

# DEPARTMENT OF TRANSPORT

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## SCHEDULE

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### MERCHANT SHIPPING ACT, 1951 (ACT NO. 57 OF 1951)

### DRAFT MERCHANT SHIPPING CONSTRUCTION AND EQUIPMENT OF FISHING VESSELS OF LESS THAN 24 METRES IN LENGTH AND EQUAL TO OR MORE THAN 25 GT.) REGULATIONS, 2025

#### SCHEDULE

#### CONSTRUCTION AND EQUIPMENT OF FISHING VESSELS OF LESS THAN 24 METRES IN LENGTH AND EQUAL TO OR MORE THAN 25 GT.

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## **CHAPTER I**

### **GENERAL PROVISIONS**

#### **Object of Regulations**

1. These Regulations—
  - (a) give effect to the Cape Town Agreement; and
  - (b) provide for safety of registered fishing vessels or fishing vessels required to be registered in terms of the Ship Registration Act, 1998 (Act No. 58 of 1998).

#### **Definitions**

2. In these Regulations, the expression “the Act” means the Merchant Shipping Act, 1951 (Act No. 57 of 1951), and unless the context otherwise indicates, any word or expression used in

these Regulations, to which a meaning has been assigned in the Act, bears the meaning so assigned, and—

**“accommodation spaces”** are those spaces used for public spaces, corridors, sanitary spaces, cabins, offices, hospitals, cinemas, games and hobbies rooms, pantries containing no cooking appliances and similar spaces;

**“AIS”** means an Automatic Identification System;

**“amidships”** is the mid-length of the Length (L) or the mid-length of the Breadth (B);

**“angle of down flooding”** means the angle of heel at which openings which cannot rapidly be closed weathertight commence to immerse. Small openings through which progressive flooding cannot take place need not be considered;

**“Approved”** means approved by the Authority;

**“Approved Inspection Authority”** means any organisation that has been accredited by the chief inspector in terms of:

- (a) SABS 0227 Part 1 to perform the functions regarding the certification of new vessels under pressure, inspections and testing; or
- (b) SABS 0227 Part 2 to perform the functions regarding the certification of modified or repaired vessels under pressure, inspections and testing, as an approved inspection authority.

**“Authority”** means the South African Maritime Safety Authority established by section 2 of the South African Maritime Safety Authority Act, 1998 (Act No. 5 of 1998);

**“auxiliary means of activating the rudder”** means the equipment provided for effecting movement of the rudder for the purpose of steering the vessel in the event of failure of the main steering gear;

**“baseline”** means the horizontal line intersecting at amidships the “keel line”;

**“boiler”** means any apparatus to convert continuously any liquid into steam, vapour or gas at a pressure higher than that due to the atmosphere and where the heat is derived from a source other than steam or the ambient temperature of the atmosphere, and includes any superheater or economiser which is an integral part of a boiler or is separately fired therefrom, but does not include such an apparatus, superheater or economiser in which the product of the design pressure in pascal and the volume in cubic metres is less than the figure 15 000;

**“Breadth (B)”** means the maximum moulded 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;

**“Cape Town Agreement”** means the 2012 agreement on the Implementation of the Provisions of the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977 adopted in October 2012;

**“collision bulkhead”** means a watertight bulkhead up to the working deck in the

forepart of the vessel which meets the following conditions:

- (a) The bulkhead shall be located at a distance from the forward perpendicular:
  - (i) 0.05L plus 1.35 metres for vessels of less than 45 metres in length; and
  - (ii) In no case less than 2.0 metres;
- (b) Where any part of the underwater body extends forward of the forward perpendicular, including the bulbous bow, the distance stipulated in paragraph (a) shall be measured from a point at mid-length of the extension forward of the forward perpendicular or from a point 0.015L forward of the forward perpendicular, whichever is less; and
- (c) The bulkhead may have steps or recesses provided they are within the limits prescribed in paragraph (a);

**“competent person”** means a person who is registered as or deemed to be competent by the appropriate authority within the area of work for which such person is required to perform in terms of these Regulations;

**“crew”** means the skipper and all persons employed or engaged in any capacity on board a vessel on the business of that vessel and excludes “incidental persons” as defined in the Maritime Occupational Health and Safety Regulations, 1994;

**“dead ship condition”** means the condition under which the main propulsion plant, boilers and auxiliaries are not in operation due to the absence of power;

**“deepest operating waterline”** means the waterline related to the maximum permissible operating draught;

**“Depth (D)”** means the vertical distance measured amidships (B) from the keel line to the top of the upper deck beam at side and-

- (a) 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;
- (b) 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 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;

**“displacement”** in relation to a ship, means the amount of water displaced by the ship’s hull at a given instant where, in accordance with Archimedes Principle, the mass of a vessel equals the mass of water it displaces;

**“draught”** means the vertical distance from the underside of the keel, at a defined longitudinal position, to the waterline;

**“enclosed superstructure”** means a superstructure with—

- (a) enclosing bulkheads constructed to the satisfaction of the Authority;
- (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;
- (c) other openings in sides or ends of the superstructure fitted with efficient weathertight means of closing; and
- (d) 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;

**“enclosed volume”** means the volume of the spaces in a vessel which can be closed watertight and weathertight and are used for determining the cross curves of stability;

**“existing vessel”** means a fishing vessel which is not a new vessel;

**“factory”** means a space where the cleaning and processing of fish or any other marine living resources is undertaken;

**“fishing vessel”** or **“vessel”** means any vessel used commercially for catching fish or other marine living resources;

**“float-free survival craft”** are craft whose installations and stowage are intended to permit the craft to clear a sinking vessel and float to the surface automatically;

**“forward and after perpendiculars”** shall be taken at the forward and after ends of the length (L) which shall be coincident with the foreside of the stem on the waterline on which the length is measured;

**“freeing ports”** means the openings in the bulwarks on deck to allow water to rapidly drain directly overboard;

**“fuel oil unit”** means the equipment used for the preparation of fuel oil for delivery to an oil-fired boiler, or equipment used for the preparation for delivery of heated oil to an internal combustion engine, and includes any associated oil pressure pump, filter or heater dealing with oil at a pressure greater than 0.18 newtons per square millimetre;

**“GT”** for a ship means, its gross tonnage calculated in terms of the Tonnage Regulations, 1986;

**“height of a superstructure or other erection”** means 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;

**“keel line”** means the line parallel to the slope of keel passing amidships through—

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

**“launching appliance”** means a device capable of launching, from the embarkation position, a craft fully loaded with the number of persons it is permitted to carry and with its equipment;

**“Length (L)”** shall be taken as 96 per cent of the total length on a waterline at 85 per cent 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;

**“lifting appliance”** means any fixed or mobile appliance on a vessel which is used for suspending, raising or lowering a load or moving it from one position to another whilst suspended but does not include—

- (a) any screw, belt, bucket or other conveyor used for transport of cargo or people;
- (b) any survival craft or rescue boat launching and recovery appliance or arrangement; or
- (c) any pilot hoist;

**“lightship condition”** means the ship ready for sea, complete with permanent ballast, outfit and spare gear, machinery and systems, but with no fuel, fresh water, feed water, ballast water, lubrication oil, provisions, consumable stores, crew and effects or cargo on board;

**“linehauler recovery station”** means an area used for the recovery of the line and catch;

**“low flame spread”** means that the surface thus described will adequately restrict the spread of flame, this being determined to the satisfaction of the Authority by an established test procedure;

**“machinery spaces of category A”** means those spaces which contain internal combustion type machinery used either—

- (a) for main propulsion;
- (b) for other purposes where such machinery has in the aggregate a total power output of not less than 750 KiloWatts; or
- (c) which contain any oil-fired boiler or fuel oil unit;

**“machinery spaces”** means 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;

**“main steering gear”** means the machinery, the steering gear power units, if any, and ancillary equipment and the means of applying torque to the rudder stock necessary for effecting movement of the rudder for the purpose of steering the vessel under normal service conditions;

**“main switchboard”** means a switchboard directly supplied by the main source of electrical power and intended to distribute electrical energy;

**“Skipper”** means, in relation to a fishing vessel, any person, other than a pilot, having charge or command of such fishing vessel and the word **“Skipper”** shall be construed accordingly;

**“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;

**“maximum ahead service speed”** means the greatest speed which the vessel is designed to maintain in service at sea at its maximum permissible operating draught;

**“mean draught”** means the mean of the forward draught and aft draught;

**“midship section”** means 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 center-line planes passing through amidships.

**“new vessel”** means a fishing vessel for which on or after the date of entry into force of these Regulations—

- (a) the building or major conversion contract is placed;
- (b) the building or major conversion contract has been placed before the date of entry into force of the Regulations, and which is delivered three years or more after the date of such entry into force; or
- (c) in the absence of a building contract—
  - (i) the keel is laid;
  - (ii) construction identifiable with a specific vessel begins; or
  - (iii) assembly has commenced comprising at least 50 tonnes or 1 percent of the estimated mass of all structural material; whichever is the less.

**“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 degrees Celsius, this being determined to the satisfaction of the Authority by an established test procedure and the expression “combustible material” shall be construed accordingly;

**“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 appropriate for the crew to the satisfaction of the Authority;

**“novel life-saving appliance or arrangement”** means a life-saving appliance or arrangement which embodies new features not fully covered by the provisions of these regulations but which provides an equal or higher standard of safety;

**“pressure vessel”** has the same meaning assigned to in the Pressure Equipment Regulations, 2009 issued under the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993);

**“pressurised system”** means an assembly of vessels under pressure and includes connections by pipes or similar ducts, fittings and valves which operate under gauge pressure equal to or greater than 50 000 pascal for the process and conveyance of a

flammable liquid, hazardous chemical substance, saturated steam or superheated steam;

**“public spaces”** mean those portions of the accommodation spaces used for halls, dining rooms, lounges and similar permanently enclosed spaces;

**“retro-reflective material”** means a material, which deflects in the opposite direction a beam of light directed on it;

**“service spaces”** means those spaces used for galleys, pantries containing cooking appliances, lockers and storerooms, workshops other than those forming part of the machinery spaces, and similar spaces and trunks to such spaces;

**“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;

**“steering gear power unit”** means in the case of—

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

**“superstructure”** means the decked structure on the working deck extending from side to side of the vessel or with the side plating not being inboard of the shell plating more than 0.04B;

**“superstructure deck”** means 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 metres above the working deck: Provided, where this height is less than 1.8 metres, the top of such deckhouses or other erections shall be treated in the same ways as the working deck;

**“survival craft”** means a craft capable of sustaining the lives of persons in distress from the time of abandoning the vessel;

**“Tonne”** 1 tonne = 1000 kg;

**“Tons”** means gross register tons (GT);

**“vessels under pressure”** means a vessel which operates under pressure and includes a boiler, pressure vessel, pressurised system or portable gas container;

**“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;

**“weathertight”** means that in any sea conditions water will not penetrate into the vessel; and

**“working deck”** means generally the lowest continuous deck above the deepest operating waterline from which fishing is undertaken: Provided, in vessels fitted with two or more continuous decks, the Authority may accept a lower deck as a working deck provided that that deck is situated above the deepest operating waterline.

### **Application**

3.(1) Unless expressly provided otherwise, the provisions of these Regulations shall apply to every registered fishing vessel or fishing vessel required to be registered or licensed in terms of the Act, less than 24 metres in length and 25 GT or more, as follows:

- (a) New vessels - upon promulgation of these Regulations;
  - (b) Existing vessels, which undergo alterations or additions - such alterations or additions, are to comply with these Regulations;
  - (c) Equipment and safety management as required by these Regulations become effective two years after promulgation; and
  - (d) Existing vessel, upon registration onto the South African register - after promulgation of these Regulations.
- (2) The provisions of these Regulations shall not apply to vessels exclusively used—
- (a) as pleasure vessels as defined in the Merchant Shipping (National Small Vessel Safety) Regulations, 2007;
  - (b) for processing fish or other marine living resources of the sea;
  - (c) for research and training; or
  - (d) as fish carriers.

### **Exemptions**

4. (1) The Authority may exempt any vessel, to which these Regulations apply, which embodies features of a novel kind from any of the requirements of these Regulations, the application of which might seriously impede research into the development of such features and their incorporation in vessels.

(2) Any such vessel shall, however, comply with safety requirements, which, in the opinion of the Authority, are adequate for the service for which the vessel is intended and are such as to ensure the overall safety of the vessel, crew and the environment.

(3) The Authority may exempt any vessel, to which these Regulations apply, from any of the requirements of these Regulations if the Authority considers that the application is unreasonable and impracticable in view of the distance of the vessel's operating area from vessel's base port, the type of vessel, the weather conditions and the absence of general navigational hazards, provided that the vessel complies with safety requirements which, in the opinion of the Authority, are adequate for the service for which the vessel is intended and are such as to ensure the overall safety of the vessel, crew and the environment.

(4) The Authority may exempt an existing vessel from any of the requirements of these Regulations if the Authority considers that the application is unreasonable in view of the vessels original construction, provided that the vessel complies with safety requirements which, in the opinion of the Authority, are adequate for the service for which the vessel is intended and are such as to ensure the overall safety of the vessel, crew and the environment.

### **Equivalentents**

5. Where these Regulations require that a particular fitting, material, appliance or

apparatus, be fitted or carried in a vessel, or that any particular provision be made, the Authority may, on prior application, permit in writing any other fitting, material, appliance or apparatus to be fitted or carried, or any other provision to be made, if the Authority is satisfied that that particular fitting, material, appliance or apparatus, is at least as effective, for the intended operation, as that required by these Regulations.

### **Alterations**

6. (1) Existing vessels upon application to the Authority that intend to undergo, alterations related thereto shall meet the requirements of these Regulations.

(2) The Authority may approve an application for the alterations in subregulation (1), provided the Authority deems the alterations reasonable and practicable.

(3) When any alteration is intended for a vessel which is provided for in these Regulations, prior approval is to be obtained from the Authority before any such alteration is commenced.

### **Surveys**

7. Every vessel shall be subject to the surveys specified in regulation 14 of these Regulations.

### **Issue and Format of Local General Safety Certificate**

8. (1)(a) A Local General Safety Certificate, in a format prescribed by the Authority, shall be issued after the satisfactory survey of a vessel that complies with the applicable requirements of these Regulations.
- (b) Whenever an exemption is granted to a vessel under, and in accordance with, the provisions of these Regulations, a Safety Exemption Certificate, in a format prescribed by the Authority, shall be issued in addition to the certificate required by paragraph (a) of this regulation.

(2) The certificates referred to in subregulation (1) of this regulation shall be issued either by the Authority or by any person or organisation duly authorised by the Authority: provided, in every case, the Authority shall assume full responsibility for the issuance of the certificate.

### **Display of Local General Safety Certificates**

9. (1) Immediately after receipt of the certificate(s) issued in accordance with regulation 8, the owner or Skipper shall cause such certificate(s), or a certified copy thereof, to be conspicuously displayed on board the vessel for the information of all on board and shall cause it to be displayed so long as it remains in force and the vessel remains in use.

### **Duration and Validity of Local General Safety Certificates**

10.(1) A Local General Safety Certificate shall be issued for a period as determined in the Act.

(2) If at the time when the validity of its certificate expires or ceases, a vessel is not in a South African port, the validity of the certificate may be extended by the Authority for a period not longer than five months, but such extension shall be granted only for the purpose of allowing the vessel to complete its voyage to a South African port or to a port in which it can be surveyed and then only in cases where it appears proper and reasonable to do so: Provided a vessel, to which

such extension is granted shall not on its arrival in a South African port, be entitled by virtue of such extension to leave such port without having obtained a new certificate.

(3) A certificate which has not been extended under the provisions of subregulation (2) of this regulation may be extended by the Authority for a period of up to one month from the original date of expiry stated on it.

- (4) The extensions referred to in subregulations (2) and (3) of this regulation shall—
- (a) be applied for five days before the expiry date indicated on the vessel's safety certificate; and
  - (b) may not be granted if a safety certificate has ceased to be valid at the time of application for an extension.

(5) Subject to compliance with subregulation (2) and (3), a certificate that expires while a vessel is at sea remains valid until the next arrival in a port: Provided a vessel shall not proceed to sea where the vessel's safety certificate is due to expire during the course of the intended voyage.

(6) When any alteration is contemplated for a vessel, which is provided for in these Regulations, prior approval shall be obtained from the Authority before any such alteration is commenced.

### **Cancellation of Local General Safety Certificates**

11. (1) The Authority may direct that a local general safety certificate be cancelled if by reason of the contents of a report by a surveyor, or for any other reason, it is satisfied that—

- (a) it was obtained fraudulently or on wrong information;
- (b) since it was issued, the hull, equipment or machinery of the vessel has, by reason of any alteration made thereto, or by reason or any damage sustained by the vessel, or for any other reason, become insufficient;
- (c) since it was issued, the vessel has for any reason become unseaworthy; or
- (d) the vessel no longer complies with all the requirements of these Regulations, the Merchant Shipping (Radio Installation) Regulations, 2002, the Merchant Shipping (Collision and Distress Signals) Regulations, 2005, or any other applicable regulations which may have been made, to the same extent to which she complied with those regulations when the certificate was issued.

(2) For the purposes of this section, the word "alteration" in relation to the hull, equipment or machinery of a vessel, includes the renewal of any part thereof.

(3) Whenever a direction is issued under subregulation (1) of this regulation for the cancellation of a safety certificate, the Authority shall, in writing, notify the owner or skipper of the vessel in respect of which the certificate was issued of the cancellation.

(4) The Authority may direct that the Local General Safety Certificate be cancelled due to failure to comply with the requirement of regulation 6 (1) and (3).

### **Designated Person Ashore**

12. (1) To ensure the safe operations of each vessel and to provide a link between the owner and those on board, every owner shall designate a person ashore having direct access to the highest

level of management.

(2) The responsibility and authority of the designated person referred to in subregulation (1) of this regulation shall include ensuring the safety and pollution aspects of the operation of each ship and to ensure that adequate resources and shore-based support are applied, as required.

(3) The appointment of the designated person shall be confirmed in writing to the Authority and that person's name and contact particulars shall be prominently displayed in the wheelhouse of the vessel.

(4) The designated person shall also be responsible for compliance with regulation 39A of the Maritime Occupational Health and Safety Regulations, 1994.

(5) Where the Skipper is the sole owner and is on-board the Skipper may be considered to be the designated person, however, the contact details of a person ashore contemplated in subregulation (1) are to be displayed.

### **On Board Safety Officers**

**13.** (1) To ensure safe operations on board each vessel and to provide a link between the vessel and the designated person ashore, every owner shall designate a person on board the vessel to have direct access to the person referred to in regulation 12.

(2) The appointment of the on-board safety officer shall be confirmed in writing by the owner.

(3) The on-board safety officer shall ensure that all safety and pollution operational aspects of the vessel shall be carried out in a safe manner.

(4) The designated on board safety officer shall undergo approved training and shall conduct the duties of the safety officer in accordance with the Maritime Occupational Health and Safety Regulations, 1994.

(5) The duties of the safety officer shall not be impeded by the Skipper or any other person of any vessel and the safety officer shall not be prevented from having direct access to the person referred to in regulation 12 for any reason whatsoever.

## **CHAPTER II SURVEYS**

### **General**

- 14.**(1) (a) An initial survey shall be required in terms of section 190 of the Act before a fishing vessel is put into service or before the certificate required under Regulation 8 is issued for the first time.
- (b) The surveys in paragraph (a) shall include a complete survey of the vessel's structure, stability, machinery, arrangements and material, including the inside and outside of the vessels hull, boilers, and associated equipment as far as the vessel is covered by these Regulations.
- (c) The survey in paragraph (a) shall be such as to ensure that the arrangements, material and scantlings of the structure, boilers, other pressure vessels and their appurtenances, main and auxiliary machinery, electrical installations, radio installations, including those used in life-saving equipment 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 these Regulations.

(2) After the survey in subregulation (1), an annual survey of the vessel shall be carried out to ensure continued compliance with requirements of these Regulations provided that specific survey intervals are prescribed in regulations 15 to 25 inclusive.

(3) The Local General Safety Certificate required by regulation 8, shall be issued on completion of the following surveys, to the satisfaction of the Authority:

- (a) Hull Survey: An annual survey of the applicable structure and machinery of the vessel referred to in Chapters II to X of these Regulations;
- (b) Radio Survey: An annual survey of the vessels radio equipment as required by the Merchant Shipping (Radio Installations) Regulations, 2002; and
- (c) Safety Survey: An annual survey of the applicable machinery, systems, life-saving equipment, and procedures referred to in chapters II to XI of these Regulations.

(4) Where a survey of a fishing vessel is required, the owner shall address a request for inspection to the proper officer in order to give at least two days' notice of the required service.

(5) If any part of the vessel, its machinery or equipment is found by the surveyor to be non-compliant with any Part of these Regulations, any repairs or renewals which the surveyor considers necessary shall be carried out to the satisfaction of the Authority and if required, to be inspected by the surveyor.

## **Hull**

**15.** (1) Subject to subregulation (7) of this regulation, fishing vessels shall every twelve months be placed in dry-dock or on a slipway for inspection by a surveyor.

(2) The hull shall be inspected as follows:

- (a) The surveyor shall examine the hull externally and internally after it has been cleaned down but not painted; and
- (b) All closing appliances for deck openings, and all coamings, ventilators, air pipes and deckhouses shall be thoroughly examined by the surveyor.

(3) Any part which the surveyor requires to be removed in order to ascertain the condition of the hull shall be removed.

(4) Hull thickness test must be carried out—

- (a) ten years after the vessel's construction;
- (b) every six years after the period in paragraph (a); or
- (c) as required by the Authority.

(5) The test referred to in subregulation (4) shall include any parts or fittings, including spool fittings, permanently connected to the hull.

(6) A record of the tests in subregulations (4) and (5) must be maintained.

(7) An owner may apply to the Authority for an extension of the period in subregulation (1), for a maximum period of one year, if their vessel is constructed of a material other than wood.

(8) Written application for an extension referred to in subregulation (7) of this regulation must be made to the Authority two days before the survey is carried out, and must be accompanied by appropriate supporting information demonstrating that the owner has in place a suitable regime to the satisfaction of the Authority, including:

- (a) Hull thickness test records referred to in subregulation (6);
- (b) Cathodic protection arrangements; and
- (c) Adequate paint protection system.

(9) Approval of the one-year extension shall be subject to the provision of the above information and the recommendation of the attending surveyor.

(10) An owner may apply to the Authority for an exemption of the hull survey if such survey is carried out by an approved classification society, the survey is carried out in accordance to these Regulations, and the vessel remains in class at all times.

### **Tanks**

**16(1)** Subject to subregulation (3), tanks forming part of the hull structure shall be inspected by a surveyor as follows:

- (a) Sea Water (S/W) - all tanks;
- (b) Fresh Water - up to age 10 years, no inspection required, and thereafter all tanks to be inspected; and
- (c) Fuel diesel oil - up to age of 15 years, half the number of tanks to be inspected.

(2) Subject to subregulation (3), tanks not forming part of the hull structure shall be inspected by a surveyor as follows:

- (a) Independent Tanks - Fresh water, Lubricating Oil or Diesel Oil- up to age of 10 years, no inspection required, and thereafter half the number of tanks to be inspected.

(3) The survey of the tanks as required by subregulations (1) and (2) —

- (a) should be equally spread over a 5-year period; and
- (b) not conducted in a single inspection.

(4)(a) Tanks in subregulations (1) and (2) shall be examined internally and externally when inspected.

(b) Tanks not examined during a particular inspection in terms of paragraph (a) shall be examined externally from accessible boundaries.

(5) Where the integrity of a tank appears to be compromised, thickness testing or pressure testing of the tank shall be carried out to the satisfaction of the surveyor.

(6) Where pressure testing of tanks is carried out such testing shall be in accordance with the appropriate SANS standard.

### **Shafts and Rudders**

**17. (1)** Propeller shafts shall be withdrawn for inspection by the surveyor as follows:

- (a) steel shafts which are water lubricated shafts- every three years; (b) Stainless steel, bronze, monel shafts, or shafts fitted with continuous liners which are water or grease lubricated- every four years;

- (c) Shafts operating in sealed oil lubricated systems- every four years, which period may be extended to a maximum period of six years, provided that—
  - (i) an independent analysis of the stern tube lubricating medium is carried out annually for the first four years and at six monthly intervals thereafter;
  - (ii) a log showing the stern tube lubrication oil consumption is maintained; and
  - (iii) a record of the shaft wear-down or shaft clearances is taken at each annual or biennial docking.

(2) The surveyor may require that the propellers and shaft couplings be removed, shaft crack testing be carried out, the fit of the shaft tapers be witnessed and that shaft clearances be measured.

(3) The rudder and rudder stock shall be dismantled at the same time that the shaft is drawn as required by subregulation (1) of this regulation, provided that the rudder stock need not be dismantled if records of rudder bearing clearances and oil consumption have been maintained to the satisfaction of the surveyor.

(4) The surveyor may require shafts to be drawn or the rudders and rudder stocks to be dismantled for inspection at any survey, if it is considered necessary.

### **Sea Connections**

**18.** (1) All sea connections, suction, discharge valves and cocks shall every two years be opened up for inspection by a surveyor while the hull is being surveyed externally.

(2) At intermediate inspections of sea connections, suction, discharge valves and cocks in subregulation (1), the surveyor shall examine all fastenings of sea connections, suction, discharge valves and cocks and, if considered necessary, may require the sea connections, suction, discharge valves and cocks to be opened for inspection.

(3) The bodies and closing mechanisms of scuppers and offal chutes located on the factory deck which form part of the enclosed volume of the vessel shall be inspected in accordance with subregulation (1) and (2) of this regulation.

### **Anchors, Cables, Wires and Steering Chains**

**19.** (1) Every twelve months, the vessel's anchors, cables, windlass gypsy and steering chains, if any, shall be inspected and may be operationally tested by the surveyor.

(2) Anchor cables shall be ranged for inspection by the surveyor eight years after construction of the vessel and thereafter at intervals of four years.

(3) Where anchor cables or steering chains are worn to such an extent that the mean diameter of any part is reduced by more than 12% of the minimum size detailed in regulation 43 of Chapter III, then such part shall be renewed.

(4) Anchor wire ropes, if used, shall be run out annually for inspection by the surveyor.

(5) An anchor wire rope shall not be used if in any length of 8 diameters the total number of visible broken wires exceeds 10 per cent of the total number of wires, or the rope shows signs of excessive wear, corrosion or other defect which, in the opinion of the surveyor, renders it unfit for use.

### **Steering Gear and Emergency Arrangements**

20. (1) The steering gear and emergency steering arrangements shall be examined by the surveyor every twelve months and the correct operation of the arrangements shall be demonstrated to the satisfaction of the surveyor.

(2) The emergency steering arrangements shall have valves properly labelled and the instructions for operating that system clearly posted where the arrangements are located.

### **Main and Auxiliary Machinery**

21. (1) The surveyor may require that a running trial of the main and auxiliary machinery be held every twelve months to the satisfaction of the surveyor.

(2) The correct operation of air compressors, air receivers and any other pressure relief valves shall be demonstrated to the surveyor's satisfaction every 12 months.

### **Air Receivers and Pressure Vessels**

22. (1) Air receivers and other pressure vessels shall be capable of withstanding the pressure assigned to them.

(2) 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.

(3) Air receivers and pressure vessels shall every four years be internally inspected and tested in accordance with the Pressure Equipment Regulations, 2009 issued under the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).

(4) 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.

(5) 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.

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

(7) The inspection, testing and overhauling of the air pressure systems required by this regulation shall be carried out by a person approved by the relevant competent authority who shall provide the owner with a certificate confirming compliance with this regulation.

### **Refrigeration Systems used for the Preservation of Catch**

23. (1) Refrigeration systems used for the preservation of catch shall every 4 years be pressure tested, with Nitrogen, to 1.25 times their working pressure.

(2) The entire refrigerant system, with the exception of the receiver shall be pressure tested.

(3) The receiver shall be externally examined every 4 years by the surveyor and if the receiver appears not to be in good condition, the surveyor may require that it be hydrostatically pressure tested to 1.25 times working pressure.

(4) All gauges and safety devices shall be overhauled and pressure relief valves shall be calibrated and reset to their operating pressures once every 4 years.

(5) The requirement of subregulations (1) to (4) of this regulation shall be carried out by a person approved by the relevant competent authority who shall provide the owner with a certificate confirming compliance with this regulation.

### **Electrical Equipment**

**24.** (1) The electrical equipment of vessels may be examined by the surveyor at every survey.

(2) Every four years an insulation test shall be carried out on all electrical circuits and machinery of greater than 50 volts and the resistance between all insulated circuits and earth shall be not less than 100,000 ohms.

(3) The generator circuit breakers, over-current protective devices and fuses shall be examined to verify that they will operate satisfactorily.

(4) The requirements of subregulation (1) of this regulation shall be carried out by a suitably qualified person who shall provide the owner with a certificate confirming compliance with this regulation.

## **CHAPTER III**

### **CONSTRUCTION, WATERTIGHT INTEGRITY AND EQUIPMENT**

#### **Submission and Approval of Plans**

**25.** (1) Before the construction or alteration of any vessel is commenced, the builder or owner thereof shall submit in duplicate to the Authority the plans and specifications set forth in Annex 1 of these Regulations for approval.

(2) If the vessel is an existing vessel, coming on to the register, the owner thereof shall submit in duplicate to the Authority the plans and specifications set forth in Annex 1 of these Regulations for approval.

(3) The Authority may call for the submission of additional or more detailed plans or specifications, and may also waive the requirements that certain plans be submitted.

(4) Some of the plans required by subregulations (1) and (2) of this regulation may also be combined, if the vessels size or simplicity of construction allows.

(5) Any subsequent proposed alterations or additions to the scantlings, arrangements or equipment shall be shown on approved plans or specifications shall be submitted to the Authority for re-approval.

(6) If a vessel is constructed and presented to the Authority for registration and inspection without the provision of the plans and specifications, required by subregulation (1) of this regulation, the Authority may refuse to proceed with registration of the vessel or the issue of safety certification for the vessel.

(7) If alterations or additions to the scantlings, arrangements or equipment shown on approved plans or specifications are carried out without the approval of the Authority, the vessels

safety certificate, as required by regulation 10(6), may be cancelled.

### **Inspections, Tests and Surveys of New Constructions**

**26.** (1) During the construction, inspections and tests shall be carried out by the surveyor to ensure that the vessel is constructed in accordance with—

- (a) the approved plans and specifications required by regulation 25; and
- (b) the requirements of these Regulations.

(2) A builder or owner shall notify the Authority at least 1 week in advance of—

- (a) commencement of framing;
- (b) commencement of planking, plating or laminating;
- (c) completion of the fitting of all underwater fittings, rudder, stern tube, shaft and propeller; and
- (d) the proposed launching date.

(3) A builder or owner of a Glass Reinforced Plastic vessel or vessel of equivalent material shall notify the Authority at least 1 week in advance of commencement of construction.

(4) In the event of the Authority not being notified in accordance with subregulations (2) or (3), a surveyor may require that any work be carried out to establish that the vessel's construction is satisfactory and in accordance with the approved plans and specifications.

(5) Dock and sea trials shall be carried out in the presence of a surveyor, at which time the pumping arrangements, steering gear, main and auxiliary machinery shall be tested to the satisfaction of the surveyor.

(6) Any additional tests considered necessary by the surveyor to demonstrate that the vessel is safe and suitable for the purpose that it is intended shall be carried out to the satisfaction of the surveyor.

### **Construction and Structural Strength**

**27.**(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 for the vessels intended service and shall be to the satisfaction of the Authority.

(2) A vessel may be constructed of wood, fibre reinforced plastic, aluminium alloy or steel or combinations of such materials.

(3) Proposals to use any other construction material shall be submitted to the Authority for approval.

(4) The hull of a new vessel shall be considered to be of adequate strength after satisfactory examination by a surveyor of the Authority or a person authorised by the Authority and—

- (a) if it has been built in accordance with the hull construction rules of a Classification Society, Code or Standard recognised by the Authority, in which case the design must be endorsed by the society or organisation; or
- (b) if it has been built in general accord with the standards of a vessel of similar configuration and manner of use which has a record of at least 5 years safe operation in an area where the sea and weather conditions are no less severe than those likely to be encountered by the new vessel.

(5) If a vessel is not intended to be built in accordance with subregulation (4) it may be specially considered by the Authority, provided that full information, including calculations, drawings, details of materials and construction, endorsed by a naval architect or professional engineer are submitted for approval by the Authority.

(6) The hull of an existing vessel may be considered to be of adequate strength if it is in a good state of repair and—

- (a) has been built to one of the standards described in subregulations (4) or (5); or
- (b) has a record, to the satisfaction of the Authority, of safe operation in sea and weather conditions considered to be no less severe than those likely to be encountered by the vessel.

(7) The hull of vessels intended for operation in ice shall be strengthened in accordance with the rules of an approved classification society for the anticipated conditions of navigation and area of operation.

### **Bulkheads**

**28.** (1) 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 these Regulations.

(2) Vessels constructed of material other than wood shall be fitted with—

- (a) a collision bulkhead; and
- (b) at least with watertight bulkheads bounding the main machinery space.

(3) Bulkheads referred to in subregulation (2) shall be extended up to the working deck.

(4) In vessels constructed of wood, watertight bulkheads shall be fitted.

(5) Pipes piercing the collision bulkheads shall be fitted with suitable valves operable from above the working deck and the valve chest shall be secured at the collision bulkhead and shall be easily accessible to the satisfaction of the Authority.

(6) A door, manhole, ventilation duct or any other opening shall not be fitted in the collision bulkhead below the working deck.

(7) Where a long forward superstructure is fitted, the collision bulkhead shall be extended weathertight to the deck next above the working deck.

(8) The extension referred to in subregulation (7) of this regulation need not be fitted directly over the bulkhead below, provided it is located within the limits provided for within the definition of “collision bulkhead” in regulation 2 and the part of the deck which forms the step is made effectively weathertight.

(9) 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.

(10) Openings referred to in subregulation (9) of this regulation shall be capable of being closed weathertight.

### **Watertight Doors and Closing Arrangements**

**29.** (1) The number of openings in watertight bulkheads shall be reduced to the minimum

compatible with the general arrangements and operational needs of the vessel and such openings shall be fitted with watertight closing appliances to the satisfaction of the Authority, which shall be of an equivalent strength to the adjacent unpierced structure.

(2) Watertight doors shall be capable of being operated locally from each side of the door and shall normally be kept closed at sea.

(3) A notice shall be attached to each side of the door stating that it shall be kept closed at sea.

(4) Prior approval for the location, design and installation of watertight doors shall be obtained from the Authority.

(5) Watertight doors shall not be provided in engine room bulkheads.

### **Watertight Integrity**

**30.** (1) Openings through which water can enter the vessel shall be provided with closing devices in accordance with the applicable provisions of these Regulations and to the satisfaction of the Authority.

(2) Deck openings which may be open during fishing operations shall normally be arranged near to the vessel's centreline, however, the Authority may approve alternative arrangements if satisfied that the safety of the vessel will not be impaired.

(3) Stockerpond hatches shall be able to be closed watertight in deadship condition.

(4) Stockerpond hatches shall be power-operated and capable of being controlled from any position which provides an unobstructed view of the operation of the hatch.

(5) Watertight closing devices shall be fitted between the stocker pond and the factory or fish processing area if it is below the working deck.

(6) All outside watertight doors shall open outwards.

(7) Deck openings which may be open during the fishing operation shall normally be arranged as close as possible to the vessel's centreline, however the Authority may approve alternative arrangements if satisfied that the safety of the vessel is not impaired.

(8) Stockerpond hatches shall have alternative means of closure under deadship conditions or where the primary source of power cannot be restored.

### **Weathertight Doors**

**31.** (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.

(2) 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.

(3) All outside weathertight doors shall open outwards.

(4) 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 on the working deck shall be at least 300 millimetres for vessels equal to or greater than 25 Gross Tons and 600 millimetres for vessels of 24 metres or greater in length: Provided the Authority may, where operating experience has shown justification, approve that these heights, except in the doorways giving direct access to machinery spaces, may be reduced to not less than 150 millimetres and 380 millimetres respectively.

(5) On exposed superstructure decks the height of sills shall be at least 300 millimetres.

(6) Where operating experience has shown justification and on approval of the Authority, these heights, except in the doorways giving direct access to machinery spaces, may be reduced to not less than 150 millimetres on superstructure decks and not less than 380 millimetres on working decks for vessels of 24 metres in length and not less than 150 millimetres for vessels equal to or greater than 25 Gross Tons.

(7) For vessels of intermediate length the minimum acceptable height shall be obtained by linear interpolation.

(8) Weathertight doors shall be permanently marked with notices to the effect that the doors should be kept closed at sea.

### **Hatchway Covers**

**32.** (1) The height above deck of hatchway coamings shall be as specified in regulation 31 of these Regulations.

(2) In the event where operating experience has shown justification and on the approval of the Authority the height of these coamings may be reduced, or the coamings omitted entirely, provided that the safety of vessels is not thereby impaired, 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.

(3) 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 a static load of 10.0 kilo-Newtons per square metre and the Authority may reduce the loads to not less than 75 per cent 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.

(4) Where covers are made of mild steel, the maximum stress calculated according to subregulation (3) of this regulation multiplied by 4.25 shall not exceed the minimum ultimate strength of the material: Provided under these loads the deflections shall not be more than 0.0028 times the span.

(5) 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 load specified in subregulation (3) of this regulation.

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

## Factories

**33.** (1) Any openings in the shell plating providing access to a factory deck which forms part of the enclosed volume of a vessel shall be provided with efficient and readily accessible means for preventing the accidental admission of water unless it can be shown that the vessels intact stability is not adversely affected by such openings.

(2) Subject to subregulation (1), the following is applicable to factories that form part of the enclosed volume of the vessel:

- (a) Scuppers shall be able to be closed weather tight and as a minimum, a non-return arrangement shall be fitted with a positive means of closing at the local position.
- (b) If a scupper opening is such that water ingress into the vessel is possible before an angle of heel of 40 degrees is reached, then a remote means of closing located at least one deck above the factory compartment shall be fitted with open or closed indication.
- (c) Offal chutes shall —
  - (i) be able to be closed watertight and as a minimum, two means of closing shall be provided with one means of closing being in the form of a non-return arrangement which can be positively secured in the open or closed position;
  - (ii) if the offal chute's opening is such that water ingress into the vessel is possible before an angle of heel of 40 degrees is reached, with the vessel in its deepest load condition, a positive means of closing shall be provided at a remote position at least one deck above the factory compartment fitted with open or close indication;
  - (iii) have one of the closing arrangements provided as close as possible to the ships side so that the strength of the intermediate plating and closing arrangement is at least equivalent to the side shell plating and structure;
  - (iv) not have openings of any nature between the side shell and the closing arrangement;
  - (v) have closing arrangement closest to the ships side provided with positive means of closing at the local position as well as at a remote position at least one deck above the factory compartment which shall be provided with markings indicating the "open" or "closed" positions;
  - (vi) have offal chutes or arrangements leading to offal chutes designed to prevent the entry of large items into areas of the offal chute which could potentially prevent the efficient operation of the chute and its closing arrangements;
  - (vii) be regarded as sea connections and shall be opened for inspection by a surveyor, at the time of dry docking at intervals not exceeding 2 years; and
  - (viii) for intermediate surveys, have external inspection and testing in place carried out, and the surveyor may require dismantling for inspection should it be deemed necessary;
- (d) Where the factory is enclosed —
  - (i) the line hauler recovery stations shall be separate from the factory area; and
  - (ii) all accesses and openings between the station and factory shall be able to be closed weathertight.
- (e) Accesses from the factory deck used by crew or for the loading of fish to compartments below the factory deck shall be consistent with the fishing operation and these accesses shall—
  - (i) be able to be closed weathertight quickly and efficiently;
  - (ii) be provided with sills or coamings of at least 600 millimetres height and where operating experience has shown justification and on approval of the

Authority, these heights, except in the doorways giving direct access to machinery spaces, may be reduced to not less than 380 millimetres; and

(iii) be located as close to the centreline as is practicably possible.

- (f) If washing water is removed using dill pumps—
- (i) wash pumps shall be configured so that they are unable to operate unless the automatically operated dill pumps of at least 150% of the wash pumps capacity are available for operation;
  - (ii) a minimum of one dill pump on the port and starboard sides shall be provided to the satisfaction of the Authority; and
  - (iii) the dill pumps shall—
    - (aa) be of suitable design and capacity and capable of handling offal and solids that could be expected during normal fishing operations;
    - (bb) be designed to be interchangeable with the spare dill pump; and
  - (iv) a spare dill pump shall be provided.

(3) Owners and skippers shall ensure that standard operating procedures are in place to ensure that all openings in the shell plating are closed and that washing water pumps are off when the factory compartment is unattended by responsible persons.

### **Machinery Space Openings**

**34.** (1) Machinery space openings shall be framed and enclosed by casings of a strength equivalent to the adjacent superstructure and external access openings therein shall be fitted with doors complying with the requirements of regulations 30 and 31 or hatch covers complying with the requirements of regulation 32.

(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.

### **Other Deck Openings**

**35.** (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.

(2) 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 Authority is satisfied that the closures are effectively watertight.

(3) 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.

(4) Companionways shall be situated as close as practicable to the centreline of the vessel.

### **Testing of Watertight and Weathertight Compartments**

**36.** (1) The bulkheads of a wooden or fibre reinforced plastic vessel, which are required to be watertight, shall before the vessel is launched, be tested to the satisfaction of the Authority, by hose pressure test or other suitable means.

(2) Before a steel vessel is launched, the compartments within the main hull shall, before

any cementing is commenced, be subjected to pressure tests as follows—

- (a) double bottoms which are not to be used for the carrying of oil, shall be tested to a head of water equal to the maximum head which can be expected in service;
- (b) deep tanks and peak tanks used for carrying water, and deep tanks and double bottom tanks arranged for carrying oil fuel, shall be tested to a head of water equal to the maximum head to which the tanks can be subjected in service, but not less than 2.4 m above the crowns of the tanks where the moulded depth to the upper deck exceeds 4.8 m, and 900 mm where the moulded depth does not exceed 3m;
- (c) Intermediate heads may be obtained by interpolation;
- (d) peak bulkheads which do not form the boundaries of tanks, shall be tested by filling the peaks with water; and
- (e) watertight bulkheads, including recesses and watertight flats, watertight tunnels, weather decks and waterways, shall either visually inspected, non-destructive tested or hose pressure tested to the satisfaction of the surveyor.

(3) The correct operation of watertight and weathertight doors, and hatches shall be proven on all vessels at the time of construction and at subsequent surveys.

### **Ventilators**

**37.** (1) The height above deck of ventilator coamings, other than machinery space ventilator coamings, shall be at least 760 millimetres on the working deck and at least 450 millimetres on the superstructure deck.

(2) The height above deck of machinery space ventilator openings situated on the working deck shall be at least 900 millimetres and 760 millimetres on the superstructure deck.

(3) 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.

(4) Where the coaming of any ventilator exceeds 900 millimetres in height it shall be specially supported.

(5) Ventilators shall be provided with a suitable means of closing which shall be secured to the ventilator or adjacent to the ventilator, provided that such closing appliances may be omitted if the Authority is satisfied that it is unlikely that water will enter the vessel through the ventilator.

### **Air Pipes**

**38.** (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 a strength equivalent to the working or the superstructure decks and fitted with appropriate protection, so as to not negatively affect the integrity of the structure through which the exposed pipe is protruding.

(2) Openings of air pipes shall be provided with automatic means of closing, except that where the Authority is satisfied that the openings are protected against water trapped on deck and do not pose a flooding threat to the vessel, these means of closing may be omitted.

(3) The height of air pipes above deck to the point where water may have access below shall be at least 760 millimetres on the working deck and at least 450 millimetres on the superstructure deck.

(4) The Authority may accept reduction of the height of an air pipe to avoid interference with the fishing operations.

(5) Fuel air pipes shall be fitted with anti-flash gauze, max = 0.5mm, of steel or ceramic material.

### **Sounding Pipes and alternative sounding devices**

**39.** (1) Sounding pipes or alternative sounding devices, to the satisfaction of the Authority, 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) Sounding pipe upper ends shall be extended to a readily accessible position and, where practicable, above the upper deck with openings provided with permanently attached means of closing.

(3) Sounding pipes to double bottom tanks or tanks which form part of the hull structure which are not extended above the working deck shall be fitted with automatic self-closing devices.

(4) Striker plates of equivalent thickness of each tank shall be welded in tanks directly below the outlets of sounding pipes provided that the Authority may accept alternative arrangements which prevent the shell plating from being damaged when tanks are sounded.

### **Side Scuttles and Windows**

**40.** (1) Side scuttles to spaces below the upper deck and to spaces within the enclosed structures on that deck shall be fitted with hinged deadlights capable of being closed watertight.

(2) Side scuttles fitted in the first tier of the superstructure which are less than 1000 millimetres from the deepest operating waterline shall be fitted with hinged deadlights capable of being closed watertight.

(3) A side scuttle shall not be fitted in such a position that its sill is less than 500 millimetres above the deepest operating waterline.

(4) Side scuttles, fitted less than 1000 millimetres above the deepest operating waterline shall be of a fixed type.

(5) Side scuttles including their glasses and deadlights shall be of an approved construction and side scuttles and glasses prone to be damaged by fishing gear shall be suitably protected.

(6) Solid toughened safety clear glass of not less than 6.35 mm thickness shall be fitted to wheelhouse windows of up to 760 millimetres square.

(7) For window sizes greater than 760 millimetres square, a minimum glass thickness of 9.5 mm shall be provided.

### **Inlets and Discharges**

**41.** (1) Valves or cocks shall be fitted to all suction and discharge pipes which pass through the hull below the upper deck, provided that this regulation shall not apply to:

- (a) Pump discharges of 38 mm or less which are situated above the deepest operating waterline;
- (b) Keel cooling systems which form an integral part of the hull; or
- (c) Scuppers which pass from the upper deck to the ships side above the deepest operating waterline.

(2) Discharge valves shall normally be fitted with an automatic non-return valve with positive means of closing from an accessible position provided that such valves shall not be required if the Authority is satisfied that entry through the opening is not likely to lead to dangerous flooding and the thickness of piping is sufficient.

(3) Suction and discharge valves and cocks shall be secured to the hull or to fabricated sea chests such that the securing arrangement is at least as strong as the surrounding structure, to the satisfaction of the Authority.

(4) Valves or cocks shall be fitted as close to the hull as practicable and where a threaded valve and flanged pipe arrangement is used, schedule 40 piping shall be used subject to a minimum pipe wall thickness of 3mm, and not exceeding 200 mm in length.

(5) Valves or cocks shall be fitted in accessible positions and shall be arranged in such a manner that it can be readily seen whether they are open or closed.

(6) The handles of valves or cocks shall not be removable in the open position.

(7) Due regard shall be paid to compatibility of materials used in order that galvanic action be minimised.

### **Freeing Ports**

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

- (a)  $A = K \times l$  where  $K = 0.07$  for vessels to which these regulations apply;  
(l need not be taken as greater than 70% of the vessels length)
- (b) (i) Where the bulwark is more than 1200 millimetres in average height the required area shall be increased by 0.004 square metres per metre of length of well for each 100 millimetres difference in height;
- (ii) Where the bulwark is less than 900 millimetres in average height, the required area may be decreased by 0.004 square metres per metre of length of well for each 100 millimetres difference in height.

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

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

(4) Freeing ports shall—

- (a) be so arranged along the length of bulwarks as to ensure that the deck is freed of water most rapidly and effectively;

- (b) be sufficient for the purpose of efficient drainage of water on deck, and shall be suitably situated;
  - (c) not be obstructed, welded closed or impeded in any way;
  - (d) have an area of at least 0.1m<sup>2</sup> per 1.83m length of bulwarks which are 76 centimetres high for greater heights the area shall be increased in direct proportion; and
  - (e) if an emergency exit is located in the well formed by the bulwarks, be located nearby.
- (5) Lower edges of freeing ports shall be as near the deck as practicable.
- (6) Freeing ports over 300 millimetres in depth shall be fitted with bars spaced not more than 230 millimetres nor less than 150 millimetres apart or provided with other suitable protective arrangements.
- (7) On vessels with partially or fully exposed weather decks, no bilge or dill pumps shall be permitted as a replacement for freeing ports.
- (8) Where shutters are fitted to freeing ports, these shutters must be able to operate freely, and any safety bars should be securely attached.
- (9) Freeing ports over 230 millimetres in height shall be fitted with safety bars spaced not more than 230 millimetres apart or provided with other suitable protective arrangements.
- (10) In a vessel in which freeing ports cannot be fitted, the Authority may approve other efficient means to be provided for clearing trapped water from the vessel.
- (11) Pondboards and means for stowage of the fishing gear shall be arranged so that the effectiveness of freeing ports will not be impaired and shall be so constructed that they can be locked in position when in use and shall not hamper the discharge of shipped water.
- (12) Freeing ports insert into a bulwarks should be constructed with rounded corners in order to prevent any undue stress at the freeing port corners.

### **Anchoring Equipment**

- 43.** (1) Anchor equipment designed for quick and safe operation shall be provided which shall consist of -
- (a) anchors, anchor chains or wire ropes or a combination of anchor chains and wire ropes, stoppers and
  - (b) a 5-tooth windlass gypsy or other arrangements for dropping and weighing the anchor, for holding the vessel in position in all foreseeable service conditions.
- (2) The anchor equipment in subregulation (1) must be mutually compatible for operation.
- (3) The hull of a vessel shall be suitably strengthened in way of fitted anchoring equipment.
- (4) Every vessel should be equipped with anchors and chain sufficient in weight and strength, having regard to the vessel's size and intended service.
- (5) Wire rope of suitable strength may be substituted for chain: Provided that-
- (a) a length of chain is attached between the wire rope and the anchor;

- (b) the length of the chain should not warp onto the drum; and
- (c) the anchor, chain and wire rope combination, should be of equivalent holding capacity to the anchor and chain weight and length contemplated in sub-regulation (8).

(6) The anchor with the associated chain or wire rope should be stowed to enable rapid deployment and be provided with means of retrieval and in an emergency be capable to slip the anchor.

(7) A vessel shall carry at least two anchors, in accordance with the table below, one of a weight not less than that derived from the following formula, and one of a weight not less than two-thirds of that derived from the following formula:

$$W = 0.15 (L \times (B + D)) + 100$$

where W = weight of anchor in kg.

L = registered length of boat in meters.

B = greatest breadth of boat in meters, measured to the inside of planking or plating.

D = depth of boat in meters, measured at amidships from the top of the keel to the top of the deck beam at side; where a raised deck aft extends forward of amidships, the depth shall be measured to the line of the upper deck.

(8) Anchor weights and chain cable lengths should be in accordance with the following table:

Gross Register Tons	Bow Anchors		Cable = 27.5 metres - Lengths		
	Number	Min. Weight in kg/anchor.	Cables	Chain Diameter-mm	Wire rope diameter calculation
25 or over but under 40	2	45	2	9.5	
40 or over but under 60	2	54 and 36	3	11	
60 or over but under 80	2	81 and 45	4	12	
80 or over but under 90	2	81 and 54	4	16	
90 or over but not over 100	2	108 and 72	4	16	

(9) A dedicated mechanical means for working the anchor shall be provided on any vessel which is required to carry an anchor of more than 75 kg in weight.

(10) The main bow anchor shall be connected and stowed in position, ready for immediate use when proceeding to sea.

(11) Anchors shall be of approved design and shall be manufactured from forged open hearth ingot steel or cast steel.

(12) A test certificate shall be produced to the Authority for every anchor of more than 75 kg and for every chain of 12 mm or more in diameter.

(13) The anchor in subregulation (1) may not be used as fishing gear.

(14) When the anchor cable is of rope, there shall be at least 10 metres of chain between the rope and the anchor.

## CHAPTER IV

### STABILITY AND ASSOCIATED SEAWORTHINESS

#### Provision of Stability Information

**44.** (1) The owner and skipper of every vessel, to which these Regulations apply, shall cause to be kept on board the ship such information, in writing, about the stability of the ship as is necessary for the guidance of the skipper and chief engineer in loading and ballasting the vessel.

(2) A notice identifying the enclosed volume of the vessel and importance of maintaining equipment and closing arrangements in their as-fitted state and identifying any special stability instructions applicable to the vessel shall be prominently displayed in the wheelhouse and engine room for guidance of the Skipper and Chief Engineer.

(3) The notice in subregulation (2) shall further advise that no changes or modifications shall be made to the closing arrangements without prior approval of the Authority.

(4) The owner of the vessel shall submit a copy of the stability information to the Authority for approval prior to the issue of a certificate referred to in regulation 8—

- (a) after construction;
- (b) after alteration of the vessel where the alteration exceeds 1% of the GT of the vessel; and
- (c) for purposes of new registration.

(5) The stability information shall be based upon the determination of the stability of the ship by means of an inclining experiment witnessed by a surveyor from the Authority or person authorised by the Authority.

(6) Any vessel, which is subject to these Regulations, which does not have a stability book approved by the Authority, on board shall be considered to be unseaworthy and as such the vessel's safety certificate, as required by regulation 8, may be cancelled.

#### Form of Stability Information

**45.** (1) Stability information shall be drawn up by a suitably qualified person recognised by the Authority as competent to provide the required stability information in a clear and comprehensive

manner.

- (2) The content of stability books shall be as is laid down in Annex 2 of these Regulations.

### **General Intact Stability Criteria**

46. (1) Vessels shall comply with the following criteria in all operational load conditions:
- (a) The area under the righting lever curve (GZ curve) shall not be less than 0.055 metre radians up to an angle of heel of 30 degrees
  - (b) The area under the righting lever curve (GZ curve) shall not be less than 0.090 metre radians up to an angle of heel of 40 degrees or the angle of downflooding, if it is less than 40 degrees.
  - (c) The area under the righting lever curve (GZ curve) between the angles of heel of 30 degrees and 40 degrees or 30 degrees and the angle of downflooding, if it is less than 40 degrees, shall not be less than 0.030 metre radians.
  - (d) The righting lever arm (GZ) shall be at least 0.200 metres at an angle of heel equal to or greater than 30 degrees.
  - (e) The maximum righting arm shall occur at an angle of heel exceeding 30 degrees but not less than 25 degrees.
  - (f) The initial metacentric height (GM<sub>0</sub>) shall not be less than 0.350 metres at any time.

### **Loading Conditions**

47. (1) The following operational load conditions shall be evaluated:
- (a) Lightship (Non-operational condition).
  - (b) Departure from port - the vessel being assumed to be loaded with the necessary equipment, materials and supplies, including ice, fuel, stores, water and nets.
  - (c) Departure from the fishing grounds with a normal catch and normal quantities of stores and fuel.
  - (d) Departure from the fishing grounds with a poor catch and minimum fuel and stores
  - (e) Arrival port with normal catch and minimum fuel and stores.
  - (f) Worst case load condition – Any operational condition identified which results in a worse case stability condition for the vessel: provided the Authority may require that additional load conditions be investigated.
  - (g) In all such cases the information as detailed in Annex 2, paragraph (1) (m) of these Regulations shall be reflected.

### **Flooding of Fish Holds**

48. (1) The heel angle at which progressive flooding of fish holds could occur through hatches which remain open during fishing operations shall be at least 20 degrees unless the stability criteria of regulation 46 can be satisfied with the respective fish holds partially or completely flooded.

### **Lightship**

49. (1) The vessels lightship condition is not considered to be an operational condition however, the vessel shall have an initial transverse metacentric height (GM<sub>o</sub>) of at least 0.05 metres in this condition.

(2) If the vessel does not meet these criteria provided in sub-regulation 1 of this regulation, a minimum load condition shall be specified so that this criterion is satisfied.

## **Icing Considerations**

**50.** For vessels operating in areas where ice accretion is likely to occur, as defined in Annex 4 of these Regulations, icing allowances shall be included in the relevant loading conditions in accordance with Annex 4 of this Regulations.

## **Anti-rolling or Stabilisation Devices**

**51.** When anti-rolling or stabilisation devices are installed, all stability criteria applicable to the vessel shall be satisfied with the devices in operation and with the devices not in operation.

## **Lifting of weights**

**52.** Vessels engaged in particular fishing methods involving the lifting of heavy weights over the side shall be evaluated in accordance with criteria laid down in Annex 5 of these Regulations in the relevant loading conditions.

## **Form of the Righting Arm (GZ) Curve**

**53.** Where the righting arm curve has double peaks or the down flooding angle is excessively large, the GZ curves can be as is shown in figure 2. and in these cases the following shall apply:

GZ [m]

GZMAX

DOWNLOADING ANGLE

NOT GREATER THAN 5 0°

NOT GREATER THAN 7 0°

GZ [m]

GZMAX

DOWNFLOODING ANGLE

HEEL ANGLE 50°

- (a) The value of maximum GZ shall be taken at the angle of heel corresponding to the first peak or at 50°, whichever angle is less.
- (b) The effective range shall be the angle at which unrestricted down flooding occurs or 70°, whichever angle is less.

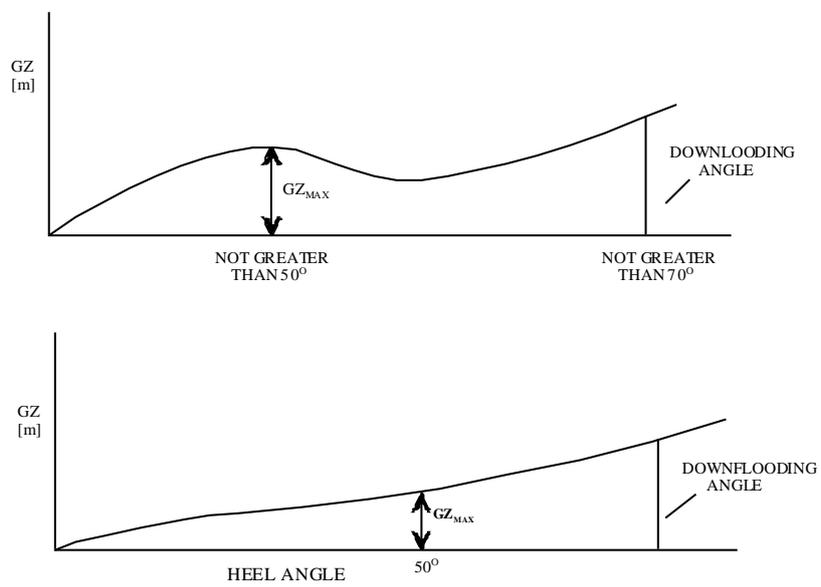


Figure 2 – Range and GZ maximum limitations

### **Fixed Ballast**

54. (1) Fixed ballast shall be installed under the supervision of the Authority in a manner that prevents any shifting of position of the ballast.

(2) Fixed ballast shall not be removed from a vessel or relocated within a vessel without the prior approval of the Authority.

### **Portable fish hold divisions**

55. (1) The catch shall be properly secured against shifting which could cause dangerous trim or heel of the vessel.

(2) The scantlings of portable fish hold divisions, if fitted, shall be to the satisfaction of the Authority.

### **Additional or Alternative criteria**

56. Where the characteristics and the area or mode of operation of a craft are unsuitable for the application of the criteria presented in these Regulations, the Authority may specify or accept additional or alternative criteria appropriate to the type of craft and area of operation.

### **Sister Ships**

57. (1) The Authority shall not accept lightship particulars of sister ships for the generation of stability information.

(2) Stability books for vessels shall be based on the results of an inclining experiment conducted on that vessel.

### **Special Cases**

58. If an owner considers that the constancy of a ships voyage conditions, her stability characteristics or other circumstances make it unnecessary to provide all the information set forth in this chapter, the owner shall set forth to the Authority a copy of the information he proposes to provide together with sufficient particulars about the ships service and stability to enable the Authority to decide whether the proposed form of information will be adequate and the Authority may, if satisfied, allow the ship to be provided with the lesser information.

### **Reliability of Information**

59. (1) A ships stability information shall at all times be reliable and up-to-date.

(2) If there is any change, for example, in the construction, ballasting or service of the ship which affects the accuracy or adequacy of the stability information, this information shall be properly revised and amended and copies of the amendments shall be sent to the Authority.

(3) If the change is such as to make the amended information unreliable, the ship shall be re-inclined, and the new information based on the new test shall be forwarded to the Authority for approval.

(4) In general, the guidelines illustrated in Annex 6 of these Regulations will be used to determine the requirements for revised stability information.

## CHAPTER V

### MACHINERY AND ELECTRICAL INSTALLATIONS PART A - GENERAL

#### Machinery Installations

60. (1) Main propulsion, control, steam pipe, fuel oil, compressed air, electrical and refrigeration systems, auxiliary machinery, boilers and other pressure vessels, piping arrangements, steering equipment and gears, shafts and couplings for power transmission shall be designed, constructed, tested, installed and serviced to the satisfaction of the Authority.

(2) Appropriate guards shall be fitted to cover moving parts, hot surfaces and other dangers in machinery and equipment in subregulation (1), including lifting gear, winches, fish handling and fish processing equipment.

(3) 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 and such spaces shall be adequately ventilated and illuminated to the satisfaction of the Authority.

(4) Means shall be provided whereby the machinery in subregulation (1) can be brought into operation from the dead ship condition without external aid: Provided, vessels that operate no more than 40 miles offshore may use 2 separate sets of batteries with independent charging arrangements to bring into operation separate prime movers.

(5) Main propulsion machinery and all auxiliary machinery essential to the propulsion and safety of the vessel shall, as fitted, be capable of operating whether the vessel is upright or listed up to 15 degrees either way under static conditions and up to 22.5 degrees either way under dynamic conditions, when rolling either way and simultaneously pitching or inclined dynamically, up to 7.5 degrees by bow or stern.

(6) The Authority may permit deviation from the angles specified in sub-regulation (5) of this regulation, taking into consideration the type, size and service conditions of the vessel.

(7) 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

61. 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.

### PART B - MACHINERY INSTALLATIONS

#### Main and Auxiliary Machinery

62. (1) Main and auxiliary machinery, shafting and propeller essential for the propulsion and safety of the vessel shall be of proven commercial marine design and quality and of power suitable

for the envisaged application.

- (2) All machinery shall be provided with effective means of control.
- (3) (a) Where main engines depend upon air starting arrangements—
  - (i) a minimum of two air receivers shall be provided which are capable of withstanding the pressure assigned to them.
  - (ii) the combined capacity of the air receivers shall be sufficient to provide the main engine with 12 consecutive starts if it is a reversible engine or 6 consecutive starts if it is a non-reversible engine, without replenishing the air in the receivers.
  - (iii) each air receiver, or the piping between each air compressor and each receiver shall be provided with a safety valve set to operate at or below the assigned working pressure.
  - (iv) one air compressor, driven by a prime mover which can be started without the use of compressed air shall be fitted, provided that the Authority may allow the use of a hand operated air compressor capable of charging one empty starting air receiver to normal working pressure within 30 minutes.
- (b) Where main engines depend upon electrical starting arrangements—
  - (i) batteries shall be in duplicate and connected to the starter motor via a change-over switch so that either battery can be used for starting the engine;
  - (ii) in normal conditions it shall not be possible to run both batteries in parallel;
  - (iii) the combined capacity of batteries shall be sufficient to ensure at least 6 consecutive starts of the main engine without re-charging;
  - (iv) charging facilities shall be available for the batteries when the main engine is running; and
  - (v) generators or alternators shall be to the satisfaction of the Authority.
- (c) Where main engines depend upon means other than those mentioned in subparagraphs (i), (ii) and (iii) of paragraph (b) this subregulation for starting: provided the Authority shall be satisfied that such means are acceptable for all foreseeable circumstances.

### **Means of Going Astern**

**63.** (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 to the satisfaction of the Authority.

### **Communication between the Wheelhouse and Machinery Space**

**64.** (1) 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 or an equivalent thereof.

(2) The Authority may accept one additional separate means of communication provided that this additional means of communication shall not be required if the location and configuration of the wheelhouse and engine room allows direct voice communication, except that if the propulsion machinery is directly controlled from the wheelhouse.

## **Wheelhouse Control of Propulsion Machinery**

**65.** (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 and direction of thrust shall be fully controllable from the wheelhouse;
- (b) the remote control referred to in paragraph (a) of this regulation shall be performed by means of a control device to the satisfaction of the Authority with, where necessary, means of preventing overload of the propulsion machinery;
- (c) the main propulsion machinery shall be provided with an emergency stopping device in the wheelhouse and independent from the wheelhouse control system referred to in paragraph (a) of this regulation.
- (d) it shall be possible to control the propulsion machinery locally, even in the case of failure in any part of the remote control system;
- (e) unless the Authority 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; and
- (f) special arrangements shall be provided to ensure that automatic starting shall not exhaust the starting possibilities.

(2) 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.

## **Arrangements for Fuel Oil, Lubricating Oil and Other Flammable Oils**

**66.** (1) Fuel oil which has a flashpoint of less than 60 degrees Celsius (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 degrees Celsius: Provided that the Authority may permit the general use of fuel oil having a flashpoint of not less than 43 degrees Celsius 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 degrees Celsius 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.

(3) If sounding pipes are installed, their upper ends shall terminate in safe positions and shall be fitted with suitable means of watertight closure.

(4) 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.

(5) Gauges, approved by the authority maybe used, provided that self closing valves are fitted.

(6) Provision shall be made to prevent over pressure in any oil tank or in any part of the fuel oil system including the filling pipes.

(7) Relief valves and air or overflow pipes shall discharge to a position and in a manner which is safe.

(8) No oil tanks shall be situated where spillage or leakage therefrom can constitute a hazard

by falling on heated surfaces.

(9) Precautions shall be taken to prevent any oil that may escape under pressure from any pump, filter or heater from coming into contact with heated surfaces.

- (10) (a) Fuel oil pipes and their valves and fittings shall be of steel or other equivalent material, provided that restricted use of flexible pipes may be permitted in positions where the Authority is satisfied that they are necessary.
- (b) Flexible pipes referred to in paragraph (a) of this sub-regulation and end attachments shall be of adequate strength and shall, to the satisfaction of the Authority, be constructed of approved fire-resistant materials or have fire-resistant coatings.
- (c) Where necessary, fuel oil, lubricating and hydraulic oil pipelines shall be screened or otherwise suitably protected to avoid, as far as practicable, oil spray or oil leakage onto heated surfaces, electrical switchboards or into machinery air intakes.
- (d) The number of joints in piping systems shall be kept to a minimum; and
- (e) The ventilation of machinery spaces shall be sufficient under all normal conditions to prevent accumulation of oil vapour.

(11) The arrangements for the storage, distribution and use of flammable oils employed under pressure in power transmission systems in control and activating systems and heating systems shall be to the satisfaction of the Authority.

(12) In location where means of ignition are present such arrangements shall at least comply with the provisions of subregulations (2), (3), (4), (5), (8) and (9) and with the provisions of sub-regulations (6), (7), and (10) of this regulation in respect of strength and construction.

### **Bilge Pumping Arrangements**

**67.** (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 and wing suctions shall be provided if necessary for that purpose.

(2) Arrangements shall be provided for easy flow of water to the suction pipes: Provided the Authority is satisfied that the safety of the vessel is not impaired, the bilge pumping arrangements may be dispensed with in particular compartments provided the drains from these compartments, if provided, are fitted with self-closing valves or cocks.

(3) Drains from fish holds into the engine room are not permitted.

- (4) (a) "prime mover", for purposes of this regulation, means a device, excluding a battery, that uses and converts the energy from natural sources into mechanical energy.
- (b) At least two independently driven bilge pumps shall be provided.
- (c) The pumps in paragraph (a) shall be driven by separate prime movers and may or be a dedicated pump, a ballast pump or other general service pump of sufficient capacity.
- (d) Power bilge pumps shall be capable of giving a speed of water of at least 2 metres per second through the bilge pipes which shall have an internal diameter of at least:
- (Main Bilge line)  $d = 25 + 1.68 L(B + D)$  [mm]

where:  $d$  is the internal diameter in millimetres, and  $L$ ,  $B$  and  $D$  are in metres.

- (e) At least one bilge pump provided in accordance with this regulation shall be provided with a direct bilge suction for the machinery space.
- (f) Notwithstanding the requirements of paragraph (b) of this subregulation, bilge suctions shall have a minimum inside diameter of 50 millimetres.
- (g) 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 after peak bulkheads.

(5) Bilge pipes shall not be led through fuel oil, ballast or double bottom tanks, unless these pipes are of schedule 40 steel or equivalent construction.

(6) Bilge and ballast pumping systems shall be arranged 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.

(7) 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 the sea or to the bilges and water ballast spaces.

(8) Lines connected to the bilge distribution boxes or bilge manifolds shall be fitted with non-return type valves. ~~Valves on the inlet and outlet lines connected to bilge distribution boxes shall be of a non-return type.~~

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

(10) Bilge piping shall be of seamless Schedule 40 steel pipe or other material considered by the Authority to be suitable for the purpose, but short lengths of rubber or plastic hose, clearly visible at all times, may be fitted where deemed necessary by the surveyor or reduce the effects of vibration; any hose so installed shall be of sufficient strength to withstand collapsing due to suction, and joints shall be made with clamps suitable for the purpose.

(11) Bilge suctions shall be fitted with strainers and the areas of openings of such strainers shall not be less than twice the cross-sectional area of the bilge pipe.

(12) 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.

(13) The detection system shall initiate an audible and visual alarm in at least one place where continuous watch is maintained.

### **Steering Gear**

**68.** (1) Vessels shall be provided with a main steering gear and an auxiliary means of actuating the rudder to the satisfaction of the Authority.

(2) 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.

(3) The main steering gear shall be of adequate strength and sufficient to steer the vessel at maximum service speed.

(4) 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.

(5) Where the main steering gear comprises two or more identical power units, an auxiliary steering gear need not be fitted provided that with one unit out of operation the rudder shall be capable of being put over from 15 degrees on either side to 15 degrees on the other side in not more than 60 seconds with the vessel running at one half of its maximum speed or 7 knots whichever is the greater.

(6) Each of the power units shall be operated from a separate circuit.

(7) The main steering gear shall, with the vessel at its maximum permissible operating draught, be capable of putting the rudder over from 35 degrees on one side to 35 degrees on the other side with the vessel running ahead at maximum service speed.

(8) The rudder shall be capable of being put over from 35 degrees on either side to 30 degrees on the other side in not more than 28 seconds, under the same conditions.

(9) The main steering gear shall be operated by power where necessary to fulfil these requirements.

(10) 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.

(11) Clear instructions for the operation of the auxiliary steering system shall be permanently posted at the steering gear.

(12) Steering gear and emergency arrangements shall be available for use and demonstrated to the satisfaction of the Authority

### **Refrigeration Systems for Preservation of the Catch**

**69.** (1) Refrigeration systems shall—

- (a) be so designed, constructed, tested and installed as to take account of—
  - (i) the safety of the system;
  - (ii) the emission of Chloro flouro carbons (CFC's); and
  - (iii) any other ozone-depleting substance from the refrigerant held in quantities or concentrations which are hazardous to human health or to the environment; and
- (b) be to the satisfaction of the Authority.

(2) (a) Refrigerants to be used in refrigeration systems shall be to the satisfaction of the Authority.

(b) Methyl chloride, ammonia or CFC's, whose ozone-depleting potential is higher than 5 per cent of CFC-11 shall not be used as a refrigerant.

(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; and

- (b) Refrigeration systems in which toxic or flammable refrigerants are used shall be provided with drainage devices leading to a place where the refrigerant presents no danger to the vessels or to persons on board.
- (4)
  - (a) Any space containing refrigerating machinery including condensers and gas tanks utilizing toxic refrigerants or refrigerants which would be injurious to personnel in the event of leakage shall be separated from any adjacent space by gastight bulkheads.
  - (b) Any space containing the refrigerating machinery including condensers and gas tanks shall be fitted with a leak detection system having an indicator outside the space adjacent to the entrance and shall be provided with an independent ventilation system.
  - (c) The ventilation ducting to such spaces shall be fitted with a power exhaust fan with suction point not be higher than 300 mm from the deck or lowest part of the space to the satisfaction of the Authority.
  - (d) 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.
  - (e) In cases under paragraph (d), there shall be at least two powered ventilation fans installed with at least one being a suction fan with the ducting located close or at the areas where refrigerant is potentially exposed to leaks to the satisfaction of the Authority.
- (5) In refrigerating machinery spaces and refrigerating rooms, alarms shall be connected to the wheelhouse or control stations or escape exits to prevent persons being trapped and at least one exit from each such space shall be capable of being opened from the inside.
- (6) Where practicable, exits from the spaces containing refrigerating machinery using toxic or flammable gas shall not lead directly into any accommodation spaces.
- (7) Adequate guidance for the safe operation and emergency procedures for the refrigeration systems shall be provided by suitable notices displayed on board the vessel.

## **Ventilation**

- 70.** (1) Ventilation systems serving machinery spaces of category A shall be independent of systems serving other spaces.
- (2) Ventilation provided in machinery spaces shall be sufficient for engine combustion, the removal of heat and prevention of the accumulation of oil vapors under normal operating conditions and shall be to the satisfaction of a surveyor.
  - (3) Compartments which the crew are required to enter as part of their work which may contain gases which are heavier than air shall be provided with exhaust fans which take suction from a low position that shall not be higher than 300 mm from the deck or lowest part of the compartment, to the satisfaction of the Authority.
  - (4) All ventilation systems are to be fitted with fire flaps, permanently attached and capable of being closed outside the compartment.

(5) Where forced ventilation and extraction fans are fitted, these must be fitted with remote stops capable of being operated outside the compartment to which they are fitted.

## **PART C - ELECTRICAL INSTALLATIONS**

### **General**

71. (1) All electrical equipment, generators, motors, switchgear, control gear, fuses wiring and fittings shall be of a marine grade to the approval of the Authority.

### **Sources of Electrical Power**

72. (1) The minimum provision of electrical power shall consist of a 12V/24V DC system.

(2) 12V/24V DC systems shall consist of accumulator batteries with a alternator fitted which may be driven by the main engine.

(3) A second independently driven generator shall also be fitted: Provided that the Authority may exempt vessels from this requirement if a spare generator and drive are carried on board.

(4) Combined DC and AC systems shall be provided with an independently driven charging arrangement which may be driven by the main engine as well as a second independently driven charging arrangement.

### **Emergency Source of Electrical Power**

73. (1) A self-contained emergency source of electrical power located, to the satisfaction of the Authority, 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 three hours for the following:

- (a) internal communication equipment, fire detecting systems and signals which may be required in an emergency; and
- (b) the navigation lights, if solely electrical, and the emergency lights:
  - (i) of launching stations and overside of the vessel;
  - (ii) in all alleyways, stairways and exits;
  - (iii) in spaces containing machinery or the emergency source of power;
  - (iv) in control stations; and
  - (v) in fish handling and fish processing spaces.

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

(4) Batteries required for communications shall—

- (a) not be located below the waterline of the vessel when in a fully loaded condition; and
- (b) be isolated from the vessel's lighting and general service requirements.

(5) The batteries to supply the Radio Installations should comply with the Merchant Shipping (Radio Installations) Regulations, 2002.

## **Batteries**

**74.** (1) For 12V/24V DC systems, heavy duty batteries capable of supplying 1.25 times the electrical load when fishing at night and in addition, batteries complying to (2) shall be fitted for the engine starting and communications arrangements.

(2) Where the main engine relies on batteries to start, a second isolated bank of emergency batteries will be provided.

(3) For combined AC and DC systems separate heavy-duty batteries shall be provided which are capable of operating the vessel's navigation and emergency lights for a period of at least 3 hours in addition to the batteries required for engine starting.

(4) Batteries to supply the Radio Installation should comply with the Merchant Shipping (Radio Installations) Regulations, 2002.

(5) Change-over switches or links shall be fitted to allow charging alternators to be connected to any battery bank with facility for one alternator to charge any battery in an emergency.

(6) Blocking diodes or similar arrangement shall be fitted to prevent mutual discharge between battery banks.

(7) A battery cut-out switch shall be provided for all systems to act as an isolator, however if a battery change-over switch is fitted which is provided with an "off" position this may also be accepted.

(8) A mixture of lead-acid and nickel-alkaline batteries shall not be permitted.

(9) The battery installation shall be so designed as to ensure that when one set of batteries is used for the vessel's lighting and general service requirements, the other set shall be charged and available for engine starting and communications and isolated from the vessel's lighting and general service requirements.

(10) Batteries shall be firmly secured in covered battery boxes.

(11) Batteries boxes shall be ventilated and care shall be taken to remove potential sources of ignition or arcing contacts.

(12) Batteries shall not be located in accommodation spaces in accordance with regulation 112(2)(c) of these Regulations.

(13) Batteries required for communications shall not be located below the waterline of the vessel when in a fully loaded condition.

## **Distribution**

**75.** (1) Consideration shall be given to the location of electrical equipment away from potential hazards and to facilitate maintenance.

(2) The radio installation switchboard shall be separate from the main switchboard to inhibit stray radio frequency and interference.

(3) Wherever practical the main and radio installation switchboards shall not be fitted in the immediate vicinity of batteries.

(4) For new vessels, all main switchboards shall carry at least two spare sets of ways for future additional circuits.

(5) A fully insulated distribution system shall be used.

(6) Adequate provision shall be made for securing electrical connections by use of locking washers.

(7) Cables and switches shall have a capacity of at least 10 per cent greater than the maximum calculated current flow of the circuit.

(8) Systems shall be two-wire except that single wire systems are acceptable for engine circuits comprising engine mounted equipment and which have a return connection made at the engine itself.

(9) Systems in which there is no intentional connection of the circuit to earth (insulated systems) shall be provided with double pole switches, except that single pole switches may be used in the final sub-circuit.

(10) Single pole switches are acceptable in a system with one pole earthed. Fuses shall not be installed in an earthed conductor.

(11) All circuits, except the main supply from the battery to the starter motor and electrically driven steering motors shall be provided with electrical protection against overload and short circuit and fuses or circuit breakers shall be installed.

(12) Short circuit protection shall be for not less than twice the total rated current of the motors in the circuit protected. Steering motors shall have an overload alarm in lieu of overload protection.

(13) All circuits shall be clearly marked on switch and distribution boards.

(14) Switches and circuits shall be protected against contamination by sea water or water.

(15) Cables, except for those used in electronic systems, shall not be more than 3-core.

(16) Cables shall be of the fire-retardant type.

(17) Electrical equipment or wiring shall not be fitted below the level of the floor plates, except for earthing strips, the connection of underwater equipment or bilge pumps or alarms, unless otherwise approved by the Authority.

(18) (a) Cables shall be run in cable trays and secured and protected to the satisfaction of the Authority.

(b) Cables passing through exposed decks, watertight bulkheads and structures shall be fitted with watertight glands.

## **Lighting**

**76.** (1) A single hazardous event shall not be capable of disabling all lighting systems

(2) Lighting circuits shall be distributed through spaces so that a total black out cannot occur due to the failure of a single protective device.

(3) Where general lighting is provided by a centralised source, an alternative source of lighting shall also be provided sufficient to enable persons to make their way to the open deck or to permit work on essential machinery.

(4) Emergency lighting shall be provided to illuminate the survival craft launching and embarkation areas and man overboard rescue equipment and rescue areas.

(5) Light fittings shall be switched and fused with not more than three lights on each circuit.

(6) Light fittings shall be so arranged so that the rise in temperature will not damage associated wiring or cause a fire risk to surrounding materials.

### **Earthing Arrangements**

**77.** (1) The basic requirement of earthing is to provide a low resistance path from the unit to the earth through materials of similar voltage potential.

(2) Builders and contractors shall liaise with the suppliers of equipment to be installed to ensure that earthing arrangements comply with their requirements.

- (3) (a) On non-metallic vessels, earth plates of copper shall be attached to the exterior of the hull.  
(b) Plating shall be at least 0.35 mm thick and 0.8 m<sup>2</sup>.  
(c) The plate in this subregulation shall always be submerged regardless of vessel movement.  
(d) Other types of earthing may be accepted by the Authority.

(4) Earth plates shall not be painted.

(5) Alternative methods of earthing, integral to the hull, may be accepted by the Authority.

(6) Earth points shall be accessible.

(7) Earth leads shall be as short and direct as possible and wherever practical shall not run adjacent to existing wiring.

(8) Radio Installation earth leads should be of copper foil and not round wires.

(9) Earth plates shall be kept separate from protective cathodic anodes.

(10) Each unit shall have its own earth point unless otherwise approved by the surveyor.

(11) The earth run from the earth plate to the radio, radar and navigation equipment shall not be used to earth any other electrical equipment.

(12) Separate earth plate is required to be provided the radio telephone installation.

### **Hazardous spaces**

**78.** (1) Where practicable, electrical equipment shall not be installed in a space where petroleum vapour or other hydrocarbon gas may accumulate.

(2) When equipment is installed in such a space, it shall comply with a standard recognised

by the Authority for prevention of ignition of the flammable atmosphere.

## CHAPTER VI

### FIRE PROTECTION, FIRE DETECTION, FIRE EXTINCTION AND FIRE FIGHTING

#### Additional requirements for periodically unattended machinery spaces

**79.** A vessel with periodically unmanned machinery spaces shall comply with the requirements of Part D, Chapter V for additional requirements of periodically unattended machinery spaces in the Regulations for vessels greater than 24 meters.

#### Methods of Protection

**80.** (1) Vessels of steel construction, which have the machinery space boundaries constructed of steel, require no additional fire protection however surfaces, of adjacent compartments, on the opposite side of the machinery space should only be coated with finishes which are fire retardant.

(2) In vessels of Glass Reinforced Plastic the machinery space boundaries should prevent the passage of smoke and flame for a period of at least 15 minutes.

(3) The Authority may require that a sample be tested in accordance with Annex 7 to its satisfaction.

(4) The required fire resistance should be achieved through the use of woven roving glass, phenolic resin, additives to resin, fire retardant coatings or protection by non-combustible materials and Intumescent coatings may be used.

(5) Machinery spaces boundaries should be reasonably gastight so that in the event of a fire, the fire extinguishing medium released or injected can be retained for sufficient time to extinguish the fire.

#### Windows and Skylights

**81.** (1) Portholes or windows shall be in accordance with regulation 40 requirements for side scuttles and windows and shall not be in machinery spaces provided that a maximum of one observation port per side, sited above the main deck, having a maximum diameter of 150 millimetres, may be fitted provided that the frame is constructed of steel or brass and the port is fitted with a permanently attached steel or brass means of closing.

(2) Glass shall be wire-reinforced glass.

(3) Where skylights can be opened they shall be capable of being closed from outside the space.

(4) Skylights containing glass panels shall be fitted with external shutters of steel or other equivalent material permanently attached and such glass shall be wire-reinforced glass.

#### Ventilation Systems

**82.** (1) Except as is provided in subregulation (4), means shall be provided to stop fans and

close main openings to ventilation systems from outside the spaces served which would become inaccessible in the event of a fire in the space.

(2) Store-rooms containing appreciable quantities of highly flammable products shall be provided with ventilation arrangements which are separate from other ventilation systems.

(3) Ventilation shall be arranged at high and low levels and inlets and outlets of ventilators shall be positioned in safe areas and fitted with spark arrestors in accordance with regulation 37(5).

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

### **Heating Installations**

**83.** (1) Electric radiators, if fitted, shall be fixed in position and so constructed to reduce fire risks to a minimum.

(2) The radiator referred to in subregulation (1) of this regulation shall not 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.

(3) Heating by means of open fires shall not be permitted.

(4) Approved 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.

(5) Spaces in which stoves are installed shall be provided with ventilators of sufficient area to provide adequate combustion air for the stove.

(6) Ventilators referred to in subregulation (5) of this regulation shall have no means of closure and their position shall be such that the outlet does not create a flooding hazard.

(7) Open flame gas appliances, except cooking stoves and water heaters, shall not be permitted and spaces containing any such stove or water heater shall have adequate ventilation to remove fumes and possible gas leakage to a safe place.

(8) All pipes, conveying gas from container to stove, within compartments shall be of seamless steel, copper or other approved material.

(9) A gas shut-off valve shall be installed on all pipes conveying gas, at a readily accessible area, on the line between the gas storage tank and the stove.

(10) Automatic gas shut-off devices shall be fitted to operate on loss of pressure in the gas main pipe or flame failure on any appliance within 30 seconds of such event occurring.

### **Automatic or Remote Fuel & oil Stops**

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

- (2) (a) Pipes connected to any oil fuel storage, settling, or daily service tank, not being a double bottom tank, which if damaged would permit discharge of the contents, due to the gravitational head, to cause a fire hazard, shall be fitted with a valve or cock which shall be secured to the tank to which it is connected and be capable of being closed from a readily accessible position outside the space in which the tank is situated.
- (b) Gauge glasses fitted to any fuel oil tanks shall be fitted with an automatic closing valve or cock to prevent fuel spillage in the event of fire.

(3) All oil fuel tanks forming any double bottom tank and having the means of sounding from within the engine room shall be fitted with a valve or cock that will be self-closing.

### **Miscellaneous Items**

**85.** (1) 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.

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

(3) The main and auxiliary engines, other than steam engines, of a vessel shall be fitted with suitable exhaust silencers.

(4) The silencers and exhaust pipes shall be efficiently water-cooled, lagged or installed in such a manner that the silencers and exhaust pipes will not create a fire risk.

(5) Exhaust lagging shall be made from or covered with a non-absorbent material so that the exhaust lagging is impervious to oil.

(6) Every possible precaution shall be taken to avoid fuel and lubricating oil running into the bilges.

(7) Where practicable drip trays with proper means of drainage into a closed receptacle shall be provided under fuel tank outlets and, under engines compressors and other machinery.

(8) The machinery space shall be kept clean and tidy so as not to constitute a fire hazard.

### **Storage of Gas Cylinders and Dangerous Materials**

**86.** (1) Combustible materials not required for the operation and maintenance of machinery shall not be stowed in the machinery space.

(2) Any materials stowed in the machinery space shall be properly secured and cause no obstruction to access in or from the space.

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

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

(5) Cylinders shall be protected against excessive variations in temperature, direct rays of the sun, and accumulation of snow however, the Authority may permit such cylinders to be stored in compartments complying with the requirements of subregulations (8) to (12) of this regulation.

(6) Spaces containing highly flammable liquids, shall have direct access from open decks only. Where boundary bulkheads of such compartments adjoin other enclosed spaces they shall be gastight.

(7) Ventilation of the spaces shall be in accordance with regulation 82.

(8) Except as necessary for service within the space, electrical wiring and fittings shall not be permitted within compartments used for the storage of highly flammable liquids or liquefied gases.

(9) Where such electrical fittings are installed, they shall be to the satisfaction of the Authority for use in a flammable atmosphere.

(10) 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.

(11) Separate storage shall be provided for each type of compressed gas.

(12) 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 Authority may accept lesser but effective means of compliance with these requirements considering the characteristics, volume and intended use of such compressed gases.

### **Means of Escape**

**87.** (1) Stairways and ladders leading to and from all spaces in which the crew is normally accommodated or employed shall be so arranged as to provide ready means of escape to the open deck and thence to the survival craft.

(2) At all levels of accommodation at least two widely separate means of escape shall be provided in any space which is intended to accommodate more than 10 persons at any time and this may include the normal means of access from each restricted space or group of spaces.

(3) The means of escape referred to in this regulation shall be clearly marked with photo-luminescent signage.

(4) Two means of escape shall be provided from every machinery space which shall be as widely separated as possible.

(5) Vertical escapes shall be by means of steel ladders and these means of escape shall be clearly marked with photo-luminescent signage.

(6) The width and continuity of the means of escape provided shall be to the satisfaction of the Authority.

### **Fire Pumps**

**88.** (1) The minimum number of fire pumps to be fitted shall be as follows:

(a) one power pump not dependent on the main machinery for its motive power; or,

- (b) one power pump driven by main machinery provided that the propeller shafting can be readily disconnected.
- (2) (a) Bilge, general service or any other pumps may be used as fire pumps provided the pumps comply with the requirements of this Chapter.  
(b) Fire pumps shall be so connected that the pumps cannot be used for pumping oil or other flammable liquids.
- (3) Centrifugal pumps or other pumps connected to the fire main through which back flooding could occur shall be fitted with non-return valves.
- (4) The total capacity (Q) of main power-operated fire pumps shall be at least:  
$$Q = (0.15 L(B + D) + 2.25)^2 \text{ cubic metres per hour where L, B and D are in metres.}$$
- (5) Where two independent power operated fire pumps are fitted, the capacity of each pump shall not be less than 40 percent of the quantity required by subregulation (4) of this regulation: Provided the total capacity of the two pumps equals to Q.
- (6) Where the main fire pumps are delivering the quantity of water required by subregulation (4) of this regulation through the fire main, fire hoses and nozzles, the pressure maintained at any hydrant shall not be less than 2.5 Bar.

### **Fire Mains**

- 89.** (1) Where more than one hydrant is required to provide the number of jets specified in regulation 90(1) below, a fire main shall be provided.
- (2) Materials rendered ineffective by heat shall not be used for fire mains, unless adequately protected to the satisfaction of the Authority.
  - (3) Where fire pump delivery pressure can exceed the design working pressure of fire mains, relief valves shall be fitted.
  - (4) Fire mains shall have no connections other than those required for firefighting except for the purpose of washing the deck and anchor chains or operating the chain locker bilge ejector, subject to the efficiency of the firefighting system being maintained.
  - (5) Where fire mains are not self-draining, suitable drain cocks shall be fitted where freezing damage may be expected.

### **Fire Hydrants, Fire Hoses and Nozzles**

- 90.** (1) Fire hydrants shall be positioned to allow easy and quick connection of fire hoses and that at least one jet can be directed into any part of the vessel which is normally accessible during navigation.
- (2) The jet required by sub-regulation (1) of this regulation shall be from a single length of hose.
  - (3) For every required fire hydrant there shall be one fire hose.
  - (4) Single lengths of hose shall not exceed 20 metres in length.

- (5) (a) Fire hoses shall be of approved material.
- (b) Each fire hose shall be provided with couplings and a dual jet or spray nozzle appropriate to the delivery capacity of the fire pumps.

(6) Couplings and nozzles shall be securely connected to the fire hose to the satisfaction of the Authority.

(7) Except where fire hoses are permanently attached to the fire main, there shall be complete inter-changeability of fire hose couplings and nozzles.

### **Fire Extinguishers**

**91.** (1) Fire extinguishers shall be of approved types.

(2) Every fire extinguisher provided in compliance with this Chapter shall be constructed in accordance with specifications prescribed in the FFS Code.

- (3) (a) The capacity of required portable fire extinguishers, other than carbon dioxide extinguishers, shall be not more than 13.5 litres and not less than 9 litres.
- (b) Other extinguisher shall not be in excess of the equivalent portability of the 13.5 litre fluid extinguisher and shall not be less than the fire-extinguishing equivalents of a 9-litre fluid extinguisher.

(4) The Authority shall determine the equivalents of fire extinguishers.

(5) Fire extinguishers containing an extinguishing medium which in the opinion of the Authority, either by itself or under expected conditions of use, gives off toxic gases in such quantities as to endanger persons shall not be permitted or shall be subject to safety measures as determined by the OEM.

(6) One of the fire extinguishers intended for use in any space shall be stowed near an entrance to that space.

### **Portable Fire Extinguishers in Control Stations and Accommodation and Service Spaces**

**92.** (1) A sufficient number of approved portable fire extinguishers shall be provided in control stations and accommodation and service spaces to ensure that at least one extinguisher, of a suitable type, is readily available for use in any part of such spaces.

(2) The total number of extinguishers in the spaces in subregulation (1) shall however not be less than two.

(3) Where portable dry powder extinguishers are provided in either accommodation and service spaces, there, numbers shall not exceed 50% of the total number of extinguishers provided in either of those spaces.

### **Fire-Extinguishing Appliances in Machinery Spaces**

**93.** (1) At least one portable fire extinguisher per 75 kW of installed main engine power per machinery space, shall be fitted to a maximum of 6 extinguishers.

(2) At least 50% of these extinguishers shall be of the foam type with the remainder being

Dry Powder or Carbon dioxide.

(3) The number of portable extinguishers fitted may be reduced to the satisfaction of the Authority if a fixed fire-extinguishing system is fitted.

#### **Availability of Fire Appliances**

**94.** (1) Fire appliances carried in every ship shall be maintained in good working order and shall be kept available for immediate use at all times.

(2) All moveable fire appliances carried in compliance with this Chapter shall be stowed where they will be readily accessible from the spaces in which they are intended to be used.

(3) At least one of the portable fire extinguishers in subregulation (2) intended for use in any space shall be stowed as near to the entrance to that space as is practicable.

(4) Securing arrangements allowing quick deployment of fire appliances shall be provided to the satisfaction of the Authority.

#### **Equivalents, Approval of Types and Servicing of Fire Appliances**

**95.** (1) Where this Chapter requires that a particular fitting, material, appliance or apparatus, or type thereof, shall be fitted or carried in a ship, or that a particular provision shall be made, the Authority may allow any other fitting, material, appliance, apparatus or type thereof, to be fitted or carried, or any other provision to be made in the vessel if satisfied that such other fitting, material, appliance, apparatus or type thereof, or provision, is at least as effective as that required by these Regulations.

(2) The Authority may approve any type of fire appliance for use on a vessel belonging to the Republic which in the opinion of the Authority complies with the requirements of this Chapter.

(3) The number, type and position of portable and fixed fire appliances carried on vessels shall be approved by the Authority.

(4) All fire-fighting appliances shall be serviced at intervals not exceeding 12 months by an approved service station.

#### **Use of Halons**

**96.** Halons or other firefighting mediums containing Chloro-Fluoro-Carbons (CFC's) shall not be used as an extinguishing medium on board vessels.

## **CHAPTER VII PROTECTION OF THE CREW**

#### **General Protection Measures**

**97.** (1) In vessels, the accommodation and service space boundaries should prevent the passage of smoke and flame for a period of at least 15 minutes.

(2) Owners and skippers shall ensure that the state of cleanliness and lighting of the vessel is such that hazardous conditions are not created for persons required to work in any space on board the vessel.

(3) A lifeline system shall be designed to be effective for all needs and the necessary wires, ropes, shackles, eyebolts and cleats shall be provided.

(4) Skylights, or other similar openings shall be fitted with protective bars not more than 350 millimetres apart.

(5) The Authority may exempt small openings from compliance with this requirement.

(6) The surface of all decks shall be so designed or treated as to minimize the possibility of personnel slipping.

(7) (a) Decks of working areas, such as in machinery spaces, in galleys, at winches and 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.

(b) Crew members should wear the correct protective gear pertaining to their task and ensure that their gear is maintained; and

(c) All crew members conducting hazardous work should have the necessary training and have all associated hazards identified to them.

(8) Any person who has cause to be on the working deck or on any other exposed deck or where there is a risk of falling overboard shall be required to wear an approved buoyancy aid.

### **Safe Access**

**98.** (1) Every owner and skipper shall ensure that safe access to and from the vessel is provided from the shore or from a vessel alongside.

(2) The owner and skipper shall ensure that, except in an emergency, access equipment referred to in sub-regulation (1) of this regulation is always used between a secured vessel and any quay, pontoon or similar structure or another vessel alongside to which that vessel is secured, and that—

(a) the access equipment is placed in position promptly after the vessel has been so secured and remains in position while the vessel is so secured;

(b) the access equipment which is used—

(i) is properly constructed, of adequate strength, properly rigged, secured, deployed, and safe to use; and

(ii) is so adjusted from time to time as to maintain safety of access;

(c) the access equipment and immediate approaches thereto are adequately illuminated;

(d) when access is necessary between a vessel and the shore and that vessel is not secured alongside, access equipment is provided to ensure safe access;

(e) a portable ladder is used as access equipment only where no other safe means of access is practicable;

(f) a pilot transfer arrangement is used as access equipment only between a vessel with high freeboard and a vessel with low freeboard or between a vessel and a boat where no other safe means of access is practicable;

(g) a life-buoy with a self-activating light and a separate safety line attached to a quoy or a similar device is provided ready for use at the point of access to a vessel; and

(h) an adequate number of safety nets are rigged to safeguard the full length of a gangway or accommodation ladder in use.

(3) Every owner and skipper shall ensure that a safe means of access is provided and

maintained to any place on a vessel to which a person may be required to go.

### **Deck Openings**

**99.** (1) Escape hatches shall be painted red and marked in white  
"EMERGENCY ESCAPE, KEEP CLEAR AT ALL TIMES"

(2) Dimensions of access hatches shall not be less than 600 millimetres by 600 millimetres or 600 millimetres diameter.

(3) Where practicable, hand-holds shall be provided above the level of the deck over escape openings.

(4) Every owner shall ensure that any opening, open hatchway or dangerous edge which is provided with a coaming or sill of less than 600 millimetres into, or through, or over which a person could fall is fitted with secure guardrails or fencing of adequate design and construction to prevent such occurrence, except where the installation of such guardrails or fencing will interfere with the proper performance of work.

(5) The Authority may exempt small openings such as fish scuttles from compliance with these requirements.

### **Bulwarks, Rails and Guards**

**100.** (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.

(2) The height above deck of any fixed bulwark shall be at least 1 meter.

(3) If guard rails are fitted, clearance below the lowest course of rails shall not exceed 230 millimetres.

(4) Other courses shall not be more than 380 millimetres apart, and the distance between stanchions shall not be more than 1.5 metres.

(5) In a vessel with rounded gunwales, guard rail supports shall be placed on the flat of the deck. Rails shall be free from sharp points, edges and corners and shall be of adequate strength.

(6) Guard rails, lifelines, gangways, underdeck passages or other means, shall, to the satisfaction of the Authority, be provided to protect the crew when moving between accommodation, machinery and other working spaces.

(7) 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.

### **Stairways and Ladders**

**101.** For the safety of the crew, stairways and ladders of adequate size and strength with handrails and non-slip treads shall be provided to the satisfaction of the Authority.

### **Lifting Appliances, Pulleys and Wire Ropes**

**102.** (1) Every owner or skipper shall ensure that any vessel's fishing gear and lifting

appliances are—

- (a)
  - (i) of adequate strength for the purpose for which it is used;
  - (ii) free from patent defect;
  - (iii) properly installed or assembled;
  - (iv) properly maintained; and
  - (v) used only in a safe and proper manner;
- (b) not loaded in excess of its certified safe working load, except for the purpose of carrying out a test referred to in paragraph (d) of this subregulation;
- (c) operated only by a person properly trained in the operation thereof; and
- (d) tested by a competent person after the manufacturing or installation thereof, as the case may be, but before being put into operation, and thereafter, after any repairs to or modification of the lifting plant which is likely to alter the safe working load or affect the strength, suitability or stability thereof and in any event, before being put into operation.

(2) Lifting appliances shall be—

- (a) tested by a competent person after the manufacturing or installation thereof, as the case may be, but before being put into operation, and thereafter after any repairs to or modification of the lifting plant which is likely to alter the safe working load or affect the strength, suitability or stability thereof, and before being put into operation, but at least every 4 years;
- (b) provided with a test certificate stating that the lifting appliance was tested by a competent person and specifying the safe working load after any test prescribed in paragraph (a);
- (c) clearly and conspicuously marked with its safe working load;
- (d) provided with a diagram or indicator indicating to the operator the safe working load of the lifting plant corresponding to its operating radius, if it has a safe working load which varies according to its operating radius;
- (e) fitted with a load-attaching device so designed or proportioned that the accidental disconnection of a load under working conditions is prevented; and
- (f) examined and declared safe in writing, in a dedicated register, by the responsible person, as designated by the owner or skipper-
  - (i) after any test referred to in paragraph (a); and
  - (ii) at least once every 12 months.

(3) A record of the examination in subregulation (2)(f) shall be retained in a dedicated register and made available for inspection by the Authority for a period of 3 years from the date of inspection.

(4) A pulley block shall not be used, unless the safe working load is clearly marked thereon.

(5) Means shall be provided to enable any person using chain or wire rope sling to ascertain the safe working load for such chain or sling for the conditions under which it may be used.

(6) (a) Every wire rope used for trawling, hoisting or lowering shall be inspected by the responsible person, as designated by the owner or skipper every 3 months, and when any wire has broken in such rope it shall be inspected at least monthly.

(b) The inspection in paragraph (a) shall be -

- (i) recorded by the responsible person in the dedicated register; and
- (ii) verified and recorded by the safety officer in the safety log book.

(7) A wire rope shall not be used in trawling, hoisting or lowering if in any length of eight diameters the total number of visible broken wires exceeds ten percent of the total number of wires, or the rope shows sign of excessive wear, corrosion or other defect which in the opinion of the person inspecting it, renders it unfit for use.

- (8) (a) A thimble or loop splice made in any wire rope shall have at least three tucks with a whole strand of the rope and two tucks with one half of the wires cut out of each strand.
- (b) The strands in all cases shall be tucked against the lay of the rope, provided that the provisions of this paragraph shall not prevent the use of another form of splice which can be shown to be as effective as that laid down in this paragraph.

**Safeguarding of Machinery**

**103.** (1) Every owner or skipper shall—

- (a) specifically cause every exposed and hazardous part of machinery on board a vessel which is within the normal reach of a person to be effectively safeguarded by means of insulation, fencing, screening or guarding so that it does not constitute a further hazard or potential hazard;
- (b) ensure that the quality of material used for such insulation, fencing, screening or guarding is suitable for the purpose for which it is being utilised;
- (c) ensure that all insulation, fencing, screening or guarding is properly maintained and kept in position while the guarded part is in operation;
- (d) Appropriate warning signage shall be posted in way of hazardous areas and machinery;
- (e) supply suitable apparatus to stop immediately any machine on board a vessel in an emergency;
- (f) In particular, potentially hazardous machinery on deck shall be provided with means of stopping from the local position; and
- (g) crew members operating machinery should wear the appropriate protective gear at all times .

**Use of Asbestos**

**104.** Asbestos based material may not be used for any purpose on board vessels.

**Protection against Noise**

**105.** (1) Measures shall be taken to reduce the effects of noise upon personnel in machinery, accommodation and navigation spaces to the levels tabled below as far as is practicable.

(2) Safety warning signs shall be placed at all entrances to the machinery space advising personnel of high noise levels and hearing protectors shall be provided for personnel entering the space and any other space where noise levels above 85 dB(A) are expected.

(3) The following shall be the acceptable noise limits:

Compartment	Noise limit dB(A)
Machinery Spaces - Continuously Manned	85
Machinery Spaces - Unmanned	110

Sleeping Rooms	60
Mess Rooms	65
Recreation Rooms and offices	65
Wheelhouse	65

### **Standard Operating Procedures**

**106.** The owner and skipper of every vessel shall ensure that Standard Operating Procedures, to the satisfaction of the Authority, are developed and carried on board for any operation which is required to be carried out by the crew during the operation of the vessel.

## **CHAPTER VIII CREW ENVIRONMENT**

### **Position of Crew Accommodation**

**107.** Crew accommodation shall be situated above the deepest operating load waterline.

### **Height of Crew Accommodation**

**108.** (1) The minimum height of the crew accommodation and any other space where the crew may be required to work shall be 2,00 metres.

(2) The Authority may exempt sleeping rooms, store-rooms and sanitary accommodation from the above requirements, but not to less than 1.9 metres of minimum height, at every point in the room which is available for free movement.

(3) The Authority may exempt vessels from the requirements of subregulation (1) of this regulation, but not to less than 1.9 metres of minimum height, at every point in the compartment which is available for free movement. .

### **Bulkheads and Panelling**

**109.** (1) All bulkheads enclosing the crew accommodations or being a boundary of the crew accommodation shall be properly constructed of steel or other suitable material.

(2) Any bulkhead that has exposed frames or other protrusions that could cause injury during the vessels movement at sea, is to be panelled.

(3) Any bulkhead which separates any part of the crew accommodation from a fuel tank, cargo or machinery space, a paint room, a store-room, not forming part of the crew accommodation other than a "Dry Provisions" store room, a chain locker or cofferdam shall be gastight and shall be watertight where necessary to protect the crew accommodation.

(4) Any bulkhead which separates any part of the crew accommodation from sanitary accommodation, laundry, washing rooms or galley shall be watertight to such height as necessary to prevent the passage of water.

(5) A minimum watertight height of 200 millimetres above the floor of the sanitary

accommodation is required.

(6) Any inside panelling in the crew accommodation shall be constructed of suitable material with a surface which can easily be kept clean.

(7) A bulkhead and panelling shall be constructed in such a manner or of such material not likely to harbour vermin.

### **Overhead decks**

**110.** Overhead decks which are exposed to the weather shall be of thickness and insulated to the satisfaction of the Authority.

### **Flooring**

**111.** (1) (a) All decks which form the floors in the crew accommodation shall be fitted with material providing good foothold and be capable of easily being kept clean.

(b) The floor covering shall be impervious to water and if the deck is situated on top of an oil tank, impervious to oil.

(2) The floors of sanitary accommodation, galleys and laundries in the crew accommodation shall be covered with terrazzo, tiles, or other hard material which is impervious to liquids.

(3) The floor covering shall be properly laid and shall provide a good foothold.

(4) The joining of the floors with the side walls shall be rounded in a manner which will avoid crevices.

(5) A manhole or any other opening to a fuel tank, excluding water tanks, shall not be situated in crew accommodation.

### **Protection from Weather**

**112.** (1) In every ship the crew accommodation and the means of access thereto and egress therefrom shall be so arranged and constructed and situated in such a position as to ensure—

- (a) the protection of the crew against injury to the greatest practicable extent;
- (b) the protection of the crew accommodation against the weather and the sea;
- (c) the insulation of the crew accommodation from heat and cold;
- (d) the protection of the crew accommodation against moisture due to condensation;
- (e) the exclusion from the crew accommodation of alluvia originating in other spaces in the ship; and
- (f) the exclusion from the crew accommodation, to the greatest practicable extent, of noise originating in other spaces in the ship.

(2) Without prejudice to the general provisions of subregulation (1) —

- (a) every opening from an open deck into the crew accommodation shall be protected against the weather and sea;
- (b) ventilator trunks to cargo spaces or tanks shall be made of steel or other suitable material and shall be gastight where they pass through any part of the crew accommodation;
- (c) batteries shall not be placed in any sleeping room provided for the crew, and precaution shall be taken which will ensure that fumes from such batteries cannot discharge into any part of the crew accommodation;

- (d) the bulkheads and the parts of the ship's side which enclose the crew accommodation shall be insulated in a manner which will prevent overheating of the accommodation and shall be covered with protective covering which will prevent the condensation of moisture; and
- (e) every bulkhead, casing and deck separating the crew accommodation from other spaces in the ship in which heat or cold may be generated shall be insulated in a manner which will prevent the crew accommodation being so affected by such heat or cold or by condensation as to prejudice the health or comfort of the crew.

### **Heating**

**113.** (1) Vessels operating south of 40°S or North of 40°N shall be provided with a permanently installed heating system for all sleeping rooms, mess rooms, recreation rooms, sanitary accommodation and offices forming part of the crew accommodation.

(2) The heating system shall be capable of ensuring that when the ventilation system is providing at least 0.4 m<sup>3</sup> of fresh air per minute for each person whom the space is designed to accommodate at one time and the ambient temperature of the open air is 0°C, the temperature therein can be maintained at 20°C.

(3) The permanent heating system required by subregulation(1) of this regulation shall be operated by steam, hot water or electricity or shall be a system supplying warm air, alternative arrangements may be accepted by the Authority.

(4) The heating equipment shall be so constructed, installed and, if necessary, shielded to avoid the risk of fire and not to constitute a source of danger or discomfort to the crew.

(5) Means shall be provided to vary and switch the supply of heat to any space on or off.

### **Lighting**

**114.** (1) In every ship an electrical system shall be installed which is capable of providing adequate lighting in every part of the crew accommodation.

(2) The electric lighting shall be so arranged so as to give the maximum benefit to the crew.

(3) An efficient alternative source of light or source of electrical power shall always be available for emergency lighting of the crew accommodation.

(4) Lighting shall be of sufficient intensity to enable a person of normal vision to read an ordinary newspaper in any point in the room.

### **Ventilation**

**115.** (1) In every ship the enclosed parts of the crew accommodation shall be ventilated by a system which will maintain the air therein in a state of purity adequate for the health and comfort of the crew and such system shall be additional to any side scuttles, skylights, companions, doors or other apertures not intended solely for ventilation.

(2) Every enclosed space forming part of the crew accommodation shall at least be provided with a natural system of inlet and exhaust ventilation.

(3) Every inlet ventilator forming part of such system, being a ventilator situated in the open

air, shall be of a cowl or other equally efficient type and shall be so situated that as far as is practicable, it is not screened from the wind in any direction.

(4) Ventilator referred to in subregulation (3) of this regulation shall not be situated directly over a doorway, stairway or exhaust opening.

(5) (a) Crew sleeping spaces shall be provided with inlet and exhaust ventilators sufficient to provide 200 mm<sup>2</sup> inlet area and 200 mm<sup>2</sup> outlet area for each person for whose use at any one time the space is appropriated subject to a minimum of 750 mm<sup>2</sup> for any one space.

(b) Where sleeping spaces adjoin the machinery spaces, means shall be provided to prevent fumes from the machinery spaces infiltrating the sleeping space.

(6) Where power operated ventilation arrangements are provided, they shall be quiet in operation.

### **Drainage**

**116.** (1) In every ship efficient drainage by pipes or channels shall be provided for every part of the crew accommodation situated on an open deck wherever such drainage is necessary for clearing water shipped from the sea.

(2) There shall be no drainage from any source, not being sanitary accommodation, into the sanitary accommodation forming part of the crew accommodation.

(3) Every space appropriated for use as sanitary accommodation shall be served by one or more scuppers, which do not serve any space other than sanitary accommodation.

(4) The scuppers shall be at least 50 mm in diameter and shall be situated wherever water is likely to collect on the floor of the space.

### **Painting**

**117.** (1) In every ship the interior sides and ceilings of every part of the crew accommodation shall be covered with enamel, paint or other suitable material.

(2) The paint or other material required in this regulation shall be fire-retardent, of good quality and white or light in colour.

(3) The wooden parts of the furniture and fittings in the crew accommodation shall be finished externally with paint, varnish, polish or by other suitable means.

(4) All paint, varnish, polish and other finishes in the crew accommodation shall be capable of being easily kept clean and shall be maintained in good condition.

### **Sleeping Rooms**

**118.** (1) Separate sleeping rooms shall be provided, as far as is practicable, to ensure that rest periods of watchkeepers are not compromised.

(2) The Authority may permit more than 10 persons to be accommodated in a room, if satisfied, after consultation with the owner of the ship and with such organisation as appears to be representative of the persons concerned, that the comfort and safety of the persons is not

compromised.

(3) The floor area provided for each person in a sleeping room forming part of the crew accommodation, excluding the space occupied by berths and lockers and spaces which by reason of their small size, irregular shape or height, cannot accommodate furniture and do not contribute to the area available for free movement, shall not be less than 500 mm<sup>2</sup>.

## **Bunks**

**119.** (1) Every vessel proceeding to sea for more than 16 hours shall be provided with a bunk for each person accommodated on the vessel.

(2) The framework of each bunk, and the leeboards or lee-rails thereof, if any, shall be constructed of metal or other material which is hard and smooth and unlikely to become corroded.

(3) The framework shall be so made as not to be likely to harbour vermin.

(4) In particular, if the bunk is constructed with tubular frames, the frames shall be completely sealed and without perforations.

(5) There shall be unobstructed access to at least one side of each bunk and in particular, if the adjacent sides of two beds in the same room are parallel to each other or when projected make an angle of less than 90° with each other, the distance between those sides at any point shall not be less than 760 mm if both bunks are in single tier or 900 mm in any other case.

(6) (a) Where bunks abut upon each other they shall be separated by partitions made of wood or other suitable material of at least 500mm in height.

(b) Where bunks lie next to each other a full division, must be provided.

(7) A bunk shall not be placed—

(a) within 100 mm of the outlet of a ventilation trunk which may be used for circulating hot or cold air; or

(b) within 50 mm of a bulkhead or the ship's side, unless the bed is so supported and the room so constructed as to avoid harbouring dirt and vermin in or near the bed, to enable the bedding to be kept clean and dry, and to minimise the soiling of paintwork in way of the bunk.

(8) Bunks shall not be arranged in tiers of more than two, except with the written approval of the Authority.

(9) A bunk shall not be less than 100mm from the floor of the room measured from the bottom of the mattress.

(10) The upper bunk in a double tier shall be at least 600 mm below the lower side of the deck head beams or other obstructions measured from the bottom of the mattress.

(11) The bottom of the mattress in the lower bed shall be at least 600 mm below the bottom of the mattress in the upper bunk.

(12) Subject to the provisions of sub-regulations (10) and (11) of this regulation, the mean size of the bunks provided for the crew shall be at least 1,9 m by 600 mm, the measurements being taken inside the lee-boards or lee-rails, if any and at right angles to each other.

(13) Every bunk provided for a member of the crew shall be fitted with a mattress made of material which will resist damp and is unlikely to harbour vermin.

(14) The base of a bunk fitted above another bunk shall be constructed of wood or other suitable dustproof material. .

### **Furniture and Fittings**

**120.** (1) Every sleeping room shall be provided with at least the following equipment:

- (a) for each person accommodated in the room a clothes locker or wardrobe at least 0.6m high and 50 cm<sup>2</sup> in internal sectional area, with a minimum width of 250mm
- (b) A curtain, fitted to each bunk to provide the crew member with privacy and to prevent the ingress of light from the room provided that if the room contains only one bunk a curtain is not required.

(2) All lockers, wardrobes, tables, desks, the un-upholstered parts of chairs and settees and similar furnishings shall be made of polished hardboard, rustproof metal or other smooth and impervious material not likely to crack, warp or become corroded.

(3) All furniture provided in sleeping rooms shall be constructed in such a manner or of such material not likely to harbour vermin.

(4) In every sleeping room every drawer, locker and wardrobe shall be lockable.

(5) Furniture and fittings shall be constructed that there are no sharp edges or sharp protrusions.

### **Sanitary Facilities**

**121.** (1) The following facilities shall be provided as a minimum:

- (a) One bath or shower for every 4 persons or part thereof;
  - (b) A wash basin for every 4 persons or part thereof;
  - (c) One suitable mirror for every 6 persons or part thereof; and
  - (d) One toilet for every 4 persons or part thereof,
- provided that not less than two of each item listed above shall be provided.

(2) The sanitary facilities shall be situated as close to the sleeping accommodation of the persons for whose use it is appropriated as is practicable.

(3) (a) In every ship, adequately ventilated compartments or lockers shall be provided for hanging oilskins and protective clothing used by the crew.

(b) The compartments or lockers shall be situated outside the sleeping rooms of the crew and in a position readily accessible therefrom.

(c) Vessels shall be provided with changing rooms for this purpose to the satisfaction of the authority.

(4) Sanitary facilities provided adjacent to engine rooms, factory and other working spaces shall not be included in the facilities required by subregulation (1) of this regulation unless their positions comply with subregulation (2) of this regulation.

(5) Every bath, shower and basin shall be provided with hot and cold fresh water and an efficient drainage system.

(6) A minimum of 20 litres of potable water per person per day shall be provided for washing purposes.

(7) Sanitary facilities shall be maintained in a clean and operable condition at all times. (1) On every vessel there shall be a minimum of one toilet, wash hand basin and shower with at least a cold fresh water supply and mirror suitable for toilet purposes for every 10 persons carried or part thereof.

(2) The floor area of the space in subregulation (1) shall not be less than 1.0m<sup>2</sup>.

(3) Sanitary spaces shall have an extractor fan fitted that operates in conjunction with the light switch.

(4) Sanitary facilities shall be fully enclosed and ventilated.

(5) Efficient drainage for effluent and waste-water shall be provided.

(6) A minimum of 10 litres of fresh water per person per day shall be provided for washing purposes.

(7) Sanitary facilities shall be maintained in a clean and operable condition at all times.

### **Supply of Drinking Water**

**122.** (1) Drinking water shall be provided in such quantity to provide 2.5 litres per person per day for drinking and cooking purposes and shall be stored in a manner that does not allow contamination.

(2) A supply of drinking water shall at least be provided to the galley.

### **Galleys**

**123.** (1) Every vessel proceeding to sea for more than 16 hours shall be provided with a galley adequately equipped for the preparation and provision of hot food to the crew.

(2) Galleys shall be provided with adequate lighting and ventilation.

(3) Every galley shall so far as is reasonable and practicable, be lighted by natural lighting from all the sides and from overhead.

(4) The sides floors, cupboards and dressers in the galley shall be made of material which is impervious to dirt and moisture and can easily be kept clean.

(5) All metal parts of the cupboards and dressers shall be rustproof.

(6) The cupboards and dressers shall be constructed in such a manner or of such material not likely to harbour vermin.

(7) The bottoms of all cupboards and dressers in the galley shall either be flush with the deck or shall be so fitted as to enable the deck space beneath them to be readily accessible for cleaning.

(8) Every galley shall be provided with such equipment as will enable food in sufficient quantity to be properly and readily prepared for the persons whom the galley is intended to serve, and

the cooking utensils to be hygienically cleaned.

- (9) Galleys shall be maintained in a clean and operable condition at all times.

### **Hospitals**

- 124.(1)(a) Every vessel which is less than 24 metres in length shall be provided with a space appropriated for use as a temporary hospital for the crew.
- (b) When the room is in use as a temporary hospital, the room shall be used for no purpose other than the treatment of sick persons.

(2) Alternative accommodation shall be provided for fishers normally accommodated in the temporary hospital when the hospital is in use and this alternative accommodation shall at least consist of a bunk located in a sleeping room of the dimensions specified in regulation 118, however the Authority may allow a lesser standard for this alternative accommodation.

(3) The temporary hospital shall be readily accessible and so situated that it is readily accessible from the sleeping accommodation of the skipper or a person designated by the skipper to take charge of the patients.

(4) Sick persons shall have ready access to bath or shower, wash basin, mirror and toilet from the hospital.

(5) Temporary hospitals shall be adequately ventilated and heated to the satisfaction of the Authority.

- (6) At least one single tier bed shall be provided in the temporary hospital.

(7) The temporary hospital medical appliances provided in the vessel for the benefit of the seafarers on board shall be as prescribed in the Vessels Medicines and Merchant Shipping (Medical Equipment) Regulations, 1991.

### **Medical Cabinet**

125. (1) A portable or fixed medical cabinet shall be provided and fitted in a position in which it will remain dry and which is remote from all sources of heat.

(2) The medical cabinet shall be of a size, design and construction suitable for storing the medicines, medical stores and book of instruction, provided in the ship for the benefit of the seaman on board.

(3) The contents of the medical cabinet shall be inspected at least once a year by a competent person and a certificate issued stating that the contents of the cabinet comply with the Ships Medicines and Medical Appliances Regulations, 1991.

### **Maintenance of Crew accommodation**

126. (1) The skipper shall be responsible for ensuring that crew accommodation is maintained in a clean and habitable condition and all equipment and installations shall be maintained in good working order.

(2) Every part of the accommodation, not being a store-room, shall be kept free of stores and other property not belonging to or provided for the use of persons for whom that part of the accommodation is appropriated.

(3) The Skipper shall inspect crew accommodation at least monthly and maintain a record of these inspections in the official log-book.

## **CHAPTER IX SHIPBORNE NAVIGATIONAL EQUIPMENT AND ARRANGEMENTS**

### **Compasses**

- 127.(1)(a) Vessels shall be provided with an efficient steering magnetic compass in a suitable binnacle adjacent to the main steering position clearly readable by the helmsman at the main steering position to the satisfaction of the surveyor.
- (b) Where a vessel has a second conning position, this position shall be fitted with an efficient compass or repeater.
- (2) Means shall be provided to enable compass bearings by day or by night.
- (3) Where the compass referred to in sub-regulation (1) of this regulation is fitted such that bearings cannot be taken by the main steering compass, a handheld compass shall be provided.
- (4) (a) Each magnetic compass referred to in sub-regulation (1) of this regulation shall be properly adjusted by a compass adjuster approved by the Authority, at intervals not exceeding 12 months and its table of residual deviations shall be available at all times.
- (b) Each magnetic compass referred to in sub-regulation (1) of this regulation shall be properly adjusted when repairs are carried out to the vessel such that these repairs could affect the residual deviations of the vessel.
- (c) Electromagnetic compatibility of electronic equipment adjacent to the magnetic compass should be considered when locating such equipment.

### **Depth Sounding Equipment**

128. Vessels shall be fitted with an echo sounder, to the satisfaction of the Authority.

### **Time-keeping apparatus, sextant and satellite navigation systems**

129. (1) All vessels shall carry at least two satellite navigation systems operating off two independent power supplies.

- (2) In lieu of the requirements of subregulation (1) of this regulation a vessel shall carry-
- (a) at least one satellite navigation system;
- (b) an efficient time keeping apparatus; and
- (c) one efficient sextant to assist in making accurate celestial observations.
- (3) The satellite navigation systems should provide means of interfacing with other navigational electronic equipment, as required.
- (4) For the purpose of subregulation (2), a time-keeping apparatus means a chronometer, deck watch or similar instrument, the daily rate of which can be checked and recorded by means of time signals.

### **Nautical and Other Publications and Documentation**

**130.** (1) Adequate and up to date nautical publications are to be carried on board in accordance with the following list for the intended voyage:

- (a) Nautical Charts;
- (b) Tide tables;
- (c) Latest annual Notice to Mariners;
- (d) List of Lights and Radio Signals; and
- (e) SAN Sailing Directions or equivalent publications.

(2) In addition to the above the following:

- (a) Crew List;
- (b) Code of Safe Working Practices for Fisherman;
- (c) Maritime Occupational Health and Safety Regulations, 1994;
- (d) A medical first-aid guide;
- (e) The Merchant Shipping (Collision and Distress Signals) Regulations, 2005;
- (f) Approved Stability Book;
- (g) Manuals for essential equipment and machinery; and
- (h) Appropriate documents as required by the Merchant Shipping (Radio Installation) Regulations, 2002.

### **Signalling Equipment**

**131.** Vessels shall carry at least the following International Code of Signal Flags; C, N, Q, V and W.

### **Navigating Bridge Visibility**

**132.** (1) The view of the sea surface shall, under all conditions of draught, trim and deck cargo-

- (a) (i) shall be visible from the conning position; and
- (ii) be at least two vessel lengths ahead, measured from the bow; and

(b) take in an arc from forward of the bow to at least 10 degrees on either side.

(2) The horizontal field of vision from the conning position shall extend over an arc of not less than 225 degrees; that is from right ahead to not less than 22.5 degrees behind the beam on either side of the vessel.

(3) Fishing gear or other obstructions outside the wheelhouse forward of the beam which obstruct the visible view of sea surface from the conning position and create blind sectors in the horizontal field of vision shall meet the following requirements:

- (a) a single blind sector shall not be greater than an arc of 10 degrees;
- (b) the total arc of blind sectors shall not exceed 20 degrees;
- (c) the clear sectors between blind sectors shall be at least 5 degrees; and
- (d) in the view described in subregulation (1) of this regulation each individual blind sector shall not exceed 5 degrees.

(4) The main steering position shall have a horizontal field of vision extending over an arc from right ahead to at least 60 degrees on each side of the vessel.

(5) The height between the lower edge of the wheelhouse front windows and the bridge deck shall be kept as low as possible.

(6) In no case shall the lower edge present an obstruction to the forward view.

(7) The upper edge of the navigating bridge front windows shall allow a forward view of the horizon for a person with a height of eye of 1,8 m above the bridge deck at the conning position when the vessel is pitching in heavy seas.

(8) Windows shall meet the following requirements:

- (a) framing between navigating bridge windows shall be kept to a minimum and not be installed immediately forward of any workstation;
- (b) to help avoid reflections, the bridge front windows should be inclined from the vertical plane top out, at an angle of not less than 10 degrees and not more than 25 degrees;
- (c) polarized and tinted windows shall not be fitted;
- (d) a system of ensuring a clear view through at least two wheelhouse windows in all weather and sea conditions shall be provided; and
- (e) in wheelhouses where the lookout cannot be posted outside, means shall be provided such that at least two windows can be kept clear and be able to be opened.

- (9) (a) Solid toughened glass of not less than 6,35 mm thick, shall be fitted to wheelhouse windows of up to 760 mm square clear light size.
- (b) For window sizes greater than 760 mm square, the minimum thickness of glass shall be 9.5 mm.

(10) When laminated toughened glass is fitted to wheelhouse windows, the thickness shall be increased by 1.6 mm over the thicknesses indicated in subregulation (9).

### **Radar and AIS requirements**

**133.** (1) All vessels shall be fitted with a 9 GHz marine radar, or other means, to determine and display the range and bearing of radar transponders and of other surface craft, obstructions, buoys, shorelines and navigational marks to assist in navigation and in collision avoidance.

(2) All vessels shall be fitted with an AIS, which shall—

- (a) provide automatically to appropriately equipped shore stations, other ships and aircraft information, including the ship's identity, type, position, course, speed, navigational status and other safety related information;
- (b) receive automatically such information from similarly fitted ships;
- (c) monitor and track ships;
- (d) exchange data with shore-based facilities; and
- (e) be type-approved by the Independent Communications Authority of South Africa and meet the necessary performance standards as specified by the Authority.

## **CHAPTER X**

### **LIFE-SAVING APPLIANCES AND ARRANGEMENTS PART A - GENERAL**

#### **Evaluation, Testing and Approval of Life-saving Appliances and Arrangements**

**134.** (1) Life-saving appliances and arrangements required by this Chapter shall be approved by the Authority provided that—

- (a) the appliance or arrangement is in accordance with a specification contained in these Regulations; or
- (b) The appliance or arrangement has been approved by an organisation recognised

by the Authority.

(2) Novel life-saving appliances or arrangements may be approved by the Authority if the Authority is satisfied that the appliance or arrangement provides an acceptable standard of safety for the envisaged application.

(3) Life-saving appliances and equipment shall not be used on vessels unless they have been approved by the Authority.

## **PART B - VESSEL REQUIREMENTS**

### **Liferafts**

**135.** (1) Every vessel shall carry liferafts of sufficient capacity to accommodate:

- (a) 100% of all persons carried on vessels operating up to 40 nautical miles; and
- (b) 200% of all persons carried if operating more than 40 nm offshore, of which 100% is to be carried on each side of the vessel.

(2) The capacity of any single liferaft shall not be for more than 25 persons.

### **Availability and Stowage of Liferafts**

**136.** (1) Liferafts 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.

(2) Liferafts shall be stowed to the satisfaction of the Authority such that they are easily transferable to the water and 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.

(3) Lashing, shall be fitted through a senhouse slip with an automatic hydrostatic release system of an approved type.

### **Embarkation into Liferafts**

**137.** Suitable arrangements shall be made for embarkation into liferafts which shall include:

- (a) at least one ladder, or other approved means, on each side of vessel to afford access to the liferaft when waterborne except where the distance from the point of embarkation to the lightest load waterline is less than 2 metres; and
- (b) means for illuminating the stowage position of survival craft and their launching appliances during preparation for and the process of launching, and also for illuminating the water into which the liferaft are launched until the process of launching is completed, the power for which is to be supplied from the emergency source required by regulation 73 of these Regulations.

### **Life Jackets**

**138.** (1) Approved lifejackets, appropriate to the vessels area of operation, shall be carried for the maximum number of persons to be carried on-board as specified by the vessel's Local General Safety Certificate.

(2) Life jackets shall be so placed in suitable lockers at embarkation points, Lockers shall be readily accessible and their position shall be plainly indicated to the satisfaction of the Authority.

(3) Alternative stowage positions may be accepted subject to approval the Authority.

(4) Each life jacket shall be clearly and indelibly marked with the official number or name of the vessel on which it is carried.

(5) Each life jacket shall be fitted with an approved light.

### **Immersion Suits**

**139.** Vessels operating South of Latitude 40°S or North of Latitude 40°N shall be provided with immersion suits, approved by the Authority, for all persons that the vessel is certified to carry.

### **Lifebuoys and Danbuoy**

**140.** (1) At least three lifebuoys shall be carried.

(2) One of the lifebuoys referred to in sub-regulation (1) of this regulation shall be provided with a self-igniting light and danbuoy.

(3) At least one life buoy on each side of the vessel shall be fitted with buoyant lifeline of 30 metres length.

(4) 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.

### **Distress Signals**

**141.** (1) Every vessel shall be provided with at least 12 rocket parachute flares and 2 buoyant smoke floats.

(2) Distress signals shall be so placed as to be readily accessible and their position shall be plainly indicated.

(3) All distress signals shall be kept in a waterproof container, and shall be readily accessible; the place of stowage is to be clearly indicated.

### **Retro-reflective Materials on Life-saving Appliances**

**142.** All life jackets and lifebuoys carried on board shall be fitted with retro-reflective material to the satisfaction of the Authority.

### **Operational Readiness and Maintenance**

**143.** (1) The skipper shall ensure that before the vessel leaves port and at all times during the voyage, all life-saving appliances shall be maintained in working order and ready for immediate use.

(2) Safety equipment shall be inspected on a weekly basis and an entry made in the safety officers record book on completion of such inspections.

### **Servicing of Life-saving Appliances**

**144.** (1) Every inflatable liferaft and inflatable life jacket shall be serviced at intervals not exceeding 12 months at an approved servicing station.

(2) Disposable hydrostatic release units shall be replaced when their date of expiry has passed and if not disposable, hydrostatic release units shall be serviced at intervals not exceeding 12 months at an approved servicing station.

### **Buoyancy Aids**

**145.** (1) A Risk Assessment is to be undertaken by the owner, and approved by the Authority, to determine how many approved buoyancy aids are to be carried on.

- (2) The skipper must ensure that an approved buoyancy is worn by—
- (a) every crew member performing work on deck at night;
  - (b) every crew member performing work that creates the risk of the person being lost overboard; and
  - (c) any other person on board a vessel at such times as the skipper may direct.

## **CHAPTER XI**

### **EMERGENCY PROCEDURES, MUSTERS AND DRILLS ON BOARD ABANDON SHIP AND FIRE TRAINING**

#### **Muster List and Abandon Ship Procedure**

**146.** (1) A muster list shall be drawn up when the vessel leaves port and shall include the following information:

- (a) duties assigned to different members of the crew in the event of an emergency in connection with—
  - (i) closing of watertight doors, fire doors, valves, scuppers, overboard chutes, side scuttles, skylights, portholes and other similar openings in the vessel;
  - (ii) equipping the survival craft (including portable radio apparatus, EPIRB and SART for the survival craft).
  - (iii) preparation and launching of survival craft;
  - (iv) general preparation of other life-saving appliances;
  - (v) the manning of fire parties assigned to deal with fires; and
  - (vi) the special duties assigned in respect of the operation of fire equipment and installations.
- (b) the signals for summoning the crew to their survival craft and fire stations and particulars of those signals including the emergency signal for summoning the crew to muster stations which shall be a succession of seven or more short blasts followed by one long blast on the whistle or siren.

(2) Copies of the muster list shall be posted up in the wheelhouse, engine room and in the crew accommodation.

#### **Practice Musters and Drills**

**147.** (1) The skipper shall ensure that all crew are—

- (a) competent to don a life jacket;
- (b) aware of the procedures to be followed when abandoning ship;
- (c) familiar with the firefighting facilities on board and actions to be taken in the event of a fire; and
- (d) advised of general safety practices on board.

(2) The skipper shall ensure that new members joining the vessel are familiarised with the

above preferably before sailing but at least within 24 hours of the vessel leaving port.

(3) The skipper shall ensure that a muster of the crew for fire and abandon ship drills is carried out at intervals of not more than 14 days when at sea, provided that these drills shall take place within 24 hours whenever 25 per cent of the crew has been replaced since the last muster.

(4) Every muster shall be carried out under the supervision of one of the vessels officers and shall be so arranged as to ensure that the crew thoroughly understand and are practised in the duties they have to perform including the fighting of fires, donning of life jackets and handling and operation of life rafts and rescue boats.

(5) When holding musters, the life-saving, fire-fighting and other safety equipment shall be examined to ensure that they are ready and fully operational.

### **On Board Training**

**148.** (1) The skipper shall ensure that all members of the crew are well versed and trained in the applicable provisions of the Code of Safe Working Practices for Fishermen and Fishing Vessels, any other Standard Operating Procedures and General Safety Procedures applicable to the vessels safe operation.

(2) An entry shall be made in the safety officer's record book whenever any training and drills are carried out.

### **Offences**

**149.** (1) Any person who contravenes any provisions of these Regulations, or fails to comply with the provisions thereof, with which it was the person's duty to comply shall, on conviction be guilty of an offence.

(2) If, without complying with the requirements of these Regulations, a vessel proceeds or attempts to proceed to sea—

(a) in the case of a South African vessel, from any port within or outside the Republic; or

(b) in the case of any other vessel, from any port within the Republic,

the owner, company and the skipper shall, on conviction be guilty of an offence.

(3) An offence in terms of subregulations (1) and (2) is punishable upon conviction by a fine or by imprisonment for a period not exceeding 12 months.

### **Short title and Commencement**

**150.** These Regulations are called the Merchant Shipping (Construction and Equipment of Fishing vessels of less than 24 metres in length but more than 25GT) Regulations, 2023 and are published for public comments.

## ANNEX 1

### VESSEL CONSTRUCTION: PLANS AND SPECIFICATIONS

The plans and particulars respecting hull, machinery and equipment to be submitted in accordance with regulation 25 are as follows:

- (1) Plans:
  - (a) General Arrangement including—
    - (i) fully dimensioned longitudinal elevation showing position of bulkheads, hatchways and deckhouses, crew spaces, etc.
    - (ii) a fully dimensioned midship section showing scantlings of shell, decking, bulwarks, frames, doors, stringers and beams; and
    - (iii) a series of fully dimensioned plan views showing particulars of deck openings, ventilators and air pipes and tanks;
  - (b) Engine room layout plan;
  - (c) Pumping Arrangement plan;
  - (d) Lines Plan;
  - (e) Midship section, showing scantlings of shell, decking, bulwarks, frames, floors, stringers and beams;
  - (f) A series of Plan views showing particulars of bulkheads, deck openings, ventilators, air pipes and tanks;
  - (g) Fuel, Fire, Bilge and Ballast Pumping Arrangement Schematics;
  - (h) Refrigerant system schematics (excluding domestic refrigeration systems - if fitted);
  - (i) Electrical Circuit Diagrams;
  - (j) Navigation Light Plan;
  - (k) Hydrostatic and Cross Curve data (Curves or tables); and
  - (l) Freeboard Plan (If required).
- (2) Specifications:
  - (a) All principal hull members, stating the materials, including keel, stem, stern post, beams, frames, floors, shell and deck and their fastening arrangements;
  - (b) Machinery Arrangements, including auxiliary machinery;
  - (c) Fuel, Fire, Bilge and Ballast pumping arrangements;
  - (d) Underwater fittings;
  - (e) Bulkheads;
  - (f) Hatchways, hatch coamings and covers;
  - (g) Deck houses;
  - (h) Doors, sills, side scuttles and escape hatches;
  - (i) Bulwarks;
  - (j) Ventilation;
  - (k) Tanks;
  - (l) Anchors, cables and windlass (if fitted);
  - (m) Winches, masts and derricks;
  - (n) Steering Gear;
  - (o) Crew Accommodation;
  - (p) Life Raft stowage and launching arrangements;
  - (q) Other Life Saving Fire Fighting Equipment which is integral with the vessels structure;
  - (r) Navigation Lights and Sound Signals; and
  - (s) Electrical Arrangements.



## ANNEX 2

### INFORMATION TO BE PROVIDED IN STABILITY BOOKS

- (1) The information shall be in the form of plans, statements, tables and diagrams drawn up separately or appropriately grouped. The information provided shall be in English and shall include:
- (a) the name of the company or person who has prepared the stability information;
  - (b) the vessels principal dimensions;
  - (c) a general description of the ship including its history, mode of operation and voyage profile;
  - (d) a list of applicable documentation and drawings used for the compilation of the stability book;
  - (e) a summary of the stability criteria applicable to the vessel;
  - (f) if any special procedure is required to ensure adequate stability throughout a voyage, while alongside or during dry-docking, instructions for the attention of the skipper and chief engineer shall be provided;
  - (g) a statement defining the lightship condition of the ship as determined by an inclining experiment;
  - (h) instructions on the use of the stability book highlighting any assumptions made for the information presented and including an example calculation, for the reference of the skipper and chief engineer, showing how the vessel stability can be checked using maximum VCG curves;
  - (i) general notice on precautions against capsizing using the applicable paragraphs of Annex 2 of this chapter plus any other necessary precautions which may be identified;
  - (j) the vessel downflooding points shall be identified and curves drawn depicting the angle of down flooding versus expected operational draught for the first point of down flooding for each hydrostatic trim provided;
  - (k) maximum VCG curves, which ensure vessel compliance with applicable stability criteria, for the range of expected vessel displacements and trims. Trims should be linked to the position of the vessel's LCG;
  - (l) profile and plan view of the ship drawn to a suitable scale showing thereon or in associated tables:
    - (i) the position of the fore and aft perpendiculars as well as the vessels baseline, the vessel's baseline should preferably be the moulded baseline.
    - (ii) the position of spaces available for the carriage of cargo, fuel, stores, feed water, domestic water and ballast water;
    - (iii) the weight and position of any installed fixed ballast; and
    - (iv) the enclosed volume assumed for the compilation of cross curve (KN) data.
  - (m) For each load condition which the vessel is required to be evaluated, the following information shall be provided:
    - (i) Diagrams, profile and plan views, as required, drawn to a suitable scale and statements showing the lightship weight, the position of permanent ballast, if any, and total weights of all components of the weight shall be provided, for each load condition evaluated;
    - (ii) The vessel's displacement, vertical centre of gravity and longitudinal centre of gravity, free surface correction, KM and GM0;
    - (iii) Vessel trim information, clearly indicating whether the reference point is the baseline, underside of keel or other;
    - (iv) Draught at forward perpendicular, amidships and after perpendicular. Draughts at the vessel's draught marks may also be required;

- (v) Tabulated values of KN for the range of stability being evaluated;
  - (vi) A curve of statical stability (righting lever curve), corrected for free surface, with the angle of down-flooding clearly indicated thereon;
  - (vii) The vessels freeboard;
  - (viii) A summary of results indicating compliance or non-compliance of the vessel with the applicable stability criteria.
  - (ix) The criteria of Regulations 3 and 6 shall apply to all vessels; and
  - (x) The criteria of Regulations 5 and 9 shall only be applicable in respect of certain vessel types and areas of operation.
- (n) An inclining experiment report detailing the inclining experiment procedure and results obtained. Inclining experiments shall be conducted in accordance with guidance laid down by the Authority.
- (o) Hydrostatic and cross curves of stability data (calculated on a free trimming basis), in tabular format, for the range of displacements and trims to be expected in normal operating conditions. The range of trims provided shall be such that the trim steps provided are not more than 2% of LBP and that any extrapolation required is within 1% of LBP. The enclosed volumes used for the calculation of the vessel's cross curves shall be identified.
- (p) Tank sounding tables providing tank sounding, volume, weight, VCG, LCG, TCG (if necessary) and free surface information.

## ANNEX 3

### GENERAL PRECAUTIONS AGAINST CAPSIZING AND FLOODING FOR SHIPS

- (1)
  - (a) Compliance with the stability criteria does not ensure immunity against capsizing, regardless of the circumstances, or absolve the skipper from his responsibilities.
  - (b) The Skipper should therefore exercise prudence and good seamanship, having regard to the season of the year, weather forecasts and the navigational zone, and should take the appropriate action as to speed and course warranted by the prevailing circumstances.
- (2) Before a voyage commences, care should be taken to ensure that sizeable pieces of equipment and stores have been properly stowed or lashed to minimize the possibility of both longitudinal and lateral shifting, while at sea, under the effect of acceleration caused by rolling and pitching.
- (3) A ship, when engaged in towing operations, should not carry deck cargo, except that a limited amount, properly secured, which would neither endanger the safe working of the crew on deck nor impede the proper functioning of the towing equipment, may be accepted.
- (4) The number of partially filled or slack tanks should be kept to a minimum because of their adverse effect on stability.
- (5)
  - (a) The stability criteria contained in these regulations set minimum values, but no maximum values are recommended.
  - (b) It is advisable to avoid excessive values of metacentric height, since these might lead to acceleration forces which would be prejudicial to the ship, its complement, its equipment and to safe carriage of cargo.
- (6) All doorways and other openings through which water can enter into the hull, deck-houses, forecabin, should be suitably closed in adverse weather conditions and accordingly all appliances for this purpose should be maintained on board and in good condition.
- (7)
  - (a) Weathertight and watertight hatches and doors should be kept closed during navigation, except when necessarily opened for the working of the ship, and should always be ready for immediately closure and be clearly marked to indicate that these fittings are to be kept closed except for access.
  - (b) Hatch covers and flush deck scuttles in fishing vessels should be kept properly secured when not in use during fishing operations.
  - (c) All portable deadlights should be maintained in good condition and securely closed in bad weather.
- (8) Any closing devices provided for vent pipes to fuel tanks should be secured in bad weather.
- (9) Reliance on automatic steering may be dangerous as this prevents ready changes to course which may be needed in bad weather.
- (10) In all conditions of loading, care should be taken to maintain a seaworthy freeboard.
- (11)
  - (a) In severe weather, the speed of the ship should be reduced if excessive rolling, propeller emergence, shipping of water on deck or heavy slamming occurs.
  - (b) Six heavy slammings or 25 propeller emergencies during 100 pitching motions

should be considered dangerous.

- (12) (a) Special attention should be paid when a ship is sailing in following or quartering seas because dangerous phenomena such as parametric resonance, broaching to, reduction of stability on the wave crest, and excessive rolling may occur singularly, in sequence or simultaneously in a multiple combination, creating a threat of capsize.
- (b) Particularly dangerous is the situation when the wave length is of the order of 1.0 to 1.5 ship=s length. A ship=s speed or course should be altered appropriately to avoid the above-mentioned phenomena.

(13) Water trapping in deck wells should be avoided. If freeing ports are not sufficient for the drainage of the well, the speed of the ship should be reduced or the course changed, or both. Freeing ports provided with closing appliances should always be capable of functioning and are not to be locked.

- (14) (a) Skippers should be aware that steep or breaking waves may occur in certain areas, or in certain wind and current combinations, including river estuaries, shallow water areas and funnel-shaped bays.
- (b) These waves are particularly dangerous, especially for small ships.

(15) The use of operational guidelines for avoiding dangerous situations in severe weather conditions or an on-board computer-based system is recommended. The method should be simple to use.

- (16) Additional fishing operation specific precautions:
  - (a) all fishing gear and other large weights should be properly stowed and placed as low as possible;
  - (b) particular care should be taken when the pull from fishing gear might have a bad effect on stability e.g., when nets are hauled by power- block or the trawl catches obstructions on the sea-bed;
  - (c) gear for releasing deck load in fishing vessels carrying catch on deck, e.g., herring, should be kept in good working condition for use if necessary;
  - (d) when the main deck is prepared for the carriage of deck load by division with pound boards, there should be slots between them of suitable size to allow easy flow of water to freeing ports to prevent trapping of water;
  - (e) fish should never be carried in bulk without first being sure that the portable divisions in the holds are properly installed; and
  - (f) particular care should be taken when the pull from fishing gear results in dangerous heel angles. This may occur when fishing gear fastens onto an underwater obstacle or when handling fishing gear, particularly on purse seiners, or when one of the trawl wires tears off. The heel angles caused by the fishing gear in these situations may be eliminated by employing devices which can relieve or remove excessive forces applied through the fishing gear. Such devices should not impose a danger to the vessel through operating in circumstances other than those for which they were intended.

- (17) Additional bilge or ejector operation specific precautions:
  - (a) keep the bilge pump, bilge ejectors and bilge system in a well maintained condition;
  - (b) regularly check spaces not fitted with a high level alarm for water ingress;
  - (c) regularly check high level alarms;

- (d) weekly checks of bilge strainers and mud boxes and clean if required;
- (e) clean grids for fish hold suctions whenever possible and always prior to loading of the catch;
- (f) check that all valves within the bilges or ejector system are checked at monthly intervals locally, and in the case where fitted, remotely;
- (g) check and test bilge and other pumps not in regular use on a monthly basis;
- (h) keep areas where suctions are located free of rubbish and debris; and
- (i) any modifications to the bilge or ejector system and factory deck anti- flooding systems are to be advised to the Authority for approval.

## ANNEX 4

### ICING CONSIDERATIONS

- (1) For vessels operating in areas where ice accretion is likely to occur, the following icing allowance should be made in the stability calculations:
  - (a) 30 kg per square metre on exposed weather decks and gangways;
  - (b) 7.5 kg per square metre for projected lateral area of each side of the vessel above the water plane;
  - (c) The projected lateral area of discontinuous surfaces of rail, sundry booms, spars (except masts) and rigging of vessels having no sails and the projected area of other small objects shall be computed by increasing the total projected area of continuous surfaces by 5% and the static moments of this area by 10%.(2);
  
- (2) In the application of the above standards, the following ice areas shall apply:
  - (a) The area north of of Latitude 65°30'N, between Longitude 28°W and the west coast of Iceland; north of the north coast of Iceland; north of the rhumb line running from Latitude 66°N, Longitude 15°W to Latitude 73°30'N, Longitude 15°E, north of Latitude 73°30'N between Longitude 15°E and 35°E, and east of longitude 35°E, as well as north of latitude 56°N in the Baltic sea.
  - (b) The area north of Latitude 43°N bounded in the west by the North American coast and in the east by the rhumb running from Latitude 43°N, Longitude 48°W to Latitude 63°N, Longitude 28°W and thence along Longitude 28°W;
  - (c) All seas north of the North American Continent, west of the areas defined in (a) and (b);
  - (d) The Bering and Okhotsk Seas and the Tartary Strait during the ice season; and
  - (e) South of Latitude 60°S.
  
- (3) For vessels operating within the areas defined above:
  - (a) For vessels operating in the areas defined in (a), (c), (d) and (e) known to have ice conditions significantly different from those described in paragraph (1), ice accretion requirements of one half to twice the required allowance may be applied at the discretion of the Authority; and
  - (b) For vessels operating within the area defined in (b), where ice accretion in excess of twice the allowance required by paragraph (1) may be expected, more severe allowances may be applied at the discretion of the authority.

## ANNEX 5

### LIFTING OF HEAVY WEIGHTS OVER THE SIDE

(1) The ability of a ship to withstand the effects of lifting heavy weights over the side should be demonstrated as follows:

- (a) the weight is initially assumed to be on the upper deck on the centreline of the vessel; or
- (b) with reference to the figure below, the heeling arm curve is calculated as follows:

Heeling arm =  $w a \cos$  with  $w$  = weight, [tonnes]

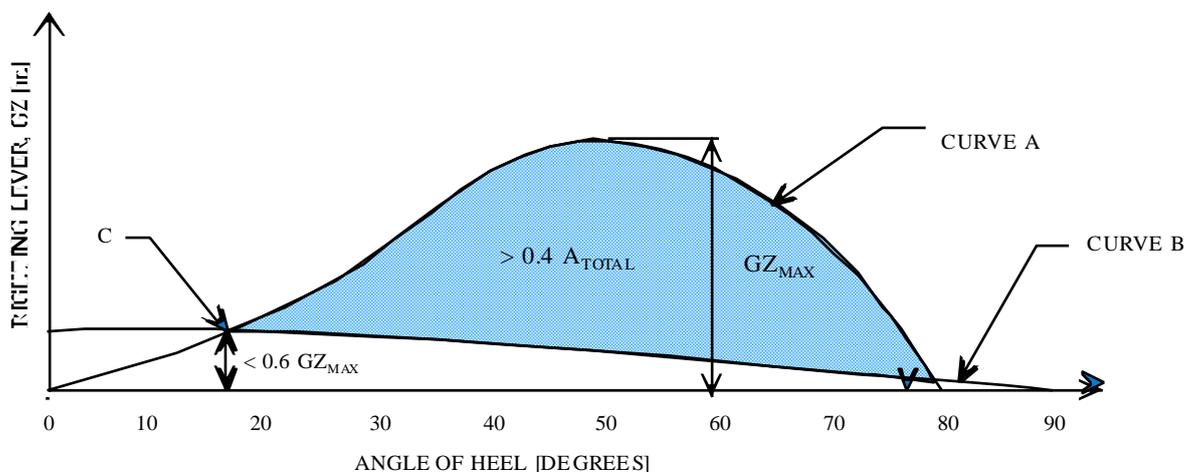
$W a$  = eccentricity of max point of

extension from ships  
centreline, [m]  $W$  = Ships  
displacement, [tonnes]

= Angle of inclination, [deg]

- (c) Criteria with reference to figure 1 below, stability is considered satisfactory if:
  - (i) the angle of heel (at point C) is less than 15 degrees (subject to crane operating restrictions);
  - (ii) the heeling arm (GZ) at the intersection of the righting arm and heeling arm curves (point C) is less than six tenths of the maximum righting arm value; or
  - (iii) the reserve of dynamic stability (shaded area) is greater than four tenths of the total area under the righting arm (GZ) curve.

Figure 1 - Lifting of Heavy weights over the side





## ANNEX 6

### FLOW CHART FOR THE RELIABILITY OF STABILITY INFORMATION

(1) When a ship is converted or modified so that the lightship changes, the following process is to be followed:

#### NOTE

$W_0, KG_0, LCG_0$  = Original lightship ship particulars (obtained from inclining experiment).

$W_1, KG_1, LCG_1$  = Estimated new lightship particulars.

$W_2, KG_2, LCG_2$  = Lightship particulars (obtained from a draft survey /inclining experiment).

$$2. \frac{W_1}{W_0} = \frac{W_1 - W_0}{W_0}; \frac{W_2}{W_0} = \frac{W_2 - W_0}{W_0}$$

$W_0$

$W_1$

#### WEIGHT ESTIMATE $W_1, KG_1, LCG_1$

No new stability book

Attach weight estimate to existing stability book

YES

$W_1 < 1\%$                       NO  
and   $LCG_1 > 0.5\%$  and  $KG_1 < KGO$

NO                        $W_1 < 5\%$   
and  $KG_1 < KG_{CRITICAL}$   
and STAB OK

YES

Draft Survey to obtain  $W_2, LCG_2$

YES

STAB OK

NO Inclining Experiment  
to obtain  
 $W_2, KG_2, LCG_2$

$W_2 < 1\%$       NO      Inclining Experiment

New Stability book

New Stability book

and

$LCG_2 < 0.5\%$

to obtain  $W_2$ ,  $KG_2$ ,  $LCG_2$

based on  
 $W_2$ ,  $KG_2$ ,  $LCG_2$

based on  
 $W_1$ ,  $KG_1$ ,  $LCG_1$

YES

New Stability book based on  
 $W_2$ ,  $KG_1$ ,  $LCG_2$

3. STAB OK means that in all statutory load conditions, the  $GM_0$  is greater than 0.5 m and the GZ value reaches 0.5 m at an angle greater than or equal to  $30^\circ$

**Annex 7**  
**FIRE TEST FOR GLASS REINFORCED PLASTICS**

(1) Heat Source

The heat source for the fire test should be provided by a propane gas torch with a Sievert burner type No 2944 giving a maximum flame temperature of 1600 degrees celsius and burning propane at the rate of 41110 grams per hour with a pressure of  $\pm 2\text{kgf/cm}$ . The rate of burning should be carefully controlled. The length of blue flame should be approximately 200 millimetres.

(2) Specimen

The specimen should be 450 mm x 450 mm cut from a one metre square panel of the laminate to be tested. The specimen should not incorporate any of the edges of the one metre square panel. The edges of the specimen should be housed in a steel frame sufficiently to prevent them igniting during the tests. The specimen should be cured for at least 28 days before testing.

(3) Test Procedure

The specimen should be oriented vertically in a draft free location, such that the tip of the blue flame (i.e. the point of greatest heat) impinges on the centre of the specimen with the flame normal to the surface. The non-gel coat surface of the specimen should be exposed to the flame. The flame should not burn through the specimen within 15 minutes.