(i); and*
  - (d) *a receiver capable of receiving international NAVTEX service broadcasts in accordance with regulation 6 (1)(d);*

#### Regulation 9

##### Radio equipment - Sea areas A1, A2 and A3

- (1) In addition to meeting the requirements of regulation 6, every *new or existing* vessel engaged on voyages beyond sea areas *STK*, A1 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 a listening 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 operating either:

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<sup>282</sup> A part of this paragraph is a specific European provision.

- (i) through the polar orbiting satellite service on 406/121.5 MHz (*COSPAS/SARSAT*). This requirement may be fulfilled by the 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<sup>283</sup>
- (ii) on HF using DSC; or
- (iii) through the polar orbiting INMARSAT satellite service with an additional INMARSATship earth station or the satellite EPIRB (INMARSAT), required by regulation 6(1)(f), either by installing the satellite EPIRB (INMARSAT) close to, or by remote activation from, the position from which the vessel is normally navigated.

(2) In addition to meeting the requirements of regulation 6, every vessel engaged on voyages beyond sea areas *STK*, A1 and A2, but remaining within sea area A3, shall, if it does not comply with the requirements of subparagraph (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 operating either:
  - (i) through the polar orbiting satellite service on 406/121.5 MHz (*COSPAS/SARSAT*). This requirement may be fulfilled by the 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<sup>284</sup>
  - (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 (INMARSAT)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).

<sup>283</sup> A part of this paragraph is a specific Icelandic provision.

<sup>284</sup> A part of this paragraph is a specific Icelandic provision.

(3) It shall be possible to initiate transmission of distress alerts by the radio installations specified in paragraphs (1)(a), (1)(b), (1)(d), (2)(a) and (2)(c) from the position from which the vessel is normally navigated.

(4) For new vessels of 24 m in length and over and existing vessels of 45 m in length and over the following applies: 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.<sup>285</sup>

#### Regulation 10

##### Radio equipment - Sea areas A1, 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), except that the equipment required by regulation 9(2)(c)(ii), shall not be accepted as an alternative to that required by regulation 9(2)(c)(i) which shall always be provided. In addition, vessels engaged on voyages in all sea areas shall comply with the requirements of regulation 9(3).*

(2) *For new vessels of 24 m in length and over and existing vessels of 45 m in length and over the following applies: 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.*<sup>286</sup>

#### Regulation 11

##### Radio watchkeeping

- (1) Every vessel, while at sea, shall maintain a continuous listening 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 listening 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.

<sup>285</sup> A part of this paragraph is a specific European provision.

<sup>286</sup> A part of this paragraph is a specific European provision.

(2) Every vessel, while at sea, shall maintain a radio watch for broadcasts of maritime safety information on the appropriate frequency or frequencies on which such information is broadcast for the area in which the vessel is navigating .

(3) Until *1 February 2005* or until such other date as may be determined by the Maritime Safety Committee of the Organization, 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.<sup>287</sup>

## Regulation 12

### Source 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) three hours., or
  - (ii) one hour, 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 six hours;
- (b) *in existing vessels, of 45 m in length and over, and existing vessels, of less than 45 m in length built on or after 1 February 1995:*
  - (i) six hours, 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<sup>288</sup>; or
  - (ii) three hours, 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) one hour, if the emergency source of electrical power complies fully with all relevant requirements of regulation IV/17 including

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<sup>287</sup> A part of this paragraph is a specific Icelandic provision.

<sup>288</sup> 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:  $\frac{1}{2}$  of the current consumption necessary for transmission + the current consumption necessary for reception + current consumption of any additional loads.

the requirements to supply the radio installations and is capable of serving for a period of at least six hours;<sup>289</sup>

(c) in existing vessels, of less than 45 m in length built before 1 February 1995, one hour.

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
- (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 hours.; 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.<sup>290</sup>

(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

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<sup>289</sup> A part of this paragraph is a specific European provision.

<sup>290</sup> One method of checking the capacity of an accumulator battery is to fully discharge and recharge the battery, using normal operating current and period (e.g. 10 hours). Assessment of the charge conditions can be made at any time, but it should be done without significant discharge of the battery when the vessel is at sea.

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 comply with the general requirements made to terminal equipment, according to the Telecommunications Act. Subject to paragraph (2), such equipment shall conform to appropriate performance standards not inferior to those adopted by the Organization.<sup>291</sup>

(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.

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<sup>291</sup> See the following resolutions adopted by the Assembly of the Organization:

- .1 Resolution A.525(13), "Performance Standards for Narrow-Band Direct-Printing Telegraph Equipment for the Reception of Navigational and Meteorological Warnings and Urgent Information to Ships";
- .2 Resolution A.694(17), "General Requirements for Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids";
- .3 Resolution A.698(17), "Performance Standards for Ship Earth Stations Capable of Two-Way Communications" and resolution A.570(14) "Type Approval of Ship Earth Stations";
- .4 Resolution A.609(15), "Performance Standards for Shipborne VHF Radio Installations Capable of Voice Communication and Digital Selective Calling";
- .5 Resolution A.610(15), "Performance Standards for Shipborne MF Radio Installations Capable of Voice Communication and Digital Selective Calling";
- .6 Resolution A.613(15), "Performance Standards for Shipborne MF/HF Radio Installations Capable of Voice Communication, Narrow Band Direct-Printing and Digital Selective Calling";
- .7 Resolution A.695(17), "Performance Standards for Float-Free Satellite Emergency Position-Indicating Radio Beacons (EPIRBs) Operating on 406 MHz" (reference is also made to resolution A.696(17), "Type Approval of Satellite Emergency Position-Indicating Radio Beacons (EPIRBs) Operating in the COSPAS-SARSAT System");
- .8 Resolution A.697(17), "Performance Standards for Survival Craft Radar Transponders for Use in Search and Rescue Operations";
- .9 Resolution A.612(15), "Performance Standards for Float-Free VHF Emergency Position-Indicating Radio Beacons";
- .10 Resolution A.663(16), "Performance Standards for Inmarsat Standard-C Ship Earth Stations Capable of Transmitting and Receiving Direct-Printing Communications" and resolution A.570(14) "Type Approval of Ship Earth Stations";
- .11 Resolution A.664(16) "Performance Standards for Enhanced Group Call Equipment";
- .12 Resolution A.661(16), "Performance Standards for Float-Free Satellite Emergency Position-Indicating Radio Beacons Operating through the Geostationary Inmarsat Satellite System on 1.6 GHz";
- .13 Resolution A.662(16), "Performance Standards for Float-Free Release and Activation Arrangements for Emergency Radio Equipment";
- .14 Resolution A.699(17), "System Performance Standards for the Promulgation and Co-ordination of Maritime Safety Information using High-Frequency Narrow-Band Direct Printing";
- .15 Resolution A.700(17), "Performance Standards for Narrow-Band Direct-Printing Telegraph Equipment for the Reception of Navigational and Meteorological Warnings and Urgent Information to Ships (MSI) by HF".

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.<sup>292</sup>
  - (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 *STK*, A1 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. *The person responsible for maintenance on board shall be properly certified and comply with the education requirements provided for in the Radio Regulations and the recommendations of the Organization.*<sup>293</sup>
  - (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.<sup>294</sup> 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. *Existing vessels of less than 45 m in length may use only one method of maintenance.*
- (7a) *The choice of method of maintenance, in accordance with paragraphs (6) and (7), shall be notified to the Administration. Regarding the method of maintenance involving duplication of equipment, the following provisions also apply:*
- (a) Vessels, which are engaged exclusively on voyages within sea area *STK* and A1 are considered to comply with the provisions on the duplication of equipment with an additional VHF radio installation in accordance with regulation 6(1);
  - (b) *Vessels, which are engaged exclusively on voyages within sea area STK, A1 and A2 are considered to comply with the provisions on the*

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<sup>292</sup> See the General Requirements for Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids adopted by the Organization by resolution A.694(17).

<sup>293</sup> A part of this paragraph is a specific Icelandic provision.

<sup>294</sup> See the Radio Maintenance Guidelines for the Global Maritime Distress and Safety System (GMDSS) related to Sea Areas A3 and A4 adopted by the Organization by resolution A.702(17).

- duplication of equipment with an additional VHF radio installation in accordance with regulation 6(1) and with an additional MF radio installation in accordance with regulation 8(1)(a) and 8(1)(b);*
- (c) *Vessels, which are engaged exclusively on voyages within sea area STK, A1, A2 and A3 are considered to comply with the provisions on the duplication of equipment with an additional VHF radio installation in accordance with regulation 9(1)(a) and 9(1)(b) which complies with all the requirements of regulation 11(4) or INMARSAT ship-earth station in accordance with regulation 9(1)(a). It shall be possible to initiate distress and safety communications by the MF/HF radio installation or ship-earth station from the position from which the vessel is normally navigated;*
  - (d) *Vessels engaged on voyages in all sea areas is considered to comply with the provisions on the duplication of equipment with the same additional equipment as required in subparagraph (c), except that the ship-earth station may not be used for duplication;*
  - (e) *Vessel, which are only occasionally engaged in voyages in sea area A4 and is fitted with an MF/HF radio installation, in accordance with regulation 9(1)(a), may use a ship-earth station, in accordance with regulation 9 (1)(a), to comply with the requirement on duplication of equipment;*
  - (f) *The above equipment shall be shall connected to a special antenna and shall be so arranged as to be ready for immediate operation;*
  - (g) *Means shall be provided to operate the above equipment by means of the vessel's reserve source or sources of energy, in accordance with regulation.<sup>295</sup>*

(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.

#### Regulation 15 Radio personnel

*Every vessel shall carry personnel qualified for distress and safety radiocommunication purposes to the satisfaction of the Administration.<sup>296</sup> The personnel shall be holders of certificates specified in the Radio Regulations as appropriate, any one of whom shall be designated to have primary responsibility for radiocommunications during distress incidents. The person responsible for navigational watch and is also responsible for performing the radio watch shall be the holder of an appropriate certificate in accordance with the Radio Regulations. In sea area STK and A1 the person responsible for performing the radio watch shall be the holder of the Restricted Operator's*

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<sup>295</sup> This paragraph is a specific Icelandic provision.

<sup>296</sup> See "Training of Radio Personnel in the Global Maritime Distress and Safety System (GMDSS)" and Article S47 of the Radio Regulations.



*Certificate (ROC). In sea areas A2, A3 and A4 the person responsible for performing the radio watch shall be the holder of General Operator's Certificate (GOC).*<sup>297</sup>

#### 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 following shall be entered into the radio log-book:*

- (a) all information on distress and safety radio communication;
- (b) information on the maintenance of radio installations and the charging of spare batteries for radio equipment; and
- (c) control of radio installations.

This information may be entered into the radio log-book.<sup>298</sup>

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<sup>297</sup> A part of this regulation is a specific Icelandic provision.

<sup>298</sup> A part of this regulation is a specific Icelandic provision.

## CHAPTER X – SHIPBORNE NAVIGATIONAL EQUIPMENT AND ARRANGEMENTS

### Regulation 1

#### Application

Unless expressly provided otherwise, this chapter shall apply to new and existing vessels.

### Regulation 2

#### Exemptions

The Administration may exempt any vessel from any of the requirements of this chapter where it considers that the nature of the voyage or the vessel's proximity to land does not warrant such requirements.

### Regulation 3

#### Shipborne navigational equipment<sup>299</sup>

- (1) (a) Vessels of 24 m in length and over shall be fitted with:
- (i) a standard magnetic compass, except as provided in subparagraph (d).
  - (ii) a steering magnetic compass, unless heading information provided by the standard compass required under (i) is made available and is clearly readable by the helmsman at the main steering position;
  - (iii) adequate means of communication between the standard compass position and the normal navigation control position to the satisfaction of the Administration; and
  - (iv) means for taking bearings as nearly as practicable over an arc of the horizon on 360°.
- (b) Each magnetic compass referred to in subparagraph (a) shall be properly adjusted and its table or curve of residual deviations shall be available at all times. *The tables or curves of residual deviations shall not be older than two years. If the magnetic compass is the vessel's main compass it shall be inspected and adjusted at least every two years by a competent person authorised by the Administration.*<sup>300</sup>
- (c) A spare magnetic compass, interchangeable with the standard compass, shall be carried, unless the steering compass mentioned in subparagraph (a)(ii) or a gyro-compass is fitted.
- (1c) *Means shall be provided for reading compasses in daylight and at night. Additionally, it shall be possible to take bearings in daylight or darkness by using the standard or steering compass or bearing finder. Magnetic compass shall be provided and means for adjustment and securing them as well as compensation equipment shall be made of nonmagnetic materials. Compasses shall be sited as near the fore-and-aft line of the vessel as practicable with the lubber's line as accurately as possible parallel with the fore-and-aft line. Compasses shall comply with the requirements of the Administration.*<sup>301</sup>

<sup>299</sup> See the Recommendation on the Carriage of Electronic Position-Fixing Equipment adopted by the Organization by resolution. A.156(ES.IV) and the World-Wide Radionavigation System adopted by the Organization by resolution A.666(16).

<sup>300</sup> A part of this paragraph is a specific Icelandic provision.

<sup>301</sup> This paragraph is a specific Icelandic provision.

- (d) The Administration, if it considers it unreasonable or unnecessary to require a standard magnetic compass, may exempt individual vessels or classes of vessels from these requirements if the nature of the voyage, the vessel's proximity to land or the type of vessel does not warrant a standard compass, provided that a suitable steering compass is in all cases carried.
- (2) Vessel of less than 24 m in length shall be fitted with a standard magnetic compass. *The compass shall be properly compensated and a list or curve of residual deviations shall be kept on board. The tables or curves of residual deviations shall not be older than two years. If the magnetic compass is the vessel's main compass it shall comply with the requirements of paragraph (c1) and it shall be inspected and adjusted at least every two years by a competent person authorised by the Administration.*<sup>302</sup>
- (3) Vessels of 45 m in length and over constructed on or after 1 September 1984 shall be fitted with a gyro-compass complying with the following requirements:
- (a) The master gyro-compass or a gyro-repeater shall be clearly readable by the helmsman at the main steering position;
  - (b) On vessels of 75 m in length and over a gyro repeater or gyro repeaters shall be provided. They shall be suitably placed for taking bearings as nearly as practicable over an arc of the horizon of 360°.
- (4) Vessels of 75 m in length and over constructed before 1 September 1984, shall be fitted with a gyro-compass complying with the requirements of paragraph (3).
- (5) Vessels with emergency steering positions shall at least be provided with a telephone or other means of communication for relaying heading information to such positions. In addition, vessels of 45 m in length and over constructed on or after 1 February 1992, shall be provided with arrangements for supplying visual compass readings to the emergency steering position.
- (5a) In vessels equipped with an auto-pilot system actuated by a magnetic detector which does not display the vessel's course, there shall be installed suitable equipment to indicate them.*<sup>303</sup>
- (6) Vessels of 45 m in length and over constructed on or after 1 September 1984 and vessels of 75 m in length and over constructed before 1 September 1984 shall be fitted with a radar installation. The radar installation shall be capable of operating in the 9 GHz frequency band. In addition, vessels of 35 m in length and over shall be fitted with a radar installation capable of operating in the 9 GHz frequency band. Vessels of 35 m in length and over but less than 45 m may be exempted from compliance with the requirements of paragraph (16) at the discretion of the Administration, provided that the equipment is fully compatible with the radar transponder for search and rescue.
- (7) In vessels of less than 35 m in length where radar is fitted, the installation shall be to the satisfaction of the Administration. *Every vessel of 24 m in length and over operating in the Northern region shall be fitted with a radar installation to the*

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<sup>302</sup> A part of this paragraph is a specific Icelandic provision.

<sup>303</sup> This paragraph is a specific Icelandic provision.

*satisfaction of the Administration. The radar installation shall be capable of operating in the 9 GHz frequency band.*<sup>304</sup>

(8) Facilities for plotting radar readings shall be provided on the navigating bridge of vessels required by paragraph (6) to be fitted with a radar installation. In vessels of 75 m in length and over constructed on or after 1 September 1984 the plotting facilities shall be at least as effective as a reflection plotter.

(9) Vessels of 75 m in length and over constructed before 25 May 1980 and vessels of 45 m in length and over constructed on or after 25 May 1990 shall be fitted with an echo-sounding device.

(10) Vessels of less than 45 m in length shall be provided with suitable means to the satisfaction of the Administration for determining the depth of water under the vessel. *Fishfinding instruments that can be used for determining the depth of water under the vessel and fitted on board shall be considered to comply with this provision.*<sup>305</sup>

(11) Vessels of 45 m in length and over constructed on or after 1 September 1984 shall be fitted with a device to indicate speed and distance.

(12) Vessels of 75 m in length and over constructed before 1 September 1984 and all vessels of 45 m in length and over constructed on or after 1 September 1984 shall be fitted with indicators showing the rudder angle, the rate of revolution of each propeller or the rate of revolution of each propulsion engine and in addition, if fitted with variable pitch propellers or lateral thrust propellers, the pitch and operational mode of such propellers. All these indicators shall be readable from the conning position.

(13) All reasonable steps shall be taken to maintain the apparatus referred to in paragraphs (1) to (12) in efficient working order. Malfunctions of the equipment 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. However, this does not apply to the items referred to in regulation I/6.<sup>306</sup>

(14) Vessels of 75 m in length and over shall be fitted with a radio direction-finding apparatus. The Administration may exempt a vessel from this requirement if it considers it unreasonable or unnecessary for such apparatus to be carried or if the vessel is provided with other radionavigation equipment suitable for use throughout its intended voyages.

(15) *Every vessel of less than 24 m in length and built of other material than steel shall be fitted with a radar reflector complying with internationally accepted performance standards.*

(16) All equipment fitted in compliance with this regulation shall be of a type approved by the Administration. Equipment installed on board vessels on or after 1 September 1984 shall conform to appropriate performance standards not inferior to

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<sup>304</sup> A part of this paragraph is a specific European provision.

<sup>305</sup> A part of this paragraph is a specific Icelandic provision.

<sup>306</sup> See the Recommendation on the Use and Testing of Shipborne Navigational Equipment adopted by the Organization by resolution A.157(ES.IV).

those adopted by the Organization.<sup>307</sup> Equipment fitted prior to the adoption of related performance standards may be exempted from full compliance with those standards at the discretion of the Administration, having due regard to the recommended criteria which the Organization might adopt in connection with the standards concerned.

#### Regulation 4

##### Nautical instruments and publications.

- (1) *On board vessels:*
- (a) *there shall be suitable nautical instruments, charts and all other nautical publications necessary to lay down the vessel's route for the intended voyage and to plot and monitor the vessel's positions during its voyage. It may be accepted that Electronic Chart Display and Information Systems (ECDIS) comply with the requirements of this subparagraph on the provision of charts;*
- (b) *there shall be fail-safe devices complying with the provisions of paragraph (1) on functionality if this role is fulfilled partly or wholly by means of with electronic equipment.*
- (2) *Navigational charts and nautical publications, such as ships' routing guidance, lists of lights, notices to mariners, tide tables and other nautical publications for the intended voyage shall be in sufficient number and up to date.*<sup>308</sup>

#### Regulation 5

##### Signalling equipment

- (1) A daylight signalling lamp shall be provided *on board vessels of 24 m in length and over*, the operation of which is not solely dependent upon the main source of electrical power. The power supply shall in any case include a portable battery.
- (2) Vessels of 45 m in length and over shall be provided with a full complement of flags and pennants to enable communications to be sent using the International Code of Signals.

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<sup>307</sup> Reference is made to resolutions of the Organization:

- .1 Resolution A.694(17), "Recommendation on General Requirements for Shipborne Radio Equipment Forming Part of the GMDSS and for Electronic Navigational Aids";
- .2 Resolution A.382(X), "Recommendation on Performance Standard for Magnetic Compasses";
- .3 Resolution A.424(XI), "Recommendation on Performance Standards for Gyro-Compasses";
- .4 Resolution A.477(XII), and A.278(VIII) "Recommendation on Performance Standards for Radar Equipment";
- .5 Resolution A.422(XI), "Performance Standards for Automatic Radar Plotting Aids";
- .6 Resolution A.224(VII), "Recommendation on Performance Standards for Echo-Sounding Equipment";
- .7 Resolution A.478(XII), um "Recommendation on Performance Standards for Devices to Indicate Speed and Distance";
- .8 Resolution A.526(13), "Performance Standards for Rate-of-Turn Indicators";
- .9 Resolution A.575(14), "Recommendation on Unification Performance Standards for Navigational Equipment";
- .10 Resolution A.665(16), um "Performance Standards for Radio Direction-Finding Systems";
- .11 Resolution A.479(XII), "Recommendation on Performance Standard for Shipborne Receivers for Use with Differential OMEGA";
- .12 Resolution A.343(IX), "Recommendation on Methods of Measuring Noise Levels at Listening Posts".

Regarding unification of ARPA signals, see MSC/Circ 563 and IEC Publication 872.

<sup>308</sup> A part of this paragraph is a specific Icelandic provision.

- (3) A publication with the International Code of Signals shall on board *vessels of 24 m in length and over*.
- (4) *In the wheelhouse a table with international signalling flags and the Morse code shall be displayed as well as the meaning of the one-letter-signals.*<sup>309</sup>
- (5) *All vessels shall be fitted with a national flag of an appropriate size.*<sup>310</sup>
- (6) *Every vessel of 24 m in length and over operating in waters where drift ice may occur shall be fitted with at least one searchlight. The lighting capacity of the searchlight shall be at least 1 lux, measured at a distance of 750 m.*<sup>311</sup>

## Regulation 6

### Navigating bridge visibility

- (1) New vessels of 24 m in length and over shall meet the following requirements:
- (a) The view of the sea surface from the conning position shall not be obscured by more than two vessel lengths, or 500 m, whichever is less, forward of the bow to 10° on either side irrespective of the vessel's draught and trim;
  - (b) No blind sector caused by fishing 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 10°. The total arc of blind sectors shall not exceed 20°. The clear sectors between blind sectors shall be at least 5°. However, in the view described in subparagraph (a) each individual blind sector shall not exceed 5°;
  - (c) 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;
  - (d) 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 vessel is pitching in heavy seas. However, the Administration, being satisfied that a 1,800 mm height of eye is unreasonable and impractical, may reduce the height of eye but not to less than 1,600 mm;
  - (e) The horizontal field of vision from the conning position shall extend over an arc of not less than 225°, that is from right ahead to not less than 22.5° abaft the beam on either side of the vessel;
  - (f) From each bridge wing the horizontal field of vision shall extend over an arc of at least 225°, that is from at least 45° on the opposite bow through right ahead and then from right ahead to right astern through 180° on the same side of the vessel;
  - (g) From the main steering position the horizontal field of vision shall extend over an arc from right ahead to at least 60° on each side of the vessel;
  - (h) The vessel's side shall be visible from the bridge wing; and
  - (i) Windows shall meet the following requirements:

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<sup>309</sup> This paragraph is a specific Icelandic provision.

<sup>310</sup> This paragraph is a specific Icelandic provision.

<sup>311</sup> This paragraph is a specific European provision.

- (i) Framing between navigation bridge windows shall be kept to a minimum and not be installed immediately forward of any workstation;
- (ii) To help avoid reflections, the bridge front windows shall be inclined from the vertical plane top out, at an angle of not less than 10° and not more than 25°;
- (iii) Polarized and tinted windows shall not be fitted; and
- (iv) A clear view through at least two of the navigating bridge front windows. Depending on the bridge configuration, an additional number of clear view windows shall be fitted. Such an equipment shall be operational at all times regardless of weather conditions.<sup>312</sup>

*(1a) New vessels of less than 24 m in length shall comply with the following provisions:*

- (a) The view of the sea surface from the conning position shall be from right ahead to not less than 22.5° abaft the beam on either side of the vessel. The total arc of blind sectors due to obstructions outside of the wheelhouse from right ahead to both sides of the vessel shall not exceed 20°;*
- (f) From each bridge wing the horizontal field of vision shall extend over an arc of at least 225°, that is from at least 45° on the opposite bow through right ahead and then from right ahead to right astern through 180° on the same side of the vessel;<sup>313</sup>*

(2) Existing ships, of 24 m in length and over, shall as far as practicable comply with the provisions of paragraphs (1)(a) and (1)(b). However, structural alterations or additional equipment need not be required.

(3) On 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 practicable to that prescribed in this regulation.

#### *Regulation 7<sup>314</sup>*

##### *Pilot ladder*

*Vessels of 45 m in length and over, as well as vessels which are likely to need a pilot shall be fitted with a pilot ladder complying with the requirements of chapter V of the International Convention for the Safety of Life at Sea, SOLAS 1974, as amended.*

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<sup>312</sup> A part of this paragraph is a specific Icelandic provision.

<sup>313</sup> This paragraph is a specific Icelandic provision.

<sup>314</sup> This regulation is a specific Icelandic provision.

## CHAPTER XI – CREW ACCOMMODATION

### *Regulation 1*

#### *General*

(1) *Before the construction of a fishing vessel, and before the crew accommodation of an existing fishing vessel is substantially altered or reconstructed, detailed plans of, and information concerning the accommodation shall be submitted to the Administration or an organization authorized by the Administration, for approval.*

(2) *Location, structure and arrangement of crew accommodation spaces and means of access thereto, shall be such as to ensure adequate security, protection against weather and sea and insulation from heat and cold, undue noise, vibration or effluvia from other spaces. If the form of a new vessel, size and its role permit the crew accommodation spaces shall be placed where the effect of the movement and speed alterations are at a minimum. In new vessels, the insulation material to be applied to bulkheads and deckheads of machinery spaces adjacent to crew accommodation shall be of a type approved by the Administration.*

(3) *Sleeping rooms may not be located forward of the collision bulkhead.*

(4) *Bulkheads and decks between accommodation spaces and fish-holds; machinery spaces; fuel tanks; galleys, engine, deck and other store-rooms; drying rooms, communal wash-places or water-closets, shall be so constructed as to prevent the infiltration of fumes and odours. Direct openings into sleeping rooms from such places are prohibited wherever reasonable or practicable. That part of bulkheads separating such places from sleeping rooms, and also external bulkheads, shall be gas-tight and, where necessary, shall prevent the passage of water.*

(5) *Corridors in crew accommodation shall be as wide as possible but in new vessels they shall not be less than 700 mm in width. Where doors open outwards into a passageway, there shall be sufficient space to pass the door when it is open at a right angle to the passageway. Handrails and grab rails shall at least be on one side of the corridor.*

(6) *Accommodation spaces shall be adequately insulated to prevent loss of heat, condensation or overheating. Care shall be taken to provide protection from heat effects of steam and/or hot-water service pipes.*

(7) *Fuel oil, sounding and hydraulic oil pipes, high voltage electrical wiring for winch machinery or steam piping, except steam heating systems, shall not be led through accommodation spaces unless such arrangement is approved by the Administration. Such pipes shall be adequately insulated.*

(8) *In the choice of materials used for construction of accommodation spaces, account shall be taken of properties potentially harmful to the health of personnel, or likely to harbour vermin and mould. Surfaces, including decks, of accommodation and furnishings shall be of a kind easily kept clean and hygienic, as well as impervious to damp. Bulkhead and deckhead surfaces, if painted, shall be light in colour and the paint specification shall be to the approval of the Administration. Other surface coverings,*



*such as lime wash, shall not be used. Accommodation spaces and equipment shall kept clean and in proper condition. The Administration may require a cleaning process if it deems necessary. The accommodation and processing spaces of existing vessels, which are bought or leased from abroad for Icelandic registration, shall be cleaned before the vessel is put in service.*

*(9) All practical measures shall be taken to protect crew accommodation and furnishings against the admission of insects and other pests.*

*(10) In new vessels, overhead exposed decks over crew accommodation shall be sheathed with wood or equivalent insulation.*

*(11) The electrical switchboard shall be so arranged that when the shore power connection is made, power would be available for crew accommodation lighting, ventilation systems and where applicable heating and cooking facilities.*

*(12) Access to ordinary exits and emergency exits shall be marked with direction indicators. Exits shall be marked in a conspicuous manner above or beside the door. If exits from crew accommodation to emergency exits leads through separated spaces, such as steering gear spaces and store-rooms, doors leading to such spaces must not be capable of being locked except if the doors are fitted with an emergency kick-hatch or comparable equipment. Sleeping room doors shall be fitted with an emergency kick-hatch or comparable equipment.*

#### *Regulation 2*

##### *Lighting, heating and ventilation.*

*(1) All crew accommodation spaces shall be adequately lit, as far as possible by natural lighting. Such spaces shall also be equipped with adequate artificial light. Artificial lighting shall be in accordance with accepted standards of visual comfort in accommodation spaces.*

*(2) The minimum standards for natural lighting in crew accommodation shall be such as to permit a person with normal vision to read an ordinary newspaper on a clear day. In new vessels, general lighting in working areas shall be at least 200 lux and over working desks, equipment, etc. at least 400 lux.*

*(3) If there are not two independent sources of electricity for lighting, additional lighting shall be provided by approved lamps or lighting apparatus for emergency use.*

*(4) A reading light of at least 100 lux shall be provided for every berth in addition to the normal lighting of the cabin.*

*(5) In new vessels, the following applies:  
A permanent night light shall, in addition to the normal lighting, be provided in sleeping rooms during the night Mess rooms and alleyways, that contain emergency escapes facilities from the crew accommodation, shall also be provided with a permanent night light during the night.*

*(6) Methods of lighting shall not endanger the health or safety of the crew or the safety of the vessel.*

(7) Adequate heating facilities in accommodation spaces shall be provided as required by climatic conditions. Heating facilities shall be capable of maintaining a satisfactory air temperature in crew accommodation under normal conditions of service of a fishing vessel and as prescribed by the Administration. The accommodation shall be capable of being heated sufficiently to maintain a minimum temperature of +22°C in all day rooms at an outside temperature of -15 °C.

(8) Facilities for heating shall be designed so as not to endanger health or safety of the crew or the safety of the vessel.

(9) Accommodation spaces shall be adequately ventilated at all times when the crew is expected to remain on board. Ventilation systems shall be capable of control so as to maintain the air in a satisfactory condition and to ensure a sufficiency of air movement in all conditions of weather and climate. The ventilation of galley and sanitary facilities shall be to the open-air and be independent from that for other crew accommodation. New vessels of 24 m in length and over shall be fitted with mechanical ventilation. A fixed ventilation system providing at least six changes of air per hour shall be provided. Ducts of ventilation systems shall have a sufficient cross-sectional area to ensure that the speed of air will not exceed 6 m/s.

(10) Accommodation spaces of vessels regularly engaged on voyages in the tropics and in similar climatic conditions, except in deckhouses with satisfactory natural ventilation, shall be equipped with mechanical ventilation and, if necessary, with additional electric fans or air conditioning, in particular in mess rooms and sleeping rooms. Air conditioning shall be so constructed that at +35 °C air temperature and 70% relative humidity, temperature can be maintained at +29 ° and relative humidity 50%. Up to 50% of the discharge air may be recycled. Adequate tools and spares shall be provided on board for the air conditioning to ensure the effectiveness of the equipment in continuous use.

(11) Vessels fitted with air conditioning shall carry a suitable gas detector.

(12) In new vessels, drying rooms or lockers for working clothes and oilskin lockers shall have adequate ventilation that is independent of other spaces. The exhaust from such spaces, as well as galleys, sanitary facilities, hospital accommodation and spaces where tobacco smoking is allowed shall be well clear of the air intakes of the ventilation systems for other spaces.

### *Regulation 3* *Sleeping rooms.*

(1) Sleeping rooms shall be so planned and equipped as to ensure reasonable comfort for the occupants and to facilitate tidiness. The clear headroom in the working space shall, if possible, be not less than 2.0 m.

(2) The floor area per person of sleeping rooms, excluding space occupied by berths and lockers, shall not be less than:

(a) in new vessels:

(i) 0.75 m<sup>2</sup> in vessels of less than 24 m in length;

- (ii) 1.0 m<sup>2</sup> in vessels of 24 m in length and over but less than 45 m in length; and
  - (iii) 1.5 m<sup>2</sup> in vessels 45 m in length and over.
- (b) in existing vessels built 1 January 1980 or later:
- (i) 0.5 m<sup>2</sup> in vessels of less than 24 m in length;
  - (ii) 0.9 m<sup>2</sup> in vessels of 24 m in length and over but less than 45 m in length; and
  - (iii) 1.3 m<sup>2</sup> in vessels 45 m in length and over.

*In vessels built 1 January 1980 or later, the distance from the bedside to the opposite bulkhead shall, if possible, be at least 0.6 m.*

(3) *The number of persons allowed to occupy each sleeping room shall not be more than four persons in vessels of 35 m in length and over and six persons in vessels of less than 35 m in length. Sleeping rooms for officers shall be for one person wherever possible and in no case shall the sleeping room contain more than two berths.*

(4) *The maximum number and rank of persons to be accommodated in any sleeping room shall be clearly and indelibly marked in the room where it could be conveniently seen.*

(5) *Each member of the crew shall be entitled to a personal berth. In new vessels, the inside diameter of the berth shall be at least 1.98 m times 0.68 m. In existing vessels of 24 m in length and over, the inside diameter of the berth shall not be less than 1.85 m times 0.60 m. In existing vessels of less than 24 metres in length, the bunk may be narrower but it shall never be less than 0.58 m in width (inside diameter). Berths may be more narrow towards one end.*

(6) *Berths shall not be placed side by side in such a way that access to one berth can be obtained only over another. No more than one berth shall be over another berth. The lower berth in a double tier shall not be less than 0.3 m above the deck; the upper berth shall be placed approximately midway between the bottom of the lower berth and the lower side of the deck head beams.*

(7) *Where the upper berth in a tier overlaps a lower berth, the underside of the upper berth shall be fitted with a dust proof bottom of wood, canvas or other material*

(8) *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.*

(9) *If tubular frames are used for the construction of berths, they shall be completely sealed and without perforations that would give access to vermin.*

(10) *In new vessels, mattresses shall not be of a type that is liable to develop toxic fumes in case of fire or harbour vermin. Mattresses shall be provided with a cover of fire retardant material.*

(11) *Wherever reasonable and practicable with respect to the size, type or intended service of a vessel, the furnishings of sleeping rooms shall include both a fitted*

*cupboard preferably with an integral lock and a drawer for each occupant. For new vessels of 24 m in length and over the following applies:*

*The internal diameter of the cupboard shall be at least 1.8 m in height, 0.55 m in width and 0.33 m in depth. In the cupboard there shall be a shelf, bar and pegs for clothing. The drawer shall be lockable and at least 0.06 m<sup>3</sup> in size. Sleeping rooms shall also be fitted with a satisfactory table or desk, adequate and proper seating, curtains for sidelights, a mirror, cabinets for toilet requisites, a book rack and coat hooks.*

#### *Regulation 4*

##### *Dining rooms.*

*(1) Mess room accommodation separate from sleeping quarters shall be provided in all vessels regularly carrying a crew of more than ten persons. Wherever reasonable and practicable it shall be provided also in vessels carrying a smaller crew.*

*(2) Mess rooms shall be as close as practicable to the galley.*

*(3) The size and furnishings of mess rooms shall be sufficient for the numbers of persons likely to use them at any one time.*

*(4) The furnishings of mess rooms shall include tables and approved seats sufficient for the numbers of persons likely to use them at any one time. The tops of tables and seats shall be free of sharp edges and be of damp resisting material without cracks and easily kept clean.*

*(5) Where pantries are not accessible to mess rooms, adequate lockers for mess utensils and proper facilities for washing shall be provided.*

*(6) Mess rooms shall be planned, furnished and equipped to provide appropriate facilities for recreation.*

*(7) Whenever possible, a separate recreation room shall be provided for the crew.*

#### *Regulation 5*

##### *Sanitary facilities*

*(1) In vessels built 1 January 1980 or later, sufficient sanitary facilities including washbasins and tubs and/or shower baths and water closets shall be provided in a following manner:*

- (i) In vessels of 24 m in length and over, one tub and/or shower baths for every eight persons;*
- (ii) one water-closet for every eight persons or less;*
- (iii) one basin for every six person or less.*

*Provided that when the number of persons exceeds an even multiple of the specified number by less than one half of the specified number, this surplus may be ignored for the purpose of this paragraph.*

*(2) Where there is more than one water-closet in a compartment, they shall be adequately screened to ensure privacy. In new vessels, the operating space in front of the closet bowl shall not be less than 0.4 m times 0.6 m.*

(3) *In general, water closets shall be situated convenient to, but separate from sleeping rooms, mess rooms and wash rooms.*

(4) *In cases where a water closet is provided with direct access from sleeping places that are intended for not more than two persons, the access shall be so constructed as to provide a reasonable seal when closed. Such water closets may also house washing facilities and shall be provided with a separate means of ventilation and shall not ventilate to or through the adjacent sleeping space.*

(5) *In vessels built 1 January 1980 or later, cold fresh water and hot fresh water or means of heating fresh water shall be available in all wash-places.*

(6) *In new vessels, the deck area of wash places shall have a covering of durable material, easily cleaned and impervious to damp and properly drained. The deck covering shall be carried up the sides of the compartment to a height of not less than 0.20 m and adequately sealed at all joints to prevent the ingress of water and damp.*

(7) *In new vessels, the bulkheads shall be of steel or other approved material and shall be water tight to a height of at least 0.25 m above the deck to allow for effective sealing of the deck covering.*

(8) *In new vessels, all sanitary equipment and systems shall be of a design, construction and size approved by the Administration. In particular, showers shall have anti-scalding valves of an approved type, sufficient drainage shall be provided, and soil and waste discharge pipes shall be of adequate dimensions and constructed so as to facilitate cleaning. International standards concerning shipboard food sanitation laid down in the WHO Guide to Ship Sanitation, 1967, (as or as may be amended) may serve as guidance.*

(9) *Soil and waste discharge pipes shall not pass through fresh water or drinking water tanks or, where practicable, provision stores. Except in the case of vacuum system discharge pipes shall, where practicable, pass overhead in mess rooms or sleeping accommodation. Such pipes shall be fitted with anti-syphon closures.*

(10) *Facilities for washing and drying clothes shall be provided on a scale appropriate to the number of the crew and the duration of intended voyages. These facilities shall include an adequate supply of cold fresh water and hot fresh water or means of heating fresh water. Wherever reasonable and practicable it shall be provided with separate facilities for washing.*

#### *Regulation 6*

##### *Potable water facilities.*

*Filling, storage and distribution for potable water shall be designed to preclude any possibility of water contamination or overheating. In this connection, the relevant international standards laid down by the WHO in Guide to Ship Sanitation, 1967 (as or as may be amended), shall be followed.*

### *Regulation 7*

#### *Provision storerooms.*

*Provision storerooms of adequate capacity shall be provided which can be kept cool, dry and well ventilated in order to avoid deterioration of the stores. Where necessary, taking into consideration the area of operation and the duration of the voyage, refrigerators or other low-temperature storage space shall be provided. It shall be possible to keep a temperature in refrigerating rooms or similar rooms of between -1°C and +4°C in all climatic conditions. Vessels whose area of operation requires foodstuffs to be frozen during storage shall be fitted with chest freezers, upright freezers or freezing rooms. It shall be possible to keep a temperature of -25°C in all weather conditions. The temperature in refrigerating and freezing rooms shall be capable of being read from the outside. Doors to refrigerating and freezing rooms shall be capable of being opened from either side. In new vessels, an alarm system shall be arranged from the refrigerating and freezing room to the galley or other appropriate location if such rooms are large enough for personnel to enter them.*

### *Regulation 8*

#### *Cooking and beverage facilities.*

*(1) Satisfactory cooking appliances and equipment shall be provided and shall, wherever practicable, be fitted in a separate galley.*

*(2) In new vessels, galleys shall be of adequate dimensions for the purpose and have sufficient storage space and satisfactory drainage. International standards concerning shipboard food sanitation laid down in the WHO Guide to Ship Sanitation, 1967, (as or as may be amended) may serve as guidance.*

*(3) The galley shall be equipped with cooking utensils, the necessary number of cupboards and shelves and sinks and dish racks of rust proof material and with satisfactory drainage. Drinking water shall be supplied under pressure to the galley by means of pipes. Where hot water is not supplied to the galley, a water heater shall be fitted.*

*(4) A domestic refrigerator of adequate size shall be provided for the numbers of persons using each messroom. Facilities for preparing hot and cold drinks shall be provided for the crew.*

### *Regulation 9*

#### *Hospital accommodation*

*In vessels built 1 January 1980 or later, and are 45 m in length and over, shall be provided with a sick bay and suitable sanitary facilities. In vessels of 100 m in length or over the sick bay shall be equipped with a detachable and portable swivel bed and shall be designed to facilitate removal of a patient in the portable bed.*

### *Regulation 10*

#### *Tobacco control*

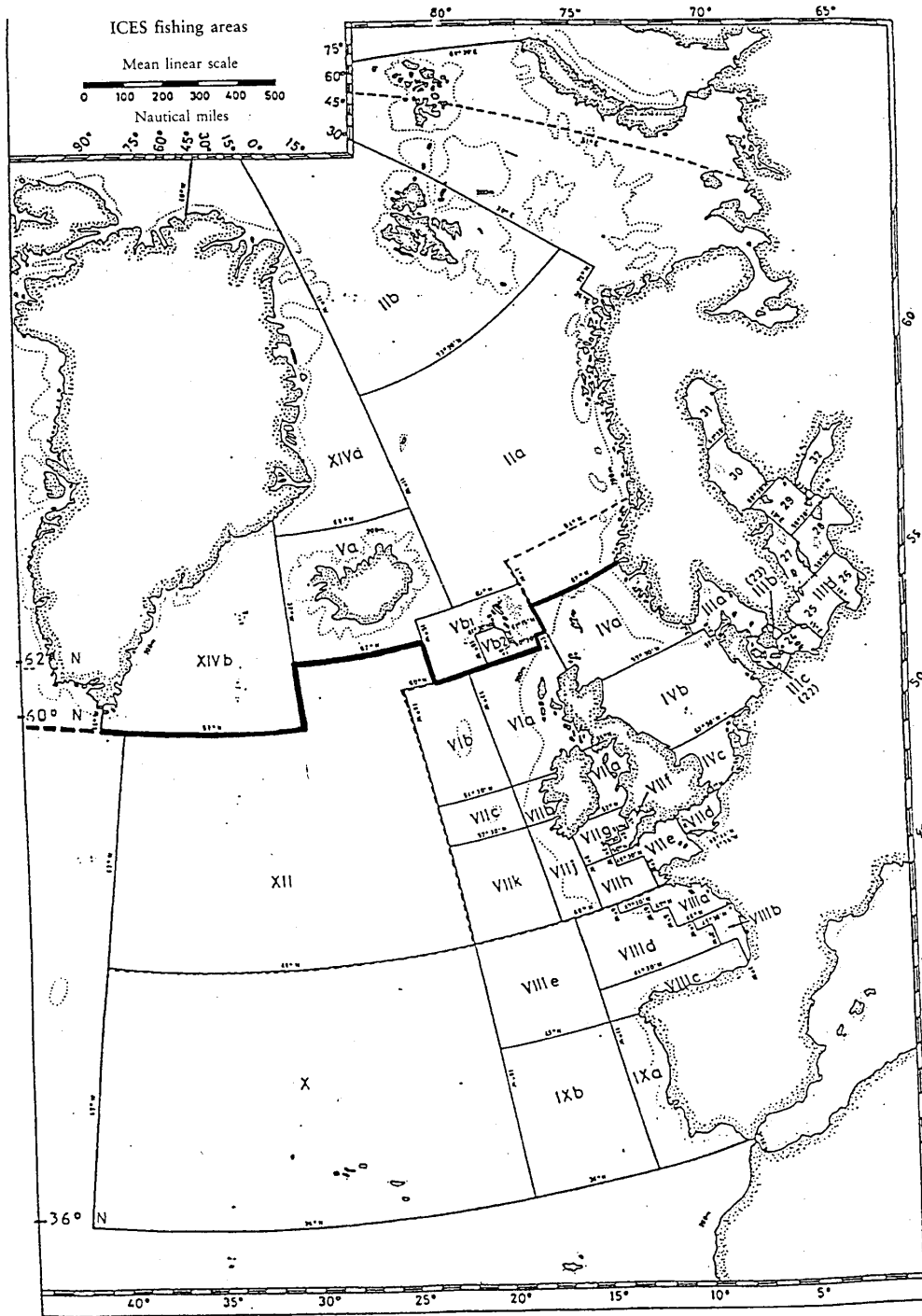
*(1) The rights of each person not to be subjected to inhale air polluted with tobacco smoke produced by others shall be respected.*

*(2) Tobacco smoking is entirely prohibited in sleeping rooms, galleys, spaces for processing fish, cargo holds and in spaces where gas cylinders and other dangerous substances are stowed.*

*(3) In other places than those referred to in paragraph (2), a shelter for smoking may be provided, provided that it will be ensured that this arrangement does not cause discomfort to non-smokers. In areas where tobacco smoking is permitted, sufficient ventilation shall be provided to the satisfaction of the Administration*

*(4) Shelters where tobacco smoking is permitted shall be suitably marked.*

ANNEX II – CHART OF THE NORTHERN REGION  
(See Regulation 2, paragraph 30 in Chapter I)





ANNEX III – DRAWINGS AND OTHER DATA REQUIRED FOR A FISHING  
VESSELS OF 15 METRES IN LENGTH OVERALL AND OVER

(see chapter I/12 Annex I)

- (1) The following list of drawings and other data specifies drawings and other data to be sent to the Administration for approval or for information in case of newbuildings. Furthermore, this list shall, as appropriate, be taken into account when a vessel is being considered for purchasing or chartering from abroad for registration on the Icelandic register of ships.
- (2) More than one item specified in the list may be specified in the same drawing. The Administration can require additional data if the drawings and other data prepared in accordance with this list are considered incomplete information.
- (3) In case of alterations or modifications it is generally sufficient to send drawings and other data relating to the relevant alterations and modifications. However, layout drawings shall be submitted to the Administration if modifications result in changes in the main dimensions of a vessel and/or its arrangements.
- (4) Generally, drawings shall be submitted to the Administration in three copies. Items marked with **A** shall be submitted to the Administration for approval and items marked with **I** shall be submitted to the Administration for information. Items marked with **C** shall be submitted to the Administration for approval in the case of unclassified vessels. In case of classified vessels the relevant drawings and other information shall be checked by the relevant classification society. When a newbuilding is built in accordance with requirements and under the surveillance of a recognized organization, drawings relating to the classification shall be sent to the Administration in one copy approved by the recognized organization and with the organization's endorsement, corrections and comments, if any.
- (5) When drawings are being made for newbuildings the relevant ISO standards for technical drawings shall be used. This applies, in particular, to the following standards:
  - (a) ISO 5455 on Technical drawings - Scales;
  - (b) ISO 5457 Technical product documentation - Sizes and layout of drawing sheets;
  - (c) ISO 7200 Technical drawings - Title blocks;
  - (d) ISO 7573 Technical drawings - Item lists; and
  - (e) the ISO 128 series, particularly part 25, lines on shipbuilding drawings.

Name		Examples of items which should be specified on drawings and data
<b>1. GENERAL PROVISIONS</b>		
General arrangement drawing (drawings) specifying plans, profiles and cross sections.	<b>I</b>	<ul style="list-style-type: none"> <li>• Main dimensions, including length overall, length (L), moulded breadth (B) and moulded depth (D).</li> <li>• Baseline, maximum draught.</li> <li>• Type of vessel (trawl, net, line, etc.), including combination modes of operation, and the intended use of operation.</li> <li>• Cargo holds, tanks, machinery spaces, service spaces, living rooms, cabins, hospital, messroom, galley, bathrooms and toilets.</li> <li>• Emergency exits with doors/hatches.</li> <li>• Deck machinery and lifting gear.</li> <li>• Location of any gas cylinders and hazardous substances. Anchor equipment</li> </ul>
Building contract and specifications.	<b>I</b>	<ul style="list-style-type: none"> <li>• Extract from a building contract indicating the date of the contract.</li> <li>• Shipyard</li> <li>• Yard number</li> <li>• Name of the ship (when available).</li> <li>• Classification (when applicable).</li> </ul>
<b>2. CONSTRUCTION, WATERTIGHT INTEGRITY AND EQUIPMENT</b>		
Midship section	<b>I/C</b>	<ul style="list-style-type: none"> <li>• Shall indicate midship section frames and other cross sections which are decisive for scantlings. Normally one section shall be displayed per space. The main frame drawing shall contain information on the equipment number and anchor-handling gear. The baseline shall be drawn for every frame.</li> </ul>
Profile and decks.	<b>I/C</b>	<ul style="list-style-type: none"> <li>• Main dimensions, baseline, maximum permissible draught and distance between frames</li> </ul>
shell plating, bulwarks and freeing ports.	<b>I/C</b>	
Waterproof bulkheads.	<b>I/C</b>	
Bottom tanks and tanks.	<b>I/C</b>	<ul style="list-style-type: none"> <li>• Sounding pipes.</li> </ul>

Bow with reinforcement.	I/C	
Stern and poop	I/C	
Rudder and steering mechanism.	I/C	<ul style="list-style-type: none"> <li>Information on steering engine and estimated cruising speed.</li> </ul>
Hatches and water and weathertight doors.	A/C	
Superstructures and deckhouses	I/C	
Engine base	I/C	<ul style="list-style-type: none"> <li>Information on engine power, engine type, engine speed and gear ratio.</li> <li>Weight and engine and gear.</li> </ul>
Masts and derricks	A/C	<ul style="list-style-type: none"> <li>Strength calculations shall be enclosed.</li> </ul>
Gallows and other fishing equipment.	A/C	<ul style="list-style-type: none"> <li>Strength calculations shall be enclosed.</li> </ul>
Bases for winches and deck machinery.	I/C	The drawing shall show the location of bases for machinery, launching appliances, etc on deck. Additionally, the responsible person for every base shall confirm that bases, including underlying structures, have been designed in accordance with the rules in force. Strength calculations shall be enclosed with the drawing.
Hold arrangements.	A	<ul style="list-style-type: none"> <li>Hold stanchions and information on hold divisions.</li> <li>Arrangements and stowage of boxes and fish containers.</li> </ul>
Deck arrangements.	A/C	<ul style="list-style-type: none"> <li>Stanchions and poundboards.</li> <li>Mooring and windlass arrangements.</li> </ul>
Drainage of enclosed working deck.	I/C	<ul style="list-style-type: none"> <li>Pumps and bilge wells/sumps.</li> </ul>
Welding	I/C	
Ice re-enforcement	I/C	
Docking drawing	I/C	
Strength calculations.	I/C	when applicable and in a separate booklet.

### **3. STABILITY AND ASSOCIATED SEAWORTHINESS**

Line drawing and construction body plan.	I	Shall be drawn in accordance with the standard NS 2598 or comparable standard.
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Information for control purposes.	<b>I</b>	Information for control of stability calculations. It shall inter alia be the following: <ul style="list-style-type: none"> <li>• Computer print-out of hull description and description of spaces and tanks.</li> <li>• Plots of data (isometric body plan).</li> <li>• Calculation of angle of down flooding.</li> <li>• Arrangement drawing of spaces giving buoyancy.</li> </ul>
Hydrostatic curves, crosscurves.	<b>I</b>	<ul style="list-style-type: none"> <li>• Tables for trimmed waterlines and control plots calculated by means of an approved computer program.</li> </ul>
Tank arrangements.	<b>I</b>	<ul style="list-style-type: none"> <li>• Capacities, contents, specific gravity, volumetric centre of gravity, free liquid surface effect.</li> </ul>
Capacities	<b>I/A</b>	<ul style="list-style-type: none"> <li>• Tables for spaces and tanks (Sounding tables).</li> <li>• Ullage tables for refrigerated seawater tanks (RSW) and other spaces and tanks. where such tables are suitable.</li> </ul>
Inclining experiment report.	<b>A</b>	
Curve of limiting KG.	<b>A</b>	Only for vessels of 45 m in length and over.
Stability information.	<b>A</b>	<ul style="list-style-type: none"> <li>• The data shall be compiled in accordance with the requirements in the Administration's model loading and stability manual (now MSC/Circ.920).</li> <li>• Table of summary of stability parameters for loading conditions.</li> </ul>
Damage stability criteria	<b>A</b>	Only for vessels of 100 m in length and over.

Freeboard drawing.	<b>I</b>	<ul style="list-style-type: none"> <li>• Baseline, maximum permissible draught, bow height.</li> <li>• Main dimensions, including moulded depth (D) and deck thickness at side for freeboard deck.</li> <li>• Doors and hatches: Types, materials, coaming and sill heights.</li> <li>• Vent pipes and ventilators: Location, height, materials, type of closing appliance.</li> <li>• Sidescuttles/windows: Location, size, fixed/capable of of being opened, hinged/loose deadlights.</li> <li>• Inlets and discharges: Height above/below loaded waterline, valves and closing appliances.</li> <li>• Railings/bulwarks: Height, freeing port area.</li> <li>• Drainage of enclosed working decks: Freeing ports (when applicable) closing appliances.</li> <li>• Offal chutes: Height above loaded waterline, closing arrangements.</li> </ul>
Ice accretion calculations	• <b>A</b>	<ul style="list-style-type: none"> <li>• The calculations shall be supported by lateral area and plans indicating areas where icing is likely to accrete.</li> </ul>

#### **4. MACHINERY AND ELECTRICAL INSTALLATIONS AND PERIODICALLY UNATTENDED MACHINERY SPACES**

Machinery space arrangements	<b>I/C</b>	<ul style="list-style-type: none"> <li>• Information on equipment, appliances and other components necessary for the safety and operation of the vessel.</li> <li>• Ventilation and calculations of air requirements in machinery spaces.</li> </ul>
Report on torsional oscillation check	<b>DI/C</b>	Applies to machinery of 500 kW propulsion power or more and to machinery of 300 kW propulsion power or more when the shaft length exceeds 6 metres.
Shaft arrangement	<b>I/C</b>	Shaftline, propeller and rudder.
Engine cooling systems.	<b>I/C</b>	
Air pressure systems.	<b>I/C</b>	
Fuel systems.	<b>I/C</b>	
Bilge pumping arrangements.	<b>I/C</b>	
Hydraulic systems.	<b>I/C</b>	

Fresh water system.	I/C	<ul style="list-style-type: none"> <li>• Fresh water tanks.</li> <li>• Heaters.</li> <li>• Pressure vessels.</li> </ul>
Drainage systems.	I/C	
[		
Report on noise measurements	A	
Steering gear.	I/C	
Warning and safety systems for machinery.	I/C	<ul style="list-style-type: none"> <li>• Inter alia, equipment for periodically unattended machinery spaces.</li> </ul>
Refrigeration systems for the preservation of the catch.	I/C	
Main electric power system.	I/C	<ul style="list-style-type: none"> <li>• Arrangements.</li> <li>• Single-line diagram.</li> <li>• Load balance calculations.</li> </ul>
Emergency source of electrical power	I/C	<ul style="list-style-type: none"> <li>• Arrangements.</li> <li>• Single-line diagram.</li> <li>• Load balance calculations.</li> </ul>

#### **5. FIRE PROTECTION, FIRE DETECTION, FIRE EXTINCTION AND FIRE FIGHTING**

Arrangements for fire prevention.	A	<ul style="list-style-type: none"> <li>• Fire protection method according to regulation V/1.</li> <li>• Fire subdivision, i.e. bulkheads, protection of stairways and lift wells, doors in fire-resistant divisions, fire integrity of bulkheads and decks.</li> </ul>
Ventilation systems.		<ul style="list-style-type: none"> <li>• Type and capacity.</li> <li>• Ventilation ducts.</li> <li>• Heating installations.</li> <li>• Sealing device.</li> </ul>
Storage of gas cylinders and dangerous materials.	A	
Means of escape.	A	

Automatic sprinkler and fire alarm and fire detection systems	I/C	
Fixed fire-extinguishing arrangements in cargo spaces of high fire risk.	I/C	
Fire mains.	I/C	<ul style="list-style-type: none"> <li>• Information on pumps, fire hydrants and fire hoses and nozzles.</li> </ul>
Fire-extinguishing appliances in machinery spaces.	I/C	<ul style="list-style-type: none"> <li>• Description of the system and drawings specifying location of gas cylinders and starting device.</li> <li>• Calculation of gas quantities.</li> </ul>
Safety- and fire control plan	A	<ul style="list-style-type: none"> <li>• Information referred to in regulation V/25 and V/42.</li> </ul>
Instructions on the use of alarm systems.	A	<ul style="list-style-type: none"> <li>• Information under chapter V and regulation VII/2.</li> </ul>

#### **6. CHAPTER VI - EQUIPMENT AND MEASURES FOR THE PROTECTION OF THE CREW**

Arrangements on deck	A	<ul style="list-style-type: none"> <li>• Deck openings and information on size and height of coamings and door sills and safety equipment.</li> <li>• Sealing device and information on hatch counterweights.</li> <li>• Skylights and other similar openings.</li> <li>• Anti-skid surfaces.</li> <li>• Arrangements and height of bulwarks and guard rails.</li> <li>• Arrangement of safety lines.</li> <li>• Stern ramp gate and other stern safety equipment.</li> <li>• Stairways and ladders.</li> <li>• Accommodation ladders and gangways.</li> </ul>
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Deck machinery, tackle and lifting gear.	A/C	<ul style="list-style-type: none"> <li>• Force diagram for all devices and equipment subject to loads during fishing operations.</li> <li>• Winches (including information on force), tackles, sheaves and rollers, etc.</li> <li>• Strength of wires, chains, etc.</li> <li>• Weak links in the system (overload protection).</li> <li>• Guards.</li> <li>• Control levers and emergency cut-off switches.</li> <li>• Closed-circuit television system.</li> <li>• Weight and/or number of men each lift is made for.</li> <li>• Lift wells, means of closure, control switches, emergency stop and bells and other security measures.</li> </ul>
		<ul style="list-style-type: none"> <li>•</li> </ul>
Arrangement in fish processing spaces.	A	<ul style="list-style-type: none"> <li>• Fish processing machinery arrangements, type of machinery, etc.</li> <li>• Arrangement in other spaces related to fish processing spaces, such as spaces for drying working clothes and spaces for sanitary facilities for fish processing spaces.</li> <li>• Bases for machinery and other equipment in working spaces (and information on links to the vessel's structure).</li> <li>• Width and height of workspace, passages and platforms.</li> <li>• Arrangement with regard to ergonomics.</li> <li>• Safety equipment, such as emergency switches and equipment for sound and light signals.</li> <li>• Dampers, taps, valves and other closing appliances.</li> <li>• Guards.</li> <li>• Means of escape.</li> </ul>



## 7. LIFE-SAVING APPLIANCES AND ARRANGEMENTS

Launching and embarkation appliances.	A/C	<ul style="list-style-type: none"> <li>• Information on the functionality of the launching appliances, such as falls and a winches.</li> <li>• Information on ladders and other launching and embarkation appliances.</li> <li>• Copy of type-approval certificates.</li> </ul>
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## 8. EMERGENCY PROCEDURES, MUSTERS AND DRILLS

The general emergency alarm system.		.
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## 9. RADIO COMMUNICATIONS

Arrangement of radio installations, antennas, etc.		<p>The drawing shall specify the setup of the radio installations and on which the following information shall be indicated:</p> <ul style="list-style-type: none"> <li>• Location of the equipment as well as information on manufacturer and type.</li> <li>• Location of antennas, seen from forward and abaft, from starboard or port and from above. Antennas mean all antennas, including antennas for navigational equipment.</li> <li>• Connection of radio installations to main, emergency and reserve sources of energy and location of fuses.</li> </ul>
Register of radio installations		<ul style="list-style-type: none"> <li>• The register shall be supplemented with information on the area of operation (STK, A1, A2 A3 og A4)</li> </ul>

## 10. APPLICATION AND DEFINITIONS

Arrangement of navigation lights.		The position of navigation lights (lateral figure, horizontal figure and cross section), signalling apparatus and fixed signalling equipment shall be displayed.
Arrangement of wheelhouse.	A	<ul style="list-style-type: none"> <li>• Arrangement and information on navigational equipment and instruments.</li> <li>• Navigating bridge visibility.</li> </ul>

## 11. CREW ACCOMMODATION

Layout of crew accommodation spaces in a scale which is at least 1:25	<b>A</b>	<ul style="list-style-type: none"><li>• Corridors, sleeping rooms, mess rooms, sanitary facilities, provision stores, facilities for washing and drying clothes, cooking facilities and hospital spaces.</li><li>• Arrangements in galley, including equipment to enhance safety at work.</li><li>• Equipment for provision stores.</li><li>• Area and equipment in sleeping rooms, mess rooms and hospital spaces.</li><li>• Width of corridors and exits.</li><li>• Arrangement of emergency exits and sizes of doors and other openings.</li><li>• Insulation material in a accommodation spaces, including insulation material to be applied to bulkheads and deckheads of machinery spaces adjacent to crew accommodation.</li><li>• Arrangement and lighting, heating and ventilation equipment.</li><li>• Areas where tobacco smoking is allowed as well as information on ventilation in such areas.</li></ul>
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## 12. MISCELLANEOUS

Information relating to tonnage measurement	<b>I</b>	<ul style="list-style-type: none"> <li>• Tonnage measurement calculations.</li> <li>• General arrangement. Profile and decks. Midship section. Construction of fore and aft half of vessel. Line drawing/construction body plan.</li> <li>• Offset tables (only if information on line drawing/construction body plan is inappropriate)</li> <li>• Capacity plan.</li> <li>• Manual calculation of each space added to or subtracted from the calculated total capacity (where appropriate).</li> <li>• Graphic plot of all spaces.</li> <li>• Table specifying the results of computer calculation of each space added to or subtracted from the calculated total capacity.</li> </ul>
Arrangements and equipment to prevent oil pollution.	<b>A</b>	For vessels of 400 gross tonnage or more.
Emergency plan in response to oil pollution incidents (SOPEP).	<b>A</b>	For vessels of 400 gross tonnage or more.
Arrangements and equipment to prevent refuse pollution.	<b>A</b>	For vessels of 400 gross tonnage or more.
Certificate of approval for the equipment.	<b>I</b>	<ul style="list-style-type: none"> <li>• Original on board.</li> <li>• Copy to the Administration.</li> </ul>

## ANNEX IV – ANCHOR AND MOORING EQUIPMENT

1. Anchors, chain, wires, towsines and mooring lines shall be determined in accordance with the attached table, based on an equipment number “EN” as follows:

$$EN = \Delta^{\frac{2}{3}} + 2B(a + \sum h_j) + 0,1A$$

where:

- $\Delta$  - moulded displacement, in tonnes to the maximum design water line;
- B - breadth in m, as defined in regulation I/2(5);
- a - distance in m from the maximum design water-line to the upper edge of the uppermost complete deck at side amidships;
- $h_j$  - height in m on the centreline of each tier of deckhouses having a breadth greater than B/4. For the lowest tier  $h_j$  is to be measured at centreline from the upper deck or from a notional deck line where there is a local discontinuity in the upper deck.  
When calculating  $h_j$  sheer and trim are to be ignored:
- A - area in m<sup>2</sup> in profile view of the hull, within L as defined in regulation I/2(7) and of superstructures and deckhouses above the maximum design water-line having a width greater than B/4.

Screens and bulwarks more than 1.5 m in height are to be regarded as parts of deckhouses when determining  $h_j$  and A.

### Anchors and Chains

2. Vessels shall be fitted with at least two anchors which shall be located at the bow. However, vessels of less than 17 m, may be fitted with only one anchor, provided that the weight of the anchor is at least double the weight of an anchor as defined in the table to this annex.

3. The weight of each anchor shall be in accordance with the table given in this annex.

4. “High Holding Power Anchors” of a design approved by the Administration may be used as bower anchors, the weight of each such anchor may be 75% of the table weight given in this annex.

5. The Administration may require increased anchor equipment for vessels fishing in very rough waters and/or may permit reduction in the equipment for vessels operating in sheltered waters.

6. Anchors with a weight of and above 150 kg shall be fitted in hawsepipes, skids or a similar arrangement that is suitable for the quick and safe operation in dropping and hoisting the anchors. If the weight of each of the anchors is below 300 kg, but greater than 150 kg, it may be accepted that only one of the anchors need be fitted in a hawsepipe or skid. Anchors shall also be secured in the stowed position by means of a locking or lashing device.

7. In general, anchors shall be fitted with anchor chain, the length and dimension of each anchor chain shall be in accordance with the table given in this annex.

8. For vessels of less than 45 m in length, the chain of one anchor may be replaced with anchor wires of equal strength provided a chain meeting the requirements given in the table to this annex is maintained for the second one. However, in existing vessels one or both anchors may be replaced with anchor wires, provided that they are of equal strength as the chain and the equipment and arrangements that were on board before the entry into force of this Regulation.

9. Where anchor wires are used as a substitute for anchor chains their length shall be equal to 1.5 times the corresponding tabular length of chain. In addition, a chain of not less than 12.5 m in length and of the same specifications as set out in the table to this annex shall be provided between anchor and anchor wire.

10. Where the Administration has authorized the use of trawl warp as anchor wire, it shall be satisfied that the arrangement does not reduce the efficiency required for the quick and safe operation in dropping and hoisting the anchors and for holding the vessel at anchor in all foreseeable service conditions. The requirements for a trawl warp shall not be less than that required for anchor wire.

#### Anchor handling

11. Fishing vessels provided with anchors of or above 150 kg shall be fitted with a windlass. The windlass shall be fitted with a messenger wheel and/or drum for each anchor and means for the release of each messenger wheel or drum.

12. It shall not be possible to carry the chains forward to the hawsepipe, skid or similar arrangement without the chain passing over the messenger wheels. When anchor wire is used it shall pass over a roller adjacent to the hawsepipe to avoid chafing.

13. The windlass, its support and its brakes shall be capable of absorbing a static tension of at least 45% of the breaking strength of the anchor chain or anchor wire without the occurrence of any lasting deformations and without the brake losing its hold. Furthermore, a chain stopper or wire nipper shall be fitted between the windlass and the hawsepipe or similar for each anchor chain or anchor wire capable of holding the vessel while at anchor. In new vessels if chain stoppers or wire nippers are not fitted, the windlass, its support and its brake shall be capable of absorbing a static tension of at least 80% of the breaking strength of the anchor chain or anchor wire. The

chain stopper or wire nipper and their supports shall be capable of absorbing a static tension of at least 80% of the breaking strength of the anchor chain/wire without the occurrence of any lasting deformations and without the chain stopper or wire nipper losing its hold.

14. If the trawl winch is fitted with messenger wheels, etc. and meets the requirements set out in paragraphs (11), (12) and (13) such a winch may be used as a windlass.

15. New fishing vessels which have been authorized to use trawl warp as anchor wire may use their trawl winch as a windlass provided the trawl warp can be wound on a drum with a braking device that is independent of the actual trawl warps in use for fishing. Vertical and horizontal lead blocks and guide rollers shall be suitably fitted and arranged to avoid chafing on deckhouses, superstructures, deck plating and equipment on deck.

16. If a vessel has lost its anchors, and it is not immediately possible to re-acquire them, the Administration after having assessed the conditions applying to the vessel, as given in paragraph (5), may permit otter boards/trawl doors with a least the same weight for anchors given in the table to this annex to be used for a limited period of time.

#### Towing lines

17. Vessels of 17 m in length and more shall be provided with at least one tow line with a length and breaking strength in accordance with the table given in this annex. It shall be appropriately located 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 warps if this has at least a similar length and breaking strength. If warp is used, a length of rope of at least 12.5 m with a minimum breaking strength as given in the table for the tow line shall also be provided and attached to the warp.

#### Mooring equipment

18. Vessels shall be provided with suitable cleats and bollards as well as hawseholes in order to 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 a spring on each bollard on each side forward and aft. In vessels of 24 m in length and over, at least three bollards shall be fitted forward, or at least two abaft of amidships. In vessels of less than 24 m in length, at least one bollard shall be fitted forward and at least two abaft of amidships. Cleats and bollards shall be of such a size that it is possible to accommodate at least four turns of the 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.

19. The vessel shall be provided with at least four mooring lines, each of a length and breaking strength in accordance with the table given in this annex.

**TABLE**

<i>Equipment number</i>		<i>Stockless bower anchors</i>		<i>Stud link chain cables for bower anchors</i>			<i>Towline</i>		<i>Mooring lines</i>	
<i>Exceeding but</i>	<i>Not and with</i>	<i>Number</i>	<i>Weight per anchor (kg)</i>	<i>Total length (m)</i>	<i>Diameter (mm)</i>		<i>Minimum length of each line (m)</i>	<i>Minimum breaking strength (kN)</i>	<i>Minimum length of each line (m)</i>	<i>Minimum breaking strength (kN)</i>
					<i>Mild steel</i>	<i>Special quality steel</i>				
up to	30	2	70	137.5	11	-	-	-	40	25
30	40	2	80	165	11	-	-	-	50	30
40	50	2	100	192.5	11	-	-	-	60	30
50	60	2	120	192.5	12.5	-	180	98	60	34
60	70	2	140	192.5	12.5	-	180	98	80	34
70	80	2	160	220	14	12.5	180	98	100	37
80	90	2	180	220	14	12.5	180	98	100	37
90	100	2	210	220	16	14	180	98	110	39
100	110	2	240	220	16	14	180	98	110	39
110	120	2	270	247.5	17.5	16	180	98	110	44
120	130	2	300	247.5	17.5	16	180	98	110	44
130	140	2	340	275	19	17.5	180	98	120	49
140	150	2	390	275	19	17.5	180	98	120	49
150	175	2	480	275	22	19	180	98	120	54
175	205	2	570	302.5	24	20.5	180	112	120	59
205	240	2	660	302.5	26	22	180	129	120	64
240	280	2	780	330	28	24	180	150	120	69
280	320	2	900	357.5	30	26	180	174	140	74
320	360	2	1020	357.5	32	28	180	207	140	78
360	400	2	1140	385	34	30	180	224	140	88
400	450	2	1290	385	36	32	180	250	140	98
450	500	2	1440	412.5	38	34	180	277	140	108
500	550	2	1590	412.5	40	34	190	306	160	123
550	600	2	1740	440	42	36	190	338	160	128
600	660	2	1920	440	44	38	190	371	160	132
660	720	2	2100	440	46	40	190	406	160	137

## ANNEX V – RECOMMENDED PRACTICE FOR AMMONIA REFRIGERATION SYSTEMS IN MANNED SPACES

### General

- (1) All electrical installations on or adjacent to the ammonia machinery flat shall be explosion proof or of an intrinsically safe type to the satisfaction of the Administration.
- (2) Flame producing devices hot surfaces above 427°C in the machinery space shall be located as remotely as practical from the ammonia machinery flat.
- (3) Ammonia equipment shall be surrounded by an efficient water curtain and in addition, water sprays shall be directed at all potential leak sources, e.g. pipe connections and flanges, compressors et cetera. The water curtain and sprays shall be provided with an adequate supply of water, which shall be maintained under constant pressure.
- (4) A large capacity ventilation system including mechanical exhaust shall be provided for the ammonia machinery flat. The system shall not exhaust to another space. The exhaust from such spaces shall be well clear of the air intakes of the ventilation systems for other spaces. The mechanical exhaust ventilation fan motor shall be either fitted exterior to the ammonia flat or shall be of an intrinsically safe type to the satisfaction of the Administration.
- (5) Coamings shall be provided around the ammonia machinery flat.
- (6) Personal safety equipment, including suitable gas masks and protective clothing, shall be provided inside and outside the machinery space.
- (7) Remote controls located in the wheelhouse or other suitable place shall be provided for the following services:
  - (a) The water curtain spray system;
  - (b) Pneumatic system for ammonia refrigeration systems;
  - (c) Propulsion machinery:
- (8) Means are to be provided for stopping the ammonia compressor prime movers from the wheelhouse or another suitable place.
- (9) Means of escape direct to deck from the ammonia machinery flat shall be provided in addition to any other escape which may be required by the Administration.
- (10) Drainage shall be provided from machinery spaces and/or flats leading to a place where water which could be contaminated with refrigerant presents no danger to the vessel or to persons on board.
- (11) Information concerning hazards, precautions and first aid shall be clearly displayed at the access to the ammonia machinery space.



## Piping systems

- (12) Joints in steel piping systems shall be butt welded wherever practical to reduce the possibility of leaks. Flanged joints shall be limited to connections with compressors, vessels, valves, braches for future extensions or where required for maintenance. The number of joints, whether flanged or welded shall be kept to a minimum.
- (13) If for operational reasons flexible hoses are required, the Administration shall be satisfied that that they are suitable for ammonia service. They shall be adequately protected against mechanical damage, torsion and stress.
- (14) To the extent possible, flexible bellows shall be avoided. Where flexible bellows are proposed, the Administration shall be satisfied that they are only used within the recommendations of their manufacturer and adequate precautions taken to avoid excessive vibration, mechanical damage, torsion and stress.
- (15) All refrigerant piping shall be adequately supported, the supports or hangers be designed to carry the weight of pipe including contents and, where required insulation.
- (16) There shall be sufficient clearance around pipelines to allow for any necessary attention to flanges, screwed joints and fittings.
- (17) Ammonia piping shall not be located in lift wells, accommodation spaces, in stairways or at entrances/exits. Pipework shall also be arranged so as not to obstruct access ways and inhibit access to the machinery.
- (18) Special attention shall be paid to the clearance around pipes passing through fire resistant bulkheads and deckheads, which shall be adequately sealed to maintain the integrity of the bulkhead or deckhead. Pipe ducts and shafts shall be isolated from other spaces to resist the spread of fire.

## Decomissioning

- (19) When a refrigeration system is to be decommissioned or taken out of service and dismantled, the procedure should ensure that:
  - (a) hazards to the personnel carrying out the process are minimized;
  - (b) refrigerant and oil are correctly removed for reclamation or disposal; and
  - (c) the system as left does not present any future hazard to personnel or the environment due to residual content.

## ANNEX VI – REQUIREMENTS FOR MAIN SEA ANCHORS FOR INFLATABLE LIFERAFTS

On polygonal rafts the sea anchor patch shall be placed on a corner of the liferaft or secured by a bridle, so either a corner of the liferaft is turned into the wind or if a straight part is into the wind, the raft is prevented from yawing.

The entrance openings shall always be at right angles to the sea anchor lines.

The sea anchor shall be made of strong, approved material, and a spare sea anchor is to be provided of the same specification. A net is to be placed between the shroud lines, to prevent them from fouling (see figure). The shroud lines shall be securely fastened (sewn) to the sea anchor at the opening where it shall be reinforced, e.g. with a protecting cloth sewn over the shroud lines. The sea anchor lines shall be of plaited nylon or equivalent material, and at least 35 m long. The sea anchor shall be made of synthetic cloth with a tensile strength of at least 1.37 kN/5 cm, in both directions, and with a tear strength of the material in both directions of least 78 N. On a sea anchor, for an inflatable liferaft intended for 9 persons or more, the bigger opening shall be 60 cm in diameter and the smaller opening 18 cm in diameter and its length shall be 120 cm. On a sea anchor, for an inflated liferaft intended for less than 9 persons, the bigger opening shall be 40 cm diameter, the smaller opening 12 cm in diameter, and the length 80 cm.

There shall be least 4 shroud lines made of braided nylon of the same length as the sea anchor.

The sea anchor shall be fastened to the liferaft at 90° to the entrance openings. A catching line ("lazy" line) connected to the line to the sea anchor shall be at hand at an entrance opening. The tensile strength of the line to the sea anchor for a liferaft, intended for 9 persons or more, shall be 11.7 kN, but for a liferaft for less than 9 persons the tensile strength shall be 7.8 kN.

