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Directive (12/2015)

National Requirements for Fishing Vessels of 12 meters in Length and above but less than 24 meters

Applicable to: Ship owners, Recognized Organizations, Shipping Companies, Flag State Surveyors

1. The Department of Marine Administration circulated this directive in the exercise of the power of Section 294(B), paragraph (b) of Myanmar Merchant Shipping Act.

2. Pursuant to the provision of section 213 (A) of Myanmar Merchant Shipping Act, the Department of Marine Administration provided this national requirements on Fishing Vessels of 12 meters in Length and above but less than 24 meters of Myanmar ships engaged on international voyages.

3. The Department of Marine Administration shall use this prepared safety requirements for fishing vessels of 12 meters in Length and above but less than 24 meters for national standard of Myanmar fishing vessels engaged on Myanmar coastal water.

Maung Maung Oo
Director General
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CHAPTER 1

GENERAL PROVISIONS

1 Application

.1 The present requirements, hereafter called the Requirements, shall apply to new fishing vessels of 12 meters in length and above, but less than 24 meters in length. Paragraph 1 of each chapter lists the requirements of the chapter also applicable to existing vessels of the same length. For existing vessels, those requirements shall enter into force two years after the adoption of the Requirements.

.2 The Requirements do not apply to fishing vessels for sport or recreation, to processing vessels, to training or research vessels or to vessels only used for carrying fish.

.3 The provisions of the present chapter shall also apply to existing vessels.

2 Definitions

For the purpose of the Requirements, unless expressly provided otherwise, the definitions in paragraph 2 of the procedural requirements for ship safety certification and safe manning are applicable. Furthermore, the following definitions apply, together with the illustrations of terms contained in annex 1.

Amidships is the mid-length of L.

Approved means approved by the Administration.

Baselineis the horizontal line intersecting at amidships the keel line.

Bow heightdefined as the vertical distance at the forward perpendicular between the waterline corresponding to the maximum permissible operating draught and the designed trim and the top of the exposed deck at side.

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

Collision bulkhead is a watertight bulkhead up to the working deck in the forepart of the vessel.

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

Decked vessel is a vessel having a fixed structural deck covering the entire hull above the deepest operating waterline. Where open wells or cockpits are fitted in this deck the vessel is considered a decked vessel if flooding of the well or cockpit will not endanger the vessel.

Deck erection is any decked structure on the working deck.

Deepest operating waterline is the waterline related to the maximum permissible operating draught.

Enclosed superstructure is a superstructure with:

.1 enclosing bulkheads of efficient construction;

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

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

A raised quarter-deck is regarded as a superstructure.

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.

Fishing vessel (hereafter called *vessel)* is a vessel used commercially for catching fish, whales, seals, walrus, or other living resources of the sea.

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

Freeboard (fmin) is the actual minimum freeboard and is the distance from the underside of the working deck at the side to a waterline, measured perpendicularly to the waterline, plus the minimum thickness of decking. When the working deck is stepped, the lowest line of the deck and the continuation of that line parallel to the upper part of the deck shall be taken as the working deck.

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

Keel line is the line parallel to the slope of keel passing amidships through:

.1 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;

.2 the rabbet lower line of the keel of a vessel with a shell of wood or a composite material; or

.3 the intersection of a fair extension of the outside of the shell contour at the bottom with the centerline of a vessel with a shell of material other than wood and metal.

Least depth (D) is the depth measured from the keel line to the top of the working deck beam at side at the point where a parallel to the keel line is tangent to the deck line. Where the working deck is stepped and the raised part of the deck extends over the point at which the least depth is to be determined, the least 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.

Machinery spaces of category A are those spaces which contain internal combustion type machinery used either:

.1 for main propulsion; or

.2 or other purposes where such machinery has in the aggregate a total power output of not less than 750 kW,or which contains any oil-fired boiler oil unit.

Amidships section is that section of the hull defined by the intersection of the moulded surface of the hull with a vertical plane perpendicular to the water and centerline planes passing through amidships.

The Procedural Requirements are the requirements for ship safety and safe manning.

The Protocol means the Torremolinos International Convention for the Safety of Fishing Vessels, 1977, as modified by the Torremolinos Protocol of 1993 relating thereto.

Skippermeans the person having command of a fishing vessel.

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 fires test (e.g. aluminum alloy with appropriate insulation).

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

Watertightmeans 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.

Weather tight means that in any sea conditions water will not penetrate into the vessel.

Working deck is generally the lowest complete deck above the deepest operating waterline from which fishing is undertaken. In vessels fitted with two or more complete decks, the Department of Marine Administrationmay accept a lower deck as a working deck provided that that deck is situated above the deepest operating waterline.

Measurementsin the requirements are given in the metric system using the following abbreviations:

m	-	meter
cm	-	centimeter
mm	-	millimeter
t	-	tonne (1,000 kg)
kg	-	kilogram
mt	-	meter - tonne
° C	-	degree centigrade
s	-	second
N	-	Newton
kW	-	Kilowatt

3. Safety Certificate

.1 The hull, machinery, equipment and radio installations as well as crew accommodation of every vessel shall be constructed and installed so as to be

capable of being regularly maintained to ensure that they are at all times, in all respects, satisfactory for the vessel's intended service and in conformity with the present requirements.

.2 Survey and certification of every vessel shall conform to the provisions of the requirements on "procedural requirements for ship safety certification and safe manning".

.3 Every vessel shall have on board a valid "Safety Certificate for Fishing Vessel" of the model given in the Appendix. For an existing vessel, the "Safety Certificate for Fishing Vessel" means that the vessel comply with the provisions of the requirements which apply to existing vessels.

.4 The Certificate issued under the provisions of paragraph 3 shall be accompanied by a Record of Equipment.

CHAPTER 2

CONSTRUCTION, WATERTIGHT INTEGRITY AND EQUIPMENT

1 Construction

a. The provisions of paragraphs 15 and 16 of the present chapter shall also apply to existing vessels.

b. Strength and construction of hull, superstructures, deckhouses, machinery casings, companionways and any other structures and vessel's equipment shall be sufficient to withstand all foreseeable conditions of the intended service and shall be to the satisfaction of the Administration. If necessary, the Department of Marine Administrationcould refer to the rules of a recognized organization

c. The hull of vessels intended for operation in ice shall be strengthened in accordance with the anticipated conditions of navigation and area of operation. Wooden vessels, operating from harbours subject to freezing shall have appropriate ice protection sheathing.

d. Bulkheads, closing devices and closures of openings in these bulkheads, as well as methods for their testing, shall be in accordance with the present requirements and with the requirements of the Administration. Vessels shall be fitted with a collision bulkhead and at least with watertight bulkheads bounding the main machinery space. Such bulkheads shall be extended up to the working deck.

e. The collision bulkhead shall be located at a distance d from the forward perpendicular not less than 0.05 L and not more than 0.08 L; however, it is not required that the distance be less than 2 m. Where any part of the underwater body extends forward of the forward perpendicular, e.g. a bulbous bow, the distance d is measured from a point at mid-length of the extension forward of the forward perpendicular or from a point 0.015 L forward of the forward perpendicular, whichever is less. The bulkhead may have steps or recesses provided they are within the limits prescribed above.

f. Pipes piercing the collision bulkhead shall be fitted with suitable valves operable from above the working deck and the valve chest shall be secured at the collision bulkhead

inside the forepeak. No door, manhole, ventilation duct or any other opening shall be fitted in the collision bulkhead below the working deck.

g. The forepeak shall not be used for carrying fuel oil.

2 Watertight doors

a. The number of openings in watertight bulkheads, as required by paragraph 1.4, shall be reduced to the minimum compatible with the general arrangements and operational needs of the vessel; openings shall be fitted with watertight closing appliances. Watertight doors shall be of an equivalent strength to the adjacent unpierced structure.

i. Watertight doors may be of the hinged type, and shall be capable of being operated locally from each side of the door and shall normally be kept closed at sea A notice shall be attached to the door on each side to state that the door shall be kept closed at sea.

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

3 Hull integrity

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

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

4 Weather tight doors

a. 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 weather tight when closed. The means for securing these doors weather tight shall consist of gaskets and clamping devices or other equivalent means and shall be permanently attached to the bulkhead or to the doors themselves, and shall be so arranged that they can be operated from each side of the bulkhead. The Department of Marine Administrationmay, without prejudice to the safety of the crew, permit the doors to be opened from one side only for freezer rooms, provided that a suitable alarm device is fitted to prevent persons being trapped in those rooms.

b. The height above deck of sills in those doorways, in companionways, erections and machinery casings which give direct access to parts of the deck exposed to the weather and sea shall be at least 600 mm on the working deck and at least 300 mm on the superstructure deck.

c. Where operating experience has shown justification and on approval of the Administration, the height above deck of sills in the doorways specified in paragraph 2, except those giving direct access to machinery spaces, may be reduced to not less than 150 mm on superstructure decks and not less than 380 mm on the working deck for vessels 24 m in length, or not less than 150 mm on the working deck for vessels of 12 m in length.

For vessels of intermediate length the minimum acceptable reduced height for sills in doorways on the working deck shall be obtained by linear interpolation.

5 Hatchways closed by wood covers

Hatchways closed by wood covers shall be prohibited.

6 Hatchways closed by covers other than wood

i. The height above deck of hatchway coamings shall be at least 600 mm on exposed parts of the working deck and at least 300 mm on the superstructure deck. Where operating experience has shown justification, and on the approval by the Administration, the height of these coamings may be reduced, or the coamings omitted entirely, provided that the safety of vessels is not thereby impaired. In this case, the hatchway openings shall be kept as small as practicable and the covers be permanently attached by hinges or equivalent means and be capable of being rapidly closed and battened down.

ii. For the purpose of strength calculations it shall be assumed that hatchway covers are subjected to static loads of 10 kN/m^1or the weight of cargo intended to be carried on them, whichever is the greater.

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

iv. 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 to ensure weathertightness under the loads specified in paragraph 2.

v. Covers shall be fitted with clamping devices and gaskets or other equivalent arrangements sufficient to ensure weather tightness.

7 Machinery space openings

1. Machinery space openings shall be framed and enclosed by casings of a strength equivalent to the adjacent superstructure. External access openings therein shall be fitted with doors complying with paragraph 4 or with hatch covers other than wood complying with the requirements of paragraph 6.

8 Other deck openings

Where it is essential for fishing operations, flush deck scuttles of the screw, bayonet or equivalent type and manholes may be fitted provided these are capable of being closed watertight and such

devices shall be permanently attached to the adjacent structure. Having regard to the size position of the openings and the design of the closing devices, metal-to-metal closures may be fitted if the Department of Marine Administrationis satisfied that they are effectively watertight.

a. 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 weather tight doors or their equivalent. Companionways shall be situated as close as practicable to the centerline of the vessel.

9 Ventilators

i. The coamings of ventilators shall be as high as practicable. On the working deck the height above deck of coamings of ventilators shall be not less than 760 mm and on superstructure decks not less than 450 mm. Except for machinery space ventilators, when the height of other ventilators may interfere with the working of the vessel their coaming heights may be reduced to the satisfaction of the Administration.

ii. Coamings of ventilators shall be of equivalent strength to the adjacent structure and capable of being closed weathertight by devices permanently attached to the ventilator or adjacent structure. Where the coaming of any ventilator exceeds 900 mm in height it shall be specially supported. Ventilators shall be arranged as close to the vessel's centerline as possible and, where practicable, shall extend through the top of a deck erection or companion-way.

iii. Closing appliances need not be fitted to ventilators the coamings of which extend more than 2.5 m above the working deck or more than 1 m above a deckhouse top or superstructure deck.

10 Air pipes

Where air pipes to tanks and void spaces below deck extend above the working or the superstructure decks, the exposed parts of the pipes shall be of strength equivalent to the adjacent structures and fitted with appropriate protection. Openings of air pipes shall be provided with means of closing, permanently attached to the pipe or adjacent structure deck. The Department of Marine Administrationmay accept reduction of the height of an air pipe to avoid interference with the fishing operations.

11 Sounding devices

.1 Sounding devices shall be fitted:

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

b. to all tanks and cofferdams.

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

3. Sounding arrangements on fuel service tanks shall be such that in the event of the tanks being overfilled, spillage through the means of sounding cannot occur.

4. Fuel tank sounding pipe openings shall not be located in crew accommodation.

12 *Sidescuttles and windows*

1 Sidescuttles to spaces below the working deck and to spaces within the enclosed structures on that deck shall be fitted with hinged deadlights capable of being closed watertight.

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

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

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

5 Skylights leading to spaces below the working deck shall be of substantial construction and capable of being closed and secured weathertight, and with provision for adequate means of closing in the event of damage to the inserts. Skylights leading to machinery spaces shall be avoided as far as practicable.

6 Toughened safety glass or suitably permanently transparent material of equivalent strength shall be fitted in all wheelhouse windows exposed to the weather. The means of securing windows and the width of the bearing surfaces shall be adequate, having regard to the window material used. Openings leading to spaces below deck from a wheelhouse whose windows are not provided with the protection required by paragraph 7 shall be fitted with a weathertight closing appliance.

7 Deadlights or a suitable number of storm shutters shall be provided where there is no other method of preventing water from entering the hull through a broken window or sidescuttle.

8 The Department of Marine Administrationmay accept sidescuttles and windows without deadlights in side or aft bulkheads of deck erections located on or above the working deck if satisfied that the safety of the vessel will not be impaired.

9 The number of openings in the sides of the vessel below the working deck shall be the minimum compatible with the design and proper working of the vessel and such openings shall be provided with closing arrangements of adequate strength to ensure water tightness and the structural integrity of the surrounding structure.

13 ***Inlets and discharges***

1 Discharges led through the shell either from spaces below the working deck or from within enclosed superstructures or deckhouses on the working deck fitted with doors complying with the requirements of paragraph 4 shall be fitted with means for preventing water from passing inboard. Normally each separate discharge shall have an automatic non-return valve with a positive means of closing it from a readily accessible position. Such a valve is not required if the Department of Marine Administrationconsiders that the entry of water into the vessel through the opening is not likely to lead to dangerous flooding and that the thickness of the pipe is sufficient. The means for operating the valve with a positive means of closing shall be provided with an indicator, showing whether the valve is open or closed. The

open inboard end of any discharge system shall be above the deepest operating waterline at an angle of heel satisfactory to the Administration, but not less than 15°.

2 In machinery spaces main and auxiliary sea inlets and discharges essential for the operation of machinery shall be controlled locally. Controls shall be readily accessible and shall be provided with indicators showing whether the valves are open or closed.

3 Fittings attached to the shell and all valves referred to the present paragraph shall be of steel, bronze or other ductile material. All pipes between the shell and the valves shall be of steel, except that in spaces other than machinery spaces of vessels constructed of material other than steel the Department of Marine Administrationmay approve the use of other materials.

14 Freeing ports

1 Where bulwarks on weather parts of the working deck form wells, the minimum freeing port area (A) in square meters 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:

.1 A = Kl

where: K = 0.07 for vessels of 24 m in length K
= 0.05 for vessels of 12 m in length

for intermediate lengths the value of K shall be obtained by linear interpolation (l need not be taken as greater than 70% of the length L of the vessel).

.2 Where the bulwark is more than 1.2 m in average height, the required area in .1 shall be increased by 0.004 m per metre of length of well for each 100 mm difference in height.

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

2 The freeing port area calculated according to paragraph 1 shall be increased where the Department of Marine Administrationconsiders that the vessel's sheer is not sufficient to ensure that the deck is rapidly and effectively freed of water.

3 The minimum freeing port area for each well on the superstructure deck shall be not less than one half the area (A) given in paragraph 1, except that where the superstructure deck forms a working deck for fishing operations the minimum area each side shall be not less than 75% of the area (A).

4 Freeing ports shall be so arranged along the length of bulwarks as to ensure that the deck is freed of water most rapidly and effectively. Lower edges of freeing ports shall be as near the deck as practicable. Two thirds of the total freeing port area per side shall be provided in the half of the well nearest the lower point of the sheer curve, and some freeing port area shall be placed as near the ends of the well as practicable.

5 Poundboards and means for stowage of the fishing gear shall be arranged so that the effectiveness of freeing ports will not be impaired or water trapped on deck and prevented from easily reaching the freeing ports. Poundboards shall be so constructed that they can be locked in position when in use and shall not hamper the discharge of shipped water.

6 Freeing ports over 300 mm in depth shall be fitted with bars spaced not more than 230 mm nor less than 150 mm apart or provided with other suitable protective arrangements. Freeing port covers, if fitted, shall be of approved construction. It shall not be possible to lock freeing ports, but they may be fitted with external top-hinged flaps/shutter and internal gratings. Such arrangements may, however, not lead to a considerable reduction of the effective freeing port area. Any shutter or external rubber flaps in freeing ports shall be fastened with hinges in the upper edge. The shutter shall fit freely so that they cannot get stuck. The hinges shall be made of materials that are notsusceptible to corrosion. There shall not be any arrangements for the locking of freeing port shutters.

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

8 Where wells or cockpits are fitted in the working deck or superstructure deck with their bottoms above the deepest operating waterline, efficient non-return means of drainage overboard shall be provided. Where bottoms of such wells or cockpits are below the deepest operating waterline, drainage to the bilges shall be provided. Alternatively, the drainage of the wells could be by pumps to the satisfaction of the Administration.

15 Anchor and mooring equipment

Anchor equipment designed for quick and safe operation shall be provided which shall consist of anchoring equipment, anchor chains or wire ropes, stoppers and a windlass or other arrangements for dropping and hoisting the anchor and for holding the vessel at anchor in all foreseeable service conditions. Vessels shall also be provided with adequate mooring equipment for safe mooring in all operating conditions. Anchor and mooring equipment shall at least be in conformity with the recommended practice provided in annex 2.

16 Working deck within an enclosed superstructure

1 Such decks shall be fitted with an efficient drainage system having an appropriate drainage capacity to dispose of water or fish waste which may occur from deck washing, fish processing or from the sea through openings that may be open during fishing operations, to the satisfaction of the Administration.

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

3 Where the catch is brought on to such decks for handling or processing, the catch shall be placed in a pound. Such pounds shall comply with paragraph 11 of

chapter 3. An efficient drainage system shall be fitted. Adequate protection against inadvertent influx of water to the working deck shall be provided.

4 At least two exits from such decks shall be provided.

5 The clear headroom in the working space shall, at all points, be to the satisfaction of the Administration.

6 A fixed ventilation system providing at least 6 renewal of air per hour shall be provided.

17 Tanks for fish in refrigerated (RSW) or chilled (CSW) seawater

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

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

CHAPTER 3

STABILITY AND ASSOCIATED SEAWORTHINESS

1 General

1 Vessels shall be so designed and constructed that the requirements of this chapter will be satisfied in the operating conditions referred to in paragraph 7. Calculations of the righting lever curves shall be carried out to the satisfaction of the Administration[2].

2 On existing vessels, wherever practicable, it shall be proceeded to an approximate determination of the vessel's stability by means of the rolling period test including values of rolling coefficients particular to the vessel.

2 Stability criteria

1. The following minimum stability criteria shall be met :

.1 the area under the righting level curve (GZ curve) shall not be less than 0.055 m-rad up to 30° angle of heel and not less than 0.090 m-rad up to 40° or the angle of flooding 0_f if this angle is less than 40°. Additionally, the area under the righting level curve (GZ curve) between the angles of heel of 30° and 40° or between 30° and 0f, if this angle is less than 40° shall not be less than 0.030 m-rad. 0_f is the angle of heel at which openings in the hull, superstructure or deckhouses which cannot rapidly be closed watertight commence to immerse. In applying this criterion, small openings through which progressive flooding cannot take place need not be considered as open;

.2 the righting level GZ shall be at least 200 mm at an angle of heel equal to or greater than 30°; the righting lever GZ may be reduced to the satisfaction of the

Department of Marine Administrationbut in no case by more than 2(24-L)%, where L, in meters, is as defined in paragraph 2 of chapter 1;

.3 the maximum righting level GZmax shall occur at an angle of heel preferably exceeding 30° but not less than 25°;

.4 the initial metacentric height GM_0 shall not be less than 350 mm for single deck vessels. In vessels with complete superstructure the metacentric height may be reduced to the satisfaction of the Department of Marine Administrationbut in no case shall be less than 150 mm.

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

3 Where ballast is provided to ensure compliance with paragraph 1, its nature and arrangements shall be to the satisfaction of the Administration.

4 It shall be ensured that stability characteristics of the vessel will not produce acceleration forces which can be prejudicial to the safety of the vessel and crew.

5 For vessels for which, by reason of insufficient stability data, paragraph 1 cannot be applied, the following approximate formula for the minimum metacentric height GMmin, in meters, for all operating conditions shall be used as the criterion:

GM min = 0.53 + 2B 0.075 - 0.37f f 1 + 0.82f f 1 - 0.014^ B1 - 0.032f ^

where:

L, B, D and f, in meters, are as defined in paragraph 2 of chapter 1; and

l_s is the actual length of enclosed superstructure extending from side to side of the vessel, in meters, as defined in paragraph 2 of chapter 1.

The formula is applicable for vessels having: *f*

.1 — between 0.02 and 0.20; *B*i_s

.2 — smaller than 0.60; *L2*^

.3 — between 1.75 and 2.15; *D*

.4 sheer fore and aft at least equal to or exceeding the standard sheer prescribed in paragraph 38(8) of the International Convention on Load Lines, 1966; and

.5 height of superstructure included in the calculation not less than 1.8 m.

For vessels with parameters outside of the above limits the formula shall be applied with special care.

6 The above formula is not intended as a replacement for the basic criteria given in paragraph .1 and in paragraph 5, but shall be used only if circumstances are such that cross-curves of stability, KM curve and subsequent GZ curves are not and cannot be made available for judging a particular vessel's stability.

7 The calculated value of GM_{min} shall be compared with actual GM values of the vessel in all loading conditions. If a rolling test, as indicated in paragraph 2.1, an

inclining experiment based on estimated displacement, or another approximate method of determining the actual GM is used, a safety margin shall be added to the calculated GM_min.[3]

3 Flooding offish-holds

The angle of heel at which progressive flooding of fish-holds could occur through hatches which remain open during fishing operations and which cannot rapidly be closed shall be at least 20° unless the stability criteria of paragraph 2.1 can be satisfied with the respective fish-holds partially or completely flooded.

4 Particular fishing methods

Vessels engaged in particular fishing methods where additional external forces are imposed on the vessel during fishing operations, shall meet the stability criteria of paragraph 2.1 increased, if necessary, to the satisfaction of the Administration.

5 Severe wind and rolling

For vessels intended for operation in areas where exceptionally adverse weather condition may be experienced, special attention shall be given to the capability to withstand the capsizing effects of breaking waves. In order to demonstrate ability to withstand such effects, the Department of Marine Administrationshall give consideration to the benefits of enclosed deck erections which may provide an improved range of positive stability to larger angels of heel with openings assumed closed weathertight. A positive range of stability up to an angle of 80° may be used as a criterion. Alternatively, the "severe wind and rolling criterion (weather criterion)" for fishing vessels may be used.[4].

6 Water on deck

Vessels shall be able to withstand, to the satisfaction of the Administration, the effect of water on deck, taking account of the seasonal weather conditions, the sea states in which the vessel will operate, the type of vessel and its mode of operation[5]

7 Operating conditions

1 The number and type of operating conditions to be considered shall include the following, as appropriate:

.1 departure for the fishing grounds with full fuel, stores, ice, fishing gear, etc.;

.2 departure from the fishing grounds with full catch;

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

.4 arrival at home port with 10% stores, fuel, etc. and a minimum catch, which shall normally be 20% of full catch but may be up to 40% provided the Department of Marine Administrationis satisfied that operating patterns justify such a value.

2 In addition to the specific operating conditions given in paragraph 1 the minimum stability criteria given in paragarph 2 shall be met under all other actual operating

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conditions including those which produce the lowest values of the stability parameters contained in these criteria. The Department of Marine Administrationshall also be satisfied that those special conditions associated with a change in the vessel's mode or areas of operation which affect the stability considerations of this chapter are taken into account.

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

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

.2 homogeneous distribution of the catch, unless this is inconsistent with practice;

.3 catch on deck, if anticipated, in operating conditions referred to in paragraphs 1.2, 1.3 and 2;

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

.5 allowance for the free surface effect of liquids and, if applicable, catch carried.

8 Inclining test

1 Every vessel shall undergo an inclining test upon its completion and the actual displacement and position of the center of gravity shall be determined for the light ship condition.

2 Where alterations are made to a vessel affecting its light ship condition and the position of the center of gravity, the vessel shall be re-inclined and the stability information revised, unless the Department of Marine Administrationconsiders this unnecessary.

3 The inclining test of an individual vessel may be omitted provided basic stability data are available from the inclining test of a sister ship, and it is demonstrated that reliable stability information for the vessel can be obtained from such basic data.

9 Stability information

1 Suitable stability information shall be supplied to enable the skipper to assess with ease and certainty the stability of the vessel under various operating conditions. Such information shall include specific instructions to the skipper warning him of those operating conditions which can adversely affect either the stability or the trim of the vessel.[6]

2 The stability information, referred to in paragraph 1, shall be kept on board, readily accessible at all times and inspected at the periodical surveys of the vessel to ensure that it has been approved for the actual operating conditions.

3 Where alterations are made to a vessel affecting its stability, revised stability calculations shall be undertaken. The new information shall be supplied to the skipper and the superseded information removed.

4 Scales indicating the vessel's draught shall be permanently marked on both sides of the stem and stern. These scales shall be measured perpendicularly from a datum line which will lie along, or be a projection of, the lower extremity of the keel or other appendage. Numbers 0.1 m in the vertical plane shall be marked on the scale, the lower edge of each number indicating the draught in meters. Between the numbers lines shall be marked, parallel to the datum, at intervals of 0.1 m. The skipper shall be provided with information defining the position of the datum line and instructions regarding the use of observed draughts.

10 Portable fish-hold divisions

The catch shall be properly secured against shifting which can cause dangerous trim or heel of the vessel. The scantlings of portable fish-hold divisions, if fitted, shall be to the satisfaction of the Administration[7].

11 Bow height

The bow height defined as the vertical distance at the forward perpendicular between the waterline corresponding to the maximum permissible operating draught and the top of the exposed deck shall be calculated in accordance with the method of calculation.

$$H = 0{,}107 \times L$$

However, the Department of Marine Administrationmay accept a lower bow height if it is sufficient to prevent the excessive shipping of water taking account of the seasonal weather conditions, the sea states in which the vessel will operate, the type of vessel and its mode of operation.

12 Maximum permissible operating draught

1 A maximum permissible operating draught shall be fixed and shall be such that, in the associated operating condition, the stability criteria of this chapter and the provisions of chapters 2 and 6, as appropriate, are satisfied.

2 The maximum permissible operating draught shall be marked on each side of the vessel. The location of the maximum permissible operating draught shall be indicated on the safety certificate of the vessel.

CHAPTER 4

MACHINERY AND ELECTRICAL INSTALLATIONS PART A - GENERAL

1 General

1 Machinery and electrical installations shall be designed, constructed and installed in accordance with good engineering practice applying, where applicable, the requirements of the Department of Marine Administrationor rules of recognized classification societies or other equivalent standards as appropriate. Equipment shall be so installed, protected and maintained as not to constitute a danger to persons and the vessel.

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

3 Means shall be provided whereby the machinery can be brought into operation from dead vessel condition without external aid.

4 All controls for operating the machinery and equipment, such as measuring devices, pumping systems and arrangements, valves, cocks, air pipes, inlets, sounders, switches, shall be permanently marked with appropriate inscriptions clearly showing their purpose. Pipes shall preferably be marked by appropriate colours to indicate their purpose. All valves shall have indicators showing whether they are open or closed and shall have handwheels so marked as to indicate the direction of turning which shall be clockwise for closing.

5 Exhaust pipes and other hot surfaces within reach of personnel shall be properly insulated or otherwise protected to prevent accidents or burns. Likewise, hot surfaces which can cause ignition shall be protected from all possible contacts with combustible materials.

6 Plastic piping shall not be used for any purpose in the machinery spaces where its destruction by fire would present a safety hazard.

7 Moving external parts of engines and mechanical and electrical equipment shall be suitably protected to prevent injury to attendant personnel.

8 Platforms and gratings in machinery spaces and openings to machinery space bilges shall be provided with adequate handrails or handholds and toeboards.

9 Walking surfaces shall be properly fitted and secured in place and shall have a non-slip surface.

10 Machinery space ladders shall be fitted with non-slip treads.

11 Machinery spaces require extensive ventilation and due regard shall be given to climatic conditions in the area of intended service and the air requirements of internal combustion engines installed.

12 Where air cooled internal combustion engines are installed special consideration shall be given to the provision of adequate volumes of cooling air and to the removal of hot air from the machinery spaces.

13 Where water cooled internal combustion engines are installed provision shall be made for an emergency means of supplying cooling water. Strainers shall be capable of being cleaned without interrupting the flow of cooling water. Where keel coolers are installed, provision shall be made to isolate them by fitting valves inside the hull at the inlet and outlet connections.

14 Tools, spare parts and spare gear required for routine maintenance and simple repairs shall be provided for main and auxiliary machinery, mechanical and electrical equipment and installations, and shall be securely stowed in an easily accessible space.

15 Information on operation and maintenance of machinery, usage of fuel and lubricating oils shall be provided.

16 Measuring devices shall be so installed as to be readily visible.

PART B –

MACHINERY INSTALLATIONS (see also paragraph 1)

2 Machinery

1 Bars used on flywheels to turn machinery over by hand shall be so constructed as to facilitate easy withdrawal from the flywheels recess if the engine shall recoil. Hand cranks for engines shall be designed to be thrown out instantly when the engine starts.

2 Where a forward power take-off is fitted to an engine for auxiliary drives, the power to be taken off shall not exceed the engine manufacturer's limits for forward end drives.

3 Where a lay shaft is driven from the power take-off shaft by either pulley or chain, the shaft shall be fitted with a bearing on both sides of the pulley or chain sprocket.

4 Hydraulic installations for fishing equipment shall have a means of disengaging the hydraulic pump from the driving engine.

5 Belt drives shall be arranged with a method of tensioning in order that each belt drive can be adjusted individually.

6 Themain engine instrument panel shall, where applicable, have the following gauges:

.1 engine revolution counter;

.2 engine lubricating oil pressure gauge;

.3 engine reverse/reduction gear box oil pressure gauge;

.4 engine cooling water temperature gauge;

.5 ammetres for batteries; and

.6 exhaust temperature gauge (on engines of 250 kW and above).

7 Audible and visual alarms shall be fitted for low lubricating oil pressure and high cooling water temperatures. Taking into consideration the configuration of the vessel and the mode of operation, the Department of Marine Administration may require the alarms to be visible and heard in the machinery space and in the wheelhouse.

8 Outboard engines as the main engines for propulsion shall not be allowed. However, if the Department of Marine Administrationis satisfied that the circumstances require the use of such main engines, the outboard engines shall be capable of being easily and securely fastened to the hull, and be provided with a safety chain or cable.

9 Where outboard engines are fitted in a well, this shall be fitted with a drain pipe of not less than 50 mm in diameter; the well shall be long enough to allow for the

engine to be tilted up; remote control and fuel hoses shall be led into the well through a hole provided with an effective bushing.

10 Auxiliary engines shall be securely mounted in rigid seats and shall be fully independent of all other systems.

3 Means of going astern

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

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

4 Air pressure systems

1 Air intakes for air compressors shall be so located that the air is as pure and clean as possible and free from flammable or toxic gases or fumes. Air filters shall be fitted. Air discharge pipes of compressors shall, where necessary, be insulated to protect personnel from burns.

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. Suitable pressure-relief arrangements shall be provided.

3 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.

4 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.

5 Means to drain oil and water shall be fitted to the lowest part of air receivers.

5 Arrangements for fuel oil, lubricating oil and other flammable oils

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

2 Fuel tanks, their filling systems, valves and associated piping shall be carefully installed and be maintained so as to prevent the leakage of fuel or fumes within the hull. As far as practicable, fuel oil tanks shall be part of the vessel's structure and shall be located outside machinery spaces of category A.

3 Vents and filling connections of fuel tanks shall be located in a safe, open-air position and remote from any ventilation intake. The cross sectional area of vents

shall be determined having regard to the filling arrangements. Vent openings shall be fitted with suitable wire gauze screens or equivalent protective devices.

4 A valve capable of shutting off the supply to the engine shall be mounted on or adjacent to the fuel tank and control of this valve shall be accessible from outside the machinery space.

5 Wherever fuel might escape and come into contact with hot surfaces, suitable guards or screens shall be installed.

6 Fuel storage tanks shall be located remote from heated surfaces and shall not be situated above stairways and ladders, boilers, hot surfaces and electrical equipment. Tanks and piping shall be arranged so as to eliminate in the event of overflow and to minimize in the event of leakage or rupture the possibility that fuel will come into contact with hot surfaces or electrical components which may cause ignition of the fuel.

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

8 Where practicable, fuel oil piping shall not be led through accommodation spaces.

9 Fuel tank sounding pipe openings shall not be located in crew accommodation.

10 Fuel return pipes shall be connected to the fuel oil service tank in use or to the suction side of the fuel pump.

11 Fuel pipes of internal combustion engines shall be of steel or other equivalent material and preferably of a jacketed design. All fuel pipes shall be adequately secured and protected.

12 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 Department of Marine Administrationis satisfied that they are necessary. Such flexible pipes and end attachments shall be of adequate strength and shall be constructed of approved fire-resistant materials or have fire-resistant coatings. Where necessary, fuel oil and lubricating oil pipelines shall be screened or otherwise suitably protected to avoid, as far as practicable, oil spray or oil leakage on heated surfaces or into machinery air intakes. The number of joints in piping systems shall be kept to a minimum.

13 Where the Department of Marine Administrationhas permitted the use of a petrol engine which is installed within a closed, decked compartment, such compartment shall be ventilated with a mechanical exhaust and a natural supply system. Exhaust ventilation trunks from compartments containing petrol engines or other sources of concentrated petrol fumes shall be isolated from other ventilation systems. The mechanical exhaust system shall include an intake located as close as practicable to a

position beneath the engine it serves or where petrol fumes are most likely to accumulate and it shall be above normal bilge water levels. Mechanical exhaust fans and trunks fitted in accordance with the requirements of this section shall be suitable for use in an atmosphere containing petrol fumes.

14 There shall be a permanent notice at each petrol engine starting position requiring:

.1 that the ventilation system be operated for at least 2 min before an engine is started; and

.2 that during fuelling all windows and doors are closed and smoking is prohibited.

15 Petrol tanks shall not be integral with the hull structure. An efficient system shall be installed to ensure that petrol does not spill into the hull of the vessel when tanks are being filled.

16 Portable petrol tanks for outboard motors shall be taken ashore for filling.

17 Petrol filling systems shall be effectively bonded or earthed.

18 Emergency controls shall be provided, preferably on deck outside machinery and accommodation spaces, for stopping every fuel pressure pump and every fan supplying air to machinery spaces and for closing all suctions from fuel tanks above double bottom. Such controls shall be at positions not likely to be cut off in the event of a fire in the machinery spaces.

19 Lubricating oil tanks, their associated piping and valves shall be carefully installed and maintained so as to prevent leakage of lubricating oil within the hull.

20 Adequate means shall be provided for indicating failure of the lubricating oil system.

21 Where tubular gauge glasses are fitted to lubricating oil tanks they shall be of substantial construction, adequately protected and fitted with self-closing arrangements on the tank.

22 Lubricating oil pipes shall be of steel or other equivalent material and shall be adequately secured and protected.

6 Bilge and ballast systems

1 Arrangements shall be provided for draining any watertight compartment (other than small buoyancy compartments) under all service conditions.

2 Valves and cocks not forming part of a piping system shall not normally be permitted in watertight bulkheads.

3 Bilge suctions shall be fitted with suitable strainers.

4 Bilge and ballast pumping systems shall be arranged so as to prevent water passing from the sea or from water ballast spaces into holds or into machinery spaces or from one watertight compartment to another. The bilge connection to any pump which draws from the sea or from water ballast spaces shall be fitted with either a non-return valve or a cock

Attention is drawn to the use of aluminum mesh inside petrol tanks to reduce the risk of explosion. GlobalReg - Fishing Vessels 12-24 m - January 2010 which cannot be opened simultaneously either to the bilges and to the sea or to the bilges and water ballast spaces. Valves in bilge distribution boxes shall be of a non-return type.

5 At least two bilge pumps shall be provided, one of which shall be manually operated. A ballast pump or other general service pump of sufficient capacity may be used as a power driven bilge pump. Power bilge pumps shall be capable of giving a speed of water of at least 2 m/s through the main bilge pipe which shall have an internal diameter of at least:

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

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

However, the actual internal diameter of the bilge main may be rounded off to the nearest standard size acceptable to the Administration. The manually operated pump shall be fitted outside the machinery space. In no case shall the capacity of the bilge pump(s) be less than the capacity of the installed fire pump(s).

6 The inside diameter of the bilge main and bilge suction pipe directly connected to the pump shall be not less than the inside diameter of the bilge pump suction inlet.

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

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

7 Exhaust systems

Exhaust pipes from engines and from heating and cooking appliances shall be permanently mounted and lead to the open air through the uppermost deck or canopy or through the hull. Where exhaust pipes pass through the uppermost deck or canopy, they shall be of sufficient height to ensure that no exhaust gases can pass back into the vessel. Where an exhaust pipe passes through the hull of the vessel, the hull connection shall be watertight and provision be made so that the engine cannot be flooded.

All exhaust pipes shall be assembled with the minimum number of bends and of a diameter as specified by the engine manufacturers. All joints shall be gastight, the pipes well secured and supported by hangers or brackets and fitted with a section of flexible pipe or a bellows pipe; exhaust pipes shall be led clear of all woodwork and other combustible material and where necessary they shall be effectively insulated.

Where exhaust pipes pass through a wooden deck or other structures of wood or other combustible material, suitable protection shall be provided to the structure to avoid the risk of fire.

4 Where a wet exhaust system is fitted, water from the engine cooling system shall be introduced into the exhaust pipe near to the manifold and a "U" bend or other suitable water trap shall be incorporated in the exhaust line to avoid the flow-back of water into the engine.

8 Steering gear

1 The steering arrangements including the rudder and associated fittings shall be of adequate strength and capable of steering the vessel at maximum speed and shall be so designed and constructed that they are not damaged at maximum astern speed or by maneuvering during fishing operations.

2 Where the main steering device is mechanically operated an emergency means of steering shall be provided which shall be easily accessible.

3 Where a steering device other than a rudder is fitted, its construction and operation shall be adequate and suitable for its intended purpose and shall comply with the provisions of paragraph 3.

4 Where the steering device is remotely operated, a rudder angle indicator shall be provided at the steering position. The rudder angle indicator for power operated steering gear shall be independent of the steering gear control system.

5 The wheelhouse shall be so arranged that the person steering the vessel has clear view ahead and that as far as practicable an all-round vision is possible from within the wheelhouse.

9 Refrigeration systems for the preservation of the catch

1 Refrigeration systems shall be so designed, constructed, tested and installed as to take account of the safety of the system and also the emission of refrigerants held in quantities or concentrations which are hazardous to human health or to the environment.

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

3 If ammonia is to be used as the refrigerant gas, the refrigerating plant shall be at least arranged so as to take account of the usual recommended practice[8].

4 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.

5 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.

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

7 Spaces containing condensers, gas tanks and refrigeration machinery utilizing toxic refrigerants, such as ammonia, shall be provided with a water spray system.

8 When it is not practicable to contain refrigeration machinery in a separate place 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, shall all the gas escape, and provided that an alarm is fitted to give warning of a dangerous concentration of gas shall any leakage occur in the compartment.

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

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

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

PART C

ELECTRICAL INSTALLATIONS

10 Main source of electrical power

Where electrical power constitutes the only means of maintaining auxiliary services essential for the propulsion and safety of the vessel, a main source of electric power shall be provided which shall, as far practicable, include two generating sets, one of which may be driven by the main engine. The Department of Marine Administrationmay accept other arrangements having equivalent electrical capacity.

11 Emergency source of electrical power

1 A self-contained emergency source of electrical power shall be located outside the machinery spaces above the main deck. It shall be so arranged as to ensure that it would function in the event of fire or other causes of failure of the main electrical installations.

2 The emergency source of electrical power, which may be either a generator or an accumulator battery, 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:

.1 a VHF radio installation or an MF radio installation or a ship-earth station or an MF/HF radio installation depending on the sea area for which the vessel is to be equipped;

.2 internal communication equipment, fire detecting systems and signals, which may be required in an emergency; and

.3 the navigational lights if solely electrical and the emergency lights: .1 at launching stations and over the side of the vessel; .2 in all alleyways, stairways and exits;

.3 in spaces containing machinery or the emergency source of power;

.4 in control stations; and

.5 in fish handling and fish processing spaces.

3 The arrangements for the emergency source of electrical power shall comply with the following:

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

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

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

5 Any accumulator battery shall be installed in a well-ventilated space, but not in the space containing the emergency switchboard. An indicator shall be mounted in a suitable space on the main switchboard or in the machinery control room to indicate when the battery constituting the emergency source of power is being discharged. The emergency switchboard shall be supplied in normal operation from the main switchboard by an inter- connector feeder protected at the main switchboard against overload and short circuit. The arrangement at the emergency switchboard shall be such that in the event of a failure of the main power supply an automatic connection

of emergency supply will be provided. When the system is arranged for feed back operation, the inter-connector feeder shall also be protected at the emergency switchboard against short circuit.

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

7 Battery level indicators shall be mounted in a highly visible position on the main switchboard or in the machinery control room to facilitate monitoring of the condition of batteries constituting the emergency source of supply as well as any batteries required for the starting of an independent, power driven emergency generator.

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

12 Precautions against shock, fire and other hazards of electrical origin

1 Electrical equipment and installations shall be such that the vessel and all persons on board are protected against electrical hazards.

2 Cable systems and electrical equipment shall be so installed as to avoid or reduce interference with radio operation.

3 Cables shall be capable of carrying the maximum rated current for the circuit. The cross sectional area shall be sufficient to ensure that the voltage drop will not exceed 6% of the nominal rating under maximum rated load for the circuit. Electrical wiring shall be of marine grade multi-strand tinned copper wire cores with an approved insulated cover.

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

5 Electric cables shall be supported in such a manner as to avoid chafing or other damage and shall not be located close to hot surfaces such as engine exhausts. Except as permitted by the Department of Marine Administrationin exceptional circumstances, all metal sheaths and armour of cables shall be electrically continuous and shall be earthed.

6 Where cables are not metal sheathed or armoured and there might be a risk of fire in case of an electrical fault, special precautions shall be taken.

7 Electrical wiring and electrical equipment installed in fishing vessels shall be of marine grade materials only and shall conform to the best marine practices of installation and workmanship. Electrical equipment exposed to the weather shall be protected from dampness and corrosion as well as mechanical damage.

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

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

.1 essential for operational purposes;

.2 of a type which will not ignite the mixture concerned;

.3 appropriate to the space concerned; and

.4 appropriately certified for safe be encountered.

10 Where a potential explosion risk equipment and fittings installed in those intrinsically safe usage in the dusts, vapours or gases likely to exists in or near any space, all electrical spaces shall be either explosion-proof .

13 Electrical systems

1 Direct current installations shall be wired as insulated return systems. The hull shall not be used to carry current.

2 Main and emergency switchboards shall be of the dead front to prevent accidental access to live parts. They shall be so arranged as to give easy access as may be needed to apparatus and equipment, without danger to attendants. The sides and backs and, where necessary, the fronts of switchboards, shall be suitably guarded. Exposed "live" parts having voltages to earth exceeding 55 V shall not be installed on the front of such switchboards. There shall be non-conducting mats or gratings at the front and rear.

3 All outgoing circuits from the switchboards shall be double pole and open circuit protected. Lighting circuits shall be separate from power circuits. Secondary distribution boards shall be fitted with double pole switches and open circuit protection whereas final sub-circuits may be fitted with single pole switches.

4 Main switchboards shall be fitted with voltmeters and ammeters for each generator and with earth lamps. The emergency switchboard shall also be fitted with a voltmeter, ammeter and earth lamps.

5 Where electrical power, other than a low voltage supply, constitutes the only means of maintaining auxiliary services essential for the propulsion and the safety of the vessel, the main switchboard shall be designed to allow preferential tripping of non-essential services to reduce the risk of overload and premature actuation of the emergency source of supply.

6 Electric circuits and the current-carrying capacity of each circuit shall be permanently indicated, together with the rating or setting of the appropriate overload protective device shall be clearly identified on switchboards and where appropriate on distribution boxes.

7 Each separate circuit shall be protected against short circuit as well as against overload.

8 Piping conveying liquid shall not be fitted above or close to switchboards or other electrical equipment. Where such arrangements are unavoidable, provision shall be made to prevent leakage damaging the equipment. The current-carrying capacity of each circuit shall be permanently indicated, together with the rating or setting of the appropriate overload protective device.

9 Where the main source of supply is an accumulator battery system only, the batteries shall be suitably housed and compartments used primarily for their storage shall be properly constructed and ventilated. However, accumulator batteries shall not be housed in crew accommodation spaces unless installed in a hermetically sealed container.

10 Batteries shall be installed with sufficient capacity and in sufficient numbers to carry all anticipated loads during normal operations and with sufficient reserve capacity for emergencies. An efficient means of battery charging shall be provided, either from a main engine driven generator or auxiliary driven generator. Battery charging systems shall be fitted with voltage surge and reverse current protection.

11 When the main and/or auxiliary engines are fitted with electric motor starters, the batteries connected to the system for starting shall be separate from the batteries used for lighting and general services as well as from the radio batteries. The starter batteries shall be capable of starting the engine at least six times without recharging.

12 The battery powered main source of supply shall consist of two individual sets of radio batteries, two sets of lighting and general services batteries and two sets of starting batteries for the main engine (if electric starting is used). The Administration, taking into consideration the design of the vessel and type of electrical equipment fitted as well as the area of operation, may allow a lesser number of battery banks to be fitted.

13 Battery banks shall be fitted with double pole spark proof isolating switches. The switches shall be placed in an accessible position.

14 There shall be an arrangement for continuous charging of the accumulator batteries as and when the main and/or auxiliary machines are running. The system shall consist of a battery charging switchboard fitted with voltmeters and ammeters for each system. The arrangement shall allow alternate charging/discharging of the battery banks using an arrangement of change-over switches. Where possible, the change-over switch shall be of a type that would automatically ensure that when one bank of batteries in a system is selected for discharging, the other bank in the same system would be automatically placed on charge.

15 Cables between a battery bank and an isolating switch and between the switch and a starter motor shall be as short as possible and double insulated.

16 Individual batteries and banks of batteries shall be secured in trays within boxes to avoid movement due to the motion of the vessel. The trays and boxes shall be suitably protected against corrosion from acid and alkaline solutions and the boxes

shall be fitted with a ventilating pipe terminating in a safe place above deck. The boxes shall be positioned above the operating load waterline.

17 Where the main source of supply is an alternating current system, non self-regulating alternators shall be provided with automatic voltage re.

18 The Department of Marine Administrationmay approve the parallel operation of alternators, if synchronizing and power sharing devices are to be fitted. The system shall also be fitted with reverse power protection.

19 Each section of the switchboard, supplied by an individual alternator, shall be fitted with a voltmeter, a frequency meter and an ammeter, switched to allow the current to be measured in each phase. A sub-distribution board fitted in the wheelhouse shall be fitted with a voltmeter and a switch to isolate it from the mains. Where fitted, the primary windings of transformers shall be protected against short circuits by circuit breakers or fuses capable of withstanding power surges. If transformers are arranged for parallel operation, they shall be provided with secondary isolation.

20 Provision shall be made for a shore connection to the main switchboard. Marine quality battery chargers powered from the mains may be used.

14 Earthing and bonding

1 All electrical installations shall be bonded to earth and each bonding point shall be accessible for maintenance.

2 The Administration, taking into consideration the design of the system and the working voltage, may require a system of earth indicator lamps or means of detecting current leakage to be installed.

3 A copper earth plate of at least 0.2 m^9 shall be fitted to the hull of a vessel, constructed of a material other than steel, or equivalent, at a point where it will always be submerged under all conditions of heel. Inside the hull, the earth plate shall be connected to a copper bar or rod, of at least 64 mm2, the length being appropriate to the number of bonding points.

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

.1 they are supplied at a voltage not exceeding 55 V direct current or 55 V, root mean square, between conductors; auto-transformers shall not be used for the purpose of achieving this alternative current voltage; or

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

.3 they are constructed taking into account the principle of double insulation.

5 All exposed metal parts of equipment that do not carry current shall be bonded to the earth bar. Lightning conductors shall be attached directly to the earth plate.

6 Radar, radio and other navigational equipment that requires to be earthed shall have a separate earthling point and the connection shall be as short as possible.

7 Where a flexible, non-conducting coupling, is fitted between the gearbox output shaft and the propeller shafting, the coupling shall be bridged by a piece of braided copper conductor.

15 Lighting systems

1 Lighting for machinery spaces, control stations and work spaces shall be supplied from at least two separate final sub-circuits and arranged in such a manner that failure of one final sub-circuit shall not leave the space in darkness.

2 An emergency source of power shall be made available for a signalling lamp if carried.

16 Electric motors

1 Every electric motor shall be provided with a means of starting and stopping so placed that the person controlling the motor can easily operate it.

2 The circuit supplying the motor shall be fitted with short circuit and overload protection.

3 Where electric motors are fitted to deck machinery, the operating device shall automatically return to the stop position when released. Emergency stops shall also be located at the control station. The mechanical component of the deck machinery shall be fitted with an appropriate fail-safe braking system.

4 Electric fans and pumps driven by electric motors for the transfer of fuel oil, fuel oil lift pumps and similar fuel oil pumps, shall be fitted with a remote control. The remote control shall be positioned outside the machinery space concerned, for stopping the motors in the event of a fire in the space in which they are located.

17 Lightning conductors

1 Lightning conductors shall be fitted on wooden masts. They shall be of continuous copper tape or copper rope having a cross section of not less than 75 mm^{10} and secured to a copper spike of 12 mm diameter projecting at least 150 mm beyond the top of the mast.

2 In the case of metal hulls, the lower end of the conductor shall be earthed to the hull.

3 In the case of wood or other non-metallic hulls, the lower end of the conductor shall be attached to the earth plate. All sharp bends shall be avoided and bolted or riveted joints only may be used.

PART D

PERIODICALLY UNATTENDED MACHINERY SPACES

18 Fire safety

Fire prevention

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

Where daily service fuel oil tanks are filled automatically or by remote control, means shall be provided to prevent overflow spillages. Similar consideration shall be given to other equipment which treats flammable liquids automatically.

Fire detection

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

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

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

Fire fighting

A fixed fire-extinguishing system shall be provided, which shall be in compliance with the provisions of paragraph 13 of chapter 5.

19 Protection against flooding

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

20 Alarm system

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

2 The alarm system shall, as far as is practicable, be designed on the fail-safe principle.

3 The alarm system shall be:

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

.2 activated by failure of the normal power supply.

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

21 Safety system

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

CHAPTER 5

FIRE PROTECTION AND FIRE FIGHTING

1 Application to existing vessels

The provisions of paragraphs 6.1, 6.2, 11, 12, 13, 14 and 15 shall also apply to existing vessels.

2 Structure

1 If steel decks or steel bulkheads in accommodation form the top or side of a fuel oil tank, they shall be coated with a non-combustible material of minimum thickness 40 mm. Manholes or other openings to fuel oil tanks shall not be positioned in the accommodation.

2 External bulkheads and vessel's sides, which delimit the accommodation spaces, shall be insulated with at least 50 mm insulating material. Bulkheads between accommodation spaces and machinery spaces or cargo spaces shall be insulated with a non-combustible material of minimum thickness 40 mm. In wooden vessels, they can be built of two layers of wood with two layers of felt or similar in between or of 60 mm wood with a lining of insulating plates or alternatively be constructed to "B-15" class standard. The surface of insulation fitted on the internal boundaries of the machinery spaces of category A and in spaces into which oil products may penetrate shall be impervious to oil or oil vapours.

3 All insulation in accommodation spaces and the wheelhouse shall be made of non-combustible materials. Combustible insulation fitted in spaces used for the storage or processing of fish shall be protected by a tight non-combustible covering.

4 Where there is a door between the accommodation space and the machinery space, this shall be a self-closing door of steel or equivalent. Doors between galley rooms and dining rooms might be permitted, provided they are made of fire-retardant material; the same applies to a serving hatch. Where only electric cooking appliances are used in the galley, the galley and the mess room could be seen as one common room, divided into two appropriate compartments.

3 Ventilation systems

1 With the exception of what may ensue from paragraph 4, there shall be means for stopping the ventilators and closing the main openings in the ventilation system from a location outside the rooms being served.

2 Ventilation openings can be permitted in and under the doors in corridor bulkheads, although such openings shall not be permitted in and under doors to staircases. The openings shall only be positioned in the lower half of a door. Where such an opening is positioned in or under a door, the total net area of the opening(s) shall not exceed 0.05 m^2. If such an opening is cut into a door, it shall be provided with a grating of non-combustible material.

3 Ventilation ducts to machinery spaces or galleys shall not normally be conducted through accommodation, service rooms, or control rooms. If the Administration, however, permits such an arrangement, the ducts shall be made of steel or equivalent material and arranged so as to maintain the fire protection of the subdivisions.

4 Ventilation ducts to accommodation, service rooms, or control rooms shall not normally be conducted through machinery spaces of category A or through galleys. If the Administration, however, permits such an arrangement, the ducts shall be made of steel or equivalent material and arranged so as to maintain the fire protection of the subdivisions.

5 Storerooms, containing appreciable quantities of highly flammable products shall be provided with ventilation arrangements, which are separate from other ventilation systems. Ventilation shall be arranged at high and low levels and the inlets and outlets of ventilators shall be positioned in safe areas. Suitable wire mesh guards to arrest sparks shall be fitted over inlet and outlet ventilation openings. Such ventilation systems shall not exhaust in close proximity to the inlets of other ventilation systems.

6 Ventilation systems, which serve machinery spaces, shall be independent of systems serving other rooms.

4 Heating installations

1 Where fitted, electric radiators shall be fixed in position and so constructed as to reduce fire risks to a minimum. No such radiator shall be fitted with an element so exposed that clothing, curtains, or other similar materials can be scorched or set on fire by heat from the element or direct heat from the element shall not be accepted by the Administration.

2 Heating stoves and other similar appliances shall be firmly permanent secured and there shall be adequate protection and insulation against fire below and around such appliances and their flues. Uptakes of stoves, which burn solid fuel, shall be positioned and executed so as to minimize the possibility of becoming blocked with flammable substances, and they shall have adequate means for cleaning. Dampers to limit draught in the boiler flues shall, when closed, always leave an adequate area open. Rooms in which furnaces are installed shall be provided with ventilators of an adequate area to provide the furnace with the necessary combustion air.

3 Open flame gas appliances, except cooking stoves and water heaters, shall not be permitted. Spaces containing any such stoves or water heaters shall have suitable ventilation in order to remove vapours and any gas leaks to a safe place. All pipes conveying gas from tank to stove or water heater shall be made of steel or other

approved material. Automatic safety gas shut-off devices shall be fitted to operate on loss of pressure in the main gas pipe or failure of the pilot flame in any appliance.

4 Where gaseous fuel is used for domestic purposes, the arrangements, distribution, and storage of the fuel shall be to the satisfaction of the Department of Marine Administrationand comply with the provisions of paragraph 6.5.

5 Where gas appliances are used for domestic purposes and where such gas supplies are stored, hydrocarbon sensors shall be fitted in appropriate locations to give warning of the leakage of gas.

5 Miscellaneous items

1 Exposed surfaces within accommodation spaces, service spaces, control stations, corridor and stairway enclosures and the concealed surfaces behind bulkheads, ceilings,

Panellings and linings in accommodation spaces, service spaces and control station shall have low flame-spread characteristics, or to be of fire-retardant materials .

2 All exposed surfaces of glass reinforced plastic construction within accommodation and service spaces, control stations, machinery spaces of category A and other machinery spaces of similar fire risk shall have the final lay-up layer of approved resin having inherent fire-retardant properties or be coated with an approved fire-retardant paint or be protected by non-combustible materials.

3 Primary deck coverings within accommodation and service spaces and control stations shall be of approved material which will not readily ignite or give rise to toxic or explosive hazards at elevated temperatures. This shall be determined in accordance with the Fire Test Procedures Code.

4 In accommodation and service rooms and in control rooms, pipes, which penetrate fire integrated subdivisions shall be made of approved material, taking into account the temperatures such subdivisions shall be able to withstand. If the Department of Marine Administrationpermits pipes carrying oil and flammable liquids to pass through accommodation and service rooms, the pipes shall be of approved material, taking account of the fire hazard.

5 Materials, such as plastic or similar, which are readily rendered ineffective by heat shall not be used for overboard scuppers, sanitary discharges and other outlets which are close to the water line and where the failure of the material in the event of fire would give rise to danger of flooding.

6 Short flexible piping connections may be accepted on sea water lines where the flexible connections are of a material that is not easily rendered ineffective by heat.

7 Flexible piping connections may be accepted for pipes transporting oil but the length of the connections shall be carefully adapted to withstand the effects of vibrations. The connections shall be resistant to oil, reinforced and of a material that is not easily rendered ineffective by heat.

8 All waste containers, with the exception of those, which are used in connection with the treatment of fish, shall be made of non-flammable material without openings in the sides or base.

9 In the event of a fire in a space containing machinery, which operates fuel oil transfer pumps, fuel oil pumps and other similar fuel pumps, it shall be possible to stop the machinery from a location outside the machinery space in question.

10 Drip pans shall be fitted, where necessary, to prevent oils leaking into the bilge.

6 Storage of gas cylinders and dangerous materials

1 Cylinders for compressed, liquid or dissolved gases shall be carefully secured and clearly marked, using the prescribed identity colours, with a clear, legible identification of the name and chemical formula of their contents and properly secured to the cylinder.

2 Cylinders, which contain flammable or other dangerous gases, and empty containers, shall be stored, suitably secured, on the open deck, and all valves, pressure regulators and pipes leading from such containers shall be protected against damage. Cylinders shall be protected against extreme changes in temperature, direct rays of the sun and accumulation of snow. However, the Department of Marine Administrationmay permit such containers to be stored in compartments complying with the provisions of paragraphs 3 to 5.

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

.4 Except as necessary for services within the space, electrical wiring and fittings shall not be permitted within compartments used for the storage of highly flammable liquids or liquid gases. Where such electrical fittings are installed, they shall be for use in a flammable atmosphere. Sources of heat shall be kept clear of such rooms, and "Smoking prohibited" and "Naked flames prohibited" notices shall be affixed in a prominent position.

5 Separate storage rooms shall be provided for each individual type of compressed gas. Rooms, which are used for storage of such gases, shall not be used for storage of other flammable substances not for tools or items, which constitute a part of the gas distribution system. However, the Department of Marine Administrationmay consider alternative arrangements taking into consideration the size and configuration of the vessel as well as the character, volume and intended use of such compressed gases.

7 Means of escape

1 Stairways and ladders leading to and from all crew rooms and spaces in which members of the crew normally are employed shall be so arranged as to provide ready means of escape to the open deck and thence to the survival craft.

2 In accommodation spaces, there shall be two exit possibilities from each large room or group of rooms and the exits shall be positioned as far as possible from each other.

3 Exceptionally the Department of Marine Administrationmay grant exemption from one of the exits and means of escape taking account of the location of the room and the number of persons who will normally be accommodated in the room and the configuration of the vessel.

4 Below the weather deck, the main exit shall be a stairway, and the second exit can be considered as an emergency exit. Above weather decks, the exits shall be stairways or through doors to the open deck or a combination thereof.

5 Two means of escape shall be provided from every machinery space of category A which shall be as widely separated as possible. Vertical escapes shall be by means of steel ladders. Where the size or configuration of the machinery spaces make it impracticable one of these means of escape may be omitted. In such cases special consideration shall be given to the remaining exit.

8 Automatic fire alarm and fire detection systems

1 In fishing vessels, which are of flammable construction, or where in other respects considerable quantities of flammable materials are used in the fitting out of accommodation, service rooms and control rooms, it shall be carefully considered, whether an automatic fire detection and alarm system shall be installed in these rooms, taking into account the size of the rooms, lay-out and location in relation to control rooms, and, where relevant, the flame propagation properties of the installed furniture.

2 Machinery spaces containing propelling machinery shall be provided with suitable alarm and fire detection systems.

9 Fire pumps - number, capacity and location

1. Fishing vessels shall be provided with at least one mechanically-driven fire pump. Depending on the service area, the Department of Marine Administrationmay however require an emergency fire pump.

2. Sanitary, ballast and general service pumps might be approved as fire pumps, provided that they are mechanically driven and not normally used for pumping oil and that, if they are occasionally used for pumping oil, they have suitable switching devices such that the pumps cannot, even accidentally, be activated to suck from tanks, which may be used for substances other than ballast water, and/or from the vessel's bilge system and simultaneously provide pressure to the vessel's fire hydrant. Such arrangements based on blanking off certain pipelines by using blind flanges shall not be approved.

3. Where pumps that are not dedicated fire pumps are authorized for use as a fire pump as provided for in paragraph 2, their use shall not reduce the capability to pump bilges at any time.

3. When the pumps are used as fire pumps, they shall only be able to supply the fire hydrant if only one is required or the fire main.

4. Where two or more pumps can be used as fire pumps they shall be capable of operating in parallel provided that each can deliver the capacity set out in paragraph 8.

5. Where the requirements to the maximum permissible suction height can be complied with, the emergency pump may be portable provided that it is driven by a diesel-engine with independent fuel oil supply and the necessary reserve fuel oil. The portable emergency fire pump shall be tested at least every month, and the necessary tools for start, suction, connection of hoses, etc. shall be positioned close to the pump. Pumps that require priming shall be provided with a funnel and shutoff valve.

6. The capacity (Q) of a fire pump shall be at least in accordance with the calculation method below, however, in no case less than $16m^3/h$.

   $Q = (0.15\ J\ L\ (\ B + D\ ) + 2.25\hat{}\ m^3/\ h$

   where L, B and D are in meters. The capacity for a fire-extinguishing pump need not exceed 30 m /h.

7. Main fire pumps shall be able to maintain a pressure of at least 0.25 N/mm at the fire plugs when the two fire plugs farthest away from the pump are both in operation and each fitted with a single hose length with a 12 mm spraying nozzle.

8. Where fixed or portable power operated emergency fire pumps are delivering the maximum quantity of water through the jet required by paragraph 11.1, the pressure maintained at any hydrant shall be to the satisfaction of the Administration.

9. The engine for diesel-driven emergency pumps shall have a service tank with sufficient fuel oil for at least 3 h operation at full load, and there shall be reserves for a further 15 h operation outside the machinery space.

10. Power to electrically driven emergency pumps shall be supplied from an energy source that is independent of installations in the main machinery space.

11. The sea-valves of fire pumps and other necessary valves shall be located so that a fire in any other place than in the space where the pump is located will not prevent the use of the pump.

12. The pump's total suction height shall not exceed 4.5 m (suction height plus pipe resistance) under all conditions of heel and trim, which the vessel may be assumed to meet with during navigation.

13 All permanently installed fire pumps shall be provided with a check valve and a non-return valve on the discharge side.

14 If the fire pumps are capable of developing a pressure in excess of the maximum permitted working pressure of the pipelines, fire hydrant or fire hoses or render flexible hoses uncontrollable, shall be provided with safety valves to prevent harmful overpressure.

10 Fire mains

1 Where more than one hydrant is required to provide the number of jets required by paragraph 11.1, a fire main shall be provided.

2 The maximum pressure at a fire hydrant shall not exceed the pressure at which a fire hose can be effectively handled by one crew member.

3 Fire mains shall be made of steel or other equivalent material, which does not easily render it ineffective under the effect of heat.

4 The fire mains shall be laid so as to minimize the risk of mechanical damage to the pipes.

5 Where there is a risk of frost damage, measures shall be taken to avoid such damage.

6 It shall be possible to close off the fire main from a machinery space and from an easily accessible position outside that machinery space.

11 Fire hydrants, fire hoses and nozzles

1 Fire hydrants shall be positioned such that they allow easy and rapid connection of fire hoses and such that at least one water jet can be directed towards any part of the vessel, which is normally accessible during navigation.

2 The water jet required in paragraph 1 shall come from a single length fire hose.

3 In addition to the requirement of paragraph 1, machinery spaces shall normally be equipped with at least one fire hydrant, complete with fire hose and combination nozzle (spray/jet). This fire hydrant shall be positioned outside the space and close to the entrance.

4 There shall be one fire hose for each prescribed fire hydrant. In addition, at least one extra fire hose shall be available.

5 The length of individual fire hoses shall not exceed 20 m.

6 Fire hoses shall be of approved material. Each fire hose shall be provided with couplings and a dual purpose nozzle (spray/jet).

7 With the exception of cases where fire hoses are permanently connected to the main fire hydrant, the couplings on fire hoses and nozzles shall be completely interchangeable.

8 The nozzles prescribed in paragraph 6 shall match the performance standard of the fire pumps installed, but shall not, in any case, have a diameter of less than 12 mm.

12 Fire extinguishers[11]

1 Fire extinguishers shall be of approved types. The capacity of required portable fluid extinguishers shall be not more than 13.5 *l* and not less than 9 l. Other extinguishers shall not be in excess of the equivalent portability of the 13.5 *l* fluid extinguisher and shall not be less than the fire-extinguishing equivalent of a 9 *l* fluid extinguisher.

2 Spare charges shall be provided in sufficient number.

3 Fire extinguishers containing an extinguishing medium, which, either by itself or under expected conditions of use, gives off toxic gases in such quantities as to endanger persons shall not be permitted.

4 Fire extinguishers shall be periodically examined and subjected to such tests as the Department of Marine Administrationmay require.

5 Normally, one of the portable fire extinguishers intended for use in any space shall be stowed near an entrance to that space.

6 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.

13 Fire-extinguishing installations in machinery spaces

1 Vessels shall be provided with suitable installations and equipment for the detection and fighting of fire in machinery spaces.

2 Spaces containing main propelling machinery, internal combustion machinery with a total power output of 750 kW and more, oil-fired boilers, including central heating boilers, incinerators and fuel oil aggregates, shall be provided with one of the following fixed fire-extinguishing systems :

.1 a pressure water-spraying installation that may be supplied from a manually-operated pump or another means of pressurizing the system;

.2 a fire-smothering gas installation; or

.3 a fire-extinguishing installation using high expansion foam.

3 New installations of halogenated hydrocarbon systems used, as fire-extinguishing media shall be prohibited on new and existing vessels.

4 Where the engine and boiler rooms are not entirely separated from each other or if fuel oil can drain from the boiler room into the engine-room, the combined engine and boiler rooms shall be considered as one compartment.

5 Installations listed in paragraph 2 shall be controlled from readily accessible positions outside such spaces not likely to be cut off by a fire in the protected space. Arrangements shall be made to ensure the supply of power and water necessary for the operation of the system in the event of fire in the protected space.

6 Vessels which are mainly or completely built of wood or glass-fibre reinforced polyester and equipped with oil-fired boilers or internal combustion engines which, in terms of the machinery space, are covered with such material, shall be equipped with one of the extinguishing systems referred to in paragraph 2.

14 Ready availability of fire-extinguishing appliances

1 Fire-extinguishing appliances shall be kept in good order and continuously available for immediate use at all times when the vessel is in service.

2 Fire drills shall be regularly held on board as prescribed in paragraph 3 of chapter 8.

15 Equivalence

Where in this chapter any special type of appliance, apparatus, extinguishing medium or arrangement is specified, any other type of appliance, etc. may be allowed provided that the Department of Marine Administrationis satisfied that it is not less effective.

CHAPTER 6

PROTECTION OF THE CREW

1 Application to existing vessels

The provisions of paragraphs 2, 3 (except paragraph 2), 4, 5.1, 7, 8.1, 11, 13, and 14 shall apply to existing vessels.

2 General protective measures

1 The surfaces of decks and of flooring in working spaces on board, such as machinery spaces, galleys, fish handling and deck equipment operating areas, and deck areas at the foot and head of ladders, shall be specially designed and treated to minimize the possibility of personnel slipping.

2 An adequate system of lifelines shall be provided and it shall be complete with the necessary, wires, ropes, shackles, eye bolts and cleats.

3 Deck openings

1 Hinged covers of hatchways, manholes and other openings shall be protected against accidental closing.

2 Dimensions of access hatches shall not be less than 600 mm by 500 mm or 500 mm diameter.

3 Having regard to the operation of the vessel, suitable protection shall be provided, where practicable, in positions where there is a danger of personnel falling through deck openings.

4 Where practicable, handholds shall be provided above the level of the deck over escape openings.

5 External hatches and doors shall be closed when the vessel is at sea. All openings occasionally required to be kept open during fishing and which may lead to flooding shall be closed immediately if such danger of filling occurs with subsequent loss of buoyancy and stability.

4 Bulwarks, rails and guards

1 Efficient bulwarks or guard rails shall be fitted on all exposed parts of the working deck and on superstructure and deck erection decks. The height above deck of any fixed bulwark shall be at least 600 mm for vessels of 12 m in length and at least 1 m for vessels of 24 m in length. For vessels of intermediate length the minimum height shall be determined by linear interpolation. In every such vessel where the fixed bulwark is less than 1 m, guard rails supported by adequate portable stanchions or similar means shall be fitted up to the prescribed height of 1 m, provided that where this would interfere with the fishing operations of the vessel, alternative arrangements may be accepted by the Administration. For existing vessels, the total height shall not be less than 800 mm.

2 Clearance below the lowest course of guard rails shall not exceed 230 mm. Other courses shall not be more than 250 mm apart, and the distance between stanchions,

shall not be more than 1.5 m. In a vessel with rounded gunwales, guard rail supports shall be placed on the flat of the deck. Rails shall be free from sharp edges and corners and shall be of adequate strength.

3 Satisfactory means in the form of guard rails, lifelines, gangways or underdeck passages, etc. shall be provided for the protection of the crew in getting to and from their quarters, machinery spaces and other working spaces. Storm rails shall be fitted on the outside of all deckhouses and casings.

4 Where practical, having due regard to the need to prevent the retention of water on deck, fixed bulwark heights may be reduced below the minimum prescribed in paragraph 1 to the satisfaction of the Administration.

5 Where the height of a bulwark or guard rail is less than 1 m for the purpose of the fishing operation as provided for in paragraph 1, or where the effective height has been reduced through the fitting of a net or gear platform at deck level, additional provisions for the safety of the crew working in the area shall be arranged.

6 Where a net roller is normally incorporated in the structure of a bulwark within the minimum height prescribed for the bulwark, or mounted between stanchions of a guard rail, provision shall be made to protect the area when the roller is not in place.

7 Where part of a bulwark or guard rail has to be removed for the purpose of the fishing operation, protection for the crew shall be provided at the opening, in particular on stern trawlers.

5 Stairways and ladders

Stairways and ladders shall be provided for safe working at sea and in port. They shall be of adequate size and strength. Means of access to holds, 'tween-decks, bunkers and similar parts of a vessel shall consist of fixed ladders or stairs. Treads of stairways shall be flat and specially prepared to minimize slipping.

Fixed vertical ladders shall be so situated as to be protected from damage and shall be so fitted as to provide clearance of 150 mm behind. The rungs of steel vertical ladders shall be made of square section steel bars with the sharp edge upwards. Where ladders are constructed with stringers, the rungs shall pass through the stringers. Handholds shall be provided where rungs or stringers are not suitable for this purpose.

Stairways of more than 1 m in height shall have handrails or hand grips on both sides.

Emergency escape ladders shall normally be fixed, but if they are portable, they shall be stowed adjacent to the escape area and when required, they shall be secured in place without the use of tools or mechanical aids.

Ladders in machinery spaces shall preferably be at least 450 mm wide.

6 Accommodation ladders and gangways

1 Means shall be provided, where practicable, to ensure sufficiently safe and convenient access to the vessel where facilities are not provided in the port. Such means shall be of reliable material, safe construction and adequate strength.

2 Accommodation ladders shall be provided with hooks or other suitable fastenings for adequate support and securing against displacement or slipping and be able to be adjusted to the height of the landing place.

7 Galleys

1 Galleys shall be provided with guard rails and hand rails.

2 Cooking stoves shall be fitted with guards to retain cooking utensils.

3 Where food processing equipment is installed, dangerous parts shall be fitted with permanent safety guards.

8 Deck machinery, tackle and lifting gear *General*

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

2 Warp guards shall be fitted where practicable between warp lead rollers.

3 Sheaves and rollers shall be guarded where practicable.

4 Chains or other suitable devices shall be provided for "stoppering off'.

5 Wires and warps provided shall be of adequate strength for the anticipated loads.

6 Where practicable, provision shall be made to stop trawl boards swinging inboard, such as the fitting of a portable prevention bar at the gallows aperture or other equally effective means.

7 Lifting and running parts of the fishing gear shall be of adequate strength for the anticipated loads.

8 Provision shall be made for the stowage of bulky netting to allow for drainage and to prevent lateral movement. The stowage area shall be of adequate dimensions to keep the center of gravity of the stowed net to a minimum and to allow for the crew to work in safety when flaking down nets.

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

10 Controls of winches, line and net hauling equipment, shall be so placed that winch operators have ample room for their unimpeded operation and have as unobstructed a view as possible of the working area. Where possible, control handles shall be arranged to return to the stop position when released and be provided, where necessary, with a suitable locking device in the stop/neutral position, to prevent accidental movements or displacement or unauthorized use. In general, winches and hauling equipment for fishing gear shall be fitted with safety devices designed to prevent accidents.

11 The arrangement of the safety devices shall also ensure that an emergency stop would be activated if a person is pulled towards a winch or other hauling equipment.

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

13 The design and construction of winches, line and net hauling equipment shall be such that the maximum effort necessary for operating hand wheels, handles, crank handles, levers, etc. shall not exceed 160 N and in the case of pedals not exceed 320 N.

Winches

14 The design of winch systems shall ensure that, when power is supplied to the winch, the control valves and levers will always be in the stop/neutral position.

15 Winches shall be provided with means to prevent over hoisting and to prevent the accidental release of a load if power supply fails. Where practicable, winches with wire storage drums shall be fitted to avoid the need to use warping heads.

16 Winches shall be equipped with brakes capable of effectively arresting and holding the safe working load. Brakes shall be proof-tested before installation with a static load suitably in excess of the maximum safe working load. Brakes shall be provided with simple and easily accessible means of adjustment. Every winch drum, which could be uncoupled from the drive, shall be furnished with a separate brake independent of the brake connected with the drive.

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

18 Winches shall be reversible.

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

20 Where a fishing winch is provided with local and remote controls, these shall be so arranged as to prevent simultaneous operation. The operator shall have a clear view of the winch and adjacent area from either position. An emergency cut-off shall be provided at the winch and at the remote station as well as in the wheelhouse.

21 Where a fishing winch is controlled from the wheelhouse, an emergency control switch at the winch shall be provided. Where a second control at the winch is required by the Administration, the arrangement shall be such as to make simultaneous control from both control positions impossible, as well as to show which control position is in operation. Where necessary, emergency switches for winches shall be provided remote from the winch to protect fishermen working in places which are dangerous for operation of warps and trawl boards. Where a fishing

winch is controlled from the bridge, the arrangements shall be such that the operator has a direct or televised clear view of the winch and adjacent area.

Line and net hauling equipment

22 Line and net hauling equipment shall be fitted with devices to ensure that the designated safe working load is not exceeded. Such devices shall be periodically tested.

23 Where line and net hauling equipment is intended to be blocked or braked in the stop position, the arrangements shall be periodically tested.

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

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

Lifting gear

26 Cranes shall be well constructed of sound material and the design shall conform to national standards that may be appropriate. They shall be periodically tested and the crane shall be marked with the designated maximum safe working load. In the case of a crane fitted with an extendable jib, the safe working load at various radii shall be clearly marked as close as practical to the operating controls.

27 In general, cranes adapted to carry net hauling equipment shall be so designed that in the fail safe condition, the hanging point of the jib shall not be too high or extend so far beyond the bulwark that retrieval of fishing gear or equipment would endanger the crew.

28 The braking or blocking arrangements of a crane shall be tested to at least 1.5 times the designated safe working load.

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

30 Lifting and hoisting appliances, as well as derricks, shall be protected from over hoisting.

31 The Department of Marine Administrationshall ensure that lifting and hoisting appliances, as well as derricks, shall be tested at least every two years and the results entered in the record of the vessel.

32 No such appliance of a kind referred to in paragraph 27 nor any part or working gear thereof, shall be taken into use for the first time or after it has undergone any substantial repair unless it has been tested and the result entered in the record of the vessel.

9 Lighting in working spaces and areas

1 All companion-ways, doors or other means of access shall be illuminated on both sides of the opening to facilitate safe passage.

2 All passageways and working spaces and areas shall be provided with artificial lighting. Particular attention shall be paid to Rule 20(b) of the International requirements for Preventing Collisions at Sea, 1972.

3 Glare, dazzle or sudden contrasts of illumination shall be eliminated to the extent possible taking into consideration the need for effective lighting for the safety of the crew on the working deck.

4 Provision shall be made for some form of emergency lighting, which is independent of the normal supply.

5 Portable watertight lights shall be provided as necessary and fitted with heavy-duty cables, bulb guards and lanyards. Such lights for use in spaces, which may contain explosive gases, shall be either explosive proof or otherwise intrinsically safe.

6 Where necessary to prevent danger, electric lamps shall be protected by guards.

7 In order to avoid the stroboscopic effect of fluorescent lighting, double tube lamps shall be used to illuminate working spaces with revolving machinery.

10 Ventilation in working and storage spaces

1 Ventilation in working and storage spaces shall be in accordance with the provisions of paragraph 2 of chapter 5.

2 Consideration shall be given to providing ventilation for the protection of personnel entering fish holds and other spaces.

3 Where necessary to safeguard personnel, work places and storage spaces shall be provided with an adequate system of heating and/or cooling.

11 Dangerous areas

1 Dangerous spaces or entrances thereto shall be properly illuminated and marked and have warning signs prominently posted. Retro-reflective and fluorescent materials may be used to increase the conspicuousness. A notice shall also be posted if a first aid procedure is appropriate.

2 A notice shall be posted below radar and radio aerials warning that no work shall be undertaken in the vicinity without authorization. A notice shall also be posted at the operating controls of radar and radio equipment warning the operator that the equipment shall not be started unless it is clear that no one is working near the aerials.

3 A working area, designated by the skipper as dangerous or requiring extra care, shall be brought to the attention of the crew at regular briefing sessions on safety and to each new crew member on joining a vessel.

12 Fish processing equipment

1 Arrangement of fish processing equipment shall ensure free access for inspection, operation and sanitary treatment of the equipment. Working areas in way of processing equipment shall be not less than 750 mm wide.

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

3 Machinery and installations operating under pressure shall comply with requirements of the Department of Marine Administration and can refer to requirements applicable to similar shore installations.

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

5 Where conveyors are working in one line, emergency switches shall be provided at intervals of not more than 3 m for stopping all conveyors working in the line. Where the length of a conveyor or series of conveyors is 10 m or more, sound or light signals shall be provided for giving warning when the conveyor system starts.

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

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

8 Moving parts of machinery and other equipment or installations, as well as gear wheels, which may present a hazard, shall be adequately guarded.

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

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

11 Adequate drainage shall be provided to prevent the accumulation of water in enclosed spaces as a consequence of fish handling or fish processing.

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

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

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

13 Medicine chest, radio-medical services and hospital accommodation

1 First aid equipment and instructions as required by the Department of Marine Administrationshall be provided in all fishing vessels. International standards relating to first aid at sea laid down in the International Medical Guide for Ships, prepared by the International Labour Organization, the International Maritime Organization and the World Health Organization, may serve as a guide. In addition, in recent years regional guidelines have also been developed.[12]

2 Fishing vessels shall carry an appropriate medical guide or instructions. The medical guide or instructions, shall be illustrated, shall explain how the medical supplies are to be used and shall be designed to enable persons other than a doctor to care for the sick or injured on board both with and, if necessary, without medical advice by radio or satellite communication.

3 The medicine chest shall contain equipment and medical supplies suitable for the expected service of the vessel (e.g., unlimited trips; trips of less than a certain distance from the nearest port with adequate medical equipment; service in harbours and very close to shore).

4 The Department of Marine Administrationshall establish requirements for the periodic replacement of medicines to ensure they are not outdated and appropriate to any changes in the operational requirements of the vessel (e.g., change in geographic location).

5 Appropriate instructions and equipment shall be provided to enable appropriate fishing vessel personnel to consult effectively with radio-medical services ashore.

6 Appropriate hospital accommodation shall be provided in accordance with international instruments.

7 Instructions and equipment necessary for safe medical evacuation by vessel, helicopter or other means shall be carried on board.

8 Generally, all instructions shall be in a language understood by the crew. Where possible, illustrations shall be used to facilitate ease of understanding and communication.

14 Miscellaneous

1 Protective clothing and safety working equipment such as gloves, goggles, ear protectors, respirators, safety helmets, special footwear, and/or other apparel, oilskins, explosive gas and oxygen sufficiency indicators, etc. shall be provided as appropriate to prevent injury or illness to personnel. The protective clothing and in particular oilskins, shall have a highly visible colour, be reflectorised, and fit as closely to the body as possible. The protective clothing for crew members working on deck shall be capable of supporting the wearer in the water in the event of being washed overboard. A buoyancy garment or a self-inflating working lifejacket could be used for this purpose.

2 All reasonable steps shall be taken to minimize harmful noise and vibration.

3 A portable gas detector shall be carried on board all fishing vessels which carry fish in bulk in their holds to enable the crew to ascertain whether it is safe to enter the fish-holds. A portable gas detector to test for leakage of refrigerant shall also be carried in a fishing vessel fitted with refrigeration machinery.

4 The skipper shall ensure that the crew are made aware of the health hazards in connection with the carriage of fish in bulk and shall advise the crew concerning safe working practices in this regard.

5 Effective lightning conductors shall be fitted to all wooden masts or topmasts. In vessels built of steel, it is sufficient to fit spikes on steel masts. In vessels constructed of non-conductive material the lightning conductors shall be connected by suitable conductors to a copper plate fixed to the vessel's hull well below the waterline.

6 The Department of Marine Administrationshall ensure that fishing vessels that carry cargo and/or fishing equipment on deck and/or a top deckhouses, carry on board clear instructions in relation to:

.1 the provisions in the stability booklet covering conditions of loading at various freeboards;

.2 permitted loading conditions relative to weather conditions;

.3 ensuring that cargo/fishing gear is not stowed in a manner that would obscure view from the bridge or obscure navigation lights and signals; and

.4 ensuring that access to, and the operation of, essential equipment and machinery is not impeded.

CHAPTER 7

LIFE-SAVING APPLIANCES

PART A - GENERAL

1 Application to existing vessels

The provisions of the present chapter shall apply to existing vessels.

2 Definitions

Float-free launching is that method of launching a survival craft whereby the craft is automatically released from a sinking vessel and is ready for use.

Inflatable appliance is an appliance which depends upon non-rigid, gas-filled chambers for buoyancy and which is normally kept uninflated until ready for use.

Inflated appliance is an appliance which depends upon non-rigid, gas-filled chamber for buoyancy and which is kept inflated and ready for use at all times.

Launching appliance or arrangements is a means of transferring a survival craft or rescue boat from its stowed position safety to water.

Novel life-saving appliance or arrangements is a life-saving appliance or arrangement which embodies new features not fully covered by the provisions of this chapter but which provides an equal or higher standard of safety.

Retro-reflective material is a material which reflects in the opposite direction a beam of light directed on it.

Survival craft is a craft capable of sustaining the lives of persons in distress from the time of abandoning the vessel.

3 Evaluation, testing and approval of life-saving appliances and arrangements[13]

1 Except as provided in paragraph 6, life-saving appliances and arrangements to which this chapter refers shall be approved by the Department of Marine Administrationin accordance with the requirements on the approbation of marine safety equipment.

2 Before giving approval to life-saving appliances and arrangements, the Department of Marine Administrationshall ensure that such life-saving appliances and arrangements:

.1 are tested to confirm that they comply with the guidelines given in this chapter and with the recommendations of the International Maritime Organization; or

.2 have successfully undergone, to the satisfaction of the Administration, tests which are substantially equivalent to those specified in the recommendations of the International Maritime Organization.

3 Before giving approval to novel life-saving appliances or arrangements, the Department of Marine Administrationshall ensure that such appliances or arrangements:

.1 provide safety standards at least equivalent to the guidelines given in this chapter and the applicable provisions of the Protocol of Torremolinos, 1993, on Safety of Fishing Vessels and have been evaluated and tested in accordance with the recommendations of the International Maritime Organization; or

.2 have successfully undergone, to the satisfaction of the Administration, evaluation and tests which are substantially equivalent to those

recommendations given in IMO resolutions on testing of life-saving appliances and arrangements.

4 Procedures adopted by the Department of Marine Administrationfor approval shall also include the conditions whereby approval will continue or will be withdrawn.

5 Part C of chapter VII of the Protocol of Torremolinos, 1993, on Safety of Fishing Vessels shall be used as guidance for the requirements for live-saving appliances.

6 Life-saving appliances referred to in this chapter for which specifications are not included in applicable provisions of the Protocol of Torremolinos shall be to the satisfaction of the Administration.

4 Production tests

The Department of Marine Administrationshall require proof that life-saving appliances have been subjected to such production tests as are necessary to ensure that the life-saving appliances are manufactured to the same standard as the approved prototype.

PART B -VESSEL REQUIREMENTS

5 Number and types of survival craft

1 Survival craft shall comply with the applicable provisions of the Protocol of Torremolinos, 1993, on Safety of Fishing Vessels. Alternatively, the Department of Marine Administrationmay permit vessels to carry other types of approved survival craft, taking into account the vessel's navigational and operational condition.

2 The Administration, taking into account the vessel's navigational area, conditions of operation and size of the vessel, may permit vessels to carry other types of survival craft of a type and number to the satisfaction of the Administration. Such survival craft may be of rigid or semi-rigid construction or of a type that is permanently inflated and of strong abrasion resistant construction with subdivided buoyancy.

3 Vessels of 17 m in length and over shall be provided with survival craft of sufficient aggregate capacity to accommodate at least 200% of the total number of persons on board. A sufficient number of these survival craft to accommodate at least the total number of persons on board shall be capable of being launched from each side of the vessel.

4 The Administration, taking into account the vessel's navigational area, conditions of operation and size of the vessel, may allow the vessel to be fitted with survival craft of sufficient aggregate capacity to accommodate at least the total number of persons on board.

5 A vessel less than 17 m in length shall carry survival craft of an aggregate capacity capable of accommodating all of the persons on board. The Administration, taking into account the vessel's navigation area and conditions of navigation may require the vessel to be provided with additional survival craft.

6 Every vessel shall carry adequate means of recovering persons from the water.

6 Availability and stowage of survival craft

1 Survival craft shall:

.1 be readily available in case of emergency;

.2 be capable of being launched safely and rapidly under the conditions required by the applicable provisions of the Torremolinos Protocol, 1993;

.3 be so stowed that:

.1 themarshalling of persons at the embarkation deck is not impeded;

.2 their prompt handling is not impeded;

.3 embarkation can be effected rapidly and in good order; and

.4 the operation of any other survival craft is not interfered with.

2 Survival craft and launching appliances shall be in working order and available for immediate use before the vessel leaves port and kept so at all times when at sea.

3 Stowage

.1 Survival craft shall be stowed to the satisfaction of the Administration.

.2 Every lifeboat shall be attached to a separate set of davits or approved launching appliance.

.3 Survival craft shall be positioned as close to accommodation and service spaces as possible, stowed in suitable positions to ensure safe launching, with particular regard to clearance from the propeller.

.4 Lifeboats for lowering down the vessel's side shall be stowed with regard to steeply overhanging portions of the hull, so ensuring, as far as practicable, that they can be launched down the straight side of the vessel. If positioned forward, they shall be stowed abaft the collision bulkhead in a sheltered position and in this respect the Department of Marine Administrationshall give special consideration to the strength of the davits.

.5 Liferafts shall be so stowed as to be readily available in case of emergency in such a manner as to permit them to float free from their stowage and break free from the vessel in the event of its sinking. However, davit- launched liferafts need not float free.

.6 Lashings, if used, shall be fitted with an automatic release system of an approved type.

.7 The Administration, if satisfied that the constructional features of the vessel and the method of fishing operation may render it unreasonable and impractical to apply particular provisions of this paragraph, may accept relaxation from such provisions, provided that the vessel is fitted with alternative launching and recovering arrangements adequate for the service for which it is intended.

4 All survival craft shall be marked with the same registration or other identification marks as used for the vessel as referred to in paragraph 16.1.

7 Embarkation into survival craft

Suitable arrangements shall be made for embarkation into the survival craft which shall include:

.1 at least one ladder, or other approved means, on each side of the vessel to afford access to the survival craft when waterborne, except where the Department of Marine Administrationis satisfied that the distance from the point of embarkation to the waterborne survival craft is such that a ladder is unnecessary;

.2 means for illuminating the stowage position of survival craft and their launching appliances during preparation for and the process of launching, and also for illuminating the water into which the survival craft are launched until the process of launching is completed, the power for which to be supplied from the emergency source required by paragraph 11 of chapter 4;

.3 arrangements for warning all persons on board that the vessel is about to be abandoned; and

.4 means for preventing any discharge of water into the survival craft.

8 Lifejackets

1 For every person on board, a lifejacket of an approved type shall be carried.

2 Lifejackets shall be so placed as to be readily accessible and their position shall be plainly indicated.

9 Immersion suits and thermal protective aids

1 For vessels operating in areas where low water or air temperature can be expected, an approved immersion suit of an appropriate size shall be provided for every person on board.

2 Where the Department of Marine Administrationconsiders that water or air temperatures in the area of operations of the vessel warrant immersion suits with inherent insulation, these suits shall be provided for every person on board.

3 Immersion suits shall be placed as to be readily accessible and their position shall be clearly indicated.

10 Lifebuoys

1 Vessels less than 17 m in length shall be provided with at least two lifebuoys one of which shall be attached to a buoyant line of not less than 30 m in length.

2 Vessels of 17 m in length and over shall be provided with at least three lifebuoys.

3 On every vessel, at least one of the lifebuoys shall be provided with self-igniting lights.

4 At least one of the lifebuoys provided with self-igniting lights in accordance with paragraph 3 shall be provided with self-activating smoke signals.

5 Where three lifebuoys are required, at least one lifebuoy on each side of the vessel shall be fitted with a buoyant lifeline of not less than 30 m in length. At least one lifebuoy shall not be fitted with a buoyant line. Such lifebuoys, fitted with buoyant lines, shall not have self-igniting lights.

6 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.

7 All lifebuoys shall be in a bright contrasting colour to the sea and marked with the same registration or other identification marks as used for the vessel as referred to in paragraph 16.1.

11 Distress signals

1 Every vessel shall be provided with means of making effective distress signals by day and by night, including at least four rocket parachute flares.

2 Distress signals shall be of an approved type. They shall be so placed as to be readily accessible and their position shall be plainly indicated.

12 Radio life-saving appliances

1 Vessels shall be equipped with suitable communications equipment having regard to the area of operation and the vessel's intended service.

2 Where two-way VHF radiotelephone apparatus is required by the Department of Marine Administrationin accordance with chapter 9, such apparatus shall conform to performance standards not inferior to those adopted by the Administration, having regard to those adopted by the International Maritime Organization.

13 Radar transponder[14]

At least one radar transponder shall be carried on every vessel. Such radar transponders shall conform to performance standards not inferior to those adopted by the Administration, having regard to those adopted by the International Maritime Organization. It shall be stowed in such a location that it can be rapidly placed in any survival craft.

14 Retro-reflective materials on life-saving appliances

All survival craft, rescue boats, lifejackets, immersion suits and lifebuoys shall be fitted with retro-reflective material in accordance with the recommendations of the International Maritime Organization.

15 Operational readiness, maintenance and inspections *Operational readiness*

1 Before the vessel leaves port and at all times during the voyage, all life-saving appliances shall be in working order and ready for immediate use.

Maintenance

2 Instructions for on-board maintenance of life-saving appliances shall be carried on board.

Spares and repair equipment

3 Spares and repair equipment shall be provided for life-saving appliances and their components which are subject to excessive wear or consumption and need to be replaced regularly.

Weekly inspection

Monthly inspections

4 Inspection of the life-saving appliances, including lifeboat equipment, shall be carried out monthly, using a checklist to ensure that they are complete and in good order. A report of the inspection shall be entered in the log book.

Servicing of inflatable liferafts, inflatable lifejackets

5 Every inflatable liferaft and inflatable lifejacket shall be serviced:

.1 at intervals not exceeding 12 months. However, in cases where it appears proper and reasonable, the Department of Marine Administrationmay extend this period to 17 months;

.2 at an approved servicing station which is competent to service them, maintains proper servicing facilities and uses only properly trained personnel.

Periodic servicing of hydrostatic release units

6 Hydrostatic release units shall be serviced:

.1 at intervals not exceeding l2 months. However, in cases where it appears proper and reasonable, the Department of Marine Administrationmay extend this period to 17 months; and

.2 at a servicing station which is competent to service them, maintains proper servicing facilities and uses only properly trained personnel.

7 In cases of vessels where the nature of fishing operations may cause difficulty for compliance with the provisions of paragraphs 6 and 7, the Department of Marine Administrationmay allow the extension of the service intervals to 24 months, provided that the Department of Marine Administrationis satisfied that such appliances are so manufactured and arranged that they will remain in satisfactory condition until the next period of servicing.

8 Hydrostatic release units of disposable design shall be replaced at or before the expiry date. Nevertheless, the Department of Marine Administrationshall inspect the release units during statutory inspections of other life-saving equipment and if found defective they shall be replaced, not serviced.

16 Miscellaneous

To facilitate aerial rescue operations, wheelhouse tops or other prominent horizontal surfaces shall be painted in a highly visible colour and shall bear the vessel's registration or other identification marks in letters and/or numerals in contrasting colours to the background. Similar marks on the sides of the wheelhouse would also facilitate search and identification by high-speed aircraft.

The skipper shall ensure that the crew is adequately trained in the use and inspection of life-saving appliances and that regular inspection of the equipment is carried out.

PART C - LIFE-SAVING APPLIANCES REQUIREMENTS

Part C of chapter VII of the Torremolinos International Convention for the Safety of Fishing Vessels, 1977, as modified by the Torremolinos Protocol of 1993 relating thereto shall be used as reference to requirements for life-saving appliances.

CHAPTER 8

EMERGENCY PROCEDURES AND SAFETY TRAINING

1 Application to existing vessels

The provisions of the present chapter shall also apply to exiting vessels.

2 General emergency alarm system, muster list and emergency instructions

1 The general emergency alarm system shall be capable of sounding the general alarm signal consisting of seven or more short blasts followed by one long blast on the vessel's whistle or siren and additionally on an electrically operated bell or klaxon or other equivalent warning system which shall be powered from the vessel's main supply and the emergency source of electrical power required by paragraph 4.11. As an alternative, an appropriate manual system shall be used on vessels of a length less than 17 m.

2 All vessels shall be provided with clear instructions for each crew member which shall be followed in case of emergency.

3 The muster list shall be posted up in several parts of the vessel and, in particular, in the wheelhouse, the engine room and in the crew accommodation and shall include the information specified in the following paragraphs.

4 The muster list shall specify details of the general alarm signal prescribed by paragraph 1 and also the action to be taken by the crew when this alarm is sounded. The muster list shall also specify how the order to abandon ship will be given.

5 The muster list shall show the duties assigned to the different members of the crew including:

.1 closing of watertight doors, fire doors, valves, scuppers, overboard shoots, sidescuttles, skylights, portholes and other similar openings in the vessel;

.2 equipping the survival craft and other life-saving appliances;

.3 preparation and launching of survival craft;

.4 general preparation of other life-saving appliances;

.5 use of communication equipment; and

.6 manning of fire parties assigned to deal with fires.

6 The Department of Marine Administrationmay permit relaxation of the requirements of paragraph 5 if satisfied that, due to the small number of crew members, no muster list is necessary.

7 The muster list shall specify which of the crew members are assigned to ensure that the life-saving and fire appliances are maintained in good condition and are ready for immediate use.

8 The muster list shall specify substitutes for key persons who may become disabled, taking into account that different emergencies may call for different actions.

9 The muster list shall be prepared before the vessel proceeds to sea. After the muster list has been prepared, if any change takes place in the crew which necessitates an alteration in the muster list, the skipper shall either revise the list or prepare a new list.

3 Abandon ship training and drills

Practice musters and drills

1 Each member of the crew shall participate in at least one abandon ship drill and one fire drill every month. However, the Department of Marine Administrationmay modify this requirement, provided that at least one abandon ship and one fire drill is held at least every three months. The drills of the crew shall take place within 24 hours of the vessel leaving a port if more than 25% of the crew have not participated in abandon ship and fire drills on board that particular vessel in the previous muster. The Department of Marine Administrationmay accept other arrangements that are at least equivalent for those classes of vessel for which this is impracticable.

2 Each abandon ship drill shall include:

.1 summoning of crew to muster stations with the general emergency alarm and ensuring that they are made aware of the order to abandon ship specified in the muster list;

.2 reporting to stations and preparing for the duties described in the muster list;

.3 checking that crew are suitably dressed;

.4 checking that lifejackets are correctly donned;

.5 preparing of at least one lifeboat or liferaft for launching;

3 Each fire drill shall include:

.1 reporting to stations and preparing for the duties described in the fire muster list;

.2 starting of a fire pump, using the required jets of water to show that the system is in proper working order;

.3 checking of fireman's outfit and other personal rescue equipment;

.4 checking of relevant communication equipment;

.5 checking the operation of watertight doors, fire doors, fire dampers and means of escape; and

.6 checking the necessary arrangements for subsequent abandoning of the vessel.

4 Drills shall, as far as practicable, be conducted as if there were an actual emergency.

5 Emergency lighting for mustering and abandonment shall be tested at each abandon ship drill.

6 The drills may be adjusted according to the relevant equipment required by those requirements. However, if equipment is carried on a voluntary basis, it shall be used in the drills and the drills shall be adjusted accordingly.

On-board training and instructions

7 On-board training in the use of the vessel's life-saving appliances, including survival craft equipment, shall be given as soon as possible but not later than 2 weeks after a crew member joins the vessel. However, if the crew member is on a regularly scheduled rotating assignment to the vessel, such training shall be given not later than 2 weeks after the time of first joining the vessel.

8 Instructions in the use of the vessel's life-saving appliances and in survival at sea shall be given at the same intervals as the drills. Individual instruction may cover different parts of the vessel's life-saving system, but all the vessel's life-saving equipment and appliances shall be covered within any period of 2 months. Each member of the crew shall be given instructions which shall include but not necessarily be limited to:

.1 operation and use of the vessel's inflatable liferafts, including precautions concerning nailed shoes and other sharp objects;

.2 problems of hypothermia, first-aid treatment for hypothermia and other appropriate first-aid procedures; and

.3 special instructions necessary for use of the vessel's life-saving appliances in severe weather and severe sea conditions.

Records

9 The date when musters are held, details of abandon ship drills and fire drills, drills of other life-saving appliances and on-board training shall be recorded in the log book.

4 Training in emergency procedures

Crews shall be adequately trained in their duties in the event of emergencies. Such training shall include, as appropriate:

.1 types of emergencies which may occur, such as collisions, fire and foundering;

.2 types of life-saving appliances normally carried on vessels; .3 need to adhere to the principles of survival; .4 value of training and drills;

.5 need to be ready for any emergency and to be constantly aware of:

.1 the information in the muster list, in particular:

.2 location of each crew member's own and spare lifejackets;

.3 location of fire alarm controls;

.4 means of escape;

.5 consequences of panic;

.6 actions to be taken in respect to lifting persons from vessels and survival craft by helicopter;

.7 actions to be taken when called to survival craft stations, including:

.1 putting on suitable clothing;

.2 donning of lifejacket; and

.3 collecting additional protection such as blankets, time permitting; .

.8 actions to be taken when required to abandon ship, such as:

.1 how to board survival craft from vessel and water; and

.2 how to jump into the sea from a height and reduce the risk of injury when entering the water;

.9 actions to be taken when in the water, such as:

.1 how to survive

.2 how to right a capsized survival craft;

.10 actions to be taken when aboard a survival craft,

.11 main dangers to survivors and the general principles of survival,

.12 actions to be taken in respect to fire fighting:

.1 the use of fire hoses with different nozzles;

.2 the use of fire extinguishers;

.3 knowledge of the location of fire doors; and

.4 the use of breathing apparatus.

CHAPTER 9

RADIOCOMMUNICATIONS

PART A - GENERAL

1 Application and definitions

1 The present chapter shall apply to new and existing fishing vessels.

2 No provision in this chapter shall prevent the use by any vessel, survival craft or person in distress of any means at its disposal to attract attention, make known its position and obtain help.

3 For the purpose of this chapter, the following terms shall have the meanings defined below.

.1 *Bridge-to-bridge communications* means safety communications between vessels from the position from which the vessels are normally navigated.

.2 *Continuous watch* means that the radio watch concerned shall not be interrupted other than for brief intervals when the vessel's receiving capability is impaired or blocked by its own communications or when the facilities are under periodical maintenance or checks.

.3 *Digital selective calling (DSC)* means a technique using digital codes which enables a radio station to establish contact with, and transfer information to, another station or group of stations, and complying with the relevant recommendations of the International Radio Consultative Committee (CCIR).

.4 *Direct-printing telegraphy* means automated telegraphy techniques which comply with the relevant recommendations of the CCIR.

.5 *General radiocommunications* means operational and public correspondence traffic, other than distress, urgency and safety messages, conducted by radio.

.6 *Inmarsat* means the Organization established by the Convention on the International Maritime Satellite Organization adopted on 3 September 1976.

.7 *International NAVTEX service* means the co-ordinated broadcast and automatic reception on 518 kHz of maritime safety information by means of narrow-band direct-printing telegraphy using the English language.

.8 *Locating* means the finding of ships, vessels, aircraft, units or persons in distress.

.9 *Maritime safety information* means navigational and meteorological warnings, meteorological forecasts and other urgent safety related messages broadcast to vessels.

.10 *Radio Requirements* means the Radio Requirements annexed to, or regarded as being annexed to, the most recent International Telecommunication Convention which is in force at any time.

. 11 *Sea area A1* means an area within the radiotelephone coverage of at least one VHF coast station in which continuous DSC alerting is available, as may be defined by a Party.

.12 *Sea area A2* means an area, excluding sea area A1, within the radiotelephone coverage of at least one MF coast station in which continuous DSC alerting is available, as may be defined by a Party.

.13 *Sea area A3* means an area, excluding sea areas A1 and A2, within the coverage of an Inmarsat geostationary satellite in which continuous alerting is available.

.14 *Sea area A4* means an area outside sea areas A1, A2 and A3.

All other terms and abbreviations which are used in this chapter and which are defined in the Radio requirements shall have the meanings as defined in those requirements .

2 Exemptions

1 It is highly desirable not to deviate from the requirements of this chapter; nevertheless the Department of Marine Administration may grant partial or conditional exemptions to individual vessels from the requirements of paragraph 5 to 9, provided:

.1 such vessels comply with the functional requirements of paragraph 3; and

.2 the Department of Marine Administration has taken into account the effect such exemption may have upon the general efficiency of the service for the safety of all ships and vessels.

2 An exemption may be permitted under paragraph 2.1 only:

.1 if the conditions affecting safety are such as to render the full application of pargraph 5 to 9 unreasonable or unnecessary; or

.2 in exceptional circumstances, for a single voyage outside the sea area or sea areas for which the vessel is equipped.

3 The Department of Marine Administrationmay exempt vessels operating always together in pair or in groups from being fully equipped in accordance with the requirements, provided that:

.1 the vessel in command fully complies with the requirements of the actual sea area;

.2 the other vessels in pair or in groups carry radio equipment sufficient for short distance distress alert and radiocommunications with the vessel in command, to the satisfaction of the Administration; and

.3 this exemption does not apply to EPIRB carriage requirements.

3 Functional requirements

Every vessel, while at sea, shall be capable:

.1 except as provided in paragraph 6.1.1 and paragraph 8.1.4.3, of transmitting ship-to-shore distress alerts by at least two separate and independent means, each using a different radiocommunication service;

.2 of receiving shore-to-ship distress alerts;

.3 of transmitting and receiving ship-to-ship distress alerts;

.4 of transmitting and receiving search and rescue co-ordinating communications;

.5 of transmitting and receiving on-scene communications;

.6 of transmitting and, as required by paragraph 1.5 of chapter 10, receiving signals for locating;

.7 of transmitting and receiving maritime safety information;

.8 of transmitting and receiving general radiocommunications to and from shore-based radio systems or networks subject to paragraph 13.7; and

.9 of transmitting and receiving bridge-to-bridge communications.

PART B - SHIP REQUIREMENTS

4 Radio installations

1 Every vessel shall be provided with radio installations capable of complying with the functional requirements prescribed by paragraph 3 throughout its intended voyage and, unless relaxed under paragraph 2, complying with the requirements of paragraph 5 and, as appropriate for the sea area or areas through which it will pass during its intended voyage, the requirements of either paragraphs 5, 6, 7 or 8.

2 Every radio installation shall:

.1 be so located that no harmful interference of mechanical, electrical or other origin affects its proper use, and so as to ensure electromagnetic compatibility and avoidance of harmful interaction with other equipment and systems;

.2 be so located as to ensure the greatest possible degree of safety and operational availability;

.3 be protected against harmful effects of water, extremes of temperature and other adverse environmental conditions;

.4 be provided with reliable, permanently arranged electrical lighting, independent of the main and emergency sources of electrical power, for the adequate illumination of the radio controls for operating the radio installation; and

.5 be clearly marked with the call sign, the ship station identity and other codes as applicable for the use of the radio installation. This includes the Maritime Mobile Service Identities (MMSI).

3 Control of the VHF radiotelephone channels, required for navigational safety, shall be immediately available on the navigation bridge convenient to the conning position and, where necessary, facilities shall be available to permit radiocommunications from the wings of the navigation bridge. Portable VHF equipment may be used to meet the latter provision.

5 *Radio equipment - General* 1 Every vessel shall be provided with:

.1 a VHF radio installation capable of transmitting and receiving:

.1 DSC on the frequency 156.525 MHz (channel 70). It shall be possible to initiate the transmission of distress alerts on channel 70 from the position from which the vessel is normally navigated; and

.2 radiotelephony on the frequencies 156.300 MHz (channel 6), 156.650 MHz (channel 13) and 156.800 MHz (channel 16);

.2 a VHF DSC watch receiver which may be separate from, or combined with, that required by 9.5.1.1.1;

.3 a radar transponder capable of operating in the 9 GHz band, which:

.1 shall be so stowed that it can be easily utilized; and

.2 may be one of those required by paragraphs 13 of chapter 7 for a survival craft;

.4 a receiver capable of receiving international NAVTEX service broadcasts if the ship is engaged on voyages in any area in which an international NAVTEX service is provided. However, if a NAVTEX service is not established in the actual area the Department of Marine Administration may permit vessels to receive navigational warnings and safety messages by other means of reception.

6 Radio equipment - Sea area A1

1 In addition to meeting the requirements of paragraph 5, every vessel engaged on voyages exclusively in sea area A1 shall be provided with a satellite emergency position- indicating radio beacon (satellite EPIRB) which shall be:

.1 capable of transmitting a distress alert either through the polar orbiting satellite service operating in the 406 MHz band or, if the vessel is engaged only on voyages within Inmarsat coverage, through the Inmarsat geostationary satellite service operating in the 1.6 GHz band;

.2 installed in an easily accessible position;

.3 ready to be manually released and capable of being carried by one person into a survival craft;

.4 capable of floating free if the vessel sinks and of being automatically activated when afloat; and

.5 capable of being activated manually.

2 The VHF radio installation, required by paragraph 5.1.1, shall also be capable of transmitting and receiving general radiocommunications using radiotelephony.

7 Radio equipment - Sea areas A1 and A2

1 In addition to meeting the requirements of 9.5 and 9.6, every vessel engaged on voyages beyond sea area A1, but remaining within sea area A2, shall be provided with:

.1 an MF radio installation capable of transmitting and receiving, for distress and safety purposes, on the frequencies:

.1 187.5 kHz using DSC; and

.2 182 kHz using radiotelephony;

.2 a radio installation capable of maintaining a continuous DSC watch on the frequency 2,187.5 kHz which may be separate from or combined with, that required by paragraph 1.1; and

3 The vessel shall, in addition, be capable of transmitting and receiving general radio communications using radiotelephony by either:

.1 a radio installation operating on working frequencies in the bands between 1,605 kHz and 4,000 kHz or between 4,000 kHz and 27,500 kHz. This requirement may be fulfilled by the addition of this capability in the equipment required by paragraph 1.1; or

.2 an Inmarsat ship-earth station.

8 Radio equipment - Sea areas A1, A2 and 3

1 In addition to meeting the requirements of paragraphs 5, 6 and 7, every vessel engaged on voyages beyond sea areas A1 and A2, but remaining within sea area A3, shall, if it does not comply with the requirements of paragraph 2, be provided with:

.1 an Inmarsat ship-earth station capable of:

.1 transmitting and receiving distress and safety communications using either radiotelephony;

.2 initiating and receiving distress priority calls;

.3 maintaining watch for shore-to-ship distress alerts, including those directed to specifically defined geographical areas;

.4 transmitting and receiving general radiocommunications, using either radiotelephony or direct-printing telegraphy.

2 In addition to meeting the requirements of paragraphs 5, 6, and 7, every vessel engaged on voyages beyond sea areas A1 and A2, but remaining within sea area A3, shall, if it does not comply with the requirements of paragraph 8.1, be provided with:

.1 an MF/HF radio installation capable of transmitting and receiving, for distress and safety purposes, on all distress and safety frequencies in the bands between 1,609 kHz and 4,000 kHz and between 4,000 kHz and 27,500 kHz:

.1 using DSC; and

.2 using radiotelephony;

.2 equipment capable of maintaining DSC watch on 2,187.5 kHz, 8,414.5 kHz and on at least one of the distress and safety DSC frequencies 4,207.5 kHz, 6,312 kHz, 12,577 kHz or 16,804.5 kHz; at any time, it shall be possible to select any of these DSC distress and safety frequencies. This equipment may be separate from, or combined with, the equipment required by 9.8.2.1.

9 Watches

1 Every vessel, while at sea, shall maintain a continuous watch:

.1 on VHF DSC channel 70;

.2 on the distress and safety DSC frequency 2,187.5 kHz, is fitted with an MF radio installation;

.3 on the distress and safety DSC frequencies 2,187.5 kHz and 8,414.5 kHz and also on at least one of the distress and safety DSC frequencies 4,207.5 kHz, 6,312 kHz, 12,577 kHz or 16,804.5 kHz, appropriate to the time of day and the geographical position of the vessel, if the vessel is fitted with an MF/HF radio installation. This watch may be kept by means of a scanning receiver;

.4 for satellite shore-to-ship distress alerts, if the vessel is fitted with an Inmarsat ship-earth station.

2 Every vessel, while at sea, shall maintain a radio watch for broadcasts of maritime safety information on the appropriate frequency or frequencies on which such information is broadcast for the area in which the vessel is navigating.

3 Every vessel, while at sea, shall maintain, when practicable, a continuous listening watch on VHF channel 16.

10 Sources of energy

1 There shall be available at all times, while the vessel is at sea, a supply of electrical energy sufficient to operate the radio installations and to charge any batteries used as part of a reserve source or sources of energy for the radio installations.

2 A reserve source or sources of energy shall be provided on every vessel to supply radio installations, for the purpose of conducting distress and safety radiocommunications, in the event of failure of the vessel's main and emergency source of electrical power. The reserve source of energy shall be capable of simultaneously operating:

.1 the VHF radio installation in sea area A1;

.2 the VHF radio installation and the MF or MF/HF installation in sea area A2;

.3 the VHF radio installation and the MF or MF/HF installation or the Inmarsat station in sea area A3; and

.4 for a period of at least 3 h.

The reserve source of energy need not supply independent HF and MF radio installation at the same time.

3 The reserve source or sources of energy shall be independent of the propelling power of the vessel and the vessel's electrical system.

4 The reserve source or sources of energy may be used to supply the electrical lighting required by paragraph 4.2.4.

5 Where a reserve source of energy consists of a rechargeable accumulator battery or batteries:

.1 a means of automatically charging such batteries shall be provided which shall be capable of recharging them to minimum capacity requirements within 10 h; and

.2 the capacity of the battery or batteries shall be checked using an appropriate method, at intervals not exceeding 12 months.

11 Performance standards

All equipment to which this chapter applies shall be of a type approved by the Administration. Such equipment, except for the domestic radio installation and its ancillary equipment, shall conform to appropriate performance standards approved by the Administration, having regard to those adopted by the International Maritime Organization.

12 Maintenance requirements

1 Equipment shall be so designed that the main units can be replaced readily, without elaborate re-calibration or readjustment.

2 Where applicable, equipment shall be so constructed and installed that it is readily accessible for inspection and onboard maintenance purposes.

3 Adequate information shall be provided to enable the equipment to be properly operated and maintained taking into account the recommendations of the International Maritime Organization.

4 Adequate tools and spares shall be provided to enable the equipment to be maintained.

5 The Department of Marine Administrationshall ensure that radio equipment required by this chapter is maintained to provide the availability of the functional requirements specified in paragarph 3 and to meet the recommended performance standards of such equipment.

6 Satellite EPIRBs shall be tested at intervals not exceeding 12 months for all aspects of operational efficiency with particular emphasis on frequency stability, signal strength and coding. However, in cases where it appears proper and reasonable, the Department of Marine Administration may extend this period to 17 months. The test may be conducted on board the vessel or at an approved testing or servicing station.

13 Radio personnel

Every vessel shall carry personnel qualified for distress and safety radiocommunications purposes, any one of whom shall be designated to have primary responsibility for radio communications during distress incidents. The personnel shall be holders of certificates specified in the Radio Requirements as appropriate. Alternatively, national certificates based on the same requirements as the Radio Requirement, but taking account of particular local circumstances, may be issued.

14 Radio records

A record shall be kept, to the satisfaction of the Department of Marine Administration and as required by the Radio Requirements, of all incidents connected with the radio communication service which appear to be of importance to safety of life at sea.

CHAPTER 10
NAVIGATIONAL EQUIPMENT

1 Application to existing vessels

The provisions of paragraphs 2, 3, 4 and 6 of the present chapter shall apply to existing fishing vessels.

2 Magnetic compass

1 Vessels shall be fitted with a standard magnetic compass, except as provided in paragraph 10.1.2. The magnetic compass shall be properly adjusted and its table or

curve of residual deviations shall be available at all times. Its rose shall have a minimum diameter of 150 mm and be graduated degree by degree,

2 The Administration, if it considers it unreasonable or unnecessary to require a standard magnetic compass, may exempt individual vessels or classes of vessels from these requirements, if the nature of the voyage, the vessel's proximity to land or the type of vessel does not warrant a standard compass, provided that a suitable steering compass is in all cases carried.

3 It shall be possible to read the compass by day and by night from the steering position. Magnetic compasses shall be provided with means for adjustment; securing devices for compasses and compensators shall be made of nonmagnetic materials. Compasses shall be sited as near the fore-and-aft line of the vessels as practicable, with the lubber line, as accurately as possible, parallel with the fore-and-aft line.

4 In vessels equipped with an auto-pilot system actuated by a magnetic sensor, which does not indicate the vessel's heading, suitable means shall be provided to show this information.

3 Nautical instruments, publications and distress signalling equipment

1 Every vessel shall carry on board the following equipment:

- radar capable of operating in the 9 GHz frequency band 1 radar reflector if the hull of the vessel is of non metallic material 1 GNSS receiver
- echo sounder (fish-finding devices, if fitted, can be used for that purpose) 1 hand sounding lead 1 barometer 1 thermometer
- list indicator
- pair of binoculars
- red rockets signal of parachute type
- hand red flares
- floating smoke signal 1 national flag
- set of flags N and C of the International Code of Signals 1 set of day marks 1 watertight light torch 1 set of updated charts 1 protractor 1 divider 1 binnacle clock 1 set of tools 1 boat hook
- set of assorted ropes and cables 1 bag of quick-setting glue 1 illustrated table of rescue signals

2 Vessel navigating more than 20 miles from the shore, shall also carry the sailing directions, the list of lights, the tidal tables and all other nautical publications necessary for the area concerned, as well as the requirements for the prevention of collisions at sea.

3 All equipment fitted in compliance with this section shall be to the satisfaction of the Administration.

4 Navigational signalling equipment

1 Attention is drawn to the need to provide the equipment to comply in every respect with the requirements of the International Regulations for Preventing Collisions at Sea 1972, as amended.

2 Lights, shapes and flags shall be provided to indicate that the vessel is engaged in any specific operation for which such signals are used.

5 Navigating bridge visibility

Vessels shall meet the following requirements:

.1 The view of the sea surface from the conning position shall extend from right ahead to 22.5° abaft the beam on either side of the vessel. Blind sectors caused by any obstruction outside the wheelhouse shall be kept as small as possible.

.2 From each side of the wheelhouse, the horizontal field of vision shall extend over an arc of at least 225°, that is from at least 45° on the opposite bow through right ahead and then from right ahead to right astern through 180° on the same side of the vessel.

6 Log Book

On every vessel, the skipper shall maintain and keep updated a log book. Main events regarding navigation, safety of life at sea, security, pollution, communications, and all other incidents or accidents concerning the vessel, its machinery and its fishing activity shall be recorded in the log book.

CHAPTER 11 CREW ACCOMMODATION

1 General

1 Before the construction of a fishing vessel, and before the crew accommodation of an existing fishing vessels is substantially altered or reconstructed, detailed plans of, and information concerning, the accommodation shall be submitted to the Administration, or an entity authorized by the Administration, for approval. Crew accommodation forms an integral part of the procedural requirements for ship safety certification and safe manning, and shall be in accordance with the present requirements.

2 Location, structure and arrangement of crew accommodation spaces and means of access thereto shall be such as to ensure adequate security, protection against weather and sea and insulate from heat and cold, condensation, undue noise, vibration or effluvia from other spaces. In particular, the insulation material to be applied to bulkheads and deckheads of machinery spaces adjacent to crew accommodation shall be of a type approved by the Administration. Sleeping rooms shall be placed aft the collision bulkhead and, to the extent possible, not below the working deck.

3 Where practical, noise measurements may be taken by the Department of Marine Administrationon completion of construction of a new vessel. Similar measurements

may also be taken following a refit or major alterations to an existing vessel if it is considered that noise levels might have been influenced.

4 Bulkheads and decks between accommodation spaces and fish-holds, machinery spaces, fuel tanks, galleys, engine, deck and other store rooms, drying rooms, communal wash-places or water closets shall be so constructed as to prevent the infiltration of fumes and odours. Direct openings into sleeping rooms from such places shall be avoided whenever reasonable or practicable.

5 Where passageways are provided in crew accommodation these shall be as wide as possible, but the clear width shall not be less than 700 mm. Where doors open outwards into a passageway, there shall be sufficient space to pass the door when it is open at a right angle to the passageway.

6 Accommodation spaces shall be adequately insulated to prevent loss of heat, condensation or overheating.

7 In the choice of materials used for construction of accommodation spaces, account shall be taken of properties potentially harmful to the health of personnel or likely to harbour vermin and mould. Surfaces, including decks, of accommodation and furnishings shall be of a kind easily kept clean and hygienic, as well impervious to damp. Bulkhead and deckhead surfaces, if painted, shall be light in colour and the paint specification shall be to the approval of the Administration. Other surface coverings, such as lime wash, shall not be used.

8 Where appropriate, access to ordinary exits and emergency exits shall be marked with direction indicators. Exits shall be marked in a conspicuous manner above or beside the door.

9 Where the deck covering is of composition material, the connection to the side of the vessel, bulkheads and partitions shall be rounded to avoid crevices.

10 All practical measures shall be taken to protect crew accommodation and furnishings against the admission of insects and other pests.

11 Overhead exposed decks over crew accommodation shall be sheathed with wood or equivalent insulation.

12 The electrical switchboard shall be so arranged that when the shore power connection is made, power would be available for crew accommodation lighting, ventilation systems and, where applicable, heating and cooking facilities.

2 Lighting, heating and ventilation

1 All crew accommodation spaces shall be adequately lighted, as far as possible, by natural lighting. Such spaces shall also be equipped with adequate artificial light. Artificial light shall be in accordance with accepted standards of visual comfort in living spaces. The minimum standards for natural lighting in crew accommodation shall be such as to permit a person with normal vision to read an ordinary newspaper on a clear day.

2 If there are no two independent sources of electricity for lighting, additional lighting shall be provided by properly constructed lamps or lighting apparatus for emergency use.

3 Methods of lighting shall not endanger the health or safety of the crew or the safety of the vessel.

4 Adequate heating facilities in crew accommodation spaces shall be provided as required by climatic conditions. Heating facilities shall be capable of maintaining a satisfactory air temperature in crew accommodation under normal conditions of service of a fishing vessel. The accommodation shall be capable of being heated sufficiently to maintain a minimum temperature of +22°C in all day rooms at an outside temperature of - 15°C.

5 Facilities for heating shall be designed so as not to endanger health or safety of the crew or safety of the vessel.

6 Heating by means of open fires shall be prohibited.

7 Accommodation spaces shall be adequately ventilated at all times when the crew is expected to remain on board. Ventilation systems shall be capable of control so as to maintain the air in a satisfactory condition and to ensure a sufficiency of air movement in all conditions of weather and climate. The ventilation of galleys and sanitary spaces shall be to the open air and, unless fitted with a mechanical ventilation system, be independent from that for other crew accommodation.

8 Accommodation spaces of vessels regularly engaged on voyages in the tropics and under similar conditions, except in deckhouses with satisfactory natural ventilation, shall be equipped with mechanical ventilation and, if necessary, with additional electric fans or air conditioning, in particular, mess rooms and sleeping quarters.

9 Drying rooms or lockers for working clothes and oilskin lockers shall have adequate ventilation that is separate from other spaces. The exhaust from such spaces shall be well clear of the air intakes of the ventilation systems for other spaces.

3 Sleeping rooms

.1 Sleeping rooms shall be so planned and equipped as to ensure reasonable comfort for the occupants and to facilitate tidiness. The clear headroom shall, whenever possible, be not less than 2 m. There shall be no access to the accommodation from the fish room.

.2 Wherever reasonable and practical, the floor area of sleeping rooms per person accommodated therein, excluding space occupied by berths and lockers, shall not be less than 0.75 m^2.

.3 Each member of the crew shall be provided with an individual berth, the inside dimensions of which shall, wherever practicable, be not less than 1.9 m by 0.7 m.

.4 Berths shall, wherever possible, not be placed side by side in such a way that access to one berth can he obtained only over another. Berths shall not normally be arranged in tiers of more than two. The lower berth in a double tier shall be not less

than 300 mm above the deck; the upper berth shall he paced approximately midway between the bottom of the lower berth and the lower side of the deck head beams.

.5 Where the upper berth in a tier overlaps a lower berth, the underside of the upper berth shall be fitted with a dust proof bottom of wood, canvas or other material.

.6 If tubular frames are used for the construction of berths, they shall be completely sealed and without perforations that would give access to vermin.

.7 Suitable bedding shall be provided for the crew. Mattresses shall not be of a type that is liable to develop toxic fumes in cases of fire nor of a type that will attract pests or insects. Mattresses shall be provided with a cover of fire retardant material.

.8 Whenever reasonable and practicable, having regard to the size, type or intended service of the vessel, the furnishings of sleeping rooms shall include both a fitted cupboard preferably with an integral lock and a drawer for each occupant. A table or desk, adequate seating, a mirror, cabinet for toilet requisites, a book rack and coat hooks shall also be provided.

9 The maximum number of persons to be accommodated in any sleeping room shall be clearly and indelibly marked in the room where it can be conveniently seen.

4 Mess rooms

1 Wherever reasonable and practicable, mess room accommodation separate from sleeping quarters shall be provided.

2 The mess room shall be as close as practicable to the galley.

3 The dimensions and equipment of each mess room shall be sufficient for the number of persons likely to use it at any one time.

4 The furnishings of mess rooms shall include tables and approved seats sufficient for the number of persons likely to use them at any one time. The tops of tables and seats shall be free of sharp edges and shall be of damp resisting material without cracks and easily kept clean.

5 Where pantries are not accessible from mess rooms, adequate lockers for mess utensils and proper facilities for washing shall be provided.

6 Mess rooms shall be planned, furnished and equipped to provide appropriate facilities for recreation.

5 Sanitary facilities

1 Sufficient sanitary facilities, including wash-basins, shower-baths and water-closets, shall be provided to the satisfaction of the Administration, having due regard to the intended service of the vessel. Wherever practicable, such facilities shall be provided as follows:

.1 one shower-bath for every eight persons or less;

.2 one water-closet or suitable alternative for every eight person or less;

.3 one wash-basin for every six persons or less; and

.4 cold fresh water and hot fresh water or means of heating fresh water shall be available in all wash spaces.

2 Soil and waste discharge pipes shall not pass through fresh water or drinking water tanks or, where practicable, provision stores. Neither shall they, where practicable, pass overhead in mess rooms or sleeping accommodation. Such pipes shall be fitted with anti-syphon closures.

3 In general, water-closets shall be situated convenient to, but separate from, sleeping rooms, mess rooms and wash-rooms.

4 The deck area of wash places shall have a covering of durable material, easily cleaned, impervious to damp and properly drained. The deck covering shall be carried up the sides of the compartment to a height of not less than 0.2 m and be adequately sealed at all joints to prevent the ingress of water and damp.

5 The bulkheads shall be of steel or other approved material and shall be watertight to a height of at least 0.25 m above the deck to allow for effective sealing of the deck covering where it meets the bulkheads.

6 Facilities for washing and drying clothes shall be provided on a scale appropriate to the number of the crew and the duration of intended voyages.

7 In general, international standards concerning shipboard sanitary facilities contained in the WHO Guide to Ship Sanitation, 1967 as amended may serve as guidance.

6 Potable water facilities

Filling, storage and distribution arrangements for potable water shall be designed to preclude any possibility of water contamination or overheating. Tanks shall be designed to allow internal cleaning.

7 Provision stores

Having regard to the intended service of the vessel, store rooms of adequate capacity shall be provided which can be kept cool, dry and well ventilated in order to avoid deterioration of the stores. Where possible, refrigerators or other satisfactory low-temperature storage shall be provided. Where refrigerating or freezing rooms are fitted, the access doors shall be capable of being opened from either side. An alarm system shall be arranged from the refrigerating and freezing room to the galley or other appropriate location if such rooms are large enough for personnel to enter them.

8 Cooking facilities

1 Having regard to the intended service of the vessel, satisfactory cooking appliances and equipment shall be provided and shall, wherever practicable, be fitted in a separate galley.

2 Galleys shall be of adequate dimensions for the purpose and have sufficient storage space and satisfactory drainage.

3 The galley shall be provided with cooking utensils, the necessary number of cupboards, shelves, sinks and dish racks of rustproof material and with satisfactory drainage. Drinking water shall be supplied to the galley by means of pipes. Where it

is supplied under pressure, the system shall be protected against backflow. Where hot water is not supplied to the galley, a water heater shall be fitted.

4 The galley shall be fitted with suitable facilities for the preparation of hot drinks for the crew at all times.

5 Cooking appliances shall be fitted with fail-safe devices in the event of failure of the power source or fuel. Supplies of fuel in the form of gas or oil shall not be stored in the galley.

CHAPTER 12

MANNING, TRAINING AND COMPETENCE

1 Application

1 The provisions of the present chapter shall apply to all personnel serving on board new and existing vessels not authorized to navigate more than 20 miles from the shore.

2 The provisions of the International Convention on Standards of training, certification and watchkeeping for fishing vessel personnel, 1995, shall apply to new and existing vessels authorized to navigate more than 20 miles from the shore.

2 Manning

1 The Department of Marine Administrationshall ensure that vessels are sufficiently and safely manned with a crew necessary for the safe navigation and operation of the vessel and under the control of a competent skipper[21]. When deciding on the manning the Department of Marine Administrationshall take into account:

.1 seasonal weather conditions;

.2 sea states in which the vessel could operate;

.3 type of vessel;

.4 the range and risk of the fishing operation;

.5 length of time the vessel is at sea;

.6 distance from shore;

.7 training and experience of the fishermen; and

.8 the need to minimize fatigue.

3 Skippers' standard of competence

1 The skipper shall be sufficiently trained and experienced to keep the vessel safe and well managed at all times. This includes:

.1 operating and maintaining machinery and systems;

.2 handling emergencies and using communications to seek help;

.3 first aid;

.4 manoeuvring a vessel, at sea, in port and during fishing operations;

.5 knowledge of navigation;

.6 weather conditions and forecasting;

.7 knowledge of stability;

.8 the use of signals;

.9 application of the collision requirements;

.10 understanding and minimizing the risks of fishing operations;

.11 knowledge of security; and

.12 knowledge of pollution prevention.

4 Certification of skippers

1 The skipper shall be certificated by the Administration.

2 Every candidate for certification shall satisfy the Department of Marine Administrationas to medical fitness, particularly regarding eyesight and hearing, and have approved seagoing service of not less than 12 months on fishing vessels.

3 The certification shall be granted after having passed a written and/or oral and /or practical examination including the items listed in paragraph 3.

5 Crew training

Each of the crew shall be trained in:

.1 the use of fire extinguishers, lifejackets and personal flotation devices; .2 work place safety; including understanding the dangers associated with fatigue and the consumption of alcohol and drugs;

.3 safe handling of the fishing gear;

.4 safe operation of deck equipment;

.5 basic pre-sea safety training and familiarization ' security;

.6 pollution prevention; and

.7 prevention of onboard accidents applying the principles of risk assessment.

6 Watchkeeping

1 The skipper shall ensure that watchkeeping arrangements are adequate for maintaining a safe and permanent navigational watch, in particular for avoiding collision and stranding.

2 The composition of the crew shall at all times be adequate and appropriate to the foreseeable circumstances and conditions of the intended activities for maintaining a proper look-out.

3 The watch system shall be such that the efficiency of watchkeeping personnel is not impaired by fatigue.

CHAPTER 13 PREVENTION OF POLLUTION

1 Discharge at sea

1 Any discharge into the sea of oil or oily mixtures from vessels shall be prohibited.

2 Disposal of garbage at sea is prohibited, except food waste at a distance of more than 12 nautical miles from the nearest land.

2 Retention on board

The crew shall be notified of the disposal prohibition defined in paragraph 1. They shall be informed on the locations where garbage they could detain or generate may be stored on board.

3 Disposal ashore and record keeping

1 Substances or garbage that are retained on board shall be disposed of ashore in accordance with the relevant national or local requirements.

2 Any incidents of pollution caused by a vessel shall be noted in the log book and, if necessary, reported to the competent authorities.

CHAPTER 14

SAFETY MANAGEMENT

1 Voluntary application of the International Safety Management Code

The provisions of the International Management Code for the Safe Operation of Ships and for Pollution Prevention (International Safety Management - ISM Code), adopted by the IMO in resolution A.741(18), as amended, may be applied voluntarily to vessels covered by the present requirements .

2 Voluntary application of the Safety Assessment and Management System[15]

The provisions of the Safety Assessment and Management System as described in Appendix 1, Part A, of the Code of safety for fishermen and fishing vessels, 2005, may also be applied voluntarily to vessels covered by the present requirements.

CHAPTER 14

SECURITY OF VESSEL

1 Application

The requirements of the present chapter shall apply to new and existing vessels, taking into account the security environment and the risk area related to the operating area and the security risk that may be encountered during the intended voyage, as evaluated by the Administration.

2 Vessel security

Searching

1 Vessels shall be searched after having been left unattended to ensure that nothing has been placed aboard while the vessel was unattended and for the purpose of concealing trespassing persons and articles placed on board for illegal purposes. To the extent possible, checks shall include all spaces accessible to non-authorized persons while the vessel was unattended, e.g., any crew areas, holds, under-water hull, if concern prevails and areas that could conceal persons or articles that may be used for illegal purposes.

Securing

2 With due regard to the need to facilitate escape in the event of an emergency, where possible external doors, hatches and storage areas shall be kept locked and windows secured while the ship is left unattended. If the vessel is left unattended for a long period of time such as overnight, it is recommended that the engine is disabled to prevent theft/unauthorized use.

Preventing unauthorized access to vessels

3 Measures preventing unauthorized access to vessels shall be implemented and maintained. Such measures may be:

.1 over-the-side lighting which gives an even distribution of light on the whole hull and waterline;

.2 keeping a good watch from the deck;

.3 challenging all approaching boats; if unidentified, they shall, where possible, be prevented from coming alongside; and

.4 all visitors and contractors shall report to the skipper of the vessel, or other responsible person to notify them of their arrival.

3 Contingency measures for security alerts

Contingency measures shall be in place for dealing with emergency navigational and health and safety alerts on board vessels. These plans may be adapted to include procedures for security alerts and incidents.

If a suspicious device or package is found while a vessel is at sea, the master shall take into account:

.1 the size and location of the device;

.2 the credibility of the threat;

.3 the vessel's location and the time it will take for security services and other assistance to arrive;

.4 the need to keep everyone well clear of the suspect device; and

.5 the need for all on board to keep clear of all doors, trunks and hatches leading from the space containing the device to avoid possible blast injuries.

4 Reporting security incidents

1 Procedures and processes for reporting and recording security incidents shall be implemented. The skipper shall be provided with contact information for authorities responsible for emergency response, the national response centre(s) (if appropriate) and any other authorities that may need to be notified.

2 Reports of security incidents on board a vessel shall be reported to the skipper or the person designated by him.

3 In the event of a security incident occurring while the vessel is at sea the skipper, in addition to activating an appropriate response, shall alert the nearest coastal State or authorities and/or vessels in vicinity and provide details of the incident.

5 Training

1 The skipper shall be made aware of basic security requirements contained in chapter 11-2 of the SOLAS Convention, as amended, as well as in the International Code for the Security of Ships and of Port Facilities (ISPS Code), adopted by the IMO in resolution A.924(22), as amended.

2 Every new members of the crew, when embarking on board the vessel for the first time, shall be briefed on security risks and how to report any suspicious situation he may encounter.

APPENDIX

(Name of Country)

MINISTRY OF THE MERCHANT MARINE

SAFETY CERTIFICATE FOR FISHING VESSEL

(This Certificate shall be supplemented by a Record of Equipment)

Issued under the provisions of the Safety requirements for Fishing Vessel of 12 m. in length and above, but less than 24 m.

By :Mr/Mrs/Ms

Name of vessel	Distinctive number or letters	Port of registry	Length	Type

Fishing Vessel : New / Existing

Gross tonnage .....

Power of main propulsion engine (kW) .....

Limits of navigation authorised.....

Areas in which the vessel is certified to operate (under GMDSS rules)

Name and address of shipowner.....

Date on which keel was laid or vessel was at a similar stage of construction or, where applicable, date on which work for an alteration or modification of a major character was commenced :

Maximum permissible operating draught:.....

Location of the Maximum permissible operating draught measured from the working deck (freeboard): .....

Possible exemptions granted, by ..... Date .....

1 -.....

2 -.....

THIS IS TO CERTIFY :

That the vessel has been surveyed in accordance with the requirements of the requirements

1 That the survey showed that :

1.1 the condition of the structure, machinery and equipment was satisfactory and the vessel complied with the relevant requirements of the requirements ;

1.2 the last inspection of the outside of the vessel's bottom took place on

.....*(date)* ;

1.3 the vessel complied with the requirements of the requirements as regards fire safety systems and appliances and fire control plans ;

1.4 the life-saving appliances and the equipment of the liferafts boats were provided in accordance with the requirements of the requirements ;

1.5 the vessel complied with the requirements of the requirements as regards radio installations;

1.6 the vessel complied with the requirements of the requirements as regards shipborne navigational equipment and nautical publications ;

1.7 the vessel was provided with lights, shapes, means of making sound signals and distress signals in accordance with the requirements of the requirements and the International Regulations for Preventing Collisions at Sea in force ; and

1.8 in all other respects the vessels complied with the relevant requirements of the requirements.

2 That the vessel described in the present document shall be considered as being provided with adequate personnel for the purposes of safety in accordance with the requirements if, when it puts to sea, it has on board at least the number of persons with the ranks/capacities specified in the table(s) below.

Rank/capacity	Certificate	Number of personnel

4 That the vessel has been subject to a voluntary audit on ..... *(date)* and that it satisfies the

requirements of the International Code for the Safe Management of Ships and Prevention of Pollution (ISM Code), after verification that the certificate of conformity of the company applies to this type of vessel, or, on a provisional basis

This certificate is valid until .....

subject to the annual surveys and inspection of the outside of the vessel's bottom in accordance with the requirements .

Issued at .....

(Place of issue of certificate)

(Date of issue) (Signature of authorized official issuing the certificate)

(Seal or stamp of the issuing authority, as appropriate)

Endorsed in confirmation of the validity of this Certificate after satisfactory annual Survey. At ..... , on.....20

Signature and official seal

Endorsed in confirmation of the validity of this Certificate after satisfactory annual Survey. At ..... , on.....20

Signature and official seal

Endorsed in confirmation of the validity of this Certificate after satisfactory annual Survey. At ..... , on.....20

Signature and official seal

Endorsed in confirmation of the validity of this Certificate after satisfactory annual Survey. At ..... , on.....20

Signature and official seal

Record of equipment for the Fishing Vessel Safety Certificate

(This Record shall be permanently attached to the Safety Certificate for Fishing Vessel issued at.....on .....)

1 *Particulars of vessel*

Name of vessel .....

Registration Number or distinctive letters

2 *Details of life-saving appliances*

1 Total number of persons for which life-saving appliances are provided		
	Port side	Starboard side
2.1 Total number of lifebrafts		
2.2 Total number of persons accommodated by them		
2.3 Other lifeboats		
3 Number of lifebuoys.....		
4 Number of lifejackets		
5 Immersion suits :		
5.1 Total number		
5.2 Number of suits complying with the requirements for lifejackets.....		
6 Number of thermal protective aids		
7 Radio installations used in life-saving appliances :		
7.1 Number of radar transponders		
7.2 Number of two-way VHF radiotelephone apparatus		

3 *Details of radio facilities*

Item	Actual provision
1 Primary systems	
1.1 VHF radio installation:	
1.1.1 DSC encoder	
1.1.2 DSC watch receiver	
1.1.3 Radiotelephony	
1.2 MF radio installation:	

1.2.1 DSC encoder	
1.2.2 DSC watch receiver	
1.2.3 Radiotelephony 1.3 MF/HF radio installation:	
1.3.1 DSC encoder	
1.3.2 DSC watch receiver	
1.3.3 Radiotelephony	
1.4 INMARSAT earth ship station	
2 Secondary means of alerting	
3 Facilities for reception of maritime safety information : 3.1 NAVTEX receiver 3.2 EGC receiver 3.3 HF direct-printing radiotelegraph receiver	
4 EPIRB satellite 4.1 COSPAS-SARSAT 4.2 INMARSAT	
5 VHF EPIRB	
6 Ship's radar transponder	

5 Other relevant documents

Stability information

Charts, list of lights, sailing directions

Log book

THIS IS TO CERTIFY that this Record is correct in all respects .

Issued at .....

(Place of issue of the Record)

(Date of issue) (Signature of duly authorized official issuing the Record)

(Seal or stamp of the issuing authority, as appropriate)

ANNEX 1

ILLUSTRATION OF TERMS USED IN THE DEFINITIONS

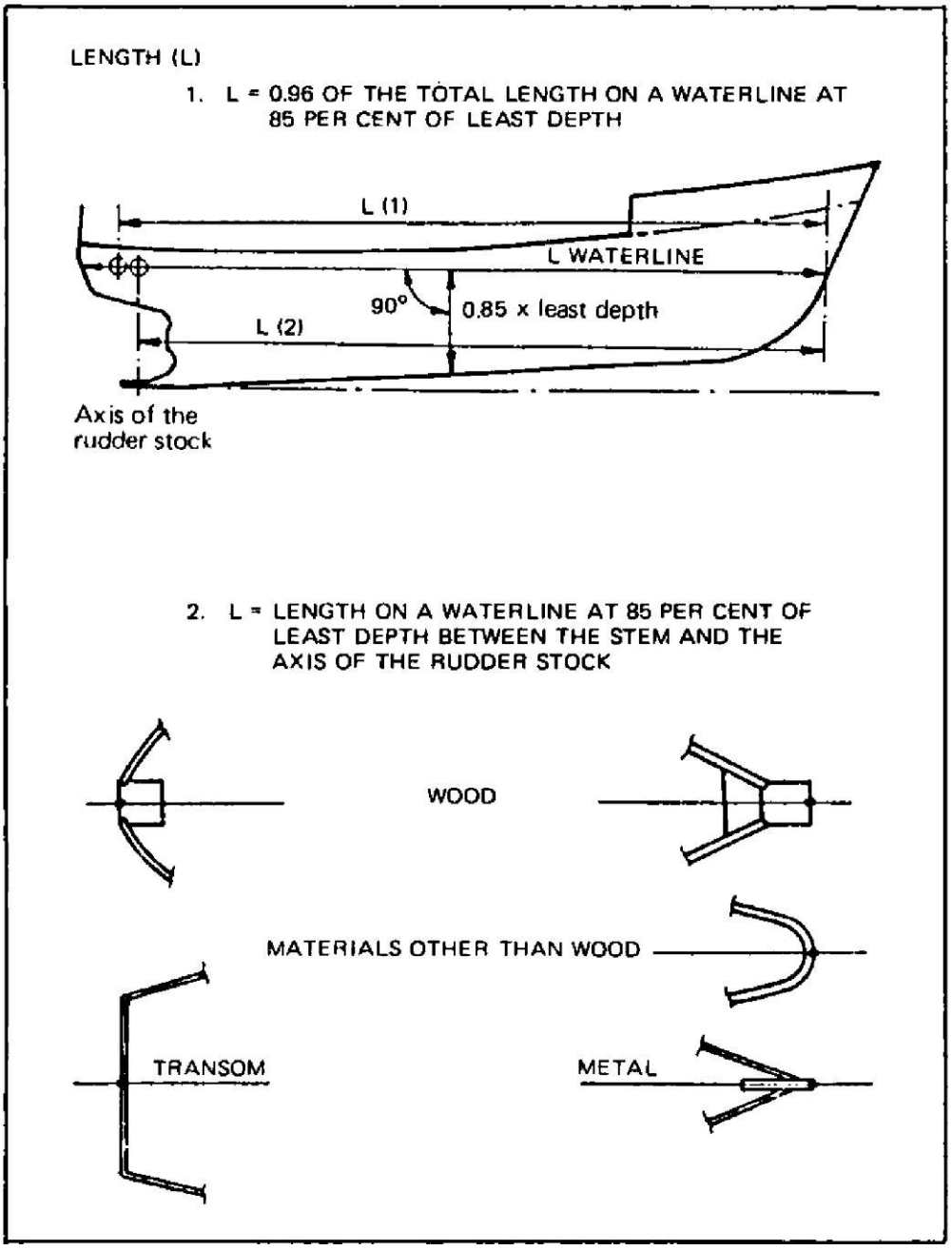
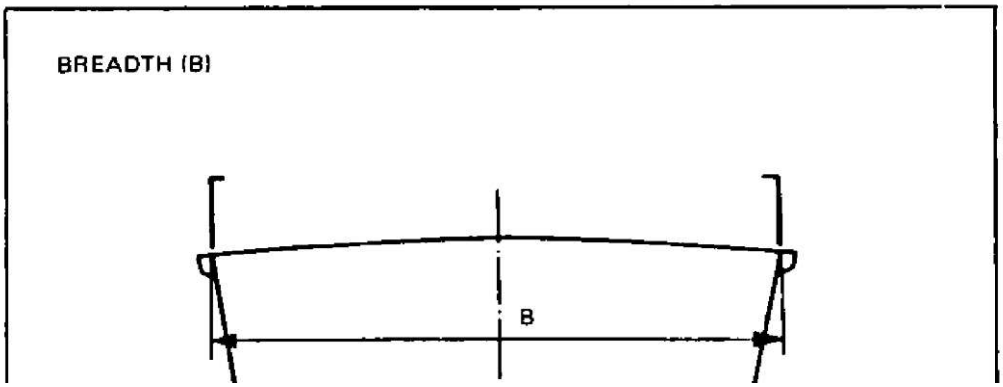


Figure 1



LEAST DEPTH

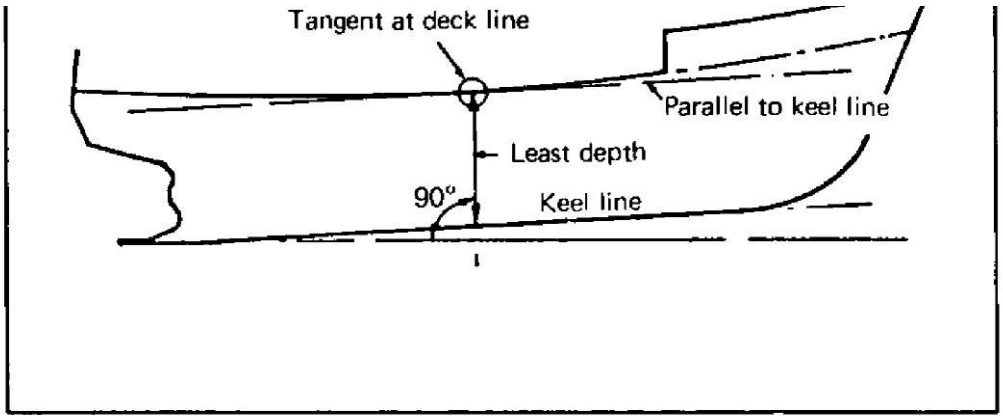


Figure 2

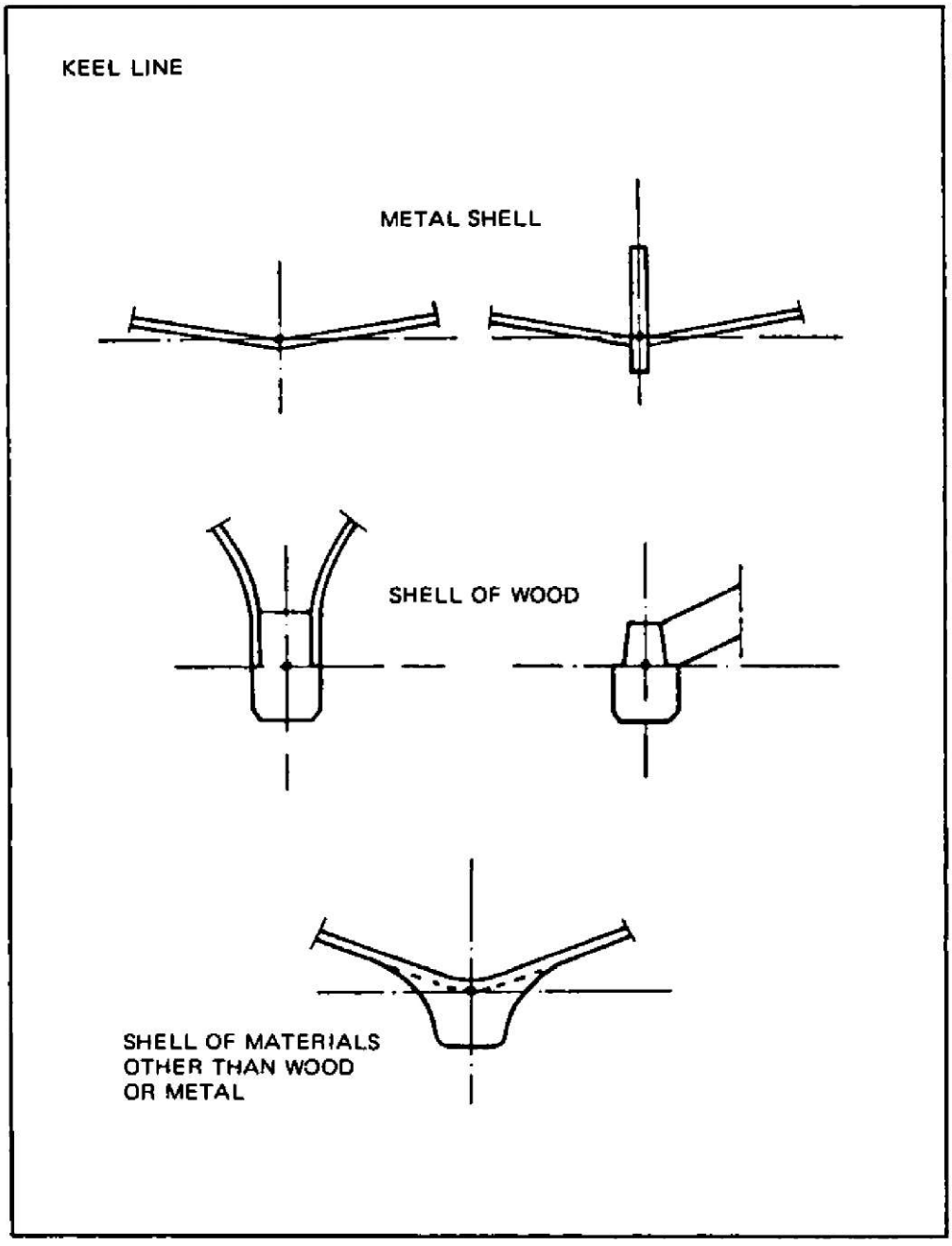
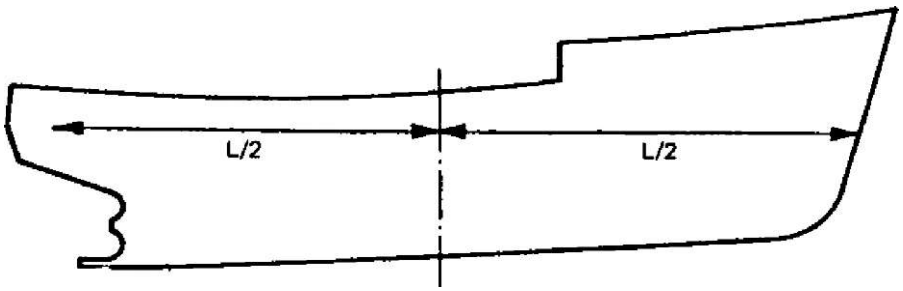


Figure 3



AMIDSHIPS

Figure 4

ANNEX 2

RECOMMENDED STANDARDS FOR ANCHORING AND MOORING EQUIPMENT

1 The characteristics of anchors, chain, wires, towlines and mooring lines should be determined in accordance with the attached table, based on an equipment number "EN" as follows.

2 $EN = A^3 + 2B(a + \wedge hj) + 0.1A$

where:

A moulded displacement, in tonnes, to the maximum design waterline;

B breadth, in m, as defined in 1.2.1.9;

a distance, in m, from the maximum design waterline to the upper edge of the uppermost complete deck at side amidships;

hj height, in m, on the centerline of each tier of deckhouses having a breadth greater than B/4. For the lowest tier hj is to be measured at centerline from the upper deck or from a notional deck line where there is a local discontinuity in the upper deck. When calculating hj sheer and trim should be ignored;

A area, in m^2, in profile view of the hull, within L as defined in 1.2.1.7 and of superstructures and deckhouses above the maximum design waterline having a width greater than B/4. Screens and bulwarks more than 1.5 m in height should be regarded as parts of deckhouses when determining hj and A.

Anchors and chains

2 Vessels should be fitted with at least two anchors which should be located at the bow. However, vessels of less than 17 m in length may be fitted with only one anchor, provided that the weight of the anchor is at least twice the weight of an anchor as specified in the table to this annex.

3 The weight of each anchor should be in accordance with the table given in this annex.

4 High holding power anchors of a design approved by the competent authority may be used as bower anchors. The weight of each such anchor may be 75% of the table weight given in this annex.

5 The competent authority may require increased anchor equipment for vessels fishing in very rough waters and/or may permit reduction in the equipment for vessels operating in sheltered waters.

6 Anchors with a weight of and above 150 kg should be fitted in hawse pipes, skids or a similar arrangement that is suitable for the quick and safe operation in dropping and hoisting the anchors. If the weight of each of the anchors is below 300 kg, but greater than 150 kg, it may be accepted that only one of the anchors need be fitted in a hawse pipe or skid. Anchors should also be secured in the stowed position by means of a locking or lashing device.

7 In general, anchors should be fitted with anchor chains. The length and dimension of each anchor chain should be in accordance with the table given in this annex.

8 For vessels of 17 m in length and over, the chain of one anchor may be replaced with anchor wire of equal strength, provided a chain meeting the requirements given in the table to this annex is maintained for the second one.

9 For vessels less than 17 m in length, the chain of both anchors may be replaced with anchor wire of equal strength to the chain.

10 Where anchor wires are used as a substitute for anchor chains, their length should be equal to 1.5 times the corresponding tabular length of chain. In addition, a chain of not less than 12.5 m in length and of the same specifications, as set out in the table to this annex, should be provided between anchor and anchor wire.

11 Where the competent authority has authorized the use of trawl warp as anchor wire, it should be satisfied that the arrangement does not reduce the efficiency required for the quick and safe operation in dropping and hoisting the anchors and for holding the vessel at anchor in all foreseeable service conditions. The requirements for a trawl warp should not be less than that required for anchor wire.

Anchor handling

12 Fishing vessels provided with anchors of or above 150 kg should be fitted with a windlass. The windlass should be fitted with a messenger wheel and/or drum for each anchor and means for the release of each messenger wheel or drum.

13 It should not be possible to carry the chains forward to the hawse pipe, skid or similar arrangement without the chain passing over the messenger wheels. When anchor wire is used, it should pass over a roller adjacent to the hawse pipe to avoid chafing.

14 The windlass, its support and its brakes should be capable of absorbing a static tension of at least 45% of the breaking strength of the anchor chain or anchor wire without the occurrence of any lasting deformations and without the brake losing its hold. Furthermore, a chain stopper or wire nipper should be fitted between the windlass and the hawse pipe or similar for each anchor chain or anchor wire capable of holding the vessel while at anchor. If chain stoppers or wire nippers are not fitted, the windlass, its support and its brake should be capable of absorbing a static tension of at least 80% of the breaking strength of the anchor chain or anchor wire. The chain stopper or wire nipper and their supports should be capable of absorbing a static tension of

at least 80% of the breaking strength of the anchor chain/wire without the occurrence of any lasting deformations and without the chain stopper or wire nipper losing its hold.

15 If the trawl winch is fitted with messenger wheels, etc. and meets the requirements set out in paragraphs 12, 13 and 14, such a winch may be used as a windlass.

16 Fishing vessels which have been authorized to use trawl warp as anchor wire may use their trawl winch as a windlass, provided the trawl warp can be wound on a drum with a braking device that is independent of the actual trawl warps in use for fishing. Lead blocks and guide rollers should be suitably fitted and arranged to prevent the warps from chafing at the deckhouses, superstructures, deck plating and equipment on deck.

17 If a vessel has lost its anchors and it is not immediately possible to re-acquire them, the competent authority, after having assessed the conditions applying to the vessel, as given in paragraph 5, may permit otter boards/trawl doors with a least the same weight for anchors given in the table to this annex to be used for a limited period of time.

Towing lines

18 Vessels of 17 m of length and over should be provided with at least one tow line with a length and breaking strength in accordance with the table given in this annex. It should be appropriately located so that it is possible to make it ready for use at sea. The tow line may be replaced by one of the fishing vessel's trawl warps if this has at least a similar length and breaking strength. If warp is used, a length of rope of at least 12.5 m, with a minimum breaking strength as given in the table for the tow line, should also be provided and attached to the warp.

Mooring equipment

19 Vessels should be provided with suitable cleats and bollards as well as hawseholes in order to moor the vessel securely. The number of bollards, etc. should be determined in each individual case, dependent on the size and deck arrangement of the vessel. At least one bollard should be fitted forward and at least two abaft of amidships. Cleats and bollards should be of such a size that it is possible to accommodate at least four turns of the mooring lines or tow line below the horns of the cleat or the upper protruding edge of the bollard. The area where cleats and bollards are to be fastened should be securely reinforced.

20 The vessel should be provided with at least three mooring lines, each of a length and breaking strength in accordance with the table given in this annex.

TABLE

Equipment number		Stockless bower anchors		Stud link chain cables for bower anchors			Towline		Mooring lines	
Exceeding	Not exceeding	Number	Weight per anchor (kg)	Total length (m)	Diameter (mm)		Minimum length of each line (m)	Minimum breaking strength (kN)	Minimum length of each line (m)	Minimum breaking strength (kN)
					Mild steel	Special quality steel				
up to	30	2	70	137.5	11	-	-	-	40	25
30	40	2	80	165	11	-	-	-	50	30
40	50	2	100	192.5	11	-	-	-	60	30
50	60	2	120	192.5	12.5	-	180	98	60	34
60	70	2	140	192.5	12.5	-	180	98	80	34
70	80	2	160	220	14	12.5	180	98	100	37
80	90	2	180	220	14	12.5	180	98	100	37
90	100	2	210	220	16	14	180	98	110	39
100	110	2	240	220	16	14	180	98	110	39
110	120	2	270	247.5	17.5	16	180	98	110	44
120	130	2	300	247.5	17.5	16	180	98	110	44
130	140	2	340	275	19	17.5	180	98	120	49
140	150	2	390	275	19	17.5	180	98	120	49
150	175	2	480	275	22	19	180	98	120	54
175	205	2	570	302.5	24	20.5	180	112	120	59
205	240	2	660	302.5	26	22	180	129	120	64
240	280	2	780	330	28	24	180	150	120	69
280	320	2	900	357.5	30	26	180	174	140	74

2 The height of air pipes above deck to the point where water may have access below shall be at least 760 mm on the working deck and at least 450 mm on the superstructure

Refer to an Approximate determination of vessel's stability by means of rolling period test (for vessels up to 70 m in length) contained in Appendix 7 of Part A of the Code of Safety for Fishermen and Fishing Vessels.

Refer to paragraph 2.4 of appendix 10 in Part A of the Code of Safety for Fishermen and Fishing Vessels on a typical list of equipment and hand tool required for combating ice formation.

Refer to the Guidance on stability information contained in recommendation 3 of attachment 3 to the Final Act of the 1993 Torremolinos Conference. See also the General provisions against capsizing, contained in chapter 5, part B, of the International Code on Intact Stability, 2008 (2008 IS code), adopted by IMO by resolution MSC.267(85)

[12] Refer to the Guidelines on the evaluation of fire properties of materials, adopted by the Organization by resolution A.166(ES.IV) and the Recommendation on improved fire test procedures for surface flammability of bulkhead, ceiling and deck finish materials, adopted by the Organization by resolution A.653(16).

12 Fire pumps, including emergency fire pumps, shall not be positioned or stored forward of the forepeak bulkhead or its extension.

Marking of fishing vessels and fishing gear for identification shall be in accordance with uniform and internationally recognizable vessel and gear marking systems, such as the Food and Agriculture Organization of the United Nations Standard Specifications for the Marking and Identification of Fishing Vessels.

Refer to the NAVTEX *Manual* approved by the International Maritime Organization .

Where practical, taking into account the size and type of the vessel, resolution A.468(XII) may be used as a point of reference