



Maritime &  
Coastguard  
Agency

# **Code of Practice for the Safe Construction and Operation of Fishing Vessels of 24 metres Registered Length and Over**

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## CHAPTER 1 (GENERAL)

### 1.1 FOREWORD

1.1.1 This Code applies to all fishing vessels, registered in the UK, of 24 metres in length (L) and over and shall be known as “The Code of Practice for the Construction and Safe Operation of Fishing Vessels of 24 metres Registered Length and Over”. Other Member States fishing vessels operating in UK waters or landing their catch in UK ports, shall be subject to this Code, in accordance with Council Directive 97/70/EC (Article 4 of the Torremolinos Protocol) and Council Directive 2002/35/EC

1.1.2 The provisions of this Code, unless otherwise specified, apply to new and existing vessels.

1.1.3 Development of the Code by the Maritime and Coastguard Agency (MCA) was carried out in consultation with the 24 metre and Over Fishing Vessel Code Sub-Group of the Fishing Industry Safety Group, with representation from the following organisations:

National Federation of Fishermen’s Organisation  
Scottish Fishermen’s Federation  
Northern Ireland Fishermen’s Federation  
Shipbuilder and Ship Repairers Association  
Royal National Lifeboat Institution  
A representative of the Anglo-Spanish fleet  
Seafish Industry Authority  
Maritime and Coastguard Agency  
Department for Transport  
Classification Societies

1.1.4 The aim in developing this Code was to set standards of safety and protection for all on board fishing vessels. The Code sets minimum standards for construction, machinery, equipment and stability and, in conjunction with health and safety legislation and periodical survey requirements, for the safe maintenance and operation of fishing vessels in service.

1.1.5 The following Statutory Instruments (including any amendments made to them) are revoked:

- (i) The Fishing Vessels (Safety Provisions) Rules 1975 (S.I. 1975/330);
- (ii) The Fishing Vessels (Life-Saving Appliances) Regulations 1988 (S.I. 1988/38);
- (iii) The Fishing Vessels (EC Directive on Harmonised Safety Regime) Regulations 1999 (S.I. 1999/2998) (which give effect to the Torremolinos Protocol (Cmnd.3339) relating to the Torremolinos International Convention for the safety of Fishing Vessels (Cmnd. 7252).

1.1.6 The Code is also intended to give effect, in part, to the following Council Directives:

- (i) 1993/103/EC of 23 November 1993 concerning the minimum safety and health requirements for work on board fishing vessels (thirteenth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC);
- (ii) 1997/70/EC of 11 December 1997 setting up a harmonised safety regime for fishing vessels of 24 metres in length and over;

- (iii) 1999/19/EC of 18 March 1999 amending Council Directive 97/70/EC setting up a harmonised safety regime for fishing vessels of 24 metres in length and over;
- (iv) 2002/35/EC of 25 April 2002 amending Council Directive 97/70/EC setting up a harmonised safety regime for fishing vessels of 24 metres in length and over.

1.1.7 In addition to the Merchant Shipping Act 1995, the following legislation, as amended, is relevant to fishing vessels that are covered by this Code (this list is for guidance purposes only and skippers and owners shall ensure that they are aware of all applicable regulations):

SI 1972, No. 919 The Merchant Shipping (Crew Agreements, List of Crew and Discharge of Seamen)(Fishing Vessels) Regulations as amended by SI 1979 No.1519 and SI 1983 No.478 and any subsequent amendments;

SI 1975 No. 2220 The Merchant Shipping (Crew Accommodation)(Fishing Vessels) Regulations, as amended by SI 1998 No.929 and SI 2002 No.2201 and any subsequent amendments;

SI 1981, No. 570 The Merchant Shipping (Official Log Books)(Fishing Vessels) Regulations as amended by SI 2002 No.1473 and any subsequent amendments;

SI 1984, No. 1115 The Fishing Vessels (Certification of Deck Officers and Engineer Officers) Regulations as amended by SI 1995 No.1428 and SI 1998 No.1013 and any subsequent amendments;

SI 1988, No. 1656 The Loading and Unloading of Fishing Vessels Regulations and any subsequent amendments;

SI 1988, No. 1909 The Merchant Shipping (Fishing Vessels - Tonnage) Regulations as amended by SI 1998 No.1916 and any subsequent amendments;

SI 1989, No. 126 The Fishing Vessels (Safety Training) Regulations as amended by SI 2004 No.2169 and any subsequent amendments;

SI 1995, No. 1802 The Merchant Shipping and Fishing Vessels (Medical Stores) Regulations as amended by SI 1996 No.2821 and any subsequent amendments;

SI 1996, No. 75 The Merchant Shipping (Distress Signals and Prevention of Collisions) Regulations as amended by SI 2004 No.302 and any subsequent amendments;

S.I. 1996 No. 2154 The Merchant Shipping (Prevention of Oil Pollution) Regulations 1996 as amended by S.I. 1997 No. 1910, S.I. 1999 No. 1957, SI 2000 No.483, SI 2004 No 303, SI 2004 No 2110, SI 2005 No.1916 and SI 2009 No 1210 and any subsequent amendments;

SI 1997, No. 2962 The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations as amended by SI 1998 No.2411 and SI 2001 No.54 and any subsequent amendments;

SI 1998, No. 2411 The Merchant Shipping and Fishing Vessels (Health and Safety at Work)(Employment of Young Persons) Regulations as amended by SI 2002 No.2125 and any subsequent amendments;

SI 1998, No. 2857 The Merchant Shipping and Fishing Vessels (Manual Handling Operations) Regulations as amended by SI 1999 No.2205 and any subsequent amendments;

SI 1999, No. 2205 The Merchant Shipping and Fishing Vessels (Personal Protective Equipment) Regulations and any subsequent amendments;

SI 1999, No.3210 The Merchant Shipping (Radio)(Fishing Vessels) Regulations as amended by SI 2002 No.2201 and any subsequent amendments;

SI 2000 No.1850 The Merchant Shipping (EPIRB Registration) Regulations and any subsequent amendments;

SI 2001, No. 3444 The Merchant Shipping and Fishing Vessels (Safety Signs and Signals) Regulations and any subsequent amendments;

SI 2002, No 1473 The Merchant Shipping (Safety of Navigation) Regulations as amended by SI 2004 No.302, SI 2004 No.2110,, SI 2005 No.2114, SI 2010 No.610 and SI 2010 No.1075, S.I. 2011 No. 2978 and any subsequent amendments;

SI 2003, No. 1809 The Merchant Shipping and Fishing Vessels (Port Waste Reception Facilities) Regulations, as amended by SI 2009 No.1176 and any subsequent amendments.

SI 2004, No 1713 The Fishing Vessels (Working Time: Sea fishermen) Regulations and any subsequent amendments;

SI 2006, No 2183 The Merchant Shipping and Fishing Vessels (Provision and Use of Work Equipment) Regulations 2006, as amended by SI 2008 No.2165 and any subsequent amendments;

SI 2006 No.2184 The Merchant Shipping and Fishing Vessels (Lifting Operations and Lifting Equipment) Regulations as amended by SI 2008 No.2166 and any subsequent amendments;

SI 2007 No.3075 The Merchant Shipping and Fishing Vessels (Control of Noise at Work) Regulations, as amended by SI 2010, No. 1110 and any subsequent amendments;

SI 2007 No.3077 The Merchant Shipping and Fishing Vessels (Control of Vibration at Work) Regulations, as amended by SI 2010, No. 1110 and any subsequent amendments;

SI 2007 No.3100 The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Carcinogens and Mutagens) Regulations, as amended by SI 2010, No. 1110 and any subsequent amendments;

SI 2008 No 2924The Merchant Shipping (Prevention of Air Pollution from Ships) Regulations, as amended by SI 2010, No. 895, SI 2011 No.3056 and any subsequent amendments;

SI 2008 No.3257 Merchant Shipping (Prevention of Pollution by Sewage and Garbage from Ships) Regulations, as amended by SI 2010, No.897, SI 2011 No.3056 and any subsequent amendments;

SI 2010 No. 323 The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Biological Agents) Regulations, any subsequent amendments;

SI 2010 No. 330 The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Chemical Agents) Regulations, as amended by SI 2010, No. 1110, SI 2012 No. 1844 and any subsequent amendments;

SI 2010 No. 332 The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Work at Height) Regulations, any subsequent amendments;

SI 2010 No. 2984 The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Asbestos) Regulations as amended by S.I. 2013 No.1473 and any subsequent amendments;

SI 2010 No. 2987 The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Artificial Optical Radiation) Regulations, and any subsequent amendments;

SI 2012 No.1743 The Merchant Shipping (Accident Reporting and Investigation) Regulations, and any subsequent amendments;

SI 201\* No\*\*\*\* The Fishing Vessels (Code of Practice) Regulations.

1.1.8 In some chapters within this Code, a reminder is given of the requirements of other existing regulations. In those cases the purpose of this Code is not to impose any separate regulatory requirement, but only to provide a reminder of the requirements that are contained within those regulations.

1.1.9 Where in some chapters of the Code, there is reference to any action or standard that is recommended, in those cases the purpose of this Code is not to impose any separate regulatory requirement.

1.1.10 Supplementary guidance, instructions and information for fishing vessels is contained in current Merchant Shipping Notices (MSNs), Marine Guidance Notes (MGNs) and Marine Information Notes (MINs).

1.1.11 It is recognised that the Code will be required to be revised in the light of experience gained in its application and as the inevitable changes within the industry dictate. Section 1.3.12 makes provision for this. Changes will not be made where those changes would conflict with the implementation of any EU or international obligations.

## 1.2 DEFINITIONS

1.2.1 In the Code, except where the context otherwise indicates:

1.2.2 "A' Class divisions" are those divisions formed by bulkheads and decks which shall comply with the following:

1.2.2.1 be constructed of steel or other equivalent material;

1.2.2.2 be suitably stiffened;

1.2.2.3 be constructed as to be capable of preventing the passage of smoke and flame to the end of the one-hour standard fire test; and

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

Class 'A-60'	60 minutes
Class 'A-30'	30 minutes
Class 'A-15'	15 minutes
Class 'A-0'	0 minutes

- 1.2.2.4 A test of a prototype bulkhead or deck to ensure that it meets the above requirements for integrity and temperature rise in accordance with the IMO Fire Test Procedures Code is required;
- 1.2.3 "Accommodation spaces" are those spaces used for public space, corridors, lavatories, cabins, offices, hospitals, cinemas, games and hobbies rooms, and pantries containing no cooking appliances and similar spaces;
- 1.2.4 "Amidships" is the mid-length of Length between Perpendiculars (LBP);
- 1.2.5 "Approved" means:
- 1.2.5.1 in relation to hull and machinery construction and arrangements:
- approved by MCA or by full classification from one of the following organisations:
- (a) American Bureau of Shipping;
  - (b) Bureau Veritas;
  - (c) Det Norske Veritas;
  - (d) Germanischer Lloyd;
  - (e) Lloyd's Register of Shipping;
  - (f) Registro Italiano Navale;
- 1.2.5.2 in relation to life saving appliances:
- approved by MCA or a signatory Administration to SOLAS 1974 as amended or, in relation to any equipment or arrangement, by one of the nominated bodies having powers as delegated by The Merchant Shipping (Delegation of Type Approval ) Regulations 1996, SI 1996 No. 147;
- 1.2.5.3 in relation to stability:
- approved by MCA;
- 1.2.6 "Auxiliary means of activating the rudder" is the equipment which is provided for effecting movement of the rudder for the purpose of steering the vessel in the event of failure of the main steering gear;
- 1.2.7 "B' Class divisions" are those divisions formed by bulkheads, decks, ceilings or linings which comply with the following:
- 1.2.7.1 they shall be so constructed as to be capable of preventing the passage of flame to the end of the first half hour of the standard fire test;
- 1.2.7.2 they shall have an insulation value such that the average temperature of the unexposed side will not rise more than 140°C above the original temperature, nor will the temperature at any one point, including any joint, rise more than 225°C above the original temperature, within the time listed below:
- Class 'B-15' 15 minutes;  
Class 'B-0' 0 minutes; and

- 1.2.7.3 they shall be constructed of approved non-combustible materials and all materials entering into the construction and erection of "B" Class divisions shall be non-combustible with the exception that combustible veneers may be permitted provided they meet the relevant requirements of Chapter 5;
- 1.2.7.4 The Certifying Authority shall require a test of prototype division to ensure that it meets the above requirements for integrity and temperature rise in accordance with the IMO Fire Test Procedures Code;
- 1.2.8 "Baseline" is the horizontal line intersecting amidships at the keel line;
- 1.2.9 "The breadth (B)" is the maximum breadth of the vessel, measured amidships to the moulded line of the frame in a vessel with a metal shell and to the outer surface of the hull in a vessel with a shell of any other material;
- 1.2.10 "'C' Class divisions" are those divisions constructed of approved non-combustible materials. They need meet no requirements relative to the passage of smoke and flame nor the limiting of temperature rise. Combustible veneers are permitted provided they meet other requirements of Chapter 5;
- 1.2.11 "Certifying Authority" means the Maritime and Coastguard Agency (MCA);
- 1.2.12 "Classification Society" means a Classification Society listed in M Notice No. 1672 as amended or replaced;
- 1.2.13 "Code" means this Code, unless another Code is specified;
- 1.2.14 "Continuous "B" Class ceilings or linings" are those "B" Class ceilings or linings which terminate only at an "A" or "B" Class division;
- 1.2.15 "Control stations" are those spaces in which the ships radio or main navigation equipment or the emergency source of power is located, or where the fire recording or fire control equipment is centralised;
- 1.2.16 "Collision bulkhead" is a watertight bulkhead up to the working deck in the forepart of the vessel which meets the following conditions:
- 1.2.16.1 The bulkhead shall be located at a distance from the forward perpendicular:
- (i) not less than 0.05L and not more than 0.08L for vessels of 45 metres in length (L) and over;
  - (ii) *for New Fishing Vessels (2003) not less than 0.05L and not more than 0.05L plus 1.35 metres for vessels of less than 45 metres in length (L); N*
  - (iii) *For New Fishing Vessels (1999) not less than 0.05L and not more than 0.05L plus 1.35 metres for vessels of less than 45 metres in length (L) except as may be allowed by the Certifying Authority; N*
  - (iv) in no case, less than 2.0 metres;
- 1.2.16.2 Where any part of the underwater body extends forward of the forward perpendicular, e.g. a bulbous bow, the distance stipulated in section 1.2.16.1 shall be measured from a point at mid-length of the extension forward of the forward perpendicular or from a point 0.015L forward of the forward perpendicular, whichever is less;
- 1.2.16.3 The bulkhead may have steps or recesses provided they are within the limits prescribed in section 1.2.16.1;

- 1.2.17 "Crew" means any person carrying out an occupation on board a vessel, (which includes share fishers, trainees, and apprentices but excluding shore personnel) carrying out work on board a vessel at the quayside and port pilots;
- 1.2.18 "Crew space" means crew accommodation within the meaning of section 43(7) of the Merchant Shipping Act 1995;
- 1.2.19 "Dead ship condition" is the condition under which the main propulsion plant and auxiliaries are not in operation due to the absence of power and in restoring propulsion, no stored energy for starting the propulsion plant, the main source of electrical power and other essential auxiliaries is to be assumed available;
- 1.2.20 "Decked vessel" means a vessel with a continuous watertight freeboard deck that extends from stem to stern and has positive freeboard throughout, in any condition of loading of the vessel;
- 1.2.21 "Deckhouse" see "Superstructure" as defined in 1.2.98;
- 1.2.22 "Deepest operating waterline" is the waterline related to the maximum permissible operating draught;
- 1.2.23 "Depth" (D) means the moulded depth amidships;
- 1.2.24 "Draught" means:
- 1.2.24.1 For stability purposes the vertical distance from the moulded base line amid-ships to the operating waterline of the vessel;
- 1.2.24.2 "Operational Draught" means the vertical distance from the under side of the keel (USK) at the lowest point to the operating waterline of the vessel;
- 1.2.25 "Enclosed superstructure" means a superstructure with:
- 1.2.25.1 Enclosing bulkheads of efficient construction;
- 1.2.25.2 Access openings, if any, in those bulkheads fitted with permanently attached weathertight doors of a strength equivalent to the unpierced structure that can be operated from either side; and
- 1.2.25.3 Other openings in sides or ends of the superstructure fitted with efficient weathertight means of closing;
- 1.2.25.4 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;
- 1.2.26 "Equivalent material" used in the expression "steel or other equivalent material" means any non-combustible material which, by itself or due to insulation provided, has structural and integrity properties equivalent to steel at the end of the applicable exposure to the standard fire test (e.g. aluminium alloy with appropriate insulation);
- 1.2.27 "Existing fishing vessel" is a fishing vessel which is not a new vessel;
- 1.2.28 "F' Class divisions" are those divisions formed by bulkheads, decks, ceilings or linings which comply with the following:
- 1.2.28.1 they shall be so constructed as to be capable of preventing the passage of flame to the end of the first 30 minutes of the standard fire test; and

1.2.28.2 they shall have an insulation value such that the average temperature of the unexposed side will not rise more than 139°C above the original temperature, nor will the temperature at any one point, including any joint, rise more than 225°C above the original temperature, up to the end of the first 30 minutes of the standard fire test;

MCA shall require a test of a prototype division to ensure that it meets the above requirements for integrity and temperature rise in accordance with the IMO Fire Test Procedures Code;

- 1.2.29 "Fire Test Procedures Code" means the IMO Code for Application of Fire Test Procedures;
- 1.2.30 "Fishing vessel" means a vessel for the time being used (or, in the context of an application for registration, intended to be used) for, or in connection with fishing sea fish other than a vessel used (or intended to be used) for fishing otherwise than for profit; and for the purpose of this definition "sea fish" includes shellfish, salmon and migratory trout (as defined by section 44 of The Fisheries Act 1981);
- 1.2.31 "Float-free" in relation to life saving appliances means that method whereby the appliance is automatically released from a sinking vessel and is ready for use;
- 1.2.32 "Freeboard" means the distance measured vertically downwards from the upper edge of the working deck to the operating waterline;
- 1.2.33 "Free-fall launching" is that method of launching a survival craft whereby the craft with its complement of persons and equipment on board is released and allowed to fall into the sea without any restraining apparatus;
- 1.2.34 "Free cross-sectional area" means, even in the case of a pre-insulated duct, the area calculated on the basis of the inner diameter of the duct;
- 1.2.35 "Fuel oil unit" is the equipment used for the preparation of fuel oil for delivery to an oil-fired boiler, or equipment used for the preparation of oil for delivery to an internal combustion engine, and includes any oil pressure pumps, filters and heaters dealing with oil at a pressure greater than 0.18 Newton per millimetre<sup>2</sup>;
- 1.2.36 "Heavy drift ice" is drift ice covering 80% or more of the sea surface;
- 1.2.37 "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;
- 1.2.38 "In Class" means that a vessel holds a current classification certificate issued by a recognised Classification Society (see definition of Classification Society above);
- 1.2.39 "Independent" in relation to a pump, means a pump operated autonomously through a different power source or switch board other than from the vessel's main engines;
- 1.2.40 "Inflatable appliance" is an appliance which depends upon non-rigid, gas-filled chambers for buoyancy and which is normally kept un-inflated until ready for use;
- 1.2.41 "Inflated appliance" is an appliance which depends upon non-rigid, gas-filled chambers for buoyancy and which is kept inflated and ready for use at all times;
- 1.2.42 "Keel line" is the line parallel to the slope of keel passing amidships through:

- 1.2.42.1 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; or
- 1.2.42.2 The rabbet lower line of the keel of a vessel with a shell of wood or a composite vessel; or
- 1.2.42.3 The intersection of a fair extension of the outside of the shell contour at the bottom with the centreline of a vessel with a shell of material other than wood and metal;
- 1.2.43 "Launching appliance or arrangement" is a means of transferring a survival craft or rescue boat from its stowed position safely to the water;
- 1.2.44 "Length overall (LOA)" means the overall length from the foreside of the foremost fixed permanent structure to the aft side of the aftermost fixed permanent structure of the vessel;
- 1.2.45 "Length (L)" in relation to a vessel, means the registered length shown on the vessel's register and as defined in Statutory Instrument 1998 No. 1916 The Merchant Shipping (Tonnage) (Fishing Vessels) (Amendment) Regulations 1998. The definition is as per 1.2.46;
- 1.2.46 "Length between perpendiculars" (LBP) is the ITC '69 definition which means 96% of the total length on a waterline of a vessel at 85% of the least moulded depth measured from the top of the keel, or the length from the fore-side of the stem to the axis of the rudder stock on that waterline, if that be greater. In vessels designed with a rake of keel the waterline on which this is measured shall be parallel to the designed waterline. The forward perpendicular and the after perpendicular are positioned at the forward and after ends of LBP respectively;
- 1.2.47 "Lifebuoy" means a lifebuoy complying with the Life Saving Appliances (LSA) Code as amended;
- 1.2.48 "Lifejacket" means a lifejacket complying with the LSA Code as amended or as approved by MCA;
- 1.2.49 "Liferaft" means a liferaft complying with the LSA Code as amended;
- 1.2.50 "Lightship", is a ship complete in all respects, but without all portable fishing gear, consumables, stores, cargo, and crew and effects, and without any liquids on board except for machinery and piping fluids, such as lubricants and hydraulics, which are at operating levels;
- 1.2.51 "Lightship check" is a procedure to establish the weight and centres of gravity of the vessel without consumables, stores, cargo, crew and effects and without any liquids on board except that machinery and piping fluids are at operating levels;
- 1.2.52 "Line throwing appliance" means a device complying with the requirements of LSA Code;
- 1.2.53 "Low flame spread" means that the surface thus described will adequately restrict the spread of flame, this being determined in accordance with the IMO Fire Test Procedures Code;
- 1.2.54 "LSA Code" means the International Life-Saving Appliance (LSA) Code adopted by the Maritime Safety Committee of the Organisation by resolution MSC.48(66), as amended;

- 1.2.55 "Machinery spaces of Category A" are those spaces which contain internal combustion type machinery used either:
- 1.2.55.1 For main propulsion; or
  - 1.2.55.2 for other purposes where such machinery has in the aggregate a total power output of not less than 375 kilowatts, or which contain any oil-fired boiler or fuel oil unit; and trunks to such spaces;
- 1.2.56 "Machinery spaces" are those machinery spaces of Category A and all other spaces containing propulsion machinery, boilers, fuel oil units, steam and internal combustion engines, generators, steering gear, major electrical machinery, oil filling stations, refrigerating, stabilising, ventilating and air conditioning machinery and similar spaces; and trunks to such spaces;
- 1.2.57 "Main steering gear" is the machinery, the steering gear power units, if any, and ancillary equipment and the means of applying torque to the rudder stock (e.g. tiller or quadrant) necessary for effecting movement of the rudder for the purpose of steering the vessel under normal service conditions;
- 1.2.58 "Main switchboard" is a switchboard directly supplied by the main source of electrical power and intended to distribute electrical energy;
- 1.2.59 "Major conversion" is alteration in the vessel that does one of the following:
- 1.2.59.1 Changes the dimensions or carrying capacity;
  - 1.2.59.2 Changes the type of vessel or fishing method;
  - 1.2.59.3 Otherwise so changes the vessel by major reconstruction;
- 1.2.60 "Maximum ahead service speed" is the greatest speed which the vessel is designed to maintain in service at sea at its maximum permissible operating draught;
- 1.2.61 "Maximum astern speed" is the speed which it is estimated the vessel can attain at the designed maximum astern power at its maximum permissible operating draught;
- 1.2.62 "MCA" means The Maritime and Coastguard Agency, an executive agency of the Department for Transport or their successors;
- 1.2.63 "Merchant Shipping Act 1995" means the Merchant Shipping Act 1995 or rules or regulations which are made or have effect as if made under that Act, and references to the Merchant Shipping Act are to that Act or to those rules or regulations respectively as amended;
- 1.2.64 "Marine Guidance Note" (MGN), "Merchant Shipping Notice" (MSN) and "Marine Information Note" (MIN) means a Note or Notice described as such and issued by MCA;
- 1.2.65 "Midship section" is that section of the hull defined by the intersection of the moulded surface of the hull with a vertical plane perpendicular to the waterline and centreline planes passing through amidships;
- 1.2.66 "Moulded depth" means:
- (a) the vertical distance measured from the top of the keel to the underside of the upper deck at side. In wood and composite ships the distance is to be measured from the lower edge of the keel rabbet. Where the form at the lower part of the midship section is of a hollow character, or where thick garboards are fitted, the distance is

measured from the point where the line of the flat of the bottom continued inwards cuts the side of the keel;

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

(c) where the upper deck is stepped and the raised part of the deck extends over the point at which the moulded depth is measured, the moulded depth shall be measured to a line of reference extending from the lower part of the deck along a line parallel with the raised part; and for the purposes of this definition:

(i) "upper deck" means the uppermost complete deck exposed to weather and sea, which has permanent means of weathertight closing of all openings in the weather part thereof, and below which all openings in the sides of the ship are fitted with permanent means of watertight closing. In a ship having a stepped upper deck, the lowest line of the exposed deck and the continuation of that line parallel to the upper part of the deck is taken as the upper deck; and

(ii) "weathertight" means that in any sea conditions water will not penetrate into the ship;

1.2.67 "Navigable speed" means the minimum ahead speed at which the vessel can be effectively steered;

1.2.68 "New Fishing Vessel (1999)" means a fishing vessel for which:

1.2.68.1 on or after 1<sup>st</sup> January of 1999 the building or major conversion contract is placed; or

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

1.2.68.3 in the absence of a building contract, on or after 1 January 1999:

(i) the keel is laid; or

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

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

1.2.69 "New Fishing Vessel (2003)" means a fishing vessel for which:

1.2.69.1 on or after 1<sup>st</sup> January of 2003 the building or major conversion contract is placed; or

1.2.69.2 the building or major conversion contract has been placed before 1 January 2003, and which is delivered three years or more after that date; or

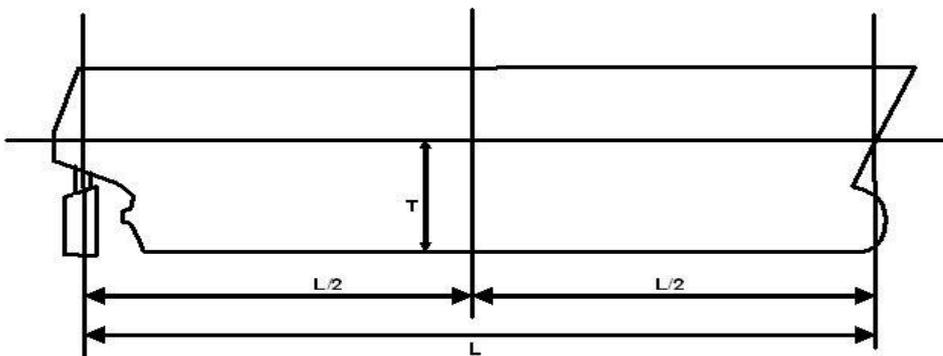
1.2.69.3 in the absence of a building contract, on or after 1 January 2003:

(i) the keel is laid; or

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

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

- 1.2.70 "Non-combustible material" means a material which neither burns nor gives off flammable vapours in sufficient quantity for self-ignition when heated to approximately 750°C, this being determined in accordance with the IMO Fire Test Procedures Code). Any other material is a combustible material;
- 1.2.71 "Normal operational and habitable conditions" means conditions under which the vessel as a whole, its machinery services, means of main and auxiliary propulsion, steering gear and associated equipment, aids to safe navigation and to limit the risks of fire and flooding, internal and external means of communicating and signalling, means of escape and winches for rescue boats, are in proper working order and the minimum comfortable conditions of habitability are satisfactory;
- 1.2.72 "Northern Region" – see description and map in section 3.1.6.3 (i);
- 1.2.73 "Novel life-saving appliance or arrangement" is a life-saving appliance or arrangement which embodies new features not fully covered by the provisions of this chapter but which provides an equal or higher standard of safety;
- 1.2.74 "Open Decks" anywhere on a sea going vessel that is exposed and not within a weather tight or watertight area or within the shelter deck area of a vessel;
- 1.2.75 "Owner" means the registered owner of a vessel, unless that vessel has been chartered by demise or is managed, either wholly or in part, by a natural or legal person other than the registered owner under the terms of a management agreement; in that case, the owner shall be construed as the demise charterer or natural or legal person managing the vessel as appropriate;
- 1.2.76 "Periodically unattended machinery spaces" means those spaces containing main propulsion and associated machinery and all sources of main electrical supply which are not at all times manned under all operating conditions, including manoeuvring;
- 1.2.77 "Perpendiculars"
- 1.2.77.1 The aft perpendicular shall be taken at the after end of length between perpendiculars (LBP). This shall be measured on the waterline at 85% of the moulded depth and shall be either the aft side of the stern or the axis of the ruder stock, whichever is the longer;
- 1.2.77.2 Amidships is the perpendicular to the waterline at a distance 0,5L aft of the forward perpendicular;
- 1.2.77.3 Forward perpendicular, means the perpendicular at the forward end of the ship's length between perpendiculars coinciding with the foreside of the stem on the waterline at 85% of the moulded depth on which such length is measured;



- 1.2.78 "Power unit" means:
- 1.2.78.1 in the case of electric steering gear, the electric motor and its associated electrical equipment; or
- 1.2.78.2 in the case of electro-hydraulic steering gear, the electric motor, its associated electrical equipment and connected pump;
- 1.2.79 "Public spaces" are those portions of the accommodation spaces which are used for halls, dining rooms, lounges, and similar permanently enclosed spaces;
- 1.2.80 "Ramp door, hatch or lid" is a power operated deck level hatch used to empty the catch from the codends into the fish holding ramp;
- 1.2.81 "Rescue boat" is a boat designed to rescue persons in distress and to marshal survival craft;
- 1.2.82 "Retro-reflective material" is a material which reflects in the opposite direction a beam of light directed on it;
- 1.2.83 "Rocket parachute flare" means a pyrotechnic signal complying with the requirements of LSA Code;
- 1.2.84 "Sea" in the context of 'at sea' means all waters outside a safe haven and "safe haven" means a harbour or shelter of any kind which affords entry, subject to prudence in the weather conditions prevailing, and protection from the forces of weather. Details of categorised waters can be found in MSN 1837 or any superseding MSN;
- 1.2.85 "Self-activating smoke signal" means a signal complying with the requirements of LSA Code;
- 1.2.86 "Self-contained Breathing Apparatus" means a breathing set that is self-contained and not dependent on a remote supply of air;
- 1.2.87 "Self-igniting light" means a light complying with the requirements of LSA Code as amended;
- 1.2.88 "Service spaces" are those spaces used for galleys, pantries containing cooking appliances, lockers and store-rooms, workshops other than those forming part of the machinery spaces, and similar spaces and trunks to such spaces;
- 1.2.89 "Sister Ship" is a ship that is one of two vessels or more, of virtually identical design and built in the same ship yard to the same drawings;
- 1.2.90 "Skipper" means the certificated officer/crew member who commands, or has responsibility of the vessel holding the relevant certificates;
- 1.2.91 "SOLAS 1974 as amended" means the International Convention for the Safety of Life at Sea, 1974, as amended;
- 1.2.92 "Southern Ocean" means South of latitude 60° S;
- 1.2.93 "Southern Region" means the Mediterranean Sea and the coastal areas, within 20 miles from the coast of Spain and Portugal, of the summer zone of the Atlantic Ocean, as defined on the "Chart of zones and seasonal areas" in Annex II to the 1966 International convention on Load Lines, as amended;
- 1.2.94 "Standard fire test" is one in which specimens of the relevant bulkheads or decks are exposed in a test furnace to temperatures corresponding approximately to the

standard time-temperature curve. The test methods shall be in accordance with the IMO Fire Test Procedures Code;

- 1.2.95 "Standards" such as BS (British Standard), EN (European Standard accepted by the European Committee for Standardisation, CEN), IEC (International Electro-technical Commission), ISO (International Organisation for Standardisation) and MED (Marine Equipment Directive) identified in the Code for reference purposes, shall include any Standards that amend or replace them;
- 1.2.96 "Steel or other equivalent material" means steel or any material which, by itself or due to insulation provided, has structural and integrity properties equivalent to steel at the end of the applicable fire exposure to the standard fire test (e.g. aluminium alloy with appropriate insulation);
- 1.2.97 "Steering gear power unit," means in the case of:
- 1.2.97.1 Electric steering gear, an electric motor and its associated electrical equipment;
- 1.2.97.2 Electro-hydraulic steering gear, an electric motor and its associated electrical equipment and connected pump; and
- 1.2.97.3 Other hydraulic steering gear, a driving engine and connected pump;
- 1.2.98 "Superstructure" is the decked structure on the working deck extending from side to side of the vessel or with the side plating not being inboard of the shell plating more than 0.04B;
- 1.2.99 "Superstructure deck" is that complete or partial deck forming the top of a superstructure, deckhouse or other erection situated at a height of not less than 1.8 metres above the working deck. Where this height is less than 1.8 metres, the top of such deckhouses or other erections shall be treated in the same way as the working deck;
- 1.2.100 "Survival craft" means a craft capable of sustaining the lives of persons in distress from the time of abandoning the vessel;
- 1.2.101 "International Fishing Vessel Safety Certificate" means a certificate issued in respect of a fishing vessel under this Code;
- 1.2.102 "Vessel" means a new or existing fishing vessel;
- 1.2.103 "Watertight" in relation to a structure means capable of preventing the passage of water through the structure in any direction under a head of water for which the surrounding structure is designed;
- 1.2.104 "Weather deck" means the main deck that is exposed to the elements;
- 1.2.105 "Working deck (Freeboard)" 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, MCA may accept a lower deck as a working deck provided that the deck is situated above the deepest operating waterline;
- 1.2.106 "Weathertight" means that in any sea conditions water will not penetrate into the vessel.

### 1.3 APPLICATION AND INTERPRETATION

#### 1.3.1 Application

1.3.1.1 This Code applies to all fishing vessels, registered in the UK, of 24 metres in length (L) and over in accordance with The Code of Practice for the Construction and Safe Operation of Fishing Vessels of 24 metres Registered Length and over. It also applies to any fishing vessel not UK registered, of 24 metres in length (L) and over, while it is within UK waters.

1.3.1.2 **It is recognised that in a number of areas it would be impractical for existing vessels to comply fully with the new provisions for construction and permanently fitted equipment. Alternative arrangements or provisions for existing vessels are identified individually for each section affected. E**

1.3.1.3 The application of the Code to new and existing vessels is indicated within the body of the text by means of the following convention:

- (i) Normal text: section is applicable to new and existing vessels;
- (ii) *Text in italics, N at right margin: section is applicable to new vessels only;*
- (iii) **Text in bold format, E at right margin: section is applicable to existing vessels only.**

1.3.1.4 **With reference to section 1.3.1.2, owners of existing vessels may, and are recommended to, comply with the Code as it applies to new vessels, instead of complying with the alternative arrangements or provisions identified in the Code for existing vessels. In such cases, the vessel shall generally comply with all the relevant provisions relating to new vessels in that part of the Code. However, provided that an overall improvement in safety is achieved (as compared with the standard achieved by compliance with the alternative arrangements or provisions), the vessel will be taken to comply with this Code if it complies with some, rather than all, the relevant provisions in that part of the Code. E**

1.3.1.5 Exemptions previously granted to vessels under the provisions of the Fishing Vessels (Safety Provisions) Rules 1975, as amended, shall be reviewed with the aim of deleting them where possible. Any application for exemption must show equivalence with the statutory requirements. Exemptions may only be granted after agreement between the Consultant Fishing Vessel Surveyors and Vessel Standards Branch of MCA Section HQ, to ensure consistency. E

1.3.1.6 Where a provision in this Code requires equipment, machinery, an arrangement or any other aspect to be “to the satisfaction of MCA”, this means that MCA is to determine whether the equipment or machinery etc is suitable for its purpose and satisfies the requirements of this Code.

#### 1.3.2 Compliance with Code Requirements

1.3.2.1 To comply with the Code the vessel owner is responsible for ensuring that the vessel:

- (i) is built, equipped, surveyed, certified and maintained and operated in accordance with the relevant provisions of the Code;
- (ii) continues to comply with the requirements of the Code in service;
- (iii) is operated by appropriately qualified and certificated crew who have completed mandatory training courses; and

- (iv) is not operated as a fishing vessel without a valid International Fishing Vessel Safety Certificate;
- (v) is maintained to Classification Society standards with Annual and Intermediate surveys conducted by the Certifying Authority.
- (vi) *is maintained and operated with a valid full Classification Society certificate;* N
- (vii) **Existing vessels shall be maintained to Classification Society standards.** E

### 1.3.3 Surveys, Inspections and Certification

1.3.3.1 Applications for survey or inspection shall be made by or on behalf of the owner of the vessel to MCA or the Classification Society, as approved in section 1.2.5.1, giving reasonable notice for the survey or inspection to be carried out at the port agreed.

1.3.3.2 A vessel may be inspected by MCA at any time to verify compliance with Code requirements.

### 1.3.4 Initial and Periodical Survey Schedules

1.3.4.1 Every vessel shall be surveyed and inspected in accordance with the requirements of this Section:

- (i) For the Initial Survey a surveyor appointed by MCA shall survey the vessel during and on completion of construction, or on transfer to the UK Register prior to the issue of an International Fishing Vessel Certificate. The Survey shall verify that the vessel complies with the requirements of the Code and such regulations as may apply to it. The surveyor may require the vessel and any of its machinery, fittings, equipment or arrangements to be submitted to such tests and examinations as are considered necessary to demonstrate compliance with the requirements of the Code.
- (ii) Periodic Surveys shall ensure that the appropriate items fully comply with this Code, that the equipment is in good working order and the stability information is readily available on board and will take place in the following:
  - (a) Certificate renewal surveys at intervals not exceeding four years with regard to the structure, including the outside of the vessel's hull, and machinery of the vessel as stands in this Code and in accordance with section 1.3.6;
  - (b) At intervals not exceeding two years with regard to the equipment of the vessel;
  - (c) Intermediate surveys to be taken within three months before or three months after anniversary date. If the vessel has been issued an IFVC lasting two years or less, any intermediate survey shall take place one month before or after the mid point date between the issue of the IFVC and its expiry date;
  - (d) Annual surveys to be taken within three months before or three months after the anniversary date
  - (e) Surveys during major repairs or modifications.

1.3.4.3 On completion of the survey, the surveyor shall provide MCA with a declaration of survey and a record of particulars in an agreed format.

1.3.4.4 Two copies of the record of particulars shall be sent to the owner of the vessel on completion of survey, one copy of which shall be placed on board for inspection at subsequent surveys.

**1.3.5 Surveys during repairs, modifications or alterations**

1.3.5.1 Extensive repairs, modifications, either funded through grants or other means, alterations carried out to the structure or machinery of a vessel, shall only be undertaken after consultation and with MCA's approval to ensure it complies with the requirements of this Code, as applicable to a new vessel, to the satisfaction of MCA.

**1.3.6 Certification**

**1.3.6.1 Issue and form of International Fishing Vessel Safety Certificates**

If MCA is satisfied that a vessel has been duly surveyed in accordance with the provisions of Chapter 2 to Chapter 10 of this Code and is found to comply with their requirements and with other relevant regulations issued under the powers of the Merchant Shipping Act 1995, an International Fishing Vessel Safety Certificate will be issued by MCA to the owner of the vessel.

**1.3.6.2 Duration of Certificates**

(i) An International Fishing Vessel Safety Certificate may remain in force for a period of not more than four years and shall not be extended for more than one year subject to the periodical and intermediate surveys as required in regulations. An International Fishing Vessel Exemption Certificate shall not be valid for longer than the period of the International Fishing Vessel Safety Certificate.

**1.3.6.3 Extension of Certificates**

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

(ii) Vessels to which 1.3.6.3(i) applies shall not have their certificates extended for a period longer than five months and a vessel to which such extension is granted shall not on its arrival in a port of the Party whose flag the vessel is entitled to fly or the port in which it is to be surveyed, be entitled by virtue of such extension to leave such port without having obtained a new certificate;

(iii) A certificate which has not been extended under the provisions of section (ii) may be extended by MCA for a period of grace up to one month from the date of expiry stated on it;

(iv) A certificate shall cease to be valid in any of the following cases:

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

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

- (c) upon transfer of the vessel to the flag of another State. A new certificate shall only be issued when the Government issuing the new certificate is fully satisfied that the vessel is in compliance with the requirements of the regulations. In the case of a transfer between Parties, if requested within three months after the transfer has taken place, the Government of the State whose flag the vessel was formerly entitled to fly shall, as soon as possible, transmit to MCA copies of the certificates carried by the ship before the transfer and, if available, copies of the relevant survey report.

### 1.3.7 **Cancellation of certificates**

MCA may cancel an International Fishing Vessel Safety Certificate if satisfied:

- (i) that any declaration of survey on which the certificate was founded has been made fraudulently or erroneously;
- (ii) that the certificate has been issued based upon false or erroneous information;
- (iii) that since the issue of the certificate, the hull, equipment or machinery have sustained any damage or are otherwise inadequate for their intended service (the owner must inform MCA of any collision, grounding, fire, flooding or any other event which may have implications in this area);
- (iv) that the vessel has been significantly modified or changed its mode of fishing without due authorisation;
- (v) that another fishing vessel certificate has been issued in respect of the vessel;
- (vi) that the vessel has ceased to be registered as a fishing vessel in the United Kingdom; or dependent territory;
- (vii) that a vessel classed with a Classification Society is not maintained in Class.

### 1.3.8 **Detention and Penalties**

1.3.8.1 A vessel that is found, in the course of inspection, or survey, not to have been Code compliant may be detained. An owner, who operates a vessel that does not comply with the Code, may be liable to prosecution. A skipper who fails to operate the vessel in accordance with the requirements of the Code may be liable to prosecution.

### 1.3.9 **Certifying Authorities**

1.3.9.1 MCA is the Certifying Authority. However Classification Societies, as approved in 1.2.4.1 that are authorised by MCA, may appoint persons for the purpose of surveying vessels for ascertaining compliance with Code provisions.

### 1.3.10 **Appeal Procedures**

1.3.10.1 If an owner is dissatisfied with an inspection then this shall in the first instance be discussed with the person who carried out the inspection.

1.3.10.2 If agreement cannot be reached with the person who carried out the inspection the owner may refer the matter to the Consultant Fishing Vessel Surveyor in the Region where the vessel was inspected.

- 1.3.10.3 Should the above procedure fail to resolve the dispute, the owner may refer the matter to the Director of Maritime Safety and Standards at MCA headquarters, and, if necessary, to MCA Chief Executive.
- 1.3.10.4 If an owner is still not content with the way in which the dispute has been handled, the owner may serve notice, within twenty-one days of the completion of the procedure given in section 1.3.10.3, on MCA that their dispute be referred to a single arbitrator appointed by agreement between MCA and the owner.
- 1.3.10.5 A person should not be qualified for appointment as an arbitrator unless that person is:
- (i) a person holding a certificate of competency as a deck officer, marine engineer or equivalent;
  - (ii) a naval architect;
  - (iii) a person with special experience of the fishing industry;
  - (iv) a member of the Chartered Institute of Arbitrators; or
  - (v) a person holding a Certificate of Competency (Fishing Vessels) Class 1.
- 1.3.10.6 The final allocation of costs will depend on the arbitrator's decision. If the decision is in favour of the owner, the arbitrator may award the owner such compensation as the arbitrator thinks fit in addition to allocating costs.
- 1.3.11 Standards for Vessels 'Flagging-in' to UK Registration**
- 1.3.11.1 *New vessels must comply with the provisions of the Code wherever the place of construction or origin.* N
- 1.3.11.2 Vessels flagging in will be treated as being new vessels.
- 1.3.11.3 Before purchasing and applying to register an existing vessel in the UK, owners are advised to consider the consequences of compliance with the Code. Owners are recommended to seek early advice from their technical consultants and MCA prior to making any commitment for registering a vessel. Vessels will be considered for compliance with the Code for the purposes of UK registration on the following basis:
- (i) The vessel is registered as a fishing vessel in a British Crown Dependency (e.g. Isle of Man and Channel Islands); or
  - (ii) The vessel complied with the relevant UK safety requirements for hull construction at the time of build; or
  - (iii) The vessel is certified as being in Class.
- 1.3.11.4 The Vessel will be assessed against a Flag-in Matrix, which can be obtained from MCA, prior to acceptance on the UK Flag. Depending on the outcome of the assessment, the vessel will either be Flagged in by MCA through survey, have a Pre Flag Inspection by MCA prior to flag in Survey or referred to the Flag in Panel for a decision.

### 1.3.12 **Updating the Code**

- 1.3.12.1 In cases where a question of interpretation of part of the Code arises, or guidance is required on the standards to be applied for compliance, advice may be obtained on written application to MCA.
- 1.3.12.2 The Code provisions will be reviewed and reconsidered not later than five years following its entry into force to take into account experience gained from its application. MCA will consult with and consider recommendations of a standing committee under the auspices of the Fishing Industry Safety Group.
- 1.3.12.3 When new standards are developed and finalised by the British Standards Institution (BSI) or any international body which impact upon the provisions of the Code, amendment may be considered immediately.

## CHAPTER 2 (CONSTRUCTION & WATERTIGHT INTEGRITY)

### 2.1 CONSTRUCTION AND STRUCTURAL STRENGTH

#### 2.1.1 General Requirements for Structural Strength

2.1.1.1 The structural strength and construction of every fishing vessel and the disposition of bulkheads shall be adequate for all foreseeable operating conditions in service. The scantlings, arrangements and construction for the hull, bulkheads, superstructures, deckhouses, machinery casings, companionways and other structures shall be sufficient to withstand all operational loads arising during the vessel's service and shall be to the satisfaction of MCA or Classification Societies as approved in 1.2.5.1.

2.1.1.2 The owners are to inform MCA if the vessel is to be operated in areas subject to sea ice conditions. Hull construction and stability requirements will be specially considered for vessels operating in such areas.

#### 2.1.2 Construction Materials

2.1.2.1 *A vessel shall be constructed of wood, fibre reinforced plastic (FRP), aluminium alloy or steel or appropriate combinations of such materials.* N

2.1.2.2 *Proposals to use any other construction material shall be submitted to MCA for consideration and approval.* N

#### 2.1.3 New Vessels

2.1.3.1 *Hull construction and arrangement drawings shall be reviewed and approved by the Classification Society and MCA, as appropriate.* N

2.1.3.2 *The hull shall be surveyed during construction by the Classification Society to verify compliance with the approved drawings. An appropriate certificate of construction shall be issued on completion of build.* N

#### 2.1.4 Existing Vessels

2.1.4.1 **An existing vessel will be considered to be of acceptable structural strength if it is determined that it is in a good state of repair for the purposes of this Code.** E

#### 2.1.5 Decks

##### 2.1.5.1 Working deck

(i) The working deck shall be of watertight construction and shall extend from stem to stern with positive freeboard throughout in any condition of loading of the vessel;

(ii) The working deck may be stepped, recessed or raised provided the stepped, recessed or raised portion is of watertight construction;

(iii) *Minimum requirements for bow height are given in section 3.2.* N

##### 2.1.5.2 Weather deck

The weather deck is as defined in section 1.2.104.

## 2.1.6 Watertight Bulkheads

- 2.1.6.1 Bulkheads, closing devices and closures of openings in these bulkheads, as well as methods for their testing, shall be in accordance with the requirements of MCA or Classification society.
- 2.1.6.2 **The bulkhead arrangement of an existing vessel is acceptable provided that such an arrangement continues to remain efficient in service. E**
- 2.1.6.3 The main and auxiliary machinery essential for the propulsion and safety of the vessel shall be situated in a watertight machinery compartment with watertight bulkheads provided at the fore and aft positions of that space.
- 2.1.6.4 Such bulkheads shall extend up to the working deck and the number of openings fitted therein shall be the minimum compatible with the safe operational requirements of the vessel.
- 2.1.6.5 **The strength of the bulkheads shall be adequate to withstand a head of water to the satisfaction of the MCA or Classification Society. E**
- 2.1.6.6 When it is necessary for pipes, cables, etc. to penetrate watertight bulkheads, arrangements shall be made to maintain the watertight integrity of the bulkhead in way of such penetrations.
- 2.1.6.7 The collision bulkhead shall have valves, with the valve chest secured at the collision bulkhead inside the forepeak, fitted to all pipe penetrations and these shall be capable of operation from a readily accessible position above the working deck.
- 2.1.6.8 Such valves may be fitted on the after side of the collision bulkhead provided that they are readily accessible under all service conditions and the space in which they are located is not a cargo space.
- 2.1.6.9 A door fitted in a watertight bulkhead shall be of watertight construction, have equivalent structural strength as the adjacent bulkhead and be kept closed at sea.
- 2.1.6.10 No door, access hole, ventilation duct or any other opening is permitted in the collision bulkhead below the working deck, unless fitted in a bulkhead extension above the working deck. Such doors shall be of weathertight construction and shall be kept closed at sea.
- 2.1.6.11 Doors required by sections 2.1.6.9 and 2.1.6.10, may be used for authorised transit, but must be closed thereafter.
- 2.1.6.12 A warning notice with a “**KEEP CLOSED AT SEA**” legend shall be placed on the doors related in sections 2.1.6.9 and 2.1.6.10.
- 2.1.6.13 Where a long forward superstructure is fitted, the collision bulkhead shall be extended weathertight to the deck next above the working deck. The extension need not be fitted directly over the bulkhead below provided it is located within the limits given in section 1.2.16 and the part of the deck which forms the step is made effectively weathertight.
- 2.1.6.14 The number of openings in the collision bulkhead above the working deck shall be reduced to the minimum compatible with the design and normal operation of the vessel. Such openings shall be capable of being closed weathertight.
- 2.1.6.15 In vessels of 75 metres in length (L) and over, a watertight double bottom shall be fitted, as far as practicable, between the collision bulkhead and the afterpeak bulkhead.

## 2.1.7 **Watertight Doors**

- 2.1.7.1 The number of doors fitted in any watertight bulkhead shall be the minimum compatible with the normal operation of the ship. Every such door shall be efficiently constructed and be watertight when closed.
- 2.1.7.2 In vessels of less than 45 metres in length (L) , such doors may be of the hinged type, which shall be capable of being operated locally from each side of the door and shall normally be kept closed at sea.
- 2.1.7.3 In vessels of 45 metres in length (L) and over, watertight doors shall be of the sliding type in spaces where it is intended to open them at sea and if located with their sills below the deepest operating waterline and the lower part of a machinery space where there is access from it to a shaft tunnel. The doors shall be capable of being operated by remote control from an accessible position above the working deck except where the doors are fitted in crew accommodation spaces. Sliding watertight doors whether manually operated or otherwise shall be capable of being operated locally from each side of the door.
- 2.1.7.4 Means shall be provided at remote operating positions to indicate when a sliding door is open or closed.
- 2.1.7.5 Sliding doors shall be capable of being efficiently operated when the vessel is listed up to 15 ° either way.

## 2.2 **WATERTIGHT AND WEATHERTIGHT INTEGRITY**

### 2.2.1 **Openings and Closing Arrangements**

- 2.2.1.1 The number of openings in the watertight structure of the vessel shall be the minimum consistent with its safe and practical operation and, when fitted such openings shall be provided with effective closing arrangements in accordance with the requirements of this Code.
- 2.2.1.2 *Hatches and doorways which may be open at sea, shall normally be arranged as near as practicable to the vessel's centreline. Due consideration shall be given to the risk of down flooding in determining location of hatches and doorways. N*
- 2.2.1.3 The ramp door, hatch or lid 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.
- 2.2.1.4 Machinery space openings shall be framed and enclosed by casings of a strength equivalent to the adjacent superstructure. External access openings therein shall be fitted with doors complying with the requirements of section 2.1.7.
- 2.2.1.5 Openings other than access openings shall be fitted with covers of equivalent strength to the unpierced structure, permanently attached thereto and capable of being closed weathertight.
- 2.2.1.6 Openings in the main deck or exposed weather decks shall be properly framed and efficiently enclosed by either superstructures, casings of adequate strength or hatch covers meeting the requirements of section 2.2.2.
- 2.2.1.7 Coaming heights appropriate to the position of the openings shall be provided as in section 2.2.5.
- 2.2.1.8 *Openings in weathertight boundaries for warps or wires used in fishing operations shall be kept as small as practicable and shall not be submerged with a vessel heel of up to 40° at the deepest draught. N*

## 2.2.2 Hatchway Covers

2.2.2.1 A hatchway that gives access to spaces below the working deck shall be of efficient construction and be provided with effective means of weathertight closure.

2.2.2.2 A coaming height appropriate to the position of the hatch opening shall be provided as in section 2.2.5.

2.2.2.3 *A cover to a hatchway may be of hinged, rolling or sliding type and shall be permanently secured to the structure of the vessel. Every such cover shall be fitted with gaskets and clamping devices, or other equally effective means that are both sufficient to retain the cover in position and ensure weathertight integrity when closed. Discharge hatches that are not open at sea may be of the "lift-off" type, provided they are weathertight when closed.* N

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

(a) 10.0 kilonewtons per square metre for vessels of 24 metres in length to less than 100 metres in length;

(b) 17.0 kilonewtons per square metre for vessels of 100 metres in length and over. For intermediate lengths the load values shall be determined by linear interpolation. MCA may reduce the loads to not less than 75% of the above values for covers to hatchways situated on the superstructure deck in a position abaft a point located 0.25L from the forward perpendicular.

2.2.2.5 *For new vessels the covers shall be of steel or equivalent material and of sufficient strength to accommodate the expected service loading.* N

2.2.2.6 Where covers are made of mild steel, the maximum stress calculated according to section 2.2.2.4 multiplied by 4.25 shall not exceed the minimum ultimate strength of the material. Under these loads the deflections shall not exceed more than 0.0028 times the span.

2.2.2.7 Covers made of materials other than mild steel shall be at least the equivalent strength to those made of mild steel and their construction shall be of sufficient stiffness ensuring weathertightness under the loads specified in section 2.2.2.4 above.

2.2.2.8 **The covers provided on an existing vessel will be acceptable provided they continue to remain efficient in service. This will be assessed by MCA during surveys and inspections. They shall then be maintained in this position at all times.** E

2.2.2.9 Weathertight hatches on all exposed decks shall be kept closed at sea, when not in use.

## 2.2.3 Hatchways closed by wood covers on Existing Vessels

2.2.3.1 The height above deck of hatchway coamings shall be at least 600 millimetres on exposed parts of the working deck and at least 300 millimetres on the superstructure deck.

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

2.2.3.3 Arrangements for securing wood hatchway covers weathertight shall be provided in accordance with the standards as given in regulations 14 and 15 of Annex I to the International convention on Load Lines 1966.

## 2.2.4 Weathertight Doors

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

## 2.2.5 Heights of Hatchway Coamings and Sills to Weathertight Doors

2.2.5.1 The height above deck of sills in those doorways, in companionways, erections, machinery casings and hatches which give direct access to parts of the deck exposed to the weather and sea shall be at least 600 millimetres on the working deck and at least 300 millimetres on the superstructure deck. Where operating experience has shown justification and on approval of MCA, these heights, except in the doorways giving direct access to machinery spaces, may be reduced to not less than 380 millimetres and 150 millimetres respectively. Reductions in sill heights must conform with the following:

- (i) The height of the hatch coamings specified in section 2.2.5.1 may be reduced, or the coamings omitted, provided the safety of the vessel is not thereby impaired and provided that watertight covers are fitted. Such covers shall be kept as small as reasonably practicable, be permanently attached by hinges or equivalent means and capable of being rapidly closed watertight;
- (ii) Coamings may also be reduced for hatches that are provided on working decks when the hatchway is positioned within a shelter, superstructure or deckhouse provided that such spaces are maintained weathertight whilst at sea and providing that flooding hazards will not arise due to activities within those spaces;
- (iii) The heights of sills to doors provided in exposed companionways, superstructures, deckhouses and machinery casings that give access to spaces leading below the working deck shall not be less than those specified for hatchway coamings in section 2.2.5.1 for a similar position. For other spaces the heights of door sills may be reduced provided:
  - (a) there is no access to spaces leading below the working deck; and
  - (b) the spaces are small; and
  - (c) *provided the safety of the vessel is not thereby impaired.* N
- (iv) *The heights of coamings or sills shall be required to be increased when a freeboard of less than that required by section 3.2 has been accepted;* N
- (v) *Where it is essential for fishing operations, flush type deck scuttles, hatches or access holes may be fitted to exposed freeboard or superstructure decks*

*provided they are of watertight construction, are closed at sea and are permanently attached to the hull.* N

- (vi) **The coaming heights for doors and hatches on existing vessels may be maintained as they stand, as long as they don't compromise the safety of the vessel.** E

## 2.2.6 **Sidescuttles (Portholes) and Windows**

2.2.6.1 Sidescuttles to spaces below the working deck and to enclosed superstructures, deckhouses or companionways on the working deck shall be fitted with hinged deadlights capable of being closed watertight.

2.2.6.2 No sidescuttle shall be fitted in such a position that its sill is less than 500 millimetres above the deepest operating waterline, and shall not be fitted in new vessels.

2.2.6.3 Sidescuttles fitted less than 1000 millimetres above the deepest operating waterline shall be of the fixed type.

2.2.6.4 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.

2.2.6.5 Sidescuttles, glasses and deadlights shall meet the requirements of ISO 21005:2004, ISO 1751:1993 and ISO 5780:1987, type B (medium duty grade), or any superseding standards, in respect of nominal size and toughened safety glass thickness, or an equivalent standard.

2.2.6.6 Windows must not be fitted below the working deck.

2.2.6.7 If windows are fitted in the forward or after bulkheads of exposed working deck erections, they shall be provided with efficient means of protection.

2.2.6.8 Windows and their frames shall meet the requirements of ISO 3903:1993, ISO 21005:2004 and ISO 5779:1987, type E (heavy duty grade), or any superseding standards, in respect of nominal size and toughened safety glass thickness, or an equivalent standard (e.g. BSMA 25).

2.2.6.9 Wheelhouse windows shall not be fabricated using polarised or tinted glass, although portable tinted screens may be employed if desired.

2.2.6.10 ***The Certifying Authority may accept sidescuttles and windows in existing vessels and New Fishing Vessels (1999) without deadlights in side and aft bulkheads of deckhouses located on or above the working deck if satisfied that the safety of the vessels will not be impaired.*** N&E

2.2.6.11 ***For New Fishing Vessels (2003) the Certifying Authority may accept sidescuttles and windows in existing vessels and New Fishing vessels (1999) without deadlights in side and aft bulkheads of deckhouses located on or above the working deck if satisfied that the safety of the vessels will not be impaired, taking into account the rules of Classification Societies based upon relevant ISO standards.*** N&E

## 2.2.7 **Scuppers, Inlets and Discharges**

2.2.7.1 *The number of inlets and discharges shall be kept to the operational minimum.* N

2.2.7.2 Each scupper or discharge leading through the hull from spaces below the working deck or from within an enclosed superstructure or deckhouse on the working deck shall have an automatic non-return valve fitted at the hull with a positive means of closure from an accessible position. A valve is not required if MCA considers that

the entry of water into the vessel through the opening is not likely to lead to dangerous flooding and that the thickness of the piping is sufficient. The means for operating the positive action valve shall be provided with an indicator showing whether the valve is open or closed.

2.2.7.3 Each sea inlet valve shall be permanently fitted with a positive means of closure from an accessible position, above the floor plates and flooding risk to be taken into account. If valves are fitted in wells, extended spindles shall be fitted to a higher level to enable their accessibility if flooding occurs.

2.2.7.4 Each sea inlet valve shall be provided with indicators showing whether the valves are open or closed.

2.2.7.5 *Soil and other waste water drainage shall be so arranged and fitted with such water seals, air vents and storm valves as are necessary to prevent siphoning, blowback or ingress of water. The hull closing arrangements shall be as detailed in section 2.2.7.2.* N

2.2.7.6 If scuppers from open decks penetrate the hull below the working deck they shall be made from piping of substantial thickness.

2.2.7.7 Waste-chutes and other similar discharges installed in enclosed spaces on the working deck shall be of robust construction and be provided with:

(i) An automatic valve with an easily accessible local means of closure. In addition, if the upper edge of the inner opening is less than 1.2 m above the highest waterline, there must be a means of closing remotely from outside the space being served. There shall be an indicator light located in the wheelhouse.

(ii) A steel lid, with hinged gasket and clamping device, which is easily accessible and allows an effective seal for the inner opening.

2.2.7.8 **Existing vessel arrangements will continue to be acceptable provided that valves fitted at hull penetrations remain both accessible and efficient in service with flooding risk taken into account.** E

## 2.2.8 Ventilators

2.2.8.1 In vessels of 45 metres in length (L) and over, the height above deck of ventilator coamings, other than machinery space ventilator coamings, shall be at least 900 millimetres on the working deck and at least 760 millimetres on the superstructure deck. In vessels of less than 45 metres in length (L), the height of these coamings shall be 760 millimetres and 450 millimetres respectively.

2.2.8.2 ***For Existing vessels and New Fishing Vessels (1999), the height above deck of machinery space openings shall be to the satisfaction of the Certifying Authority.*** N&E

2.2.8.3 *For New Fishing Vessels (2003), the height above working deck of machinery space ventilator openings necessary to continuously supply the machinery space and on demand immediately supply the generator room in general shall be in compliance with 2.2.8.4 and 2.2.8.5. However where, due to the ship's size and arrangements, this is not practicable, lesser heights, but in all cases not less than 900 millimetres above the working deck and the superstructure deck, may be accepted with the provision that the angle of initial downflooding to the machinery spaces shall not be less than 40°.* N

2.2.8.4 Coamings of ventilators shall be of equivalent strength to the adjacent structure and capable of being closed weathertight by closing appliances permanently attached to

the ventilator or adjacent structure. Where the coaming of any ventilator exceeds 900 millimetres in height it shall be specially supported.

2.2.8.5 Closing appliances in vessels of 45 metres in length (L) and over need not be fitted to ventilators the coamings of which extend to more than 4.5 metres above the working deck or more than 2.3 metres above the superstructure deck unless specifically required by MCA or the Classification Society. In vessels of less than 45 metres in length (L), closing appliances need not be fitted to ventilators the coamings of which extend to more than 3.4 metres above the working deck or more than 1.7 metres above the superstructure deck. Fireflaps shall be fitted in such coamings in accordance with section 5.1.3 (Ventilation Systems).

2.2.8.6 Reference shall also be made to sections 4.1.16 (machinery spaces habitability), 5.1.3 (ventilation systems), 5.4.1 (remote means for stopping machinery), 5.4.5.3 and .4 (LPG installations), 6.1.7 (ventilation of enclosed workplaces), 10.3 (Ventilation and air conditioning systems).

## 2.2.9 **Air Pipes**

2.2.9.1 The lowest point at which water might gain access through an air pipe shall be not less than 760 millimetres above the exposed working deck nor less than 450 millimetres above the superstructure deck. The exposed portions of the air pipes shall be of substantial construction.

2.2.9.2 A reduced height may be accepted if it can be shown that the rule air pipe height would interfere with essential vessel operations and provided that an adequate height above the deck is maintained. Alternatively consideration may be given to relocating the air pipe inboard.

2.2.9.3 Air pipes shall be provided with an efficient means of weathertight closure and provision shall be made to prevent overpressure or vacuum occurring when the tanks are being filled or emptied.

2.2.9.4 Reference shall also be made to section 4.1.13 (Oil fuel installations).

2.2.9.5 The height above working deck of air pipes openings shall be in compliance with section 2.2.9.1. However where due to the ships size and arrangements this is not practicable, lesser heights, but in all cases not less than 450 millimetres above the working deck and the superstructure deck, may be accepted with the provision that the angle of initial downflooding to the machinery spaces shall not be less than 40°.

## 2.2.10 **Sounding devices**

### 2.2.10.1 **Sounding pipes, shall be fitted:**

- (i) to the bilges of those compartments which are not readily accessible at all times during the voyage;
- (ii) to all tanks and cofferdams.

2.2.10.2 Sounding pipes upper ends shall be extended to a readily accessible position 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.

2.2.10.3 The fitting of other sounding devices do not preclude the fitting of sounding pipes.

## 2.3 WATER FREEING ARRANGEMENTS

### 2.3.1 General

2.3.1.1 When working or first tier superstructure decks are fitted with bulwarks, deck houses, erections or other arrangements such that wells are formed and shipped water may be retained onboard, then ample provision shall be made for rapidly freeing the decks of this water and for draining them.

2.3.1.2 The means by which this water is freed shall be by freeing ports, open rails, scuppers or other suitable arrangement.

2.3.1.3 In a vessel in which freeing ports cannot be fitted, other efficient means of clearing trapped water from the vessel shall be provided to the satisfaction of MCA.

### 2.3.2 Freeing Ports

2.3.2.1 Where bulwarks on weather parts of the working deck form wells, the minimum freeing port area (A) in m<sup>2</sup>, 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:

- (i)  $A = 0.07 l$  (l need not be taken as greater than 0.7 L);
- (ii) Where the bulwark is more than 1200 millimetres in average height the required area shall be increased by 0.004 metres<sup>2</sup> per metre of length of well for each 100 millimetres difference in height;
- (iii) Where the bulwark is less than 900 millimetres in average height, the required area may be decreased by 0.004 metres<sup>2</sup> per metre of length of well for each 100 millimetres difference in height;

2.3.2.2 The freeing port area calculated according to 2.3.2.1 shall be increased where MCA considers that the vessel's sheer is not sufficient to ensure that the deck is rapidly and effectively freed of water. For vessels with zero sheer, the required freeing port area shall be increased by 50%.

2.3.2.3 Subject to the approval of MCA the minimum freeing port area for each well on the superstructure deck shall be not less than one-half the area (A) given in 2.3.2.1.

2.3.2.4 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.

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

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

2.3.2.7 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 MCA.

2.3.2.8 **On existing vessels the areas of freeing ports and their arrangements will continue to be accepted provided that such arrangements continue to remain efficient in service.** **E**

**2.3.3 Working decks within an enclosed superstructure**

2.3.3.1 Such decks shall be fitted with an efficient drainage system having an appropriate drainage capacity to dispose of washing water and fish guts.

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

2.3.3.3 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 section 3.1.7. An efficient drainage system shall be fitted. Adequate protection against inadvertent influx of water to the working deck shall be provided.

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

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

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

**2.3.4 Tanks for fish in refrigerated (RSW) or chilled (CSW) sea water**

2.3.4.1 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. 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)

- 3.1 **STABILITY** (To be read in conjunction with MGN 281(F))
- 3.1.1 **General**
- 3.1.1.1 The vessel must be maintained in a seaworthy condition and be properly equipped appropriate to its purpose and use.
- 3.1.1.2 All vessels must be provided with approved stability information to the satisfaction of MCA for the conditions of service for which the vessel is intended.
- 3.1.1.3 The approved stability information shall contain the information and particulars detailed in the latest version of the Recommended Format for Fishing Vessels Freeboard and Stability Information (see MGN 281(F))
- 3.1.1.4 **Existing vessels, for which satisfactory stability characteristics have been demonstrated, shall carry the results of the most recent test onboard in support of the approved stability information that is required by section 3.1.1.3, until new information is approved and onboard. E**
- 3.1.1.5 All vessels must be sufficiently stable when intact in the conditions of service for which they are intended.
- 3.1.1.6 The skipper shall take the precautionary measures necessary to maintain adequate stability of the vessel.
- 3.1.1.7 Information on the vessel's stability shall be on board at all times and be readily accessible.
- 3.1.1.8 Instructions supplied concerning the vessel's stability must be strictly observed at all times.
- 3.1.1.9 Information on the vessel's stability shall be available at the periodical surveys of the vessel to ensure that it has been approved for the actual operating conditions.
- 3.1.1.10 Compliance with the stability criteria does not ensure immunity against capsizing regardless of the circumstances or absolve the skipper from their responsibilities. The skipper shall, therefore, exercise prudence and good navigational and operational skills having regard to the stowage of stores and equipment, the season of the year, weather forecasts and the navigational zone and shall take note of the particular advice contained in this Code (IMO Resolution A.749(18) 2.5.& 2.6 refers).
- 3.1.1.11 Vessels shall be so designed and constructed that the requirements of this Chapter will be satisfied in the operating conditions referred to in section 3.1.5. **For existing vessels and New Fishing Vessels (1999) calculations of the righting lever curves shall be to the satisfaction of MCA. For New Fishing Vessels (2003) calculations of the righting lever curves shall be carried out in accordance with the International Code on Intact Stability 2008. N&E**
- 3.1.2 **Stability Criteria**
- 3.1.2.1 Vessels must, in all foreseeable operating conditions and circumstances, including icing allowances when applicable, satisfy the following stability criteria after due correction for the free surface effects of liquids in tanks:

- (i) the area under the righting lever curve (GZ curve) must not be less than 0.055 m-radians up to 30° angle of heel and not less than 0.090 m-radians up to 40° or the angle of flooding  $\theta_f$  if this angle is less than 40°;
- (ii) Additionally, the area under the righting lever curve (GZ curve) between the angles of heel of 30° and 40° or between 30° and  $\theta_f$  if this angle is less than 40° must not be less than 0.030 m-radians.  $\theta_f$  is the angle of heel at which openings in the hull, superstructure or deckhouses which cannot rapidly be closed weathertight commence to immerse. In applying this criterion, small openings through which progressive flooding cannot take place need not be considered as open;
- (iii) the righting lever GZ must be at least 200 millimetres at an angle of heel equal to or greater than 30°;
- (iv) the maximum righting lever GZ<sub>max</sub> shall occur at an angle of heel preferably exceeding 30° but not less than 25°;
- (v) ***the initial metacentric height GM for existing vessels and New Fishing Vessels (1999) must not be less than 350 millimetres for single deck vessels.*** In vessels with complete superstructure or vessels of 70 metres in length or over the metacentric height may be reduced to the satisfaction of MCA but in no case shall be less than 150 millimetres;  
N&E
- (vi) *the initial metacentric height GM for New Fishing vessels (2003) must not be less than 350 millimetres for single deck vessels. In vessels with complete superstructure the metacentric height may be reduced to the satisfaction of MCA but in no case shall be less than 150 millimetres.*  
N

3.1.2.2 Where arrangements other than bilge keels are provided to limit the angles of roll, MCA must be satisfied that the stability criteria given in section 3.1.2.1 are maintained in all operating conditions.

3.1.2.3 Where ballast is provided to ensure compliance with section 3.1.2.1, its nature and arrangement must be to the satisfaction of the MCA. *In New Fishing Vessels (2003) with a length of less than 45 metres, such ballast shall be permanent.* Where ballast is permanent, it shall be solid and fixed securely in the vessel. MCA may accept liquid ballast of a non combustible nature, stored in completely filled tanks which are not connected to any pumping system of the vessel. If liquid ballast is used as permanent ballast to ensure compliance with section 3.1.2.1, details shall be included in the Certificate of Compliance and in the stability booklet. Permanent ballast must not be removed from the ship or relocated without the approval of the MCA. N&E

3.1.2.4 Vessels engaged in particular fishing methods where additional external forces are imposed on the vessel during fishing operations, shall meet the appropriate stability criteria, if necessary increased to the satisfaction of the MCA. *New Fishing Vessels (2003) engaged in beam trawling must comply with the following increased stability criteria:*

- (i) *the criteria for areas under the righting lever curve and for the righting levers as given in 3.1.2.1 (i), (ii), (iii) must be increased by 20%;*
- (ii) *the metacentric height must not be less than 500 millimetres;*
- (iii) *the criteria as given under 3.1.2.1 (i) and (ii) shall be applicable only to vessels with an installed propulsion power lower than the ones given in the following formulas, in kilowatts:*

- (a)  $N = 0.6 L_s^2$  for vessels with a length of 35 metres or less; and
- (b)  $N = 0.7 L_s^2$  for vessels with a length of 37 metres and over;
- (c) at intermediate length (35 metres to 37 metres) of the vessel the coefficient for  $L_s$  has to be obtained by interpolation in between 0.6 and 0.7;
- (d)  $L_s$  is the overall length according to the registration certificate. N&E

If the power at the flywheel exceeds the values for the standard propulsion power given in the above formulas the criteria as mentioned under (i) must be increased in direct proportion to the higher propulsion power. MCA must be satisfied that the above increased stability criteria for beam trawlers are met in the operating conditions mentioned in 3.5.1. For the calculation of the stability, the derricks shall be assumed to be hoisted up to an angle of 45° with the horizontal.

3.1.2.5 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 section 3.1.2.1 can be satisfied with the respective fish-holds partially or completely flooded.

3.1.2.6 *Vessels must be able to withstand the effect of severe wind and rolling in associated sea conditions taking account of the seasonal weather conditions, the sea states in which the vessel will operate, the type of vessel and its mode of operation. The relevant calculations shall be carried out in accordance with the International Code on Intact Stability 2008.* N

3.1.2.7 Vessels must be able to withstand 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. The following method shall be followed:

- (i) The ability of the vessel to withstand the heeling effect due to the presence of water on deck shall be demonstrated by a quasi-static method, with reference to figure 1, when the following condition is satisfied with the vessel in the worst operating condition:

$$Ratio C_{wod} = \frac{area_b}{area_a} \text{ must not be less than unity}$$

- (ii) The angle which limits area b must be equal to the flooding angle  $\theta_f$  or 40° whichever is the less;

- (iii) The value of the heeling moment  $M_{wod}$  (or the corresponding heeling arm) due to the presence of water on deck shall be determined assuming that the deck well is filled to the top of the bulwark at its lowest point and the vessel heeled up to the angle at which this point is immersed. For the determination of  $M_{wod}$  the following formula must be used:

$$M_{wod} = KM_w$$

where:

$M_w$  = static heeling moment due to water on deck

$K$  = coefficient

- (a) If  $M_{wod}$  is determined by a static approach,  $K = 1.0$  may be applied.
- (b) If  $M_{wod}$  is determined by a quasi-static approach,  $K$  may take into account the rolling period of the vessel and the dynamic effect of the water flow, including the effect of the disposition and configuration of deck wells and deckhouses. The value of  $K$  shall be satisfactory, taking into account the type of vessel, area of operation, etc. For vessels where the angle of deck edge immersion  $\theta_D$  is less than  $10^\circ$  to  $15^\circ$ , or the angle of bulwark top immersion  $\theta_B$  is less than  $20^\circ$  to  $25^\circ$  a value for  $K$  greater than 1.0 may be applied. When  $\theta_D$  is greater than  $20^\circ$  or  $\theta_B$  greater than  $30^\circ$  a value for  $K$  less than 1.0 may be applied.
- (iv) When calculating  $M_w$  the following assumptions shall be made:
- (a) at the beginning the vessel is in the upright condition;
- (b) during heeling, trim and displacement are constant and equal to the values for the vessel without the water on deck;
- (c) the effect of freeing ports shall be ignored.
- (v) The above provisions shall be adjusted, taking into account the seasonal weather conditions and sea states in the areas in which the vessel will operate, the type of vessel and its mode of operation.

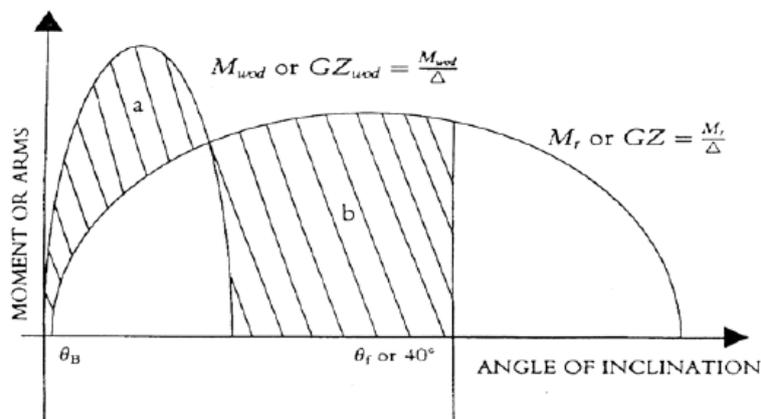


Figure 1 – Water on deck

3.1.2.8 Engine room vents shall be assumed as downflooding points if the angle of initial immersion is less than  $40^\circ$ . This requirement must be applied regardless of whether closures are fitted.

### 3.1.3 Lightship Particulars

3.1.3.1 The vessel lightship particulars shall be determined by inclining on completion of building or major conversion to the satisfaction of MCA.

3.1.3.2 Fishing vessels with approved stability must have a Lightship Check carried out at every renewal survey even if no modifications have been declared.

3.1.3.3 The inclining test and determination of conditions required by section 3.1.3.1 must be performed at least every ten years, though for purposes of a better survey cycle it is recommended that it shall be carried out at every second renewal survey.

3.1.3.4 The Lightship check is a procedure which involves auditing all items which are to be added, deducted or relocated on the ship at the time of the inclining test so that the observed condition of the ship can be adjusted to the lightship condition. The weight and longitudinal, transverse and vertical location of each item are to be accurately determined and recorded. The lightship displacement and longitudinal centre of gravity (LCG) can be obtained using this information, as well as the static waterline of the ship at the time of the inclining test as determined by measuring the freeboard or verified draught marks of the ship, the ship's hydrostatic data and the seawater density.

3.1.3.5 The carriage of unnecessary spare gear, stores and parts, the accumulation of debris and the cumulative effects of minor modifications over time can adversely affect the vessel's lightship weight and centre of gravity. Attention must be given to limiting these effects if lightship growth and the possibility of adverse effects on the vessel's stability are to be avoided.

3.1.3.6 If the lightship check exceeds 2% on displacement and 1% on LCG and the vessel cannot be made within these limits it shall be re-inclined.

#### 3.1.4 **Vessel Modifications Affecting Stability**

3.1.4.1 (i) The ship must be re-inclined whenever, in comparison with the approved stability information, deviation from the light-ship displacement exceeding 2% or a deviation of the longitudinal centre of gravity exceeding 1 % of L is found or anticipated.

(ii) The formal lightship check and/or re-incline as advised by the owners consultant will be witnessed by a MCA surveyor at each renewal survey.

3.1.4.2 MCA may allow the inclining test of an individual vessel to be dispensed with provided basic stability data is available from the inclining test of a sister ship built by the same yard and it is shown to the satisfaction of MCA that reliable stability information for the exempted vessel can be obtained from such basic data.

#### 3.1.5 **Operating conditions**

3.1.5.1 The number and type of operating conditions to be considered must include at least the following, as appropriate:

(i) departure for the fishing grounds with full fuel, stores, ice, fishing gear, full fresh water tanks etc;

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

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

(iv) arrival at home port with 10%, fuel, etc. and a minimum catch which shall normally be 20% of full catch but may be up to 40% provided MCA is satisfied that operating patterns justify such a value.

In addition for vessels operating in the Northern Region and Southern Oceans (as defined in section 3.1.6.3) the following operating conditions shall also be considered:

(v) operating condition (ii), (iii) or (iv), whichever produces the lowest values of the stability parameters contained in the stability criteria listed in section 3.1.2, shall be calculated including allowance for ice accretion in accordance with the provisions of section 3.1.6;

- (vi) for purse seiners: depart from fishing grounds with the fishing gear, no catch and 30% stores, fuel, etc., including allowance for ice accretion in accordance with the provisions of section 3.1.6.

3.1.5.2 In addition to the specific operating conditions given in section 3.1.5.1 MCA must also be satisfied that the minimum stability criteria given in section 3.1.2 are met under all other actual operating conditions including those which produce the lowest values of the stability parameters contained in these criteria. MCA must 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.

3.1.5.3 Concerning the conditions referred to in section 3.1.5.1, the calculations must include the following:

- (i) allowance for the weight of the wet fishing nets and tackle, etc. on the deck;
- (ii) allowance for ice accretion, if anticipated, in accordance with the provisions of section 3.1.6;
- (iii) homogeneous distribution of the catch, unless this is inconsistent with practice;
- (iv) catch on deck, if anticipated, in operating conditions referred to in section 3.1.5.1(ii) and (iii) and section 3.1.5.2;
- (v) 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
- (vi) allowance for the free surface effect of liquids and, if applicable, catch carried.

### 3.1.6 Ice accretion

3.1.6.1 For vessels operating in areas where ice accretion is likely to occur the following icing allowance must be made in the stability calculations:

- (i) 30 kg/metres<sup>2</sup> on exposed weather decks and gangways;
- (ii) 7.5 kg/metres<sup>2</sup> for projected lateral area of each side of the vessel above the water plane;
- (iii) the projected lateral area of discontinuous surfaces of rail, spars (except masts) and rigging of vessels having no sails and the projected lateral area of other small objects must be computed by increasing the total projected area of continuous surfaces by 5% and the static moments of this area by 10%.

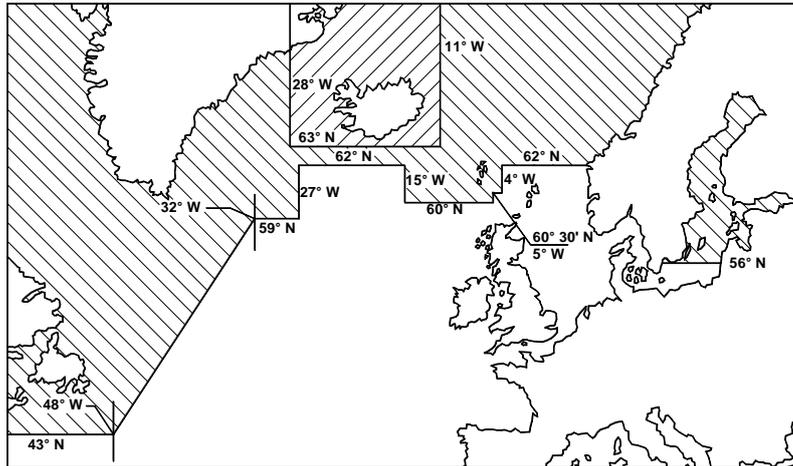
3.1.6.2 Vessels intended for operation in areas where ice accretion is known to occur must be:

- (i) designed to minimise the accretion of ice; and
- (ii) equipped with adequate means for removing ice.

3.1.6.3 *The specific requirements of sections 3.1.6.1 & 3.1.6.2 and the specific guidance given below must be applied* N

- (i) Within the following icing areas:

(a) Northern Region are the waters north of the boundary as illustrated on the chart attached to this Annex, excluding the Baltic Sea. This boundary is defined by the parallel of latitude 62° N from the west coast of Norway to longitude 4° W, thence the meridian of longitude 4° W to latitude 60° 30' N, thence the parallel of latitude 60° 30' N to longitude 5° W, thence the meridian of longitude 5° W to latitude 60° N, thence the parallel of latitude 60° N to longitude 15° W, thence the meridian of longitude 15° W to latitude 62° N, thence the parallel of latitude 62° N to longitude 27° W, thence the meridian of longitude 27° W to latitude 59° N and thence the parallel of latitude 59° N to the west. A larger scale map of this area is at Appendix 1 to this Section;



(b) The area north of latitude 43° N bounded in the west by the North American coast and the east by the rhumb line running from latitude 43° N longitude 48° W to latitude 63° N longitude 28° W and thence along longitude 28° W;

(c) All sea areas north of the North American continent, west of the areas defined in subsections (a) and (b) of this section;

(d) The Bering and Okhotsk Seas and the Tartary Strait during the icing season;

(e) South of latitude 60° S.

(ii) For vessels operating in areas where ice accretion may be expected:

(a) For vessels entering the Northern Region between 1 November and 30 April inclusive, stability conditions that contain an icing allowance of 30 kg/metres<sup>2</sup> for all exposed weather decks and gangways and 7.5 kg/metres<sup>2</sup> for the projected lateral area of each side of the vessel above the waterline, must be applied;

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

(c) Within the areas defined in section (i), (c), (d) and (e) known to having icing conditions significantly different from those in section 3.1.6.1, ice accretion requirements of one-half to twice the required allowance may be applied;

(d) Within the area defined in section (i)(b) where ice accretion in excess of twice the allowance required by section 3.1.6.1 may be expected, more severe requirements than those given in that section may be applied.

3.1.6.4 *Notwithstanding the provisions of section 3.1.6.1 (i) and (ii) the following icing allowance must be made in the stability calculations for vessels operating in the area north of latitude 63° N between longitude 28° W and longitude 11° W (Denmark Strait and Greenland Sea). N*

- (i) 40 kg/metres<sup>2</sup> on exposed weatherdecks and gangways;
- (ii) 10 kg/metres<sup>2</sup> for projected lateral area of each side of the vessel above the waterplane.

3.1.6.5 Reference shall be made to Annex 2 of the Intact Stability Code (A.749(18)) "Recommendations for skippers of fishing vessels on ensuring a vessel's endurance in conditions of ice formation".

**3.1.7 Portable fish-hold divisions**

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

**3.2 BOW HEIGHT**

3.2.1 The bow height shall be sufficient, to prevent the excessive shipping of water. For *New Fishing Vessels (2003) operating in restricted areas not more than 10 miles from the coast, the minimum bow height shall be to the satisfaction of MCA, and be determined 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. N*

**3.2.1.1 For all vessels operating in all other areas:**

(i) where, during the fishing operations, the catch has to be stowed into the fish holds via hatchways, which are situated on an exposed working deck forward of the deckhouse or superstructure, the minimum bow height shall be calculated in accordance with the following method of calculation:

(a) The bow height is defined as the minimum vertical distance from the deepest waterline to the top of the highest exposed deck measured at the forward perpendicular;

(b) The determination of the bow height (HB) in metres required may be based upon the following formula:

$$H_B = K_1 L \left( 1 + \frac{L}{K_2} \right)$$

where: L is the length of the vessel in metres; K1 and K2 are the coefficients depending upon areas of operation and L as follows:

Area of operation	L	K1	K2
Extreme conditions with significant wave height of up to and including 8 metres	24 metres < L < 110 metres	0.09	-270
	L > 110 metres	4.959 / L	600
Extreme conditions with significant wave height above 8 metres	24 metres < L < 110 metres	0.117	-220
	L > 110 metres	5.991 / L	1,484

(c) Waves of above 8 metres significant height must be assumed. A reduced bow height may be considered by MCA for vessels operating in restricted areas;

(d) Where the bow height required is obtained by sheer, this shall extend from the stem for a length of at least 0.15L abaft of the forward perpendicular. Where it is obtained by fitting a forecastle, such forecastle shall extend from the stem at least 0.07L abaft the forward perpendicular. However, where the length of the forecastle exceeds 0.15L due consideration shall be given to the fitting of a bulkhead with adequate closing appliances. If no such bulkhead is fitted adequate arrangements shall be provided for removing water from the open forecastle;

(e) Where a bulwark is fitted, this may be taken into account for a height of 1 metre provided that the bulwark extends from the stem to a point at least 0.15L abaft the forward perpendicular;

(f) When a vessel is always trimmed by the stem in service conditions, the minimum trim may be allowed in the calculation of the bow height.

- (ii) *For New Fishing Vessels (2003) where, during the fishing operations, the catch has to be stowed into the fish holds via hatchways, which are situated on an exposed working deck protected by a deckhouse or superstructure, the minimum bow height shall be in accordance with regulation 39 of annex I to the International Convention on Load Lines, 1966<sup>1</sup> but shall not be less than 2000 millimetres. In this respect the maximum permissible operating draught shall be used in place of the freeboard, for the purpose of determining the minimum bow height. N*

### 3.3. SUBDIVISION AND DAMAGE STABILITY

3.3.1 Vessels of 100 metres in length (L) and over, where the total number of persons carried is a hundred or more, must be capable of remaining afloat with positive stability, after the flooding of any one compartment assumed damaged, having regard to the type of vessel, the intended service and area of operation. Calculations are to be carried out in accordance with the guidance below.

#### 3.3.2 Guidance on subdivision and damage stability calculations

##### 3.3.2.1 Conditions of equilibrium

- (i) The final waterline after damage to any one compartment must be either:
- (a) to the line of openings at which progressive flooding to spaces below would occur and to the requirements of the MCA;
  - (b) or to the after end of the top of the poop superstructure deck at the centreline, subject to section (3.3.2.3)(i);
- (ii) Unsymmetrical flooding must be kept to a minimum consistent with efficient arrangements. Where it is necessary to correct large angles of heel, the means adopted shall, where practicable, be self-acting.

##### 3.3.2.2 Damage assumptions

The following assumed damage shall apply:

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<sup>1</sup> by the Protocol of 1988 relating to the International Convention on Load Lines, 1966

- (i) The vertical extent of damage in all cases is assumed to be from the base line upwards without limit;
- (ii) The transverse extent of damage is equal to B/5 metres, measured inboard from the side of the vessel perpendicularly to the centreline at the level of the deepest operating waterline, where B (in metres) is as defined in section 1.2.9;
- (iii) If damage of a lesser extent than specified in subsections (i) and (ii) above results in a more severe condition, such lesser extent shall be assumed;
- (iv) The flooding must be restricted to any single compartment between adjacent transverse bulkheads. If there are steps or recesses in a transverse bulkhead of not more than 3.05 metres in length located within the transverse extent of assumed damage as defined in subsection (ii) above, such transverse bulkhead may be considered intact and the adjacent compartments may be floodable singly. Where there exists a step or recess within the transverse extent of assumed damage of more than 3.05 metres in length in a transverse bulkhead, the two compartments adjacent to this bulkhead shall be considered as flooded. The step formed at the junction of the afterpeak bulkhead and the afterpeak tank top shall not be regarded as a step;
- (v) Where a main transverse bulkhead is situated within the transverse extent of assumed damage and is stepped in way of a double bottom or side tank by more than 3.05 metres, the double bottom or side tanks adjacent to the stepped portion of the main transverse bulkhead shall be considered as flooded simultaneously;
- (vi) Main transverse watertight bulkheads must be spaced at least  $\left(\frac{1}{3}\right)L^{2/3}$  metres apart, where L (in metres) is as defined in section 1.2.45. Where transverse bulkheads are spaced at a lesser distance, one or more of these bulkheads must be assumed as non-existent in order to achieve the minimum spacing between bulkheads;
- (vii) If pipes, ducts or tunnels are situated within the assumed extent of damage penetration as defined in subsection (ii) above, arrangements are to be made so that progressive flooding cannot thereby extend to compartments other than those assumed to be floodable in the calculation for each case of damage;
- (viii) Where operating experience has shown that other values for subsections (ii) and (iii) above are more appropriate, those values shall be used.

### 3.3.2.3 Survival assumptions

The vessel is considered to survive the conditions of damage specified in section 3.3.2.2 above provided the vessel remains afloat in a condition of stable equilibrium and satisfies the following stability criteria:

- (i) The stability in the final condition of flooding may be regarded as sufficient if the righting lever curve has a minimum range of 20° beyond the position of equilibrium in association with a residual righting lever of at least 100 millimetres. The area under the righting lever curve within this range must be not less than 0.0175 m-rad. Consideration must be given to the potential hazard presented by protected or unprotected openings which may become temporarily immersed within the range of residual stability. The unflooded volume of the poop superstructure around the machinery space casing, provided the machinery casing is watertight at this level, may be

taken into consideration in which case the damage waterline must not be above the after end of the top of the poop superstructure deck at the centreline;

- (ii) The angle of heel in the final condition of flooding must not exceed 20°;
- (iii) The initial metacentric height of the damaged vessel in the final condition of flooding for the upright position must be positive and not less than 50 millimetres;
- (iv) Relaxation from the damage stability requirements shall only be permitted if the proportions, arrangements and other characteristics of the vessel are more favourable to stability after damage.

### 3.3.3 Permeabilities

The permeabilities employed are to be those as calculated or estimated for the individual spaces in question.

### 3.3.4 Initial condition of loading

The subdivision and stability calculation must be carried out in the worst operating condition in respect of the residual buoyancy and stability in the non-icing condition.

## 3.4 LIFTING OPERATIONS

3.4.1 Particular care must be taken to ensure that the vessel retains adequate stability at all times during the course of any lifting operation.

3.4.2 *For vessels with lifting equipment, a sketch of the rig (arrangement, length of derricks and weight of gear) that is provided onboard must be appended to the vessel's Trim and Stability Manual. N*

3.4.3 *The Trim and Stability Manual must also include a calculation that indicates the maximum theoretical heel angle that will be produced when the fishing gear, excluding catch, is statically deployed on one side of the vessel, with both derricks at their maximum outreach. This is intended to provide a reference throughout the vessel's working life. The calculation must be carried out for the vessel in the 'arrive fishing grounds' condition. N*

3.4.4 For further advice on Stability, see MGN 281 or any superseding document.

## 3.5 DRAUGHT MARKS

3.5.1 Every vessel shall have scales of draughts permanently and clearly marked in metric units on the sides of the vessel at the bow and where they can be easily read at the stern.

3.5.2 The datum and longitudinal positioning of the draught marks shall be indicated by means of sketches in the vessels trim and stability manual, similarly the position of the datum for the vessel's hydrostatics data shall be correlated to the position of the draught marks datum. The positioning of the draught marks shall be verified by MCA or Classification Societies, if delegated.



## CHAPTER 4 (MECHANICAL & ELECTRICAL INSTALLATIONS)

### 4.1 MACHINERY

#### 4.1.1 General Requirements

4.1.1.1 Machinery installations shall comply with the general requirements given below and to the requirements of MCA, Certifying Authority or Classification Society. Other installations proposed may be specially considered, provided that full information is presented to and approved by MCA. Attention is drawn to Chapter 11, Clean Seas, regarding prevention of pollution.

#### 4.1.2 Machinery Installations

4.1.2.1 Machinery and pressure vessels shall be of a design and construction adequate for the service for which they are intended (fit for purpose) and be efficiently installed (taking into account the manufacturer's guidance) and protected so as to minimise any danger to persons on board. Due regard shall be given to moving parts, hot surfaces, spills and other hazards.

4.1.2.2 Machinery spaces shall be designed to provide safe and free access to all parts of the machinery that may require servicing at sea.

4.1.2.3 Main and auxiliary machinery essential for the propulsion and safety of the vessel shall be provided with effective means of control. The machinery shall be capable of being brought into operation from the "deadship" condition without using sources external to the vessel.

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

4.1.2.5 Internal combustion engines of a cylinder diameter greater than 200 millimetres or a crankcase volume greater than 0.6 cubic metres shall be provided with crankcase explosion relief valves of an approved type with sufficient relief area.

#### 4.1.2.6 Control of main engine(s)

Two separate means of communication between the wheelhouse and the machinery space control platform shall be provided, one of which shall be an engine-room telegraph, except that in vessels of less than 45 metres in length (L), where the propulsion machinery is directly controlled from the wheelhouse, MCA or Classification Society may accept means of communication other than an engine room telegraph. See also section 4.3.4.1 (Communication and Alarm Systems).

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

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

(b) the remote control referred to in sub-section (a) shall be performed by means of a control device to the satisfaction of MCA or Classification Society with, where necessary, means of preventing overload of the propulsion machinery. *For New Vessels (2003) where remote control of propulsion machinery is provided from the wheelhouse, the following shall apply: the remote control referred to in subsection (a) shall be performed by means of a control device complying with the rules of a Classification*

*Society with, where necessary, means of preventing overload of the propulsion machinery;* N&E

- (c) the main propulsion machinery shall be provided with a emergency stopping device in the wheelhouse and independent from the wheelhouse control system referred to in sub-section (a);
- (d) remote control of the propulsion machinery shall be possible only from one station at a time: at any control station interlocked control units may be permitted. There shall be at each station an indicator showing which station is in control of the propulsion machinery. The transfer of control between the wheelhouse and machinery spaces shall be possible only in the machinery space or control room. *On New Vessels (1999) and (2003) of less than 45 metres in length MCA or Classification Society may permit the control station in the machinery space to be an emergency station only, provided that the monitoring and control in the wheelhouse is adequate;*  
N
- (e) indicators shall be fitted in the wheelhouse for:
  - (i) propeller speed and direction in the case of fixed propellers;
  - (ii) propeller speed and pitch position in the case of controllable pitch propellers; and
  - (iii) advance alarm as required in section 4.3.5 below;
- (f) it shall be possible to control the propulsion machinery locally, even in the case of failure in any part of the remote control system;
- (g) unless MCA or Classification Society considers it impracticable the design of the remote control system shall be such that if it fails an alarm will be given and the pre-set speed and direction of thrust will be maintained until local control is in operation;
- (h) special arrangements shall be provided to ensure that automatic starting shall not exhaust the starting possibilities. An alarm shall be provided to indicate low starting air pressure and shall be set at a level which will still permit main engine starting operations.

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

4.1.2.9 **Safety devices**

- (i) Where risk from over-speeding of machinery exists, provisions shall be made to ensure that the safe speed is not exceeded;
- (ii) Where main or auxiliary machinery including pressure vessels or any parts of such machinery are subject to internal pressure and may be subject to dangerous overpressure, means shall be provided, where applicable, which will protect against such excessive pressure.

4.1.2.10 Machinery spaces that will be periodically unattended at sea shall be provided with proper alarm, detection and machinery control systems (refer to section 4.3).

4.1.2.11 Main engines, controlled from the engine room, shall also be controlled from a separate area, soundproofed and insulated from the engine room and accessible without entering the engine room.

4.1.2.12 The wheelhouse is considered to be an area that meets the requirements of section 4.1.2.11.

4.1.2.13 To ensure safety of personnel, it shall be possible to start and stop the main engine(s) from the engine room, in addition to any wheelhouse control.

#### 4.1.3 **Means for Going Ahead and Astern**

4.1.3.1 Every vessel shall have adequate power for going ahead and astern to maintain proper control of the vessel in all foreseeable service conditions.

4.1.3.2 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.

4.1.3.3 The main propulsion machinery and all auxiliary machinery essential to the propulsion and the safety of the vessel shall be designed to operate when the vessel is upright and when inclined at any angle of heel and trim up to and including 22.5° and 7.5° respectively, either way under dynamic conditions.

#### 4.1.4 **Engine Starting**

4.1.4.1 Main or auxiliary engines shall be capable of being started from the dead-ship condition without using a source external to the vessel. Such means shall be hydraulic, air, hand or electric starting or other means acceptable to MCA or Classification Society.

##### 4.1.4.2 **Main engine starting arrangements**

(i) Main engine starting arrangements shall be adequate to start the main engine or engines not less than six times successively if the engine is non reversible;

(ii) The total air storage receiver capacity shall be adequate to start the main engine or engines not less than twelve times successively if the engine is reversible.

4.1.4.3 When the sole means of starting is by battery, provision shall be made, via a change over switch, to make available an alternative battery as a safeguard for starting.

4.1.4.4 Every vessel in which machinery essential for the propulsion and safety of the vessel is required to be started, operated or controlled solely by compressed air, shall be provided with an efficient air system, including an adequate number of air compressors and air storage receivers and shall be so arranged as to ensure that an adequate supply of compressed air is available under all foreseeable service conditions.

4.1.4.5 Special arrangements shall be provided to ensure that other starting possibilities are still available shall automatic starting fail to start the vessel. An alarm shall be provided to indicate low starting possibilities. An alarm shall be provided to indicate low starting air pressure and shall be set at a level which will still permit main engine starting operations.

#### 4.1.5 **Air Pressure Systems**

4.1.5.1 Air pressure systems shall be designed, constructed and pressure tested to the satisfaction of MCA or Classification Society.

4.1.5.2 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.

- 4.1.5.3 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.
- 4.1.5.4 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.
- 4.1.5.5 Provision shall be made to reduce to a minimum the entry of oil into the air pressure systems.
- 4.1.5.6 Air pressure systems shall be provided with adequate draining appliances.
- 4.1.5.7 Compressed air systems shall be well maintained, examined at regular intervals and appropriately certified.

#### 4.1.6 **Propeller Shafts**

- 4.1.6.1 Every propeller shaft shall be designed and constructed to the satisfaction of MCA or Classification Society, to withstand the maximum working stresses to which it may be subjected, with a factor of safety that is adequate having regard to:

- (i) the material of which it is constructed;
- (ii) the service for which it is intended;
- (iii) the type and size of prime mover or motor by which it is driven or of which it forms a part.

#### 4.1.7 **Gearboxes**

- 4.1.7.1 Where fitted, gearboxes shall be suitable for the intended purpose and installed and maintained in an efficient manner, to the satisfaction of MCA or Classification Society.

#### 4.1.8 **Propeller and Stern Gear**

- 4.1.8.1 As appropriate to the vessel, the propeller materials and design in total (including shaft brackets, propeller securing, bearings, stern-tube and thrust block) and supporting structures shall correspond to the operating conditions for the vessel. Design, construction and fitting standards shall be to the satisfaction of MCA or Classification Society.

#### 4.1.9 **Controllable Pitch Propellers**

- 4.1.9.1 Where any vessel is equipped with a controllable pitch propeller, the propeller and its control gear shall be adequate having regard to the intended service of the vessel and be to the satisfaction of MCA.

#### 4.1.10 **Exhaust Systems**

- 4.1.10.1 Exhaust pipes and silencers of every internal combustion engine shall be adequately cooled or lagged to protect persons on board the vessel. Oil and fuel pipes shall be kept as clear as practicable from exhaust pipes and turbochargers.

#### 4.1.11 **Cooling Water and Other Seawater Systems**

4.1.11.1 A seawater piping diagram, including all the sea inlets, shall be displayed on a prominent location in the wheel house or the engine room.

4.1.11.2 All new or replacement installations of seawater piping and fittings for cooling water systems shall be of aluminium bronze, cupro-nickel or similar corrosion resistant material of a recognised standard.

4.1.11.3 'Heavy wall' mild steel pipe for 'cross vessel' inlet mains may be used, provided that the internal diameter is 100 millimetres or greater and the pipe is galvanised internally after all fabrication work is complete with consideration being given to all isolation requirements.

4.1.11.4 Piping for cooling water and other seawater systems shall be so arranged as to avoid sharp bends and flexible couplings. Pipe joints shall be kept to a minimum.

4.1.11.5 Care shall be taken to ensure that galvanic corrosion effects from dissimilar metals are prevented, by such means as isolation packing, washers and sleeves between the flanges and fasteners joining pipes or continuous bonding.

4.1.11.6 Recommendations may also be found in MGN 190. Fishing vessels - Premature failure of Copper Pipes in Engine Room Cooling Water Systems.

4.1.11.7 **Seawater pipes, wherever practicable, shall be connected by means of bolted flanges, visible and readily accessible for maintenance and inspection purposes. Existing vessels shall be fitted with such arrangements whenever seawater pipework is renewed. E**

4.1.11.8 Where cooling water services are essential for the cooling of the propelling machinery, alternative means of circulating water shall be provided in the event of failure of the primary source. Such alternative means shall be demonstrated to the satisfaction of MCA or Classification Society.

4.1.11.9 Flexible pipes and expansion joints are to be designed so as to withstand:

- (i) External contact with hydrocarbons;
- (ii) Internal pressure;
- (iii) Vibration;
- (iv) Pressure impulses.

4.1.11.10 Seawater suction of cooling systems essential for internal combustion machinery shall be provided with strainers suitably arranged so that they may be cleaned without interrupting the supply. Air vents shall be added to strainers to allow for bleeding any air trapped in the system.

4.1.11.11 Refer also to section 2.2.7 (Scuppers, Inlets and Discharges).

#### 4.1.12 **Fuel, Lubricating and Hydraulic Systems (fire hazards)**

4.1.12.1 Pipes used to convey lubricating oil, cooling oil, hydraulic oil or fuel oil shall be made of seamless steel or other suitable material and shall be properly installed and adequately installed. Pipes, joints and fittings, other than those fitted in hydraulic control systems, shall, before being put into service for the first time, be subjected to a test by hydraulic pressure to twice their maximum working pressure and at any time thereafter shall be capable of withstanding such a test.

- 4.1.12.2 Main engine lubricating oil filters of the Duplex type, capable of being readily dismantled for cleaning or replacement, shall be provided. Sufficient spare filter elements shall be carried on board.
- 4.1.12.3 Adequate means shall be provided for indicating failure of the main engine lubricating oil system.
- 4.1.12.4 The length of any flexible pipework in the engine room shall be as short as possible according to the service conditions. Such lengths shall not exceed 1.5 metres and joints kept to a minimum.
- 4.1.12.5 Where flexible hydraulic pipes are fitted within a high fire risk area, such pipes shall be fire proof and capable of withstanding a fire test to 800° C for 30 minutes. One of the following standards may be used to verify such a test:
- (i) BS ISO 15540:1999 – Fire resistance of hose assemblies – Test methods; or any superseding standard and
  - (ii) BS ISO 15541:1999 – Fire resistance of hose assemblies – Requirements for the test bench or any superseding standard.
- 4.1.12.6 The construction requirements of flexible hoses fitted within high fire risk area shall comply with one of the following British Standards (BS):
- (i) BS EN 853:1997 Rubber covered wire braided reinforced hydraulic type or any superseding standard;
  - (ii) BS EN 856:1997. Rubber covered spiral wire reinforced hydraulic type or any superseding standard.
- 4.1.12.7 Equivalent or higher standards may be accepted by MCA or Classification Society.
- 4.1.12.8 Where the failure of a flexible pipe or connection could result in oil being sprayed onto a source of ignition, then spray/splash guards shall be fitted.
- 4.1.12.9 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 MCA is satisfied that they are necessary. Such flexible pipes and end attachments shall be of adequate strength and shall, to the satisfaction of MCA, be constructed of approved fire resistant materials.
- 4.1.12.10 All hydraulic pumps shall be fitted with a remote stop facility.
- 4.1.12.11 Hydraulic oil tanks with a capacity greater than 65 litres shall comply with section 4.1.13.11.
- 4.1.12.12 Hydraulic oil service tanks directly supplying pumps may, in place of section 4.1.13.11, be accepted with automatic non-return valves (which may be integral with the pump), provided that the pumps can be stopped remotely. Any flexible pipes/hoses fitted shall comply with sections 4.1.12.5 and 4.1.12.6 (above) and if fitted between the pump and the service tank, they shall be located and protected such that in the event of hose failure, hydraulic oil will not come into contact with an ignition source.
- 4.1.12.13 *Hydraulic oil service tanks, with a capacity greater than 65 litres, shall be fitted with a high and low level alarm to detect leakage from the system.* N

#### 4.1.13 Oil Fuel Installations

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

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

#### 4.1.13.3 Ascertaining the amount of fuel oil

(i) Means shall be provided for measuring the contents of oil fuel tanks and means provided to prevent overpressure in such tanks. Sounding arrangements or oil level indicating gear fitted to settling tanks or daily service tanks shall not permit the escape of oil if these tanks are overfilled. Oil level indicators shall not allow oil to escape in the event of their being damaged.

(ii) Safe and efficient means of ascertaining the amount of fuel oil contained in any oil tank shall be provided. The upper ends of sounding pipes 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. Secondary 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. Adequate air vent breathers shall be fitted to fuel tanks and protected by gauze antifeash heads.

4.1.13.4 Oil fuel, lubricating oil and other flammable oils shall not be carried in fore peak shell tanks.

4.1.13.5 Fuel filling and venting pipes shall be constructed of steel, adequately supported and of sufficient dimensions to prevent spillage during filling. A venting pipe shall be led to the open atmosphere terminating in a position level with or higher than the fuel filling mouth and where there is no danger of fire or explosion resulting from the emergence of oil vapour from the pipe (refer also to section 2.2.9). The open end of the pipe shall be protected against:

(i) water ingress - by ball float or equivalent means;

(ii) flame ingress - by a corrosion resistant gauze mesh (that can be detached for cleaning).

4.1.13.6 **Existing vessels may be accepted with other suitable means of protection, if arranged to the satisfaction of MCA. MCA will issue an exemption to confirm**

**this. This will be assessed by MCA during surveys and inspections. They shall then be maintained in this position at all times. E**

- 4.1.13.7 Where pipes also serve as overflow pipes, provision shall be made to prevent pollution of the sea.
- 4.1.13.8 The overflow shall not run into or near a machinery space, galley or other space where ignition may occur.
- 4.1.13.9 Air pipes from oil fuel tanks and levelling pipes attached to tanks shall have a net cross-sectional area not less than 1.25 times that of the filling pipes.
- 4.1.13.10 Self-closing type drains shall be provided for the removal of water from oil fuel in storage tanks or settling tanks or in oily water separators.
- 4.1.13.11 Means shall be provided to isolate a source of fuel (either fuel or oil, capacity greater than 65 litres) that may feed a fire in an engine space. A valve or cock, capable of being closed from a position outside the engine space, shall be fitted in the fuel feed pipe as close as possible to the tank and in an accessible position. Tanks to be considered for such an arrangement are hose fitted with an outlet valve which may be left open during normal operation of the vessel. Inlet and re-circulation valves shall be of the non return type.
- 4.1.13.12 Subject to the satisfaction of MCA or Classification Society, fuel oil pipes which, if damaged, would allow oil to escape from a storage, settling or daily service tank situated above the double bottom, shall be fitted with a cock or valve on the tank capable of being closed from a safe position outside the space concerned in the event of a fire arising in the space in which such tanks are situated. In the special case of deep tanks situated in any shaft or pipe tunnel or similar space, valves on the tank shall be fitted but control in the event of fire may be effected by means of an additional valve on the pipe or pipes outside the tunnel or similar space. If such additional valve is fitted in the machinery space it shall be capable of being operated outside this space.
- 4.1.13.13 Pumps forming part of the fuel oil system shall be separate from any other system and the connexions of any such pumps shall be provided with an efficient relief valve which shall be in closed circuit.
- 4.1.13.14 No oil tank shall be situated where spillage or leakage therefrom can constitute a hazard by falling on heated surfaces. Precautions shall be taken to prevent any oil that may escape under pressure from any pump, filter or heater from coming into contact with heated surfaces.
- 4.1.13.15 Electric driven fuel and oil pumps shall be fitted with a remote stop at a suitable position outside the machinery space.
- 4.1.13.16 Save-all(s) or equivalent means of containment of spillage shall be provided below fuel pump(s), auxiliary engines, oil pumps and filter(s).
- 4.1.13.17 Fuel supply lines to main propulsion and essential auxiliary machinery shall be provided with duplicate filters, so constructed that either filter may be dismantled for cleaning without disrupting the fuel supply through the filter in use, which shall be impossible to open.
- 4.1.13.18 Oil fuel filling points shall be so arranged that oil fuel will not readily be spilled, overflow, drain or lodge in any space.
- 4.1.13.19 Pipes used to convey fuel oil shall, wherever possible, be made of seamless steel or other suitable material and shall be properly installed and adequately secured, taking into consideration vibration and chafing. Pipes, joints and fittings shall, before being

put into service for the first time, be subjected to a test by hydraulic pressure to twice their maximum working pressure, and at any time thereafter shall be capable of withstanding such a test. Where fitted, flexible pipes shall comply with section 4.1.12.5, to the satisfaction of MCA or Classification Society.

- 4.1.13.20 Fuel oil and lubricating oil pipes, where necessary, 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.
- 4.1.13.21 The arrangements for the storage, distribution and use of oil employed in pressure lubrication systems shall be to the satisfaction of MCA or Classification Society. Such arrangements in machinery spaces of Category A and, wherever practicable, in other machinery spaces shall at least comply with the provisions of sections 4.1.13.1, 4.1.13.3, 4.1.13.5, 4.1.13.6, 4.1.13.14, 4.1.13.16 and 4.1.13.19 and in so far as MCA or Classification Society may consider necessary with sections 4.1.13.3 and 4.1.13.12. This does not preclude the use of sight flow glasses in lubrication systems provided they are shown by test to have a suitable degree of fire resistance.
- 4.1.13.22 The arrangements for the storage, distribution and use of flammable oils employed under pressure in power transmission systems other than oils referred to in section 4.1.13.21 in control and activating systems and heating systems shall be to the satisfaction of MCA. In locations where means of ignition are present such arrangements shall at least comply with the provisions of sections 4.1.13.3 and 4.1.13.14 and with the provisions of sections 4.1.13.3, 4.1.13.5, 4.1.13.6, 4.1.13.7 and 4.1.13.19 in respect of strength and construction.

#### 4.1.14 **Steam boilers, feed systems and steam piping arrangements**

- 4.1.14.1 Every steam boiler and every unfired steam generator shall be provided with not less than two safety valves of adequate capacity. ***For New Vessels 1999 and existing vessels, provided that MCA or Classification Society may, having regard to the output or any other features of any steam boiler or unfired steam generator, permit only one safety valve to be fitted if satisfied that adequate protection against overpressure is thereby provided. For New Fishing Vessels (2003), protection against overpressure must be provided in accordance with the rules of a Classification Society.*** N&E
- 4.1.14.2 Every oil-fired steam boiler which is intended to operate without manual supervision shall have safety arrangements which shut off the fuel supply and give an alarm in the case of low water level, air supply failure or flame failure.
- 4.1.14.3 MCA or Classification Society shall give special consideration to steam boiler installations to ensure that feed systems, monitoring devices, and safety provisions are adequate in all respects to ensure the safety of boilers, steam pressure vessels and steam piping arrangements.

#### 4.1.15 **Thermal oil heating systems**

- 4.1.15.1 The inlet and outlet valves of thermal oil heaters are to be operable from outside the compartment where they are situated unless an arrangement for quick gravity draining of the thermal oil in the system into a separate collecting tank is provided.
- 4.1.15.2 The system is to be arranged so that a positive pressure is maintained in the heating coil at least equivalent to 3 metres water column above the static head of the fuel level in the tank at all times, including when the circulation pump is not in operation.
- 4.1.15.3 The thermal oil system expansion tank is to be fitted with high and low level alarms.

- 4.1.15.4 A means is to be provided in the thermal oil system expansion tank for detection of flammable oil fuel vapours. Portable equipment may be accepted.
- 4.1.15.5 Valves which could isolate individual heating coils are to be provided with locking arrangements to ensure that the coils are under static pressure at all times.
- 4.1.15.6 The thermal oil circulating pump is to be arranged to permit emergency stopping from a position outside the space in which the pump is situated.
- 4.1.15.7 The temperature of the thermal oil in the pipes and heating coils are not to exceed 220°C. Suitable cut outs are to be fitted to the thermal oil heater to prevent this.
- 4.1.15.8 If an exhaust fired thermal oil heater is fitted, in addition to the requirements specified above, the heater is to be so designed and installed that all tubes may easily and readily be inspected for signs of corrosion and leakage.
- 4.1.15.9 The exhaust heater is to be fitted with temperature sensors and an alarm for fire detection.
- 4.1.15.10 A fixed fire extinguishing and cooling system is to be fitted. A water drenching system may be considered.

#### 4.1.16 **Machinery spaces habitability**

- 4.1.16.1 Adequate means of efficiently ventilating the engine room under all operating conditions, with doors and hatches closed, shall be provided.
- 4.1.16.2 *For New Vessels (1999) and existing vessels measures shall be taken to reduce the effects of noise upon personnel in machinery spaces to the satisfaction of MCA or Classification Society. For New Vessels (2003) these measures shall be taken to reduce the effects of noise upon personnel in machinery spaces to the levels given in the IMO Code on Noise Levels on Board Ships A646 (XII). N*

#### 4.1.17 **Refrigerating Plant**

- 4.1.17.1 Refrigerating plants shall be of a design and construction adequate for the service for which they are intended and shall be so installed and protected as to reduce to a minimum any danger to persons on board. Refrigerant detection sensors, compatible with the refrigerant being used, shall be fitted.
- 4.1.17.2 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.
- 4.1.17.3 Methyl chloride or chlorofluorocarbons (CFCs, with ozone depleting potential higher than 5% of CFC-11) shall not be used as refrigerants.
- 4.1.17.4 Ammonia refrigerating plants, shall comply with all other provisions contained in the following:
  - (i) Monitoring and operation of ammonia plant is crucial for the safety of the plant and crew onboard. Engineers in charge of such plant shall be suitably qualified and trained in the safe use of ammonia;
  - (ii) The refrigerating machinery compartment and the compartments where ammonia bottles are stored are to be separated by gastight bulkheads from the accommodation spaces, the engine room (including the shaft tunnel) and other machinery spaces intended for essential services;

- (iii) The space is to be arranged with a ventilation system, distinct from that of other spaces, having a capacity of at least 30 changes per hour. Provision is to be made for starting and stopping the ventilation fans from outside the refrigerated space;
- (iv) The ventilation exits from these spaces shall be placed as far as possible from the air intakes of the vessel;
- (v) A fire-extinguishing water spray system is to be provided in way of the access doors. The actuating device is to be fitted close to the entrance outside the protected space;
- (vi) At least two access doors are to be provided. One of these doors is to be used for emergency and is to lead directly to an open space. The doors are to open outwards and are to be self-closing;
- (vii) Where the access to a refrigerating machinery space is through an accommodation or machinery space, the ventilation of the former is to be such as to keep it under negative pressure with respect to the adjacent space, or, alternatively, the access is to be provided with an air lock;
- (viii) An independent bilge system is to be provided for the refrigerating machinery space, for new vessels and if practicable on existing vessels;
- (ix) All electrical equipment and apparatus in the space is to be arranged such that it may be shut off by a central switch located outside the space. This switch is not to control the ventilation system;
- (x) The electrical equipment and apparatus in the space is to comply with the requirements for electrical installations in dangerous areas;
- (xi) Ammonia piping is not to pass through accommodation space;
- (xii) When installation of ammonia is allowed in the machinery space in accordance with section 4.1.17.5 (iii) the area where ammonia machinery is installed is to be served by a hood with a negative pressure ventilation system, having a capacity of not less than 30 changes per hour, independent from any other ship ventilation system, so as to prevent any leakage of ammonia from dissipating into other areas;
- (xiii) The periphery of the hood is to be fitted with a drenching water system operable locally and from the outside of the machinery space;
- (xiv) Where the refrigerating machinery spaces are not permanently attended, a gas detection system with an audible and visual alarm is to be arranged in the bridge. This system is also to stop the compressor when a flammable gas concentration is reached.

#### 4.1.17.5 Spaces containing refrigerating machinery

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

- (iii) When such containment is not practicable, due to the size of the vessel, the refrigeration system may be installed in the machinery space provided that the quantity of refrigerant used will not cause danger to persons in the machinery space, 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.

4.1.17.6 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. All exits from such spaces shall be capable of being opened from the both sides. Where practicable, exits from the spaces containing refrigerating machinery using toxic or flammable gas shall not lead directly into any accommodation spaces.

4.1.17.7 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.

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

4.1.17.9 Where refrigerating plants are installed they shall be maintained in an efficient working condition and examined by the Classification Society, or as directed by MCA, at regular intervals.

#### 4.1.18 **Spares**

4.1.18.1 Adequate spares shall be provided for normal operation of the main machinery, auxiliary machinery and electrical equipment, having regard to the intended service of the vessel. Such spares shall include fuel filters, oil filters, temporary means of repairing pipework, seawater pump spares, bilge pump spares, tool-kit, fuses and light bulbs. Lists of such spares may be provided by either Classification Societies or Manufacturers.

#### 4.1.19. **Risk Assessment for Machinery**

4.1.19.1 A Risk Assessment shall also consider whether a Damage Control kit should be carried.

#### 4.1.20 **Refrigerated Spares**

4.1.20.1 Consideration shall be given to the location of foam insulation used in refrigerated spaces when carrying out hot work.

### 4.2 **ELECTRICAL ARRANGEMENTS**

#### 4.2.1 **General**

4.2.1.1 The electrical arrangements shall be designed and constructed so as to ensure the proper functioning of all equipment necessary to maintain the vessel in normal operational and living conditions without recourse to an emergency power supply. The installation shall also be such as to minimise the risk of fire and electric shock and satisfy the requirements of MCA or Classification Society.

4.2.1.2 Tanks, machinery or other metallic objects that do not have good electrical continuity with the water surrounding the vessel shall have special earthing arrangements to reduce potential risk.

4.2.1.3 For general guidance, a number of the most common standards that are appropriate to fishing vessel over 24 metres in length (L) are listed in section 4.2.6.  
*Other standards that are considered more appropriate and safe for a particular application may also be used for guidance.* N

#### 4.2.2 **Systems**

4.2.2.1 *DC Systems shall be of the two wire insulated type, with double pole switches used.* N

**Other DC systems on existing vessels are acceptable.** E

4.2.2.2 It is recommended that AC systems are of the insulated neutral type.

4.2.2.3 Hull return systems for earth monitoring and impressed current systems are acceptable.

#### 4.2.2.4 Insulation resistance

4.2.2.4.1 Before a new installation, or any alteration or addition to an existing installation, is put into service the insulation resistance is to be measured of all circuits and electrical equipment, using a direct current insulation tester.

4.2.2.4.2 The test shall use an applied voltage of 500 V.d.c for all circuits up to 500V.d.c or V.a.c. (r.m.s.). For vessels with systems of 50 volts or less, the insulation resistance shall be at least 0.3 megohm. For vessels with systems greater than 50 volts, the insulation resistance shall be at least 1.0 megohm.

4.2.2.4.3 A low voltage instrument operating at twice the minimum voltage may be used for testing to avoid the possibility of damage. In this case the insulation resistance shall be at least 1.0 megohm.

4.2.2.4.4 Electrical systems insulation testing shall be conducted on a routine basis at renewal surveys. The condition of the electrical cables and the insulation material shall also be visually checked.

4.2.2.5 Insulated neutral distribution systems shall be continuously monitored by suitable means.

4.2.2.6 All circuits except the main supply from the battery to the starter motor and electrically driven steering motors, shall be provided with electrical protection against overload and short circuit, (i.e. circuit breakers shall be installed). Short circuit protection shall be for not less than twice the total rated current load in the circuit protected.

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

#### 4.2.3 **Distribution Systems**

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

- 4.2.3.2 Where two or more generating sets may be in operation at the same time for providing the auxiliary services essential for the propulsion and safety of the vessel each generator shall be arranged to supply such essential services and means shall be provided to trip automatically sufficient non-essential load when the total current exceeds the connected generator capacity. It shall be possible to connect such generators in parallel whilst maintaining continuity of electrical supply.
- 4.2.3.3 Cable systems and electrical equipment shall be so installed as to reduce interference with radio reception to a minimum.
- 4.2.3.4 The hull return system of distribution shall not be used for power, heating or lighting in new vessels and vessels of 75 metres in length (L) and over.
- 4.2.3.5 The requirement of section 4.2.3.4 does not preclude, under conditions approved by MCA, the use of:
- (i) impressed current cathodic protective system;
  - (ii) limited locally earthed systems; or
  - (iii) insulation level monitoring devices provided the circulation current does not exceed 30 milliamperes under the most unfavourable conditions.
- 4.2.3.6 Where the hull return system is used, all final sub-circuits (all circuits fitted after the last protective device) shall be two wire and special precautions shall be taken to the satisfaction of MCA or Classification Society.
- 4.2.3.7 (a) Where a distribution system, whether primary or secondary, for power, heating or lighting, with no connection to earth is used, a device capable of monitoring the insulation level to earth shall be provided.
- (b) Where the distribution system is in accordance with subsection (a) and a voltage exceeding 55 volts direct current or 55 volts, root mean square, between conductors, is used, a device capable of continuously monitoring the insulation level to earth and of giving an audible or visual indication of abnormally low insulation values shall be provided.
- (c) Distribution systems which are supplied at a voltage not exceeding 250 volts direct current or 250 volts, root mean square, between conductors and which are limited in extent, may comply with subsection (a), subject to the satisfaction of MCA or Classification Society.
- 4.2.3.8 Switchboards shall be clearly marked; fuse boxes and fuse holders shall be checked at regular intervals to ensure that the correct rating of fuse is being used.
- 4.2.4 **Lighting**
- 4.2.4.1 Lighting circuits shall be distributed through the spaces so that a total blackout cannot occur due to the failure of a single protective device.
- 4.2.4.2 Where general lighting is provided by a single centralised source, an alternative source of lighting shall also be provided sufficient to enable persons to make their way to the open deck or to permit work on essential machinery.
- 4.2.4.3 Emergency lighting shall be provided to illuminate launching stations and over side of the vessel; emergency fire pumps, alleyways, stairways and exits; spaces containing machinery or the emergency source of power; control stations; and fish handling and fish processing spaces.

4.2.4.4 Emergency lighting shall be provided towards all exits to allow emergency exit in event of lighting failure.

4.2.4.5 The stroboscopic effect of fluorescent lighting shall be avoided. Split phase double fluorescent lighting shall be used.

#### 4.2.5 **Hazardous Spaces**

4.2.5.1 Electrical equipment, other than lighting, shall not normally be installed in a space where petroleum vapour or other hydrocarbon gas may accumulate. When electrical equipment is unavoidably installed in such a space, it must comply with a recognised explosion proof standard for prevention of ignition of the flammable atmosphere and wherever possible, switches shall be fitted outside that space.

#### 4.2.6 **Reference Standards**

4.2.6.1 The Institution of Electrical Engineers (IEE) Regulations for the Electrical and Electronic Equipment of Ships with Recommended Practice for their Implementation, 6th Edition 1990 and subsequent supplements.

4.2.6.2 BS 6883:(1999), Specification for elastomer insulated cables for fixed wiring in vessels, or superseding standard. (Suitable for lighting, power, control, instrumentation and propulsion circuits).

4.2.6.3 *IEC 600 92-350 shipboard power cables. (General construction and test requirements for shipboard cables with copper conductors intended for low-voltage power systems at voltages up to and including 8.7/15kV, or superseding standard)*  
N

4.2.6.4 *BS IEC 60092-401:1980, Electrical installation in ships – Part 401: Installation and test of completed installation.*  
N

#### 4.2.7 **Electrical Precautions**

4.2.7.1 Electrical equipment shall be so constructed and installed, that there will be no danger to any person handling it in a proper manner.

(i) Subject to section (ii), where electrical equipment is to be operated at a voltage in excess of 55 volts the exposed metal parts of such equipment that are not intended to have a voltage above that of earth, but which may have such a voltage under fault conditions, shall be earthed;

(ii) Exposed metal parts of portable electrical lamps, tools and similar apparatus, to be operated at a voltage in excess of 55 volts shall be earthed through a conductor in the supply cable unless, by the use of double insulation or a suitable isolating transformer, protection at least as effective as earthing through a conductor is provided. MCA or Classification Society may require additional precautions for portable electric lamps, tools or similar apparatus for use in confined or exceptionally damp spaces where particular risks due to conductivity may exist;

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

4.2.7.2 Fixed electrical cable shall be of a flame retardant type. All metal sheaths and armour of any electric cable shall be electrically continuous and shall be earthed. Electric cable that is neither metal sheathed nor armoured shall, if installed where its failure might cause a fire or explosion, be effectively protected and shall be so installed as not to impair their original flame-retarding properties. MCA or Classification Society

may permit the use of special types of cables when necessary for particular applications, such as radio frequency cables, which do not comply with the foregoing.

- 4.2.7.3 Cables and wiring serving essential or emergency power, lighting, internal communications or signals shall as far as practicable be routed clear of galleys, machinery spaces of Category A and other high fire risk areas and laundries, fish handling and fish processing spaces and other spaces where there is a high moisture content. Cables connecting fire pumps to the emergency switchboard shall be of a fire-resistant type where they pass through high fire risk areas. Where practicable all such cables shall be run in such a manner as to preclude their being rendered unserviceable by heating of the bulkheads that may be caused by a fire in an adjacent space.
- 4.2.7.4 Wiring shall be supported in such a manner as to avoid chafing or other damage (refer to section 4.2.6 above).
- 4.2.7.5 Joints in all electrical conductors except those in low voltage communications circuits shall be made only in junction or outlet boxes or by a suitable method such that it retains the original mechanical, flame retarding and electrical properties of the cable. Junction or outlet boxes shall be so constructed as to confine the spread of fire.
- 4.2.7.6 Lighting fittings shall be so arranged that the rise in temperature will not damage the associated wiring or cause a fire risk in the surrounding materials, especially where fitted at the head of bunk beds.
- 4.2.7.7 Every lighting circuit terminating in a fish hold or similar space shall be provided with an isolating switch positioned outside that space.
- 4.2.7.8 Cables installed in refrigerated compartments shall be suitable for low temperatures and high humidity.
- 4.2.7.9 Regular testing of the insulation on electrical systems shall be conducted and records maintained of the tests.
- 4.2.8 **Equipment and Installation Requirements**
- 4.2.8.1 Where electrical power is the only means for maintaining auxiliary services essential for propulsion or safety of the vessel, a main source of electrical power shall be provided comprising of at least two independent generators, one of which may be driven by the main engine. Such services shall be capable of being provided when any one of the sources of electrical power is out of operation. Other arrangements may be accepted provided they have equivalent electrical capability and are in accordance with the rules of a Classification Society.
- 4.2.8.2 Navigation lights, if solely electrical, shall be supplied through their own separate switchboard and adequate means for the monitoring of such lights shall be provided.
- 4.2.8.3 The power rating of each of the generators required in section 4.2.8.1 shall be sufficient to simultaneously supply the essential services required for propulsion, navigation and safety of the vessel. Such services include lighting, communications, bilge pumps, steering gear, fire pumps and navigation lights.
- 4.2.8.4 The output of any generator or alternator driven by a variable speed engine shall be based on the lowest operational speed of the engine. Throughout the entire operating engine speed range, the generator or alternator shall operate within its safe speed range.
- 4.2.8.5 *Sources of electrical power shall be so arranged to operate efficiently in the conditions detailed in section 4.2.8.4.* N

4.2.8.6 Where transformers form an essential part of the supply system, they shall be arranged to ensure continuity of supply.

4.2.8.7 *Main and emergency lighting systems shall be such that in case of fire or other incident in the spaces containing either source of supply, this will not render the other system inoperable.* N

#### 4.2.9 **Accumulator (Storage) Batteries**

4.2.9.1 Accumulator (storage) batteries shall be housed in boxes, trays or compartments that are constructed to provide protection of the batteries from damage and ventilated to outside atmosphere to reduce the accumulation of explosive gas to a minimum. Where fans are fitted in exhaust ducts from compartments assigned principally to the storage of batteries they shall be of a flameproof type. Electrical arrangements liable to arc shall not be installed in any compartment used principally for the storage of accumulator batteries. Lead acid and nickel alkaline batteries shall not be housed in the same space.

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

#### 4.2.10 **Emergency Power Source**

4.2.10.1 An emergency electrical power source must be provided.

4.2.10.2 An emergency electrical power source shall be located outside the engine room and shall, in all cases, be so arranged as to ensure that in the event of fire or other failure of the auxiliary installation, the emergency electrical power source shall provide the simultaneous functioning for at least three hours of the following services:

- (i) The internal communication system, fire detectors and emergency signals;
- (ii) The navigation lights if solely electrical and the emergency lights;
  - (a) in all alleyways, stairways and exits;
  - (b) in spaces containing machinery or the emergency source of power;
  - (c) in control stations;
  - (d) in fish handling and fish processing spaces; and
  - (e) in launching stations and overside of the vessel;
- (iii) The radio installation (reference shall be made to The Merchant Shipping (Radio) (Fishing Vessels) Regulations, 1999 No.3210;
- (iv) The operation of the emergency fire pump if any.

4.2.10.3 Notwithstanding section 4.2.10.2, for vessels of 45 metres in length (L) and over the emergency source of electrical power shall be capable of serving the installations listed in that section for a period of not less than 8 hours.

4.2.10.4 The emergency source of electrical power may be an independently driven generator, provided with an independent fuel supply and means of starting, or accumulator batteries.

4.2.10.5 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.

- 4.2.10.6 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 section 4.2.10.2. The emergency switchboard shall be provided with an auxiliary switch allowing the battery to be connected manually, in case of failure of the automatic connexion system.
- 4.2.10.7 An accumulator battery fitted in accordance with this section, other than batteries fitted for the radio transmitter and receiver in vessels of less than 45 metres in length (L), shall be installed in a well ventilated space which shall not be the space containing the emergency switchboard. An indicator shall be mounted in a suitable place on the main switchboard or in the machinery control room to indicate when the battery constituting the emergency source of power is being discharged. The emergency switchboard is to be supplied in normal operation from the main switchboard by an inter-connector feeder which is to be protected at the main switchboard against overload and short circuit. The arrangement at the emergency switchboard shall be such that in the event of a failure of the main power supply an automatic connection of the emergency supply shall be provided. When the system is arranged for feedback operation, the inter-connector feeder shall also be protected at the emergency switchboard at least against short circuit.
- 4.2.10.8 If the emergency electrical power source is an accumulator battery and the main electrical power source fails, the accumulator battery must be automatically connected to the emergency electrical switchboard and supply power for an uninterrupted period of three hours to the systems referred to in section 4.2.10.2 (i) to (iv).
- 4.2.10.9 The main electrical switchboard and the emergency switchboard must, to the extent possible, be installed in such a way that they cannot be exposed simultaneously to water or fire.
- 4.2.10.10 The emergency generator and its prime mover and any accumulator battery shall be so arranged as to ensure that they will function at full rated power when the vessel is upright and when rolling up to an angle of 22.5° either way and simultaneously pitching 10° by bow or stern, or is in any combination of angles within those limits.
- 4.2.10.11 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.
- 4.2.11 **Engineers' Alarm**
- 4.2.11.1 In vessels of 75 metres in length (L) and over, an engineers' alarm is to be provided to be operated from the engine control room or at the manoeuvring platform as appropriate, and is to be clearly audible in the engineers' accommodation.
- 4.2.12 **Lightning Protection.**
- 4.2.12.1 Ships built as follows are to have a lightning protection system:
- (i) Ships with wooden hull
  - (ii) Ships with metal hull with wooden masts.
- 4.2.12.2 Lightning conductors are to be fitted to all wooden masts or topmasts. In vessels constructed of non-conductive materials, the lightning conductors are to be connected by suitable conductors to a copper plate fixed to the vessel's hull well below the waterline.

#### 4.2.13 **Shore Power**

- 4.2.13.1 Vessels arranged to have a supply from a shore or other external supply shall be fitted with a suitable connection box having an inlet socket or terminals suitably rated for the supply.
- 4.2.13.2 The connection box is to be fitted in a position as close as possible to the source of supply to minimise the length of flexible supply cable. The flexible cable shall not be run into the main switchboard, unless the board is the nearest point, in which case it is to be connected via a suitable isolating device and be incapable of being paralleled with the vessel's own supply.
- 4.2.13.3 A permanent cable shall be run from the connection box to the main switchboard and connected via a suitable isolating device.
- 4.2.13.4 On three phase AC systems, a meter or lamps shall be fitted at the shore inlet terminal point to indicate the correct phase sequence and, on a DC system, the correct polarity.
- 4.2.13.5 An earthed terminal shall be fitted to connect the vessel's hull (or in the case of non-metallic hull, the main earth plate) to permit interconnection to the in coming supply earth.
- 4.2.13.6 An indicator shall be fitted at the main switchboard to show when the shore supply is live.
- 4.2.13.7 Shore connection boxes are to be fitted with a label detailing the supply requirement of the vessel and the method of connection.

#### 4.3 **PERIODICALLY UNATTENDED MACHINERY SPACES**

##### 4.3.1 **General**

- 4.3.1.1 Vessels with periodically unattended machinery spaces are committed to comply with sections 4.1 and 4.2 plus the specific requirements listed below.
- 4.3.1.2 Measures shall be taken complying with the rules of MCA or a Classification Society to ensure that all equipment is functioning in a reliable manner in all operating conditions, including manoeuvring, and that arrangements are made for regular inspections and routine tests to ensure continuous reliable operation.
- 4.3.1.3 Vessels shall be provided with documentary evidence, complying with the rules of MCA or a Classification Society, of their fitness to operate with periodically unattended machinery spaces.

##### 4.3.2 **Fire Safety and Detection**

- 4.3.2.1 Special consideration must be given to high-pressure fuel oil pipes. Leakages from such piping systems shall be collected in a suitable drain tank which must be provided with a high level alarm.
- 4.3.2.2 Where daily service fuel oil tanks are filled automatically or by remote control, means must be provided to prevent overflow spillages. Similar consideration shall be given to other equipment that treats flammable liquids automatically, e.g. fuel oil purifiers, which whenever practicable shall be installed in a special space reserved for purifiers and their heaters.

- 4.3.2.3 Where daily fuel oil service tanks or settling tanks are fitted with heating arrangements, a high temperature alarm must be provided if the flashpoint of the fuel oil can be exceeded.
- 4.3.2.4 An approved fire detection system based on a self-monitoring principle and including facilities for periodical testing must be installed in machinery spaces.
- 4.3.2.5 The detection system must initiate both audible and visual alarm in the wheelhouse and in sufficient appropriate spaces to be heard and observed by persons on board and shall also be operable when the vessel is in harbour, on shore power.
- 4.3.2.6 The fire detection system shall be fed automatically from an emergency source of power if the main source of power fails.
- 4.3.2.7 Internal combustion engines of 2500 kilowatts and over shall be provided with crankcase oil mist detectors or engine bearing temperature detectors or equivalent devices.
- 4.3.2.8 A fixed fire-extinguishing system must be provided to the satisfaction of MCA or Classification Society, which shall be in compliance with the requirements of sections 5.1.8.1 to 5.1.8.3 and 5.5.8.1 to 5.5.8.7 for vessels of 60 metres in length (L) or more. Vessels under 60 metres in length (L) shall be in compliance with sections 5.1.8.1 to 5.1.8.3 and 5.1.8.5 to 5.1.8.8.
- 4.3.2.9 In vessels of 75 metres in length (L) and over provision shall be made for immediate water delivery from the fire main system either by:
- (i) remote starting arrangements of one of the main fire pumps in the wheelhouse and at the fire control station, if any; or
  - (ii) permanent pressurisation of the fire main system, due regard being paid to the possibility of freezing.
- 4.3.2.10 In spaces where flammable mixtures are liable to collect and in any compartment assigned principally to the containment of an accumulator battery, no electrical equipment must be installed unless MCA is satisfied that it is:
- (i) essential for operational purposes;
  - (ii) of a type which will not ignite the mixture concerned;
  - (iii) appropriate to the space concerned; and
  - (iv) appropriately certified for safe usage in the dusts, vapours or gases likely to be encountered.
- 4.3.3. **Protection Against Flooding**
- 4.3.3.1 Propulsion machinery spaces and fish holds are to be fitted with at least two bilge level sensors (one high and one low level) capable of indicating water ingress in those spaces at the control station by means of visual and audible alarm. These alarms shall be accessible for regular testing. See also section 4.4.3.
- 4.3.3.2 The controls of any valve serving a sea inlet, a discharge below the waterline or a bilge injection system must be so sited as to allow adequate time for operation in case of influx of water to the space.  
*For new vessels this means operable above floor plates or remotely operated. N*

#### 4.3.4 **Communications and Alarm System**

4.3.4.1 In vessels of 75 metres in length (L) and over one of the two separate means of communication referred to in 4.1.2.6 shall be a reliable device for vocal communication. An additional reliable device for vocal communication shall be provided between the wheelhouse and the engineers' accommodation.

4.3.4.2 An alarm system must be provided which must indicate any fault requiring attention.

- (i) The alarm system shall be capable of sounding an audible alarm in the machinery space and indicate visually each separate alarm function at a suitable position. However, in vessels of less than 45 metres in length (L), MCA or Classification Society may permit the system to be capable of sounding and indicating visually each separate alarm function in the wheelhouse only;
- (ii) In vessels of 45 metres in length (L) and over the alarm system shall have a connection to the engineers' cabins through a selector switch to ensure connection to one of those cabins and to the engineers' public rooms, if any. MCA or Classification Society may permit alternative arrangements which provide an equivalent measure of safety;
- (iii) In vessels of 45 metres in length (L) and over an engineers' alarm and an alarm to the wheelhouse for persons on watch shall be activated if an alarm function has not received attention within a limited period as specified by MCA or Classification Society.

4.3.4.3 The alarm system shall be:

- (i) continuously powered with automatic change-over to a stand-by power supply in case of loss of normal power supply;
- (ii) activated by failure of the normal power supply.

#### 4.3.4.4 **Alarm Indicators**

- (i) 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; and
- (ii) Acceptance at the position referred to in section 4.3.4.2(i) of any alarm condition shall be indicated at the positions where it was shown. Alarms shall be maintained until they are accepted and the visual indications must remain until the fault has been corrected. All alarms shall automatically reset when the fault has been rectified.

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

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

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

4.3.4.6 Where required to be duplicated, other auxiliary machinery essential to propulsion must be fitted with automatic changeover devices allowing transfer to a stand-by machine. An alarm shall be given on automatic changeover.

4.3.4.7 Automatic control and alarm system must be provided as follows:

- (i) the control system shall be such that through the necessary automatic arrangements the services needed for the operation of the main propulsion machinery and its auxiliaries are ensured;
- (ii) means shall be provided to keep the starting air pressure at the required level where internal combustion engines are used for main propulsion;
- (iii) an alarm system complying with section 4.3.4.3 shall be provided for all important pressures, temperatures, fluid levels, etc.; and
- (iv) where appropriate an adequate central position shall be arranged with the necessary alarm panels and instrumentation indicating any alarmed fault.

#### 4.3.5 **Safety System**

4.3.5.1 A safety system must 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 must 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 must be such as to preclude inadvertent activation. Visual means shall be provided to show whether or not it has been activated.

#### 4.3.6 **Control Room**

4.3.6.1 If the main engines are controlled from inside the engine room then an additional control position is required outside of the engine room, which position shall be soundproofed and insulated from the engine room and accessible without entering the engine room.

4.3.6.2 The wheelhouse is considered to be an area that meets the requirements of section 4.3.6.1.

### 4.4 **BILGE PUMPING**

#### 4.4.1 **General**

4.4.1.1 A vessel must be provided with efficient means for removal of water entering any compartment below the weather deck (other than a tank permanently used for carriage of liquids that is provided with efficient means of pumping or drainage).

4.4.1.2 Section 11.1 contains requirements for prevention of pollution of the sea.

#### 4.4.2 **Bilge and Fish Processing Space Pumping Arrangements**

4.4.2.1 Every vessel must be provided with:

- (i) Efficient means of draining any compartment, other than a compartment appropriated for the storage of oil or fresh water, when the vessel is upright or is listed not more than 5° either way. Suction(s) shall be provided in the engine room and in the fish hold to the lowest drainage level of the compartment;
- (ii) *The bilge suctions and means of drainage shall be so arranged that water entering any main watertight compartment can be pumped out through at least two independent bilge systems and suctions;* N

**Existing arrangements for existing vessels will continue to be acceptable subject to approval at survey to MCA or Classification Society.** E

- (iii) Where wet fish processing takes place within a weathertight compartment that does not have sufficient freeboard to permit direct overboard discharge via scuppers or other arrangements (see section 2.2.7.2), that space shall be provided with independent pumping arrangements having a capacity of at least 1.5 times the wash water supply. Where pumping arrangements are intended to cater for solid waste, discharge shall be arranged via local sumps with pumps suitable for pumping fish waste products.

4.4.2.2 All vessels must have:

- (i) At least two independent powered bilge pumps connected to the bilge main. One of these pumps may be driven by the propulsion machinery. At least one pump to be independent;
- (ii) Power bilge pumps must be capable of giving a speed of water of at least 2 metres per second through the main bilge pipe which must have an internal diameter of at least:

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

Where L = principal length of vessel (metres), B = principal breadth, D = principal depth

Where d = internal bilge diameter in millimetres

Each bilge pump to have minimum capacity Q cubic metres per hour, where  $Q = 0.00575 \cdot d^2$

- (iii) Each of the bilge pumps provided in accordance with this section shall be provided with a direct bilge suction, one of these suctions drawing from the port side of the machinery space and the other from the starboard side, except that in the case of a vessel of less than 75 metres in length only one bilge pump need be provided with a direct bilge suction;
- (iv) On existing vessels, at least one pump must be power driven and the second may take the form of either:
  - (a) A power driven pump, powered by separate means to the first pump; or
  - (b) A portable salvage pump; or
  - (c) A submersible pump, powered by separate means to the first pump.

Note: The capacity of systems above must satisfy the minimum capacity (Q).

A portable salvage pump may also be used as an emergency fire pump and it is most strongly recommended that existing vessels (particularly those vessels fitted with non-watertight bulkheads or singular bilge systems) carry such a pump in addition to the minimum requirements. The pump shall be stored in a readily accessible place.

- 4.4.2.3 A general service pump, of minimum capacity (Q), may be used as a power driven bilge pump.
- 4.4.2.4 A bilge ejector in combination with an independently driven high pressure sea-water pump may be installed as a substitute for one independently driven bilge pump required by section 4.4.2.2, provided this arrangement is to the satisfaction of MCA.
- 4.4.2.5 Bilge pumps shall be self-priming. Pumps must be capable of drawing water from any space as required by section 4.4.1.1.
- 4.4.2.6 Distribution boxes, valves and cocks fitted in bilge pumping systems must be in readily accessible positions.
- 4.4.2.7 In every vessel-
  - (i) pipes from the pumps for draining hold spaces or any part of the machinery space must be independent of pipes that may be used for filling or emptying spaces in which water or oil is carried;
  - (ii) bilge pipes shall be of steel or other suitable material having flanged joints wherever practicable. Flexible piping, if accessible for inspection and jointed with suitable clamps, may be installed where necessary.
- 4.4.2.8 Bilge pipes shall not be led through fuel oil, ballast or double bottom tanks, unless these pipes are of heavy gauge steel construction. This should be discussed with MCA or Classification Society at the design stage as it will not normally be allowed.
- 4.4.2.9 No bilge suction must have an inside diameter of less than 50 millimetres. The arrangement and sizing of the bilge system shall be such that the full rated capacity of the pump specified above can be applied to each of the watertight compartments located between the collision and afterpeak bulkheads.
- 4.4.2.10 Bilge pumping systems shall be so arranged 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 that draws from the sea or from water ballast spaces must be fitted with either a non-return valve or a cock which cannot be opened simultaneously either to the bilges and to the sea or to the bilges and water ballast spaces.
- 4.4.2.11 Valves in bilge distribution boxes must be of a screw down non-return type. Non-return valves shall be fitted in the discharge lines of bilge pumps unless the pumps are of suitable design and discharge directly onto the deck.
- 4.4.2.12 All bilge suctions shall be fitted with readily accessible strainers. The total area of the perforation in the strainer must be not less than twice the cross sectional area of the bilge pipe.
- 4.4.3 **Bilge Alarms**
  - 4.4.3.1 Propulsion machinery spaces and fish holds are to be fitted with at least two bilge level sensors (one high and one low level) capable of indicating water ingress in those

spaces at the control station by means of visual and audible alarm. These alarms shall be accessible for regular testing.

- 4.4.3.2 Unmanned spaces where ingress of water would seriously affect stability or essential equipment e.g. sonar rooms, no less than one of these sensors is required.
- 4.4.3.3 To prevent pollution, bilge sensors in compartments containing pollutants shall not automatically start bilge pumps.
- 4.4.3.4 Any auto-start bilge pump serving a clean compartment must be fitted with an audible and visual alarm at the control position(s) so that the reason for pumping may be investigated. Such pumps shall also be fitted with a "manual override" to start the pump.
- 4.4.3.5 Each dry compartment provided with a bilge suction capability (built-in or portable) must be fitted with a bilge level alarm if the level of bilge water can not be readily checked visually without entering the compartment. Alternatively, spring loaded drain valves may be fitted outside the compartment as a means of checking the bilge level.
- 4.4.3.6 Each engine room bilge alarm system must be provided with:
  - (i) An additional, independent bilge alarm system; or
  - (ii) A "fail safe " warning shall the bilge alarm circuit become faulty;
  - (iii) Existing vessels shall be fitted with (i) or (ii) above, by the first renewal survey under this Code. E**
- 4.4.3.7 Any bilge pipe piercing a collision bulkhead must be fitted with a positive means of closing at the bulkhead with remote control from the working deck with an indicator showing the position of the valve provided that, if the valve is fitted on the after side of the bulkhead and is readily accessible under all service conditions, the remote control may be dispensed with.
- 4.4.3.8 Further detailed guidance for bilge alarms and bilge pumps are provided in MGN 165 Fishing vessels - The Risk of Flooding and any superseding documents.

## 4.5 **STEERING GEAR, RUDDERS, ANCHORS AND CHAIN CABLES**

### 4.5.1 **Steering Gear**

- 4.5.1.1 Vessels must be provided with a main steering gear and an auxiliary means of actuating the rudder, in compliance with the rules of a Classification Society. The main steering gear and the auxiliary means of actuating the rudder shall be arranged so that so far as is reasonable and practicable a single failure in one of them will not render the other one inoperative.
- 4.5.1.2 Where the main steering gear comprises two or more identical power units an auxiliary steering gear need not be fitted if the main steering gear is capable of operating the rudder as required by section 4.5.1.10 when any one of the units is out of operation. Each of the power units shall be operated from a separate circuit.
- 4.5.1.3 The position of the rudder, if power operated, shall be indicated in the wheelhouse. The rudder angle indication for power-operated steering gear shall be independent of the steering gear control system.
- 4.5.1.4 In the event of failure of any of the steering gear units an alarm shall be given in the wheelhouse.

- 4.5.1.5 Indicators for ongoing indication of the motors of electric and electro-hydraulic steering gear shall be installed in the wheelhouse. Short circuit protection, an overload alarm and a no-voltage alarm shall be provided for these circuits and motors. Protection against excess current, if provided, shall be for not less than twice the full load current of the motor or circuit so protected, and shall be arranged to permit the passage of the appropriate starting currents.
- 4.5.1.6 The main steering gear shall be of adequate strength and sufficient to steer the vessel at maximum service speed. The main steering gear and rudderstock shall be so designed that they will not be damaged at maximum speed astern or by manoeuvring during fishing operations.
- 4.5.1.7 The main steering gear shall, with the vessel at its maximum permissible operating draught, be capable of putting the rudder over from 35° on one side to 35° on the other side with the vessel running ahead at maximum service speed. The rudder shall be capable of being put over from 35° on either side to 30° on the other side in not more than 28 seconds, under the same conditions. The main steering gear shall be operated by power where necessary to fulfil these requirements.
- 4.5.1.8 The main steering gear power unit shall be arranged to start either by manual means in the wheelhouse or automatically when power is restored after a power failure.
- 4.5.1.9 The auxiliary means for actuating the rudder shall be of adequate strength and sufficient to steer the vessel at navigable speed and capable of being brought speedily into action in an emergency.
- 4.5.1.10 The auxiliary means for actuating the rudder shall be capable of putting the rudder over from 15° on one side to 15° on the other side in not more than 60 seconds with the vessel running at one half of its maximum service speed ahead or 7 knots whichever is the greater. The auxiliary means for actuating the rudder shall be operated by power where necessary to fulfil these requirements. If this power source is electrical, the emergency source of electrical power shall be capable of serving the auxiliary means of activating the rudder for a period of 10 minutes.
- 4.5.1.11 Electric or electrohydraulic steering gear in vessels of 75 metres in length (L) and over shall be served by at least two circuits fed from the main switchboard and these circuits shall be as widely separated as possible.
- 4.5.2 **Anchors and Cables (calculated for deep-sea operation only)**
- 4.5.2.1 Anchor equipment designed for quick and safe operation must be provided which shall consist of anchoring equipment, anchor chains or wire ropes, stoppers and a powered 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. Anchoring and mooring equipment shall be in accordance with the rules of a Classification Society or MCA approved.
- 4.5.2.2 Every vessel shall be equipped with bow anchors and stud chain cables sufficient in weight and strength, having regard to the vessel's size and intended service. The size of this chain shall be appropriate to the anchor weight and length of the cable shall be in accordance with Table 1.
- 4.5.2.3 As an alternative to the stud link chain cables mentioned, wire ropes may be used in the following cases:
- (i) wire ropes for both the anchors, for ship's length less than 30 metres;
  - (ii) wire rope for one of the two anchors, for ship's length between 30 metres and 40 metres;

- (iii) The wire ropes above are to have a total length equal to 1.5 times the corresponding required length of stud link chain cables, obtained from Table 1, and a minimum breaking load equal to that given for the corresponding stud link chain cable.

A short length of chain cable is to be fitted between the wire rope and the anchor, having a length equal to 12.5 metres or the distance from the anchor in the stowed position to the winch, whichever is the lesser.

4.5.2.4 The anchor(s) with the associated cable must be stowed to enable rapid deployment and be provided with means of retrieval.

4.5.2.5 Anchor weights and lengths of cables shall comply with the table 1 where:

$$EN = D^{2/3} + 2hB + 0.1A$$

where:

D : Moulded displacement of the ship, in tons, to the waterline

h : Effective height, in metres, from the waterline to the top of the uppermost house,

to be obtained in accordance with the following formula:  $h = a + \sum h_n$

When calculating h, sheer and trim are to be disregarded

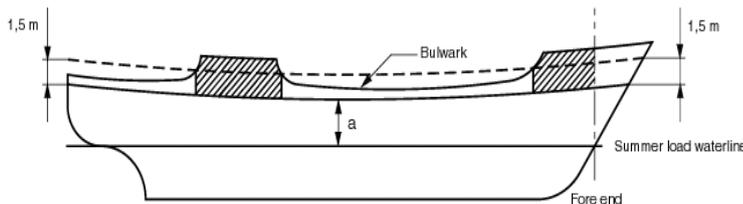
a : Freeboard amidships from the waterline to the upper deck, in metres

$h_n$  : Height, in metres, at the centreline of tier "n" of superstructures or deckhouses having a breadth greater than  $B/4$ . Where a house having a breadth greater than  $B/4$  is above a house with a breadth of  $B/4$  or less, the upper house is to be included and the lower ignored

A : Area, in metres<sup>2</sup>, in profile view, of the parts of the hull, superstructures and houses above the waterline which are within the length  $L_E$  and also have a breadth greater than  $B/4$

$L_E$  : Equipment length, in m, equal to L without being taken neither less than 96% nor greater than 97% of the total length of the summer load waterline.

Fixed screens, fixed picture windows or bulwarks 1.5 metres or more in height are to be regarded as parts of houses when determining h and A. In particular, the hatched area shown in the picture is to be included. In case of non butt-jointed picture windows, only the efficient closed areas are to be included.



4.5.2.6 Where it is proposed to use high holding power anchors, a reduction in anchor weight of up to 20% will be considered. N

4.5.2.7 High strength steel refers to special quality steel (wrought/cast with a tensile strength in the range 490 - 690 N/millimetres<sup>2</sup>).

*mild steel (tensile strength in the range 300 - 490 N/millimetres<sup>2</sup>) shall be increased by 14% in diameter.* N

4.5.2.8 **The anchor and cable arrangements on existing vessels will be accepted provided those arrangements continue to remain efficient in service. This will be assessed by MCA during surveys and inspections. They shall then be maintained in this position at all times.** E

**TABLE 1**

Equipment number EN A < EN ≤ B		Stockless anchors		Stud link chain cables for anchors			Towing Lines (guidance)		M o o r i n g l i n e s ( g u i d a n c e )		
A	B	N	Mass per anchor, in kg	Length of each line, in metres	Diameter and steel grade (millimetres)		B r e a k i n g l o a d , i n k N		N	Length of each line, in metres	Breaking load, in kN
					Mild steel	High strength steel	Minimum Length ( m )	Minimum breaking strength ( k N )			
30	40	2	80	165	11	-	180	98	2	50	29
40	50	2	100	192.5	11	-	180	98	2	60	29
50	60	2	120	192.5	12.5	-	180	98	3	80	34
60	70	2	140	192.5	12.5	-	180	98	3	80	34
70	80	2	160	220	14	12.5	180	98	3	100	37
80	90	2	180	220	14	12.5	180	98	3	100	37
90	100	2	210	220	16	14	180	98	3	110	39
100	110	2	240	220	16	14	180	98	3	110	39
110	120	2	270	247.5	17.5	16	180	98	3	110	44
120	130	2	300	247.5	17.5	16	180	98	3	110	44
130	140	2	340	275	19	17.5	180	98	3	120	49
140	150	2	390	275	19	17.5	180	98	3	120	49
150	175	2	480	275	22	19	180	98	3	120	54
175	205	2	570	302.5	24	20.5	180	112	3	120	59
205	240	2	780	302.5	26	22	180	129	4	120	64
240	280	2	900	330	28	24	180	150	4	120	69
280	320	2	1140	357.5	30	26	180	174	4	140	74
320	360	2	1290	357.5	32	28	180	207	4	140	78
360	400	2	1590	385	34	30	180	224	4	140	88
400	450	2	1740	385	36	32	180	250	4	140	98
450	500	2	1140	412.5	38	34	180	277	4	140	108
500	550	2	1590	412.5	40	34	190	306	4	160	123
550	600	2	1740	440	42	36	190	338	4	160	132
600	660	2	1920	440	44	38	190	371	4	160	147
660	720	2	2100	440	46	40	190	406	4	160	157

## CHAPTER 5 (FIRE PROTECTION, DETECTION & EXTINCTION)

### 5.1 FIRE PROTECTION

#### 5.1.1 **General – Applicable to all vessels (additional requirements for vessels of over 60 metres in length (L) are at the end of this chapter)**

- 5.1.1.1 Taking into account the contents of this Chapter, and depending on the dimensions and use of the vessel, the equipment it contains, the physical and chemical properties of the substances present, the maximum potential number of persons present, living quarters and enclosed workplaces, including the engine-room and the fish hold if necessary, it must be equipped with appropriate fire-fighting equipment and, as necessary, with fire detectors and alarm systems.
- 5.1.1.2 One of the following methods of protection must be adopted in accommodation and service spaces:
- (i) Method IF - The construction of all internal divisional bulkheads of non-combustible "B" or "C" Class divisions generally without the installation of a detection or sprinkler system in the accommodation and services spaces; or
  - (ii) Method IIF - The fitting of an automatic sprinkler and fire alarm system for the detection and extinction of fire in all spaces in which fire might be expected to originate, generally with no restrictions on the type of internal divisional bulkheads; or
  - (iii) Method IIIF - The fitting of an automatic fire alarm and detection system in all spaces in which a fire might be expected to originate, generally with no restriction on the type of internal divisional bulkheads, except that in no case shall the area of any accommodation space or spaces bounded by an "A" or "B" Class division exceed 50 metres<sup>2</sup>. **For Existing vessels and New Vessels (1999) MCA may increase this area for public spaces. For New Vessels (2003) MCA may only increase this area for public spaces up to 75 metres<sup>2</sup>.**  
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  - (iv) Regardless of method of protection chosen MCA recommends that an automatic Fire Detection System is always fitted.
- 5.1.1.3 The requirements for use of non-combustible materials in construction and insulation of the boundary bulkheads of machinery spaces, control stations, etc., and the protection of stairway enclosures and corridors shall be common to all three methods.
- 5.1.1.4 Consideration shall be given to reducing the use of combustible construction materials when non-combustible equivalents are readily available.
- 5.1.1.5 The insulating materials used in the accommodation spaces, service spaces except domestic refrigerating compartments, control stations and machinery spaces shall be non-combustible. The surface of any insulation fitted on the internal boundaries of machinery spaces must be impervious to oil or oil vapours.
- 5.1.1.6 Within refrigerating compartments, any combustible insulation must be protected by close fitting linings.
- 5.1.1.7 Exposed surfaces in corridors and stairway enclosures and surfaces, including grounds in concealed or inaccessible spaces in the accommodation and service spaces and control stations, must have low flame spread characteristics. Exposed surfaces of ceilings in accommodation and service spaces and control stations must

have low flame spread characteristics. *For New Vessels (2003) this must be as determined in accordance with the IMO Fire Test Procedures Code.* N&E

- 5.1.1.8 Paints, varnishes and other finishes used on exposed interior surfaces shall not be capable of producing excessive quantities of smoke or toxic gases or vapours, this being determined in accordance with the IMO Fire Test Procedures Code
- 5.1.1.9 Primary deck coverings within the accommodation and service spaces and control stations shall be of an approved material which will not readily ignite or give rise to toxic or explosive hazards at elevated temperatures to the satisfaction of MCA. This shall be determined in accordance with the Fire Test Procedures Code.
- 5.1.1.10 Where "A" or "B" Class divisions are penetrated for the passage of electrical cables, pipes, trunks, ducts, etc., or for the fitting of ventilation terminals, lighting fixtures and similar devices, arrangements shall be made to ensure that the fire integrity of the divisions is not impaired.
- 5.1.1.11 In the accommodation and service spaces and control stations, pipes penetrating "A" or "B" Class divisions must be of approved materials; having regard to the temperature such divisions are required to withstand. Where MCA permits the conveying of oil and combustible liquids through the accommodation and service spaces, the pipes conveying oil or combustible liquids must be of an approved material; having regard to the fire risk.
- 5.1.1.12 Materials readily rendered ineffective by heat shall not be used for overboard scuppers, sanitary discharges, and other outlets which are close to the waterline and where the failure of the material in the event of fire would give rise to danger of flooding.
- 5.1.1.13 All waste receptacles other than those used in fish processing shall be constructed of non-combustible materials with no openings in the sides or bottom.
- 5.1.1.14 Machinery driving fuel oil transfer pumps, fuel oil unit pumps and other similar fuel pumps shall be fitted with remote controls situated outside the space concerned so that they can be stopped in the event of a fire arising in the space in which they are located.
- 5.1.1.15 Drip trays shall be fitted to prevent oil leaking into bilges.
- 5.1.1.16 Within compartments used for stowage of fish, combustible insulation shall be protected by close-fitting cladding.
- 5.1.1.17 All exposed surfaces of glass reinforced plastic construction within the accommodation and service spaces, control stations, machinery spaces of Category A and other machinery spaces of similar fire risk must 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.
- 5.1.1.18 Support structure (grounds) to linings and ceilings etc. shall be constructed of non-combustible material. Where it is not practicable to use non-combustible material; the material used shall be treated with a suitable fire retarding treatment.
- 5.1.1.19 Air spaces enclosed behind suspended ceilings, panelling or linings in the accommodation spaces, service spaces and control stations shall be divided by close fitting draught stops spaced not more than 7 metres apart.
- 5.1.1.20 Curtains, floor coverings and furnishings must be resistant to flame and ignition to the satisfaction of MCA. In new vessels:

- (i) Curtains must be resistant to flame propagation in accordance with the Fire Test Procedures Code;
  - (ii) All surface floor coverings must have low flame spread; and
  - (iii) *The upholstered parts of furniture must be resistant to ignition and flame propagation, in accordance with the Fire Test Procedures Code. N*
- 5.1.1.21 Pipes conveying oil, combustible liquids or flammable gases must be constructed from steel or other suitable material. Jointing materials must not be rendered ineffective by heat.
- 5.1.1.22 Plastic piping may be used for services other than those specified in section 5.1.1.10, fire mains and scuppers, provided that appropriate fire testing, in accordance with the requirements of the Fire Test Procedures Code. The integrity of watertight or fire divisions when penetrated by such pipes must be maintained.
- 5.1.1.23 Cellulose-nitrate-based film shall not be used in cinematograph installations.
- 5.1.2 Details of Construction**
- 5.1.2.1 Method IF. In accommodation, service spaces and control stations all linings, draught stops, ceilings and their associated grounds shall be of non-combustible materials.
- 5.1.2.2 Methods IIF and IIIF. In corridors and stairway enclosures serving accommodation, service spaces and control stations, ceilings, linings, draught stops and their associated grounds shall be of non-combustible materials.
- 5.1.2.3 Methods IF, IIF and IIIF**
- (i) Except in cargo spaces or refrigerated compartments of service spaces insulating materials shall be non-combustible. Vapour barriers and adhesives used in conjunction with insulation, as well as the insulation of pipe fittings for cold service systems need not be of non-combustible material, but they shall be kept to the minimum quantity practicable and their exposed surfaces shall have low flame characteristics, this being determined in accordance with the IMO Fire Test Procedures Code. In spaces where penetration of oil products is possible, the surface of insulation shall be impervious to oil or oil vapour.
  - (ii) Where non-combustible bulkheads, linings and ceilings are fitted in accommodation and service spaces they may have a combustible veneer not exceeding 2.0 millimetres in thickness within any such space except corridors, stairway enclosures and control stations, where it shall not exceed 1.5 millimetres in thickness.
  - (iii) Air spaces enclosed behind ceilings, panelling, or linings shall be divided by close-fitting draught stops spaced not more than 14 metres apart. In the vertical direction, such spaces, including those behind linings of stairways, trunks, etc., shall be closed at each deck.
- 5.1.2.4 The hull, superstructure, structural bulkheads, decks and deckhouses must be constructed of non-combustible materials. MCA may permit combustible construction provided the requirements of this section and the additional fire-extinguishing requirements of section 5.1.6 are complied with.
- 5.1.2.5 In vessels the hull of which is constructed of non-combustible materials, the decks and bulkheads separating machinery spaces of Category A from accommodation spaces, service spaces or control stations shall be constructed to "A-60" Class standard, where the machinery space of Category A is not provided with a fixed fire-

extinguishing system. Where a fixed fire fighting system is fitted in a machinery space of Category A, "A-30" Class standard decks and bulkheads may be fitted. Decks and bulkheads separating other machinery spaces from accommodation, service spaces and control stations shall be constructed to "A-0" Class standard.

- 5.1.2.6 *For New Vessels (2003) decks and bulkheads separating control stations from the accommodation and service spaces shall be constructed to "A" Class standard in accordance with the tables 3 and 4 of section 5.5.5. For New Vessels (1999), decks and bulkheads separating control stations from the accommodation and service spaces shall be constructed to "A" Class standard, insulated to the satisfaction of MCA. **MCA may permit the fitting of "B-15" Class divisions for separating such spaces as the skipper's cabin, chartroom, radio room etc. from the wheelhouse, where such spaces are considered to be part of the wheelhouse.***

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- 5.1.2.7 In vessels the hull of which is constructed of combustible materials, the decks and bulkheads separating machinery spaces from accommodation spaces, service spaces or control stations shall be constructed to "F" Class or "B-15" Class standard. In addition, machinery space boundaries shall as far as practicable prevent the passage of gas and smoke. Decks and bulkheads separating control stations from the accommodation and service spaces shall be constructed to "F" Class standard.
- 5.1.2.8 In vessels where the hull of which is constructed of non-combustible materials, the bulkheads of corridors serving the accommodation spaces, service spaces and control stations shall be of "B-15" Class divisions.
- 5.1.2.9 In vessels where the hull of which is constructed of combustible materials, bulkheads of corridors serving the accommodation spaces, service spaces and control stations shall be of "F" Class divisions.
- 5.1.2.10 Within the accommodation and service spaces, all bulkheads required to be "B" Class divisions shall extend from deck to deck and to the shell or other boundaries, unless continuous "B" Class ceilings or linings, or both, are fitted on both sides of the bulkheads in which case the bulkhead may terminate at the continuous ceiling or lining.
- 5.1.2.11 Interior stairways serving the accommodation spaces, service spaces or control stations must be of steel or other equivalent material. Such stairways shall be within enclosures constructed of "F" Class divisions in vessels where the hull of which is constructed of combustible materials, or "B-15" Class divisions in vessels the hull of which is constructed of non-combustible materials, provided that where a stairway penetrates only one deck it need be enclosed at one level only.
- 5.1.2.12 Doors and other closures of openings in bulkheads and decks referred to in sections 5.1.3.8 and 5.1.3.9, doors fitted to stairway enclosures referred to in section 5.1.3.10 and doors fitted in engine and boiler casings, shall be as far as practicable equivalent, in resisting fire, to the divisions in which they are fitted. Doors to machinery spaces of Category A must be self-closing.
- 5.1.2.13 Lift trunks which pass through the accommodation and service spaces shall be constructed of steel or equivalent material and shall be provided with means of closing which will permit control of draught and smoke.
- 5.1.2.14 In vessels, the hull of which is constructed of combustible materials, the boundary bulkheads and decks of spaces containing any emergency source of power and bulkheads and decks between galleys, paint rooms, lamp rooms or any store-rooms which contain appreciable quantities of highly flammable materials, and the accommodation spaces, service spaces or control stations shall be constructed of "F" Class or "B-15" Class divisions.

- 5.1.2.15 In vessels, the hull of which is constructed of non-combustible materials, the decks and bulkheads referred to in section 5.1.3.7 shall be "A" Class divisions insulated to the satisfaction of MCA, having in mind the risk of fire. MCA may accept "B-15" Class divisions between a galley and the accommodation spaces, service spaces and control stations when the galley contains electrically heated furnaces, electrically heated hot water appliances or other electrically heated appliances only.
- 5.1.2.16 Highly flammable products must be carried in suitably sealed containers.
- 5.1.2.17 Where bulkheads or decks required to be of "A" Class, "B" Class divisions, are penetrated for the passage of electrical cables, pipes, trunks, ducts, etc., arrangements must be made to ensure that the fire integrity of the division is not impaired.
- 5.1.2.18 Air spaces enclosed behind ceilings, panelling or linings in the accommodation spaces, service spaces and control stations shall be divided by close-fitting draught stops spaced not more than 7 metres apart.

5.1.2.19 **Windows and Skylights**

Windows and skylights to machinery spaces shall be as follows:

- (i) where skylights can be opened they shall be capable of being closed from outside the space. Skylights containing glass panels shall be fitted with external shutters of steel or other equivalent material permanently attached;
  - (ii) glass or similar materials shall not be fitted in machinery space boundaries. This does not preclude the use of wire-reinforced glass for skylights and glass in control rooms within the machinery spaces; and
  - (iii) in skylights referred to in sub-section (i) wire-reinforced glass shall be used.
- 5.1.2.20 Within compartments used for stowage of fish, combustible insulation shall be protected by close-fitting cladding.
- 5.1.2.21 Notwithstanding the requirements of this section, MCA may accept "A-0" Class divisions in lieu of "B-15" or "F" Class divisions, having regard to the amount of combustible materials used in adjacent spaces.

5.1.3 **Ventilation Systems (Trunks, Ducts, Openings and Closures)**

- 5.1.3.1 The main inlets and outlets of all ventilation systems shall be capable of being closed from outside the spaces being ventilated. Power ventilation of the accommodation spaces, service spaces, control stations and machinery spaces shall be capable of being stopped from an easily accessible position outside the space being served. This position shall not be readily cut off in the event of a fire in the spaces served. The means provided for stopping the power ventilation of the machinery spaces shall be entirely separate from the means provided for stopping ventilation of other spaces.
- 5.1.3.2 Means shall be provided for closing, from a safe position, the annular spaces around funnels.
- 5.1.3.3 Ventilation systems serving machinery spaces must be independent of systems serving other spaces.
- 5.1.3.4 Ventilation systems to spaces containing appreciable quantities of highly flammable products must be separate from other ventilation systems. Ventilation shall be provided at high and low levels within the space and the external inlets and outlets

of such vents shall be positioned in safe areas on the open deck away from any source of ignition. Vent motors and equipment provided within the system shall be intrinsically safe.

- 5.1.3.5 Means shall be provided to stop fans and close all main openings to ventilation systems from outside the spaces served. Means shall also be provided for closing funnel ventilation openings.
- 5.1.3.6 Ventilation ducts for main machinery spaces or galleys shall not in general pass through accommodation spaces, service spaces or control stations however they may pass through fish processing or similar spaces having a low fire risk. Similarly ventilation ducts for the accommodation spaces, service spaces or control stations shall not pass through main machinery spaces or galleys. Where MCA permits such arrangements, the ducts shall be constructed of steel or a similar material and be arranged to preserve the integrity of the divisions concerned.
- 5.1.3.7 Where ventilation ducts with a free cross-sectional area exceeding 0.02 metres<sup>2</sup> pass through "A" Class bulkheads or decks, the openings shall be lined with a steel sheet sleeve unless the ducts passing through the bulkheads or decks are of steel and comply in that portion of the duct with the following:
- (i) For ducts with a free cross-sectional area exceeding 0.02 metres<sup>2</sup> the sleeves shall have a thickness of at least 3 millimetres and a length of at least 900 millimetres. When passing through bulkheads this length shall preferably be divided evenly on each side of the bulkhead. Ducts with a free cross-sectional area exceeding 0.02 metres<sup>2</sup> shall be provided with fire insulation. The insulation shall have at least the same fire integrity as the bulkhead or deck through which the duct passes. Equivalent penetration protection may be provided to the satisfaction of MCA; and
  - (ii) Ducts with a free cross-sectional area exceeding 0.085 metres<sup>2</sup> must be fitted with fire dampers. The fire damper shall operate automatically but shall also be capable of being closed manually from both sides of the bulkhead or deck. The damper shall be provided with an indicator which shows whether the damper is open or closed. Fire dampers are not required, however, where ducts pass through spaces surrounded by "A" Class divisions, without serving those spaces, provided those ducts have the same fire integrity as the bulkheads which they penetrate.
- 5.1.3.8 Where trunks or ducts serve spaces on both sides of "A" Class bulkheads or decks, dampers shall be fitted so as to prevent the spread of fire and smoke between compartments. Manual dampers shall be operable from both sides of the bulkhead or the deck. Where the trunks or ducts with a free cross-sectional area exceeding 0.02 metres<sup>2</sup> pass through "A" Class bulkheads or decks, automatic self-closing dampers shall be fitted.
- 5.1.3.9 See also requirements in section 2.2.8 (Ventilators).
- 5.1.3.10 Ventilation openings may be permitted in and under the doors in corridor bulkheads except that such openings shall not be permitted in and under stairway enclosure doors. The openings shall be provided only in the lower half of a door. Where such opening is in or under a door the total net area of any such opening or openings shall not exceed 0.05 metres<sup>2</sup>. When an opening is cut in a door it shall be fitted with a grille made of non-combustible material.

#### 5.1.4 **Fire Detection and Extinction**

- 5.1.4.1 An efficient and effective fire detection system shall be fitted in all machinery spaces which are periodically unattended or which are under manned supervision from a control room. Each system shall employ at least two different types of detector, and it is preferable for at least one flame detector to be included. The system shall not use only thermal detectors. It shall be designed to detect rapidly the onset of fire in any part of the space and under any normal condition of operation of the machinery and variations of ventilation as required by the possible range of ambient temperatures. The detection system shall be self-monitoring for faults, and on being activated shall initiate audible and visual alarms, both distinct from any other system, in sufficient places to ensure their being heard and observed both on the bridge and by a responsible engineer officer. When the bridge is unmanned in port the alarm shall sound in the cargo control room or in some other place where a responsible officer will be on duty.
- 5.1.4.2 Where MCA has permitted a combustible construction, or otherwise appreciable amounts of combustibles materials are used on the construction of accommodation spaces, service spaces and control stations, an automatic fire alarm and fire detection system is required in those spaces, having due regard to their sizes, their arrangements and location relative to control stations as well as, where applicable, the flame-spread characteristics of the installed furniture.
- 5.1.4.3 Flammable liquids must always be carried in suitably sealed containers and stowed in a safe position.
- 5.1.4.4 Fire fighting equipment must always be kept in its proper location, maintained in good working order and be available for immediate use.
- 5.1.4.5 The crew must be familiar with the locations of fire fighting equipment, the way it works and how it shall be used.
- 5.1.4.6 Manually operated fire fighting equipment must be readily accessible, simple to use and must be indicated by signs of durable construction which are appropriately positioned. Reference may be made to The Merchant Shipping and Fishing Vessels (Safety Signs and Signals) Regulations 2001.
- 5.1.4.6 Fire detection and alarm systems must be regularly tested and well maintained.
- 5.1.4.8 Fire fighting drills must be carried out at regular intervals (see Chapter 8).
- 5.1.4.9 Clear operating instructions shall be posted at the control station for fixed CO<sup>2</sup> extinguishing systems.
- 5.1.4.10 Visual and audible alarms shall be fitted to warn crew that carbon dioxide is to be discharged into a compartment.
- 5.1.5 **Fire protection, detection and extinguishing arrangements on existing vessels.**
- 5.1.5.1 **The fire protection, detection and extinguishing arrangements on existing vessels will continue to be accepted providing they are maintained in accordance with the manufacturers recommendations and service schedules and to the satisfaction of MCA, and continue to remain efficient in service. Any changes shall be checked with MCA.**

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## 5.1.6 Automatic Sprinkler and Fire Alarm and Fire Detection Systems

### 5.1.6.1 For Vessels in which Method III F is adopted:

- (i) An automatic fire alarm and fire detection system of an approved type and complying with the requirements of this section must be installed and so arranged as to detect the presence of fire in all accommodation spaces and service spaces except those which afford no substantial fire risk, such as void spaces and sanitary spaces;
- (ii) The system must be capable of immediate operation at all times and no action of the crew shall be necessary to set it in operation;
- (iii) Each section of detectors must include means for giving a visible and audible alarm signal automatically at one or more indicating units whenever any detector comes into operation. Such units shall indicate in which section served by the system a fire has occurred and shall be centralised on the wheelhouse and such other positions as will ensure that any alarm from the system is immediately received by the crew. Additionally, arrangements shall be provided to ensure that an alarm is sounded on the deck on which the fire has been detected. Such an alarm and detection system shall be so constructed as to indicate if any fault occurs in the system;
- (iv) Detectors shall be grouped into separate sections, each covering not more than fifty rooms served by such a system and containing not more than one hundred detectors. Detectors shall be zoned to indicate on which deck a fire has occurred;
- (v) The system shall be operated by an abnormal air temperature, by an abnormal concentration of smoke or by other factors indicative of incipient fire in any one of the spaces to be protected. Systems which are sensitive to air temperature shall not operate at less than 54°C and shall operate at a temperature not greater than 78°C when the temperature increase to those levels is not more than 1°C per minute. At the discretion of MCA the permissible temperature of operation may be increased to 30°C above the maximum deckhead temperature in drying rooms and similar places of normally high ambient temperature. Systems which are sensitive to smoke concentration shall operate on the reduction of the intensity of a transmitted light beam. Smoke detectors shall be certified to operate before the smoke density exceeds 12.5% obscuration per m, but not until the smoke density exceeds 2% obscuration per m. Other equally effective methods of operation may be accepted at the discretion of MCA. The detection system shall not be used for any purpose other than fire detection;
- (vi) The detectors may be arranged to operate the alarm by the opening or closing of contacts or by other appropriate methods. They shall be fitted in an overhead position and shall be suitably protected against impact and physical damage. They shall be suitable for use in a marine atmosphere. They shall be placed in an open position clear of beams and other objects likely to obstruct the flow of hot gases or smoke to the sensitive element. Detectors operated by the closing of contacts shall be of the sealed contact type and the circuit shall be continuously monitored to indicate fault conditions;
- (vii) At least one detector shall be installed in each space where detection facilities are required and there shall be not less than one detector for each 37 metres<sup>2</sup> of deck area approximately. In large spaces the detectors shall

be arranged in a regular pattern so that no detector is more than 9 metres from another detector or more than 4.5 metres from a bulkhead;

- (viii) There shall be not less than two sources of power supply for the electrical equipment used in the operation of the fire alarm and fire detection system, one of which shall be an emergency source. The supply shall be provided by separate feeders reserved solely for that purpose. Such feeders shall run to a changeover switch situated in the control station for the fire detection system. The wiring system shall be so arranged as to avoid galleys, machinery spaces and other enclosed spaces having a high fire risk except in so far as it is necessary to provide for fire detection in such spaces or to reach the appropriate switchboard;
- (ix) A list or plan shall be displayed adjacent to each indicating unit showing the spaces covered and the location of the zone in respect of each system. Suitable instructions for testing and maintenance shall be available;
- (x) Provision shall be made for testing the correct operation of the detectors and the indicating units by supplying means for applying hot air or smoke at detector positions;
- (xi) Spare detector heads shall be provided for each section of detectors to the satisfaction of MCA.

#### 5.1.7 **Fire Extinguishers (general)**

- 5.1.7.1 A sufficient number of approved portable fire-extinguishers shall be provided in control stations, accommodation and service spaces to ensure that at least one extinguisher of a suitable type is readily available for use in any part of such spaces. The total number of extinguishers in these spaces, however, shall not be less than three (five in vessels of more than 60 metres in length (L)).
- 5.1.7.2 Fire extinguishers shall be of approved types. The capacity of required portable fluid extinguishers shall be not more than 13.5 litres and not less than 9 litres. Other extinguishers shall not be in excess of the equivalent portability of the 13.5 litre fluid extinguisher and shall not be less than the fire-extinguishing equivalent of a 9 litre fluid extinguisher. MCA shall determine the equivalents of fire extinguishers.
- 5.1.7.3 For the first ten of each type of rechargeable fire-extinguisher carried, the equivalent number of spare charges shall be provided. For any further extinguishers of the same type carried, half the number of spare charges shall be provided. There is no necessity to carry more than sixty spare charges of each type.
- 5.1.7.4 For vessels with a length of less than 45 metres and for fire extinguishers which cannot be recharged on board, at least 50 % additional fire extinguishers of same type and capacity shall be provided in lieu of spare charges.
- 5.1.7.5 For fire-extinguishers which cannot be recharged onboard, at least 50% additional fire extinguishers of same type and capacity shall be provided in lieu of spare charges.
- 5.1.7.6 Instructions for recharging shall be carried onboard. Only refills approved for the fire extinguishers in question may be used for recharging.
- 5.1.7.7 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 must not be permitted.
- 5.1.7.8 Visual and audible alarms shall be fitted to warn crew that carbon dioxide is to be discharged into a compartment.

- 5.1.7.9 Fire extinguishers shall be examined annually by a competent person. Each extinguisher shall be provided with a sign indicating that it has been examined. All containers of permanently pressurised fire extinguishers and propellant bottles of non-pressurised extinguishers shall be hydraulic pressure tested every 10 years.
- 5.1.7.10 One of the portable fire extinguishers intended for use in any space must be stowed near an entrance to that space.
- 5.1.7.11 The presence of extinguishers and other portable fire fighting equipment must always be checked before the vessel gets under way.
- 5.1.8 **Fire-extinguishing Appliances in Machinery Spaces**
- 5.1.8.1 Spaces containing oil-fired boilers, fuel oil units or internal combustion machinery having a total power that is not less than 375 kilowatts must be provided with one of the following fixed fire-extinguishing systems, to the satisfaction of MCA:
- (i) a pressure water-spraying installation;
  - (ii) a fire-smothering gas installation;
  - (iii) a fire-extinguishing installation using vapours from low toxicity vaporising liquids; or
  - (iv) a fire-extinguishing installation using high expansion foam.
- 5.1.8.2 Where the engine and boiler rooms are not entirely separate, or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler rooms shall be considered as one compartment.
- 5.1.8.3 Halogenated hydrocarbon systems used as fire-extinguishing media are prohibited on all vessels.
- 5.1.8.4 Notwithstanding the provisions of this section, all machinery spaces of category A must be fitted with a fixed fire-extinguishing arrangement.
- 5.1.8.5 Installations listed in section 5.1.8.1 shall be controlled from readily accessible positions outside such spaces not likely to be cut off by a fire in the protected space. Arrangements shall be made to ensure the supply of power and water necessary for the operation of the system in the event of fire in the protected space.
- 5.1.8.6 Vessels which are constructed mainly or wholly of wood or fibre reinforced plastic and fitted with oil-fired boilers or internal combustion machinery which are decked in way of the machinery space with such material shall be provided with one of the extinguishing systems referred to in section 5.1.8.1.
- 5.1.8.7 In all machinery spaces of Category A at least two portable extinguishers shall be provided, of a type suitable for extinguishing fires involving fuel oil. Where such spaces contain machinery which has a total power output of not less than 250 kilowatts, at least three such extinguishers shall be provided. One of the extinguishers must be stowed near the entrance to the space.
- 5.1.8.8 Vessels having machinery spaces not protected by a fixed fire extinguishing system shall be provided with at least a 45 litre foam extinguisher or its equivalent, suitable for fighting oil fires. Where the size of the machinery spaces makes this provision impracticable, MCA may accept an additional number of portable fire extinguishers.
- 5.1.8.9 Fire extinguishing appliances fixed or portable shall be checked annually.

## 5.1.9 **Fixed Fire-extinguishing Arrangements in Cargo Spaces of High Fire Risk**

5.1.9.1 Cargo spaces of high fire risk must be protected by a fixed gas fire-extinguishing system or by a fire-extinguishing system which gives equivalent protection, to the satisfaction of MCA.

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

5.1.10.1 Cylinders for compressed, liquefied or dissolved gases must be clearly marked by means of prescribed identifying colours (See ISO 7225:1994 Gas cylinders - Precautionary labels, or superseding standard), have a clearly legible identification of the name and chemical formula of their contents and are properly secured.

5.1.10.2 Cylinders containing flammable or other dangerous gases and expended cylinders must be stored, properly secured, on open decks and all valves, pressure regulators and pipes leading from such cylinders must be protected against damage. Cylinders must be protected against excessive variations in temperature, direct rays of the sun, and accumulation of snow. However, MCA may permit such cylinders to be stored in compartments complying with the requirements of sections 5.1.10.3 to 5.1.10.5.

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

5.1.10.4 Except as necessary for service within the space, electrical wiring and fittings must not be permitted within compartments used for the storage of highly flammable liquids or liquefied gases. Where such electrical fittings are installed, they must be of a certified safe type and comply with the relevant provisions of the International Standard IEC Publication 79 "Electrical apparatus for explosive gas atmospheres". Sources of heat must be kept clear of such spaces and "No smoking" and "No naked light" notices must be displayed in a prominent position.

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

## 5.2. **FIRE PUMPS**

5.2.1 The minimum number and type of fire pumps to be fitted must be as follows:

5.2.1.1 One power pump not dependent upon the main machinery for its motive power; or

5.2.1.2 One power pump driven by main machinery provided that the propeller shafting can be readily disconnected or provided that a controllable pitch propeller is fitted, and,

5.2.1.3 Notwithstanding the provisions of sections 5.2.1.1 & 5.2.1.2 at least two fire pumps shall always be provided.

5.2.1.4 Sanitary, bilge, ballast general service or any other pumps may be used as fire pumps if they comply with the requirements of this chapter and do not affect the ability to cope with pumping of the bilges. Fire pumps shall be so connected that they cannot be used for pumping oil or other flammable liquids.

5.2.1.5 Centrifugal pumps or other pumps connected to the fire main through which backflow could occur shall be fitted with non-return valves.

- 5.2.1.6 Vessels not fitted with a power-operated emergency fire pump and without a fixed fire-extinguishing system in the machinery spaces shall be provided with additional fire-extinguishing means to the satisfaction of MCA.
- 5.2.1.7 Where fitted, emergency power-operated fire pumps shall be independently driven self-contained pumps either with their own prime mover and fuel supply fitted in an accessible position outside the compartment which contains the main fire pumps, or be driven by a self-contained generator which may be an emergency generator of sufficient capacity and which is positioned in a safe place outside the engine room and preferably above the working deck.
- 5.2.1.8 For any emergency fire pump, where fitted, the pump, sea-suction valves and other necessary valves shall be operable from outside compartments containing main fire pumps in a position not likely to be cut off by a fire in those compartments.
- 5.2.1.9 The total capacity (Q) of main power-operated fire pumps shall be at least:

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

Where L (Length), B(Breadth/Beam) and D(Depth) are in metres.

- 5.2.1.10 Where two independent power-operated fire pumps are fitted, the capacity of each pump shall not be less than 40 % of the quantity required by section 5.2.1.9 or 25 metres<sup>3</sup> per hour, which ever is greatest.
- 5.2.1.11 When main power fire pumps are delivering the quantity of water required by section 5.2.1.9 through the fire main, fire hoses and nozzles, the pressure maintained at any hydrant shall be not less than 2.5 bar.
- 5.2.1.12 Where power-operated emergency fire pumps are delivering the maximum quantity of water through the jet required by section 5.2.3.9, the pressure maintained at any hydrant shall be to the satisfaction of MCA.

## 5.2.2 Fire Mains

- 5.2.2.1 Where more than one hydrant is required to provide the number of jets required by section 5.2.3.9, a fire main shall be provided.
- 5.2.2.2 Fire mains shall have no connections other than those required for fire fighting, except for the purpose of washing the deck and anchor chains and operation of bilge ejectors, subject to the efficiency of the fire-fighting system being maintained.
- 5.2.2.3 Where fire mains are not self-draining, suitable drain cocks shall be fitted where frost damage may be expected.
- 5.2.2.4 Materials readily rendered ineffective by heat shall not be used for fire mains, unless adequately protected.
- 5.2.2.5 Where fire pump delivery pressure can exceed the designed working pressure of fire mains, relief valves shall be fitted.
- 5.2.2.6 In considering the problem of the freezing of fire mains in vessels, the possible solutions of the problem are:
- (a) the recirculation of a sufficient quantity of water, if necessary from a heated reservoir;

- (b) the use of a dry system of fire main such that there is no water in the line until a control valve in an accessible space protected from frost (on the rising main) is opened;
- (c) the use of a leak-off system in which a sufficient quantity of water is allowed to escape from the ends of the fire main; and
- (d) the use of a heating system whereby steam, electrical or hot water heating is used to maintain the water in the fire main in a liquid state. The use of insulation may be incorporated in this system in order to avoid heat loss. Heating may also be effective in reducing the quantity of circulating water referred to in sections (a) and (c) of this recommendation.

5.2.2.7 In any case, the provisions of effective drainage to the fire main and the proper use of the drains by the crew is imperative if freezing of the fire main is to be avoided in low ambient temperatures.

### 5.2.3 Fire Hydrants, Fire Hoses and Nozzles

5.2.3.1 All required hydrants shall be fitted with fire hoses having dual-purpose nozzles. One hydrant shall be located near the entrance of the space to be protected.

5.2.3.2 The number of fire hoses provided shall be equal to the number of fire hydrants arranged and one spare hose. This number does not include any fire hoses required in any engine or boiler room. MCA may increase the number of fire hoses required so as to ensure that hoses in sufficient number are available and accessible at all times, having regard to the size of the vessel.

5.2.3.3 Single lengths of fire hose shall not exceed 20 metres.

5.2.3.4 Fire hoses shall be of an approved material. Each fire hose shall be provided with couplings and dual purpose nozzle.

5.2.3.5 Fire hoses shall together with any necessary fittings and tools be kept ready for use in conspicuous positions near the water service hydrants or connections.

5.2.3.6 Except where fire hoses are permanently attached to the fire main, the couplings of fire hoses and nozzles shall be completely interchangeable.

5.2.3.7 The nozzles as required by section 5.2.3.4 shall be appropriate to the delivery capacity of the fire pumps fitted, but in any case shall have a diameter of not less than 12mm.

5.2.3.8 The pipes and hydrants shall be so placed that the fire hoses may be easily coupled to them.

5.2.3.9 Fire hydrants shall be positioned so as to allow easy and quick connection of fire hoses and so that at least one jet can be directed into any part of the vessel which is normally accessible during navigation.

5.2.3.10 The jet shall be from a single length of fire hose.

5.2.3.11 In addition to the above requirements, machinery spaces of Category A shall be provided with at least one hydrant complete with fire hose and dual purpose nozzle. The fire hydrant shall be located outside the space and near the entrance.

5.2.3.12 In vessels where deck cargo may be carried, the positions of the hydrants shall be such that they are always readily accessible and the pipes shall be arranged as far as practicable to avoid risk of damage by such cargo.

5.2.3.13 Materials readily rendered ineffective by heat shall not be used for fire mains and hydrants unless adequately protected.

### 5.3 MEANS OF ESCAPE AND EMERGENCY EXITS

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

5.3.1.1 At all levels of accommodation at least two widely separated means of escape shall be provided which may include the normal means of access from each restricted space or group of spaces:

- (i) below the weather deck the means of escape shall be a stairway and the second escape may be a trunk or a stairway; and
- (ii) above the weather deck the means of escape shall be stairways or doors to an open deck or a combination thereof. Where it is not practicable to fit stairways or doors, one of these means of escape may be by adequately sized portholes or hatches protected where necessary against ice accretion.

5.3.1.2 Exceptionally MCA may permit only one means of escape, due regard being paid to the nature and location of spaces and to the number of persons who normally might be accommodated or employed there.

5.3.2 Lifts must not be considered as forming one of the required means of escape.

5.3.3 Two entirely separate escape routes with openings on both sides shall be provided for each area, each route leading from the compartment to a suitably sited opening (which may be a normally used entrance) on to a weather deck. The escape routes, which shall not pass through propelling machinery spaces, galleys or other spaces where the risk of injury from fire, steam or other similar cause is comparatively high, shall be so arranged as to provide a ready and unimpeded means of escape from each compartment to the vessel's boats, lifeboats or liferafts. Where escape routes are by way of stairways or ladderways, those stairways or ladderways must be constructed of steel.

5.3.4 A corridor or part of a corridor from which there is only one route of escape shall preferably not exceed 2.5 metres in length and in no case be greater than 5.0 metres in length; and the width and continuity of the means of escape shall be to the satisfaction of MCA.. Doorways which give access to a stairway shall be not less than 700 millimetres in clear width.

5.3.5 *For New Vessels (2003) stairways and corridors used as means for escape shall be not less than 700 millimetres in clear width and shall have a handrail on at least one side*  
N

5.3.6 Two means of escape shall be provided from every machinery space of Category A by one of the following means:

- (a) two sets of steel ladders as widely separated as possible leading to doors in the upper part of the space similarly separated and from which access is provided to the open deck. In general, one of these ladders shall provide continuous fire shelter from the lower part of the space to a safe position outside the space. However, MCA may not require such shelter if, due to special arrangements or dimensions of the machinery space, a safe escape route from the lower part of this space is provided. *For New Vessels (1999), this shelter shall be of steel, insulated, where necessary,*

*to the satisfaction of MCA and be provided with a self-closing steel door at the lower end and for New Vessels (2003) insulated to "A-60" class standard and be provided with a "A-60" class self-closing steel door at the lower end; or*

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

(c) For vessels less than 45 metres in length, two means of escape shall be provided from every machinery space of Category A which shall be as widely separated as possible. Vertical escapes shall be by means of steel ladders. Where the size of machinery spaces makes it impractical, one of these means of escape may be omitted. In such cases special consideration shall be given to the remaining exit.

5.3.7 All escape routes must be kept clear of obstructions and the clear access and dimensions of such routes must allow for rapid and safe evacuation.

5.3.8 Emergency routes and exits shall be indicated by signs in accordance with The Merchant Shipping and Fishing Vessels (Safety Signs and Signals) Regulations 2001.

5.3.9 Hatches and doors forming part of an escape route must be readily operable from both sides by any person or by rescue teams.

5.3.10 All escape routes must be kept clear of obstructions and the clear access and dimensions of such routes must allow for rapid and safe evacuation.

5.3.11 Emergency lighting shall be arranged to cover all escape routes.

5.3.12 All means of escape must be arranged to the satisfaction of MCA.

#### 5.4 MISCELLANEOUS FIRE PRECAUTIONS

##### 5.4.1 Remote Means for Stopping Machinery

5.4.1.1 *Machinery space ventilation fans, oil fuel transfer pumps, and other similar fuel pumps shall be fitted with remote controls grouped together adjacent to control station for fire extinguishing system. These controls shall be capable of stopping the machinery or pumps in the event of fire.* N

5.4.1.2 **Machinery space ventilation fans, oil fuel transfer pumps, and other similar fuel pumps shall be fitted with remote controls located outside the spaces in which they are situated. These controls must be capable of stopping the machinery or pumps in the event of fire.** E

5.4.1.3 Remote electric stops for ventilation fans serving accommodation spaces must be operable from outside the space.

##### 5.4.2 Space Heaters

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

- 5.4.2.2 Heating by means of open fires must not be permitted. Heating stoves and other similar appliances shall be firmly secured and adequate protection and insulation against fire shall be provided beneath and around such appliances and in way of their uptakes. Uptakes of stoves which burn solid fuel shall be so arranged and designed as to minimise the possibility of becoming blocked by combustion products and shall have a ready means for cleaning. Dampers for limiting draughts in uptakes shall, when in the closed position, still leave an adequate area open. Spaces in which stoves are installed shall be provided with ventilators of sufficient area to provide adequate combustion-air for the stove. Such ventilators shall have no means of closure and their position shall be such that closing appliances are not required.
- 5.4.2.3 Open gas flame appliances, except cooking stoves and water heaters must not be permitted. Spaces containing any such stoves or water heaters must have adequate ventilation to remove fumes and possible gas leakage to a safe place. All pipes conveying gas from container to stove or water heater must be of steel or other approved material. Automatic safety gas shut-off devices shall be fitted to operate on loss of pressure in the gas main pipe or flame failure on any appliance.
- 5.4.2.4 Where gaseous fuel is used for domestic purposes, the arrangements, storage, distribution and use of the fuel shall be to the satisfaction of MCA.
- 5.4.3 **Galley Area**
- 5.4.3.1 Materials that are in the vicinity of any cooking appliance shall be non-combustible, except that combustible materials may be employed when these are faced with stainless steel or a similar non combustible material.
- 5.4.3.2 *Wherever practicable, electrically powered cooking equipment shall be provided in preference to open flame types.* N
- 5.4.3.3 Curtains, towel rails, hooks and similar arrangements shall be kept well clear of the cooking area.
- 5.4.3.4 Electric fans, electric stoves and other cooking appliances including deep fat fryers must be fitted with an isolation switch outside the galley space.
- 5.4.3.5 A fire blanket shall be carried in the galley, sited near to the cooking appliances.
- 5.4.3.6 Deep-fat cooking equipment shall be fitted with the following equipment, as far as it is practicable to do so:
- (i) an automatic or manual fire-extinguishing system to an international standard acceptable to MCA (ISO 15371/2009 or superseding standard);
  - (ii) a primary and backup thermostat with an alarm to alert the operator in the event of failure of either thermostat;
  - (iii) arrangements for automatically shutting off the electrical power upon activation of the fire-extinguishing system;
  - (iv) an alarm for indicating operation of the fire-extinguishing system in the galley where the equipment is installed;
  - (v) controls for manual operation of the fire-extinguishing system which are clearly labelled for ready use by the crew.
- 5.4.3.7 ISO 15371:2009 covers system activation and ventilation. Extinguishing systems for deep fat fryers shall meet ISO 15371:2000, 'Fire-extinguishing systems for protection of galley deep fat cooking equipment'.

#### 5.4.4 **Cooking Ranges and Heating Appliances (Oil Fuel Installations)**

- 5.4.4.1 Where cooking ranges or heating appliances within crew spaces are supplied with fuel from an oil tank, the tank shall be situated outside the space containing the cooking range or heating appliance and the supply of oil to the burners shall be capable of being controlled from outside that space. Ranges or burners using oil fuel having a flash point of less than 60°C (Closed Cup Test) shall not be fitted. Means must be provided to shut off the fuel supply automatically at the cooking range or heating appliance in the event of fire or if the combustion air supply fails. Such means shall require manual resetting in order to restore the fuel supply.
- 5.4.4.2 Oil tanks supplying the cooking range or heating appliance shall be provided with an air pipe leading to the open air, and in such a position that there will be no danger of fire or explosion resulting from the emergence of oil vapour from the open end of the pipe. The open end shall be fitted with a detachable wire gauze diaphragm.
- 5.4.4.3 Adequate means shall be provided for filling every such tank and for preventing over-pressure.
- 5.4.4.4 Closed flame diesel heaters shall comply with the manufacturer's instructions. Additional guidance is provided in MGN 312 Use of Liquid Petroleum Gas (LPG) and Diesel Fuelled Appliances on Fishing Vessels and any superseding documents.

#### 5.4.5 **Cooking Ranges and Heating Appliances (Liquefied Petroleum Gas Installations)**

- 5.4.5.1 Installations using liquefied petroleum gas shall be properly and safely fitted and fit for their intended service (guidance may be found in BS EN (ISO) 10239:2008 or superseding standard). All valves, pressure regulators and pipes leading from the cylinders shall be protected against damage.
- 5.4.5.2 All liquefied petroleum gas heating appliances used in the accommodation spaces, including sleeping quarters, must be fitted with a flue to the exterior of the vessel via a clear unblocked exhaust.
- 5.4.5.3 Spaces where appliances consuming liquefied petroleum gas are used must be adequately ventilated.
- 5.4.5.4 Mechanical ventilation systems fitted to any space in which such gas containers or appliances are situated shall be of such design and construction as will eliminate the hazards due to sparking. The ventilation systems serving spaces containing such gas storage containers or gas-consuming appliances shall be separate from any other ventilation system.
- 5.4.5.5 Containers holding liquefied petroleum gas shall be clearly marked and securely stowed on deck or in a well ventilated compartment situated on the deck. Where drainage is provided from compartments containing such gas containers, drains shall lead directly overboard.
- 5.4.5.6 Spaces containing cooking ranges or heating appliances that use liquefied petroleum gas must not be fitted with openings leading directly below to accommodation spaces or their passageways, except that where this is not reasonably practicable and such openings are fitted mechanical exhaust ventilation trunked to within 300 millimetres of the deck adjacent to the appliance, together with adequate supply ventilation, and a gas detector shall be fitted with an alarm in the space below.
- 5.4.5.7 A device must be fitted in the supply pipe from the gas container to the consuming appliance that will shut off the gas automatically in the event of loss of pressure or low pressure in the supply line. The device shall be of a type that requires deliberate manual operation to restore the gas supply. An automatic shut-off device that

operates in the event of flame failure shall be fitted on all appliances consuming liquefied petroleum gas.

- 5.4.5.8 Open flame gas heating appliances shall not be fitted except where used as cooking stoves. Adequate ventilation shall be provided to spaces containing cooking stoves. Pipes supplying gas from the container to the cooking stove shall be constructed of suitable material. Arrangements shall be provided to ensure automatic cut-off to the supply of gas when there is a loss of pressure or flame failure.
- 5.4.5.9 Heating stoves and other similar appliances shall be secured in position and their exhaust, together with the surrounding structure, provided with adequate fire protection. The exhausts of stoves shall be provided with ready means of cleaning. The dampers fitted in exhausts for controlling draught shall provide an adequate flow of air when in the closed position. The air supply to these appliances shall not be fitted with means of closing.
- 5.4.5.10 Every space containing a gas-consuming appliance must be provided with gas detection and audible alarm equipment. The gas detection device shall be securely fixed in the lower part of the space in the vicinity of the gas-consuming appliance. The alarm unit and indicating panel must be situated outside the spaces containing the appliance.
- 5.4.5.11 Where gas consuming appliances are used in sleeping quarters or in adjacent spaces, an audible alarm must be fitted in the sleeping quarters in addition to the alarm required by section 5.4.5.10.
- 5.4.5.12 Atmospheric monitoring devices (i.e. carbon monoxide sensors) shall be fitted and regularly tested in all compartments where fired heating and cooking appliances are fitted.
- 5.4.5.13 A suitable notice shall be displayed prominently in the vessel that details the action to be taken when a gas alarm activates or a gas leak is suspected.

#### 5.4.6 **Portable Plant**

- 5.4.6.1 When portable plant is powered by an engine, the unit shall be stored on the weather deck. If such storage is within a deck locker or similar enclosure, then the enclosure shall have gastight boundaries to adjacent spaces. The locker or enclosure shall be adequately ventilated and drained.
- 5.4.6.2 Consideration shall be given to the exhaust gases produced by portable plant and suitable ventilation or exhaust trunking provided where necessary to prevent carbon monoxide poisoning.
- 5.4.6.3 Fuel tanks shall be arranged to the satisfaction of MCA or Classification Society.
- 5.4.6.4 Portable containers for the carriage of fuel must be:
  - (i) kept to a minimum;
  - (ii) suitable for the carriage of fuel;
  - (iii) stowed on the weather deck where they can readily be jettisoned and where any spillage will drain directly overboard; and
  - (iv) clearly marked with their contents.

#### 5.4.7 **Cleanliness of Machinery Spaces**

- 5.4.7.1 Machinery spaces shall be kept clean, free of rubbish and combustible waste. Bilge levels must be checked regularly and oily waste and sludge must be collected and properly disposed of ashore (see also Chapter 11 Clean Seas, section 11.1).
- 5.4.7.2 Any oil leakage from machinery, fuel or lubricating oil systems must be promptly identified and rectified.

#### 5.4.8 **International Shore Connection**

- 5.4.8.1 At least one international shore connection, complying with section 5.4.8.2 shall be provided.
- 5.4.8.2 Standard dimensions of flanges for the international shore connection shall be in accordance with the following Table 2:

Table 2: Dimensions of Flanges for International Shore Connections

<b>Description</b>	<b>Dimension</b>
Outside diameter	178 millimetres
Inner diameter	64 millimetres
Bolt circle diameter	132 millimetres
Slots in flange	4 holes, 19 millimetres in diameter equidistantly placed on a bolt circle of the above diameter, slotted to the flange periphery
Flange thickness	14.5 millimetres minimum
Bolts and nuts	4 each of 16 millimetres in diameter and 50 millimetres in length

- 5.4.8.3 This connection shall be constructed of material suitable for 10 bar service pressure.
- 5.4.8.4 The flange shall have a flat face on one side and the other shall have a coupling permanently attached thereto that will fit the vessel's hydrant and hose. The connection shall be kept aboard the vessel together with a gasket of any material suitable for 10 bar service pressure, together with four 16 millimetres bolts 50 millimetres in length and eight washers.
- 5.4.8.5 Facilities shall be available enabling such a connection to be used on either side of the vessel.

#### 5.4.9 **Fire-fighter's Outfits**

- 5.4.9.1 At least two fire-fighter's outfits shall be carried in vessels of more than 45 metres in length (L) (one for vessels of 24 metres and over but less than 45 metres in length), stored in readily accessible, and widely separated positions, which are not likely to be cut off in the event of fire. The fire-fighter's outfits shall be in accordance with the IMO Fire Safety Systems Code, Chapter III, Regulations 2.1, 2.1.1, 2.1.2.
- 5.4.9.2 At least two spare charges shall be provided for each required breathing apparatus.
- 5.4.9.3 Cylinder inspection
- (i) Each cylinder must be checked to ensure that it is within its recertification period and not due for periodic testing.
  - (ii) Steel cylinders shall be inspected internally, externally and hydrostatically tested at intervals not exceeding 5 years.
  - (iii) Carbon composite cylinders shall be similarly inspected and hydrostatically tested at intervals specified by the manufacturer or after a period not exceeding

5 years. The normal design lifetime of a carbon composite cylinder is 15 to 20 years.

#### 5.4.10 **Fire Control Plan**

5.4.10.1 All new vessels and vessels over 45m in length must permanently exhibit a fire control plan. The contents of such a plan shall be in accordance with IMO Resolution A.654 (16) "Graphical symbols for fire control plans" and IMO Resolution A.756 (18) "Guidelines on the information to be provided on fire control plans".

#### 5.4.11 **Acceptance of Substitutes**

5.4.11.1 Where in this Part any special type of appliance, apparatus, extinguishing medium or arrangement is specified, any other type of appliance, etc., may be allowed provided MCA is satisfied that it is not less effective.

### 5.5 **ADDITIONAL REQUIREMENTS FOR VESSELS OF 60 METRES IN LENGTH (L) OR MORE**

#### 5.5.1 **Structural Fire Protection**

5.5.1.1 The hull, superstructure, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material except as otherwise specified in section 5.1.2.4.

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

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

- (i) that for such members supporting survival craft areas and "A" Class divisions the temperature rise limitation specified in section 5.5.1.2 shall apply at the end of one hour; and
- (ii) That for such members required supporting "B" Class divisions; the temperature rise limitation specified in section 5.5.1.2 shall apply at the end of one half-hour.

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

#### 5.5.2 **Bulkheads within the Accommodation and Service Spaces**

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

- (i) Method IF. All bulkheads not required by this or other sections of this Part to be "A" or "B" Class divisions shall be at least "C" Class divisions.

- (ii) Method IIF. There shall be no restriction on the construction of bulkheads not required by this or other sections of this Part to be "A" or "B" Class divisions except in individual cases where "C" Class bulkheads are required in accordance with Table 3.
- (iii) Method IIIF. There shall be no restriction on the construction of bulkheads not required by this or other sections of this Part to be "A" or "B" Class divisions. In no case shall the area of any accommodation space or spaces bounded by a continuous "A" or "B" Class division exceed 50 metres<sup>2</sup>, except in individual cases where "C" Class bulkheads are required in accordance with Table 3 in section 5.5.5. ***For Existing vessels and New Vessels (1999) MCA or Classification society may increase this area for public spaces. For New Vessels (2003) MCA or Classification society may only increase this area for public spaces up to 75 metres<sup>2</sup>.***  
**N&E**

#### 5.5.3 Protection of stairways and lift trunks in the accommodation spaces, service spaces and control stations

- (i) Stairways which penetrate only a single deck shall be protected at least at one level by "B-0" Class divisions as a minimum and self-closing doors. Lifts which penetrate only a single deck shall be enclosed by "A-0" Class divisions with steel doors at both levels. Stairways and lift trunks which penetrate more than a single deck shall be enclosed by at least "A-0" Class divisions and protected by self-closing doors at all levels.
- (ii) All stairways must be of steel frame construction except where the MCA or Classification society permits the use of other equivalent material.

#### 5.5.4 Doors in Fire-resistant Divisions (including Galleys)

- (i) Shall have resistance to fire as far as practicable, equivalent to the division in which they are fitted. Doors and doorframes in "A" Class divisions shall be constructed of steel. Doors in "B" Class divisions shall be non-combustible. Doors fitted in boundary bulkheads of machinery spaces of Category A shall be self-closing and gastight. MCA or Classification society may permit the use of combustible materials in doors separating cabins from the individual interior sanitary accommodation, such as showers, if constructed according to Method IF.
- (ii) Doors required to be self-closing must not be fitted with holdback hooks. However, holdback arrangements fitted with remote release fittings of the fail-safe type may be used.
- (iii) Ventilation openings may be permitted in and under the doors in corridor bulkheads except that such openings shall not be permitted in and under stairway enclosure doors. The openings shall be provided only in the lower half of a door. Where such opening is in or under a door the total net area of any such opening or openings shall not exceed 0.05 metres<sup>2</sup>. When such opening is cut in a door it shall be fitted with a grille made of non-combustible material.
- (iv) Watertight doors need not be insulated.

#### 5.5.5 Fire Integrity of Bulkheads and Decks

In addition to the specific provisions for fire integrity of bulkheads and decks required elsewhere in this Part the minimum fire integrity of bulkheads and decks shall be as prescribed in Table 3 and Table 4 of this section. The following requirements shall govern application of the tables:

\* Tables 3 and 4 shall apply respectively to bulkheads and decks separating adjacent spaces, and

\* For determining the appropriate fire integrity standards to be applied to divisions between adjacent spaces, such spaces are classified according to their fire risk as follows:

- (i) Control stations (1);
  - (a) Spaces containing emergency sources of power and lighting.
  - (b) Wheelhouse and chartroom.
  - (c) Spaces containing the vessel's radio equipment.
  - (d) Fire-extinguishing rooms, fire-control rooms and fire recording stations.
  - (e) Control room for propulsion machinery when located outside the machinery space.
  - (f) Spaces containing centralised fire alarm equipment.
- (ii) Corridors (2);  
Corridors and lobbies.
- (iii) Accommodation spaces (3);  
Spaces as defined in chapter I, excluding corridors.
- (iv) Stairways (4);  
Interior stairways, lifts and escalators other than those wholly contained within the machinery spaces and enclosures thereto. In this connection, a stairway which is enclosed only at one level shall be regarded as part of the space from which it is not separated by a fire door.
- (v) Service spaces of low fire risk (5);  
Lockers and storerooms having areas of less than 2 metres<sup>2</sup>, drying rooms and laundries.
- (vi) Machinery spaces of Category A (6);  
Spaces as defined in section 1.2.
- (vii) Other machinery spaces (7);  
Spaces as defined in section 1.2 including fishmeal processing spaces, but excluding machinery spaces of Category A.
- (viii) Cargo spaces (8);  
All spaces used for cargo, including cargo oil tanks, and trunkways and hatchways to such spaces.
- (ix) Service spaces of high fire risk (9);

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

(x) Open decks (10);

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

(xi) The air spaces outside superstructures and deckhouses.

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

**TABLE 3 - FIRE INTEGRITY OF BULKHEADS SEPARATING ADJACENT SPACES**

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

Notes: (see table 4)

**TABLE 4 - FIRE INTEGRITY OF DECKS SEPARATING ADJACENT SPACES**

Space below↓ Space above→	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Control stations (1)	A-0	A-0	A-0	A-0	A-0	A-60	A-0	A-0	A-0	*
Corridors (2)	A-0	*	*	A-0	*	A-60	A-0	A-0	A-0	*
Accommodation spaces (3)	A-60	A-0	*	A-0	*	A-60	A-0	A-0	A-0	*
Stairways (4)	A-0	A-0	A-0	*	A-0	A-60	A-0	A-0	A-0	*
Service spaces of low risk (5)	A-15	A-0	A-0	A-0	*	A-60	A-0	A-0	A-0	*
Machinery spaces of category A (6)	A-60	A-60	A-60	A-60	A-60	*	A-60	A-30	A-60	*
Other machinery spaces (7)	A-15	A-0	A-0	A-0	A-0	A-0	*	A-0	A-0	*
Cargo spaces (8)	A-60	A-0	A-0	A-0	A-0	A-0	A-0	*	A-0	*
Service spaces of high risk (9)	A-60	A-0	A-0 <sub>d</sub>	*						
Open Decks (10)	*	*	*	*	*	*	*	*	*	--

Notes: To be applied to both Tables 3 and 4, as appropriate.

- a No special requirements are imposed upon these bulkheads in methods IIF and IIIF fire protection.
- b In case the of method IIIF "B" Class bulkheads of "B-0" rating shall be provided between spaces or groups of spaces of 50 metres<sup>2</sup> and over in area.
- c For clarification as to which applies see sections 5.5.2 and 5.5.3.
- d Where spaces are of the same numerical category and superscript -/ appears, a bulkhead or deck of the rating shown in the tables is only required when the adjacent spaces are for a different purpose, e.g. in category (9). A galley next to a galley does not require a bulkhead but a galley next to a paint room requires an "A-0" bulkhead.
- e Bulkheads separating the wheelhouse, chartroom and radio room from each other may be "B-0" rating.
- f Fire insulation need not be fitted if the machinery space in category (7), in the opinion of MCA, has little or no fire risk.

\* Where an asterisk appears in the tables the division shall be of steel or equivalent material but is not required to be of "A" Class standard.

5.5.5.2 Where a deck is penetrated for the passage of electrical cables, pipes and vent ducts, such penetrations shall be made tight to prevent the passage of flames and smoke.

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

5.5.5.4 External boundaries which are required by section 5.5.1.1 to be of steel or equivalent material may be pierced for the fitting of windows and sidescuttles provided that there is no requirement elsewhere in this Part for such boundaries to have "A" Class integrity. Similarly, in such boundaries which are not required to have "A" Class integrity, doors may be of materials to the satisfaction of MCA.

#### 5.5.6 Ventilation Systems

5.5.6.1 Ventilation ducts shall be of non-combustible material. Short ducts however, not generally exceeding 2 metres in length and with a cross section not exceeding 0.02 metres<sup>2</sup>, need not be non-combustible, subject to the following conditions:

- (i) these ducts shall be of a material which has low flame spread characteristics being determined in accordance with the IMO Fire Test Procedures Code;
- (ii) They may only be used at the end of the ventilation device; and
- (iii) They shall not be situated less than 600 millimetres, measured along the duct, from an opening in an "A" or "B" Class division including continuous "B" Class ceilings.

5.5.6.2 Where ventilation ducts, with a free cross-sectional area exceeding 0.02 metres<sup>2</sup> pass through "B" Class bulkheads, the openings shall be lined with steel sheet sleeves of at least 900 millimetres in length, unless the ducts are of steel for this length in way of the bulkheads. When passing through a "B" Class bulkhead this length shall preferably be divided evenly on each side of the bulkhead.

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

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

- (i) A grease trap readily removable for cleaning;
- (ii) A fire damper located in the lower end of the duct;
- (iii) Arrangements, operable from within or without the galley, for shutting off the exhaust fan; and

- (iv) Fixed means for extinguishing a fire within the duct, except where MCA considers such fittings impractical in a vessel of less than 75 metres in length (L).

#### **5.5.7 Automatic Sprinkler and Fire Alarm Detection Systems (Method IIF)**

- 5.5.7.1 In vessels in which method IIF is adopted an automatic sprinkler and fire alarm system of an approved type and complying with the requirements of this section shall be installed and so arranged as to protect accommodation spaces and service spaces except spaces which afford no substantial fire risks, such as void spaces and sanitary spaces.
- 5.5.7.2 The system shall be capable of immediate operation at all times and no action by the crew shall be necessary to set it in operation. It shall be of the wet pipe type but small exposed sections may be of the dry pipe type where in the opinion of MCA or Classification society this is a necessary precaution. Any parts of the system which may be subjected to freezing temperatures in service shall be suitably protected against freezing. It shall be kept charged at the necessary pressure and shall have provision for a continuous supply of water as required by section 5.5.7.13.
- 5.5.7.3 Each section of sprinklers shall include means for giving a visible and audible alarm signal automatically at one or more indicating units whenever any sprinkler comes into operation. Such units shall indicate in which section, served by the system, fire has occurred and shall be centralised in the wheelhouse. In addition, visible and audible alarms from the unit shall be placed in a position other than in the wheelhouse, so as to ensure that the indication of fire is immediately received by the crew. Such an alarm system shall be so constructed as to indicate if any fault occurs in the system.
- 5.5.7.4 Sprinklers shall be grouped into separate sections, each of which shall contain not more than 200 sprinklers.
- 5.5.7.5 Each section of sprinklers shall be capable of being isolated by a one stop valve only. The stop valve in each section shall be readily accessible and its location shall be clearly and permanently indicated. Means shall be provided to prevent the operation of the stop valves by any unauthorised person.
- 5.5.7.6 A gauge indicating the pressure in the system shall be provided at each section stop valve and at a central station.
- 5.5.7.7 The sprinklers must be resistant to corrosion. In the accommodation and service spaces the sprinklers shall come into operation within the temperature range of 68°C and 79°C, except that in locations such as drying rooms, where high ambient temperatures might be expected, the operating temperature may be increased by not more than 30°C above the maximum deck head temperature.
- 5.5.7.8 A list or plan shall be displayed at each indicating unit showing the spaces covered and the location of the zone in respect of each section. Suitable instructions for testing and maintenance shall be available.
- 5.5.7.9 Sprinklers shall be placed in an overhead position and spaced in a suitable pattern to maintain an average application rate of not less than 5 litres/metre<sup>2</sup> per minute over the nominal area covered by the sprinklers. Alternatively, MCA or Classification Society may permit the use of sprinklers providing such quantity of water suitably distributed as has been shown to the satisfaction of MCA to be not less effective.
- 5.5.7.10 A pressure tank having a volume equal to at least twice that of the charge of water specified in this section shall be provided. The tank shall contain a standing charge of fresh water, equivalent to the amount of water which would be discharged in one minute by a pump referred to in section 5.5.7.13, and the arrangements shall provide

for maintaining such air pressure in the tank as to ensure that, where the standing charge of fresh water in the tank has been used, the pressure will be not less than the working pressure of the sprinkler, plus the pressure due to a head of water measured from the bottom of the tank to the highest sprinkler in the system. Suitable means of replenishing the air under pressure and of replenishing the fresh water charge in the tank shall be provided. A glass gauge shall be provided to indicate the correct level of the water in the tank.

- 5.5.7.11 Means shall be provided to prevent the passage of seawater into the tank.
- 5.5.7.12 An independent power pump shall be provided solely for the purpose of continuing automatically the discharge of water from the sprinklers. The pump shall be brought into action automatically by the pressure drop in the system before the standing fresh water charge in the pressure tank is completely exhausted.
- 5.5.7.13 The pump and the piping system shall be capable of maintaining the necessary pressure at the level of the highest sprinkler to ensure a continuous output of water sufficient for the simultaneous coverage of the maximum area separated by fire-resisting bulkheads of "A" and "B" Class divisions or an area of 280 metres<sup>2</sup> whichever is the less at the application rate specified in section 5.5.7.9.
- 5.5.7.14 The pump shall have fitted, on the delivery side, a test valve with a short open-ended discharge pipe. The effective area through the valve and pipe shall be adequate to permit the release of the required pump output while maintaining the pressure in the system specified in section 5.5.7.10.
- 5.5.7.15 The sea inlet to the pump shall wherever possible be in the space containing the pump and shall be so arranged that when the vessel is afloat it will not be necessary to shut off the supply of sea-water to the pump for any purpose other than the inspection or repair of the pump.
- 5.5.7.16 The sprinkler pump and tank shall be situated in a position reasonably remote from any machinery space of Category A and shall not be situated in any space required to be protected by the sprinkler system.
- 5.5.7.17 There shall not be less than two sources of power supply for the seawater pump and the automatic fire alarm and fire detection system. If the pump is electrically driven it shall be connected to the main source of electrical power, which shall be capable of being supplied by at least two generators.
- 5.5.7.18 The feeders shall be arranged so as to avoid galleys, machinery spaces and other enclosed spaces of high fire risk except in so far as it is necessary to reach the appropriate switchboard. One of the sources of power supply for the fire alarm and fire detection system shall be an emergency source. Where one of the sources of power for the pump is an internal combustion-type engine it shall, in addition to complying with the provisions of section 5.5.7.16, be so situated that a fire in any protected space will not affect the air supply to that engine.
- 5.5.7.19 The sprinkler system shall have a connection from the vessel's fire main by way of a lockable screw-down non-return valve at the connection which will prevent a backflow from the sprinkler system to the fire main.
- 5.5.7.20 A test valve shall be provided for testing the automatic alarm for each section of sprinklers by a discharge of water equivalent to the operation of one sprinkler. The test valve for each section shall be situated near the stop valve for that section.
- 5.5.7.21 Means shall be provided for testing the automatic operation of the pump on reduction of pressure in the system.

5.5.7.22 Means shall be provided for testing each section of the sprinkler system. Switches shall be provided at one of the indicating positions referred to in section 5.5.7.3 above which will enable the alarm and indicators for each section of sprinklers to be tested.

5.5.7.23 Spare sprinkler heads shall be provided for each section of sprinklers. They shall include all types and ratings installed in the vessel and shall be provided as follows:

- (i) less than one hundred sprinkler heads: three spare heads;
- (ii) less than three hundred sprinkler heads: six spare heads;
- (iii) three hundred to one thousand sprinkler heads: twelve spare heads.

#### 5.5.8 Fire Extinguishing Appliances in Machinery Spaces

5.5.8.1 Every domestic boiler room must be provided with at least one set of foam fire extinguishers or equivalent to the satisfaction of MCA.

5.5.8.2 At least two approved portable extinguishers discharging foam or equivalent must be provided in each firing space in each boiler room and each space in which a part of the fuel oil installation is situated. At least one approved foam-type extinguisher of at least 135 litres capacity or equivalent must be provided with hoses on reels suitable for reaching any part of the boiler room. MCA may relax the requirements of this section, having regard to the size and nature of the space to be protected.

5.5.8.3 Spaces containing internal combustion machinery used either for main propulsion or for other purposes, when such machinery has a total power output of not less than 750 kilowatts, must be provided with the following arrangements:

- (i) one of the following fixed fire-extinguishing systems;
  - (a) a pressure water-spraying installation;
  - (b) a fire-smothering gas installation;
  - (c) a fire-extinguishing installation using vapours from low toxicity vaporising liquids; or
  - (d) a fire-extinguishing installation using high expansion foam.
- (ii) at least one set of portable air-foam applicators to the satisfaction of MCA; and
- (iii) in each such space, approved foam-type fire extinguishers each of at least 45 litres capacity, or equivalent, sufficient in number to enable foam or its equivalent to be directed on to any part of the fuel and lubricating oil pressure systems, gearing and other fire hazards. In addition, there must be provided a sufficient number of portable foam extinguishers or equivalent which shall be so located that an extinguisher is not more than 10 metres walking distance from any point in the space; provided that there shall be at least two such extinguishers in each such space. For smaller spaces MCA may relax these requirements.

5.5.8.4 Where, a fire hazard exists in any machinery space for which no specific provisions for fire-extinguishing appliances are prescribed there must be provided in, or adjacent to, that space a number of approved portable fire extinguishers or other means of fire extinction to the satisfaction of MCA.

5.5.8.5 Where fixed fire-extinguishing systems not required by this Code are installed, such systems shall be to the satisfaction of MCA, and shall be maintained ready for immediate use.

5.5.8.6 For any machinery space of Category A to which access is provided at a low level from an adjacent shaft tunnel, there shall be provided in addition to any watertight door, and on the side remote from that machinery space, a light steel fire-screen door which shall be capable of being operated from each side of the door.

### 5.5.9 Fire Pumps

5.5.9.1 At least two fire pumps must be provided.

5.5.9.2 If a fire in any one compartment could put all the fire pumps out of action, there shall be an alternative means of providing water for fire-fighting. In vessels of 75 metres in length (L) and over this alternative means shall be a fixed emergency fire pump independently driven. *For New Vessels (1999) the emergency fire pump shall be capable of supplying two jets of water to the satisfaction of MCA. For New Vessels (2003) this emergency fire pump shall be capable of supplying two jets of water at a minimum pressure of 2.5 bar.* N

5.5.9.3 The fire pumps, other than the emergency pump shall be capable of delivering, for fire-fighting purposes, a quantity of water at a minimum pressure of 2.5 bar, with a total capacity (Q) of at least:

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

where L, B and D are in metres.

5.5.9.4 However, the total required capacity of the fire pumps need not exceed 180 metres<sup>3</sup> per hour.

5.5.9.5 Each of the required fire pumps other than any emergency pump must have a capacity of not less than 40% of the total capacity of fire pumps and shall in any event be capable of delivering at least the jets of water required by section 5.5.9.3. These fire pumps shall be capable of supplying the fire main systems under the required conditions. Where more than two pumps are installed the capacity of such additional pumps shall be to the satisfaction of MCA.

5.5.9.6 Fire pumps shall be independently driven power pumps. Sanitary, ballast, bilge or general service pumps may be accepted as fire pumps, provided that they are not normally used for pumping oil and that, if they are subject to occasional duty for the transfer or pumping of fuel oil, suitable change-over arrangements are fitted.

5.5.9.7 Relief valves shall be provided in conjunction with all fire pumps if the pumps are capable of developing a pressure exceeding the design pressure of the water service pipes, hydrants and hoses. These valves shall be so placed and adjusted as to prevent excessive pressure in any of the fire main systems.

5.5.9.8 Emergency power-operated fire pumps shall be independently driven self-contained pumps either with their own diesel engine prime mover and fuel supply fitted in an accessible position outside the compartment which contains the main fire pumps, or be driven by a self-contained generator, which may be the emergency generator referred to section 4.2.10.2, of sufficient capacity and which is positioned in a safe place outside the engine room and preferably above the working deck. The emergency fire pump shall be capable of operating for a period of at least 3 hours.

5.5.9.9 Emergency fire pumps, sea-suction valves and other necessary valves shall be operable from outside compartments containing main fire pumps in a position not likely to be cut off by a fire in those compartments.

#### 5.5.10 **Fire Mains**

- 5.5.10.1 Where more than one hydrant is required to provide the number of jets required by section 5.5.11.1, a fire main shall be provided.
- 5.5.10.2 The diameter of the fire main and water service pipes shall be sufficient for the effective distribution of the maximum required discharge from two fire pumps operating simultaneously or of 140 metres<sup>3</sup> per hour, whichever is the less.
- 5.5.10.3 With the two pumps simultaneously delivering through nozzles the quantity of water required, through any adjacent hydrants, the minimum pressure of 2.5 bar shall be maintained at all hydrants.

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

- 5.5.11.1 The number and position of the hydrants shall be such that at least two jets of water not emanating from the same hydrant, one of which shall be from a single length of fire hose, may reach any part of the vessel normally accessible to the crew while the vessel is being navigated.
- 5.5.11.2 In vessels where deck cargo may be carried, the positions of the hydrants shall be such that they are always readily accessible and the pipes shall be arranged as far as practicable to avoid risk of damage by such cargo. Materials readily rendered ineffective by heat shall not be used for fire mains and hydrants unless adequately protected.
- 5.5.11.3 A cock or valve shall be fitted to serve each fire hose so that any fire hose may be removed while the fire pumps are operating.

#### 5.5.12 **Means of Escape and Emergency**

- 5.5.12.1 A corridor or part of a corridor from which there is only one route of escape, shall not exceed 7 metres in length.
- 5.5.12.2 Two means of escape shall be provided from every machinery space of Category A by one of the following means:
  - (i) Two sets of steel ladders as widely separated as possible leading to doors in the upper part of the space similarly separated and from which access is provided to the open deck. In general, one of these ladders shall provide continuous fire shelter from the lower part of the space to a safe position outside the space. However, MCA may not require such shelter if, due to special arrangements or dimensions of the machinery space, a safe escape route from the lower part of this space is provided. This shelter shall be of steel, insulated to "A-60" class standard and be provided with a "A-60" class self-closing steel door at the lower end; or
  - (ii) One steel ladder leading to a door in the upper part of the space from which access is provided to the open deck and additionally, in the lower part of the space and in a position well separated from the ladder referred to, a steel door capable of being operated from each side and which provides access to a safe escape route from the lower part of the space to the open deck.
- 5.5.12.3 From machinery spaces other than those of Category A, escape routes shall be provided to the satisfaction of MCA having regard to the nature and location of the space and whether persons are normally employed in that space.

## **CHAPTER 6 PROTECTION OF THE CREW**

### **6.1 PROTECTION OF PERSONNEL**

#### **6.1.1 General**

6.1.1.1 Owners shall have a Duty of Care to ensure that their vessels are operated without endangering the health and safety of the crew and any other persons legitimately on board the vessel.

6.1.1.2 The crew shall be given training and instructions on health and safety matters on board fishing vessels, and in particular, on accident prevention.

6.1.1.3 All crew, whilst working on the open decks of fishing vessels at sea, should wear Personal Floatation Devices (PFDs) and/or use Safety Lines. The following is provided as guidance on Personal Floatation Devices and statutory lifejackets:

- i) A vessel is required to carry life-saving appliances (LSA) including lifejackets for all persons on-board through regulation forming part of the "Statutory LSA". These Statutory Lifejackets are of a type designed tested and maintained to a standard appropriate to the vessel type and area of operation. These lifejackets are to provide persons buoyancy in an abandon ship scenario.
- ii) A PFD can be a lifejacket or a buoyancy aid or wearable buoyancy device that buoyancy in the water. The intended use of a PFD is to be constantly worn in the case of falling overboard, rather than for intentionally entering the water or survival craft during an abandon ship scenario.
- iii) A statutory lifejacket can be very bulky in nature and cumbersome when worn on deck, however once in the water, they provide a high level of buoyancy for the wearer awaiting rescue after abandoning ship. A PFD can be much smaller and more streamlined such as a waistcoat styled buoyancy aid enabling the user to continue to perform tasks whilst wearing it on deck, with the added level of safety that should they fall overboard, the PFD will offer them added buoyancy and increase the chances of survival.
- iv) In the event of an abandon ship scenario, individuals should, if time permits, remove their PFDs and don the statutory lifejacket provided on the vessel, which will offer them a higher level of buoyancy than their PFD and a greater chance of survival.
- v) A lifeline and harness attaching the person to the vessel may be worn while on deck, instead of or in addition to the PFD.

#### **6.1.2 Risk Assessment**

6.1.2.1 The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 require employers to make a suitable and sufficient assessment of the risks to the health and safety of workers arising in the normal course of their activities or duties. Guidance on these regulations and on the principals of risk assessment is contained in a Marine Guidance Note (currently MGN 20 (M&F)). Although share fishermen are not currently considered workers, it is strongly recommended that a risk assessment is done, regardless of the number of crew and their employment status.

6.1.2.2 A risk assessment is intended to be a careful examination of the vessels procedures or operations which could cause harm, so that decisions can be made as to whether adequate control measures are in place to reduce those risks to an acceptable level or whether more shall be done.

- 6.1.2.3 The assessment shall first identify the hazards that are present and then establish whether a hazard is significant and whether it is already covered by satisfactory precautions to control the risk, including consideration of the likelihood of the failure of those precautions that are already in place.
- 6.1.2.4 The health and safety risk assessment must also be reviewed regularly, (at least annually) to ensure that it remains appropriate to the vessel's fishing method and operation. If there has been a change of fishing method or of operational practice, the assessment must also be reviewed accordingly.
- 6.1.2.5 Risk assessments of the vessel are particular to each employer. When a vessel is sold, the new owner must complete, or arrange the completion of, a new risk assessment and self-certification.
- 6.1.2.6 All members of the crew shall be informed of all measures to be taken regarding health and safety on board the vessel. Such information must be easily understood and promulgated for all to see by the persons concerned. All members of the crew must sign aforementioned Risk Assessment to agree it has been understood.
- 6.1.2.7 Where risks to the health and safety of the crew cannot be prevented or sufficiently controlled by collective or technical means of protection, they must be provided with personal protective equipment.
- 6.1.2.8 Personal protective equipment in the form of clothing or over clothing shall be in bright colours, contrasting with the marine environment and clearly visible. Reference must be made to The Merchant Shipping and Fishing Vessels (Personal Protective Equipment) Regulations 1999, No 2205.
- 6.1.3 **Precautions against falls including Bulwarks, Guard Rails and Handrails**
- 6.1.3.1 To ensure the safety of persons against falls, including falling overboard, and when the proper working of the vessel is not impeded, the perimeters of an exposed deck and the tops of any deckhouse must be provided with a combination of bulwarks, guard rails or taut wires of sufficient strength and at a height of at least 1000 millimetres. These bulwarks, rails or wires must be supported efficiently by stays or stanchions. The openings between the courses of any rails or wires must not exceed 230 millimetres for the lowest course and 380 millimetres for any other course. The distance between stanchions must not be more than 1.5 metres. When application of such measures would impede the proper working of the vessel, MCA may give an exemption for a specific mode of fishing and may direct other safety measures be put in place.
- 6.1.3.2 The minimum vertical distance from the deepest operating waterline to the lowest point of the top of the bulwark, or to the edge of the working deck if guard rails are fitted shall ensure adequate protection of the crew from water shipped on deck, taking into account the sea states and the weather conditions in which the vessel may operate, the areas of operation, type of vessel and its method of fishing and be in accordance with 6.1.3.3 and 6.1.3.4. *For New Fishing Vessels (2003) the freeboard measured amid-ships from the edge of the working deck from which fishing is undertaken, must not be less than 300 millimetres or not less than the freeboard corresponding with the maximum permissible draught, whichever is the greater. For New Fishing Vessels (2003) vessels with sheltered working decks, which are so arranged that water will not enter the sheltered working spaces no minimum freeboard other than the one corresponding with the maximum permissible draught is required.*
- 6.1.3.3 The minimum vertical distance from the deepest operating waterline to the lowest point of the top of the bulwark or to the edge of the working deck if guardrails are fitted referred to in section 6.1.3.1 above shall be determined for each vessel, taking into account the probability of shipping water on deck when the vessel is in moderate

beam seas when fishing. This probability shall not be greater than 5%. The calculations shall take account of the damping coefficient associated with the presence of bilge keels or any other roll damping arrangements.

- 6.1.3.4 This distance may be determined by means of the following formulae, based upon the regression analysis of results of the calculations of the probability of shipping water on deck, which is assumed to be 5% when the vessel is fishing in beam seas with the significant wave heights of about 2.9m and about 1.4m respectively:

$$H = 0.53 + 0.11B + 0.32\left(2.60 - \frac{B}{d}\right) + 0.85(C_B - 0.60) + 0.61(GM - 0.70) \text{ metres}$$

for vessels which are intended to stop their fishing operations at the significant wave heights of more than 2.9m, and

$$H = 0.80 + 0.23\left(2.60 - \frac{B}{d}\right) + 0.52(C_B - 0.60) + 0.62(GM - 0.70) \text{ metres}$$

for vessels which are intended to stop their fishing operations at the significant wave heights of more than 1.4m; if the significant wave heights are between 2.9 metres and 1.4 metres the values of H shall be determined by linear interpolation,

In the above formulae:

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

*d* = maximum permissible moulded draught (metres)

*C<sub>B</sub>* = block coefficient

*GM* = initial metacentric height (metres)

All dimensions correspond to the deepest waterline.

- 6.1.3.5 Hinged covers of hatchways, access holes and other openings shall be protected against accidental closing. In particular, heavy covers on escape hatches must be equipped with counterweights, and so constructed as to be capable of being opened from each side of the cover.
- 6.1.3.6 Dimensions of access hatches must not be less than 600 millimetres by 600 millimetres or 600 millimetres diameter.
- 6.1.3.7 Deck openings provided with coamings or sills of less than 600 millimetres in height shall be provided with guards, such as hinged or portable railings or nettings. MCA may exempt small openings such as fish scuttles from compliance with these requirements.
- 6.1.3.8 Skylights or other similar openings shall be fitted with protective bars not more than 350 millimetres apart. MCA may exempt small openings from compliance with this requirement.
- 6.1.3.9 Where practicable, handholds shall be provided above the level of the deck over escape openings.

- 6.1.3.10 Access to installations above the deck for operations or maintenance purposes shall be provided with guard rails or similar protective devices to prevent falls and to ensure the crew's safety. Where guard rails provide such protection, they shall be of appropriate height.
- 6.1.3.11 The minimum height above deck of any fixed bulwarks shall be 600 millimetres. All bulwark heights must be increased as necessary to not less than 1000 millimetres (see section 6.1.3.2) by adequate stanchions or guard wires, temporary or permanent.
- 6.1.3.12 Access stairways, ladderways and passageways shall be provided with handrails as necessary and storm rails shall be fitted on the outside of all deck houses and casings.
- 6.1.3.13 Adequate guardrails, gangways or passages shall be provided for the protection of persons on board the vessel when passing between their quarters, machinery spaces and working spaces. Storm rails shall be fitted as necessary to the outside of all deckhouses and casings to secure safety of passage or work for the crew.
- 6.1.3.14 Portable stanchions shall be provided to guard open flush hatches.
- 6.1.3.15 On stern trawlers with ramps, the upper part of the ramp shall be fitted with a gate or similar protective guard, of the same height as the bulwarks or adjacent structure, to protect the crew from the risks of falling into the ramp. This gate or other device shall be capable of being readily opened and closed, preferably by remote means and shall be open only for shooting or hauling the nets. See section 6.1.4.2 below. When in the vicinity of ramps which are open for operational purposes, crew members shall wear suitable lifelines or safety harnesses.
- 6.1.3.16 For the safety of the crew, stairways and ladders of adequate size and strength with handrails and non-slip treads shall be provided to the satisfaction of the MCA *except for New Fishing Vessels (2003) where these shall be provided and constructed in accordance with the relevant ISO standards.* N&E
- 6.1.3.17 Working areas shall be kept clear and, so far as is reasonably practicable, be protected from the sea and provide adequate protection for the crew against falling on the vessel or falling overboard.
- 6.1.3.18 Handling areas shall be sufficiently spacious, in terms of both height and surface area.
- 6.1.4 **Safety Harnesses**
- 6.1.4.1 A lifeline system shall be designed to be effective for all needs and the necessary wires, ropes, shackles, eyebolts and cleats shall be provided.
- 6.1.4.2 A vessel shall be provided with at least two safety harnesses and additional safety harnesses as necessary for all persons who may be required to work on deck.
- 6.1.4.3 Efficient and permanent means for securing the lifelines of safety harnesses shall be provided on exposed decks.
- 6.1.5 **Surface of Working Decks**
- 6.1.5.1 The surface of working decks and spaces accessible to the crew shall be non-slip or anti-slip or be provided with devices to prevent falls and kept free of obstacles as far as possible.

6.1.5.2 Acceptable surfaces are: chequered plate; unpainted wood; a non-skid pattern moulded into fibre reinforced plastic (FRP); non-slip deck paint; or an efficient non-slip covering.

**6.1.6 Winches, tackles and hoisting gear**

6.1.6.1 Every vessel that is provided with winches, tackles and hoisting gear shall have such gear properly installed having regard to the intended service of the vessel.

6.1.6.2 All hoisting gear, hauling gear and related equipment shall satisfy the requirements of The Merchant Shipping and Fishing Vessels (Provisions and Use of Work Equipment) Regulations 2006 No. 2183 and the Merchant Shipping and Fishing Vessels (Lifting Operations and Lifting Equipment) Regulations 2006 No. 2184 as applicable.

6.1.6.3 All equipment used in hoisting/hauling shall be used only by a competent person and must be tested and examined at regular intervals and a written record shall be made of all such tests and examinations.

6.1.6.4 All parts of hauling gear, hoisting gear and related equipment must be maintained in good repair and working order.

6.1.6.5 The controls for the hauling and hoisting gear shall be installed in an area sufficiently large enough to enable operators to work unhindered.

6.1.6.6 The hauling and hoisting gear shall also have appropriate safety devices for emergencies, including emergency stop facilities. A duplicate set of emergency stop facilities is to be provided in the wheelhouse.

6.1.6.7 The gear operator must have a clear view of the gear and any crew member working near it.

6.1.6.8 If gear is controlled from the wheelhouse, the operator must also have a clear view of the crew working near the gear, either directly or via any other suitable medium. All operators, in the wheelhouse or on deck shall give exclusive attention to that task and not carry out other tasks while operating the equipment.

6.1.6.9 A reliable communications system must be used between the wheelhouse and the working deck and the crew shall be trained in the use of hand signals.

6.1.6.10 A sharp look out must always be maintained and the crew warned of the imminent danger of heavy oncoming seas during fishing operations or when other work is being undertaken on deck.

6.1.6.11 Contact with bare ropes and warps and with moving parts of the equipment shall be minimized by installing protective devices.

6.1.6.12 The following control measures shall be installed to restrict moving masses (on vessels with trawl doors or codends):

(i) devices to immobilise the trawl doors;

(ii) devices to control the swinging motion of the codend.

6.1.6.13 The crew must be trained in the use of fishing gear and hauling and hoisting equipment.

#### **6.1.7 Ventilation of enclosed workplaces**

- 6.1.7.1 Steps shall be taken to ensure there is sufficient fresh air in enclosed workplaces, having regard to the work methods used and the physical demands that are placed on the crew.
- 6.1.7.2 If a mechanical ventilation system is used, it shall be maintained in good condition.
- 6.1.7.3 Effective means of ventilation shall be provided to all enclosed spaces that may be entered by persons on board.
- 6.1.7.4 Skippers and Crew shall also be aware of the guidance in MGN 309 Fishing Vessels – The Dangers of Enclosed Spaces.

#### **6.1.8 Temperature of working areas**

- 6.1.8.1 The heating arrangements in working areas shall be adequate to maintain the area at an adequate temperature for the human body during the hours of working, having regard to the work methods used, the physical demands placed on the crew and the actual or potential weather conditions in the area in which the vessel operates.

#### **6.1.9 Natural and artificial lighting of workplaces.**

- 6.1.9.1 Workplaces shall as far as possible receive sufficient natural light and be equipped with artificial lighting suitable for the operations in hand, without placing the crews safety and health in danger or jeopardising the navigation of other vessels.
- 6.1.9.2 Lighting installations in working areas, stairs, ladders and passageways shall be placed in such a way that the type of lighting envisaged poses no risk of accident to the crew and no hindrance to the navigation of the vessel.
- 6.1.9.3 Workplaces in which the crew are especially exposed to risks in the event of failure of artificial lighting shall be provided with emergency lighting of adequate intensity.
- 6.1.9.4 Emergency lighting shall be maintained in an efficient operating condition and be tested at regular intervals.

#### **6.1.10 Workplace soundproofing, insulation and cleanliness**

- 6.1.10.1 The owner shall take appropriate measures to ensure that the vessel and all its fittings and equipment are cleaned regularly in order to maintain an appropriate standard of hygiene.
- 6.1.10.2 Workstations shall be, as far as practicable, adequately soundproofed and insulated, bearing in mind the type of tasks involved and the physical activity of the crew.
- 6.1.10.3 The surfaces of decks, bulkheads and deckheads in working areas shall be such that they can be cleaned and maintained.

#### **6.1.11 Doors**

- 6.1.11.1 Means shall be provided so that doors can, at all times, be operated from the inside without special equipment.
- 6.1.11.2 Doors shall be operable from either side when workplaces are in use.
- 6.1.11.3 Doors, and in particular, sliding doors, where such have to be used, must function as safely as possible for the crew, especially in adverse weather and sea conditions.

## **6.2 SECURING OF HEAVY EQUIPMENT**

- 6.2.1 Heavy items of equipment such as spare fishing gear, batteries, cooking appliances etc., must be securely fastened in place to prevent movement due to severe motions of the vessel.
- 6.2.2 Stowage lockers containing heavy items shall have lids or doors with secure fastening.

## **6.3 MEDICAL STORES**

- 6.3.1 A vessel shall carry first aid equipment and medical stores (reference shall be made to Merchant Shipping Notice No. M.1768 (M+F) Ships Medical Stores: Application of the Merchant Shipping and Fishing Vessels (Medical Stores) Regulations 1995 No 1802) and the Merchant Shipping and Fishing Vessels (Medical Stores) (Amendment) Regulations 1996 No. 2821

## **CHAPTER 7 (LIFE-SAVING APPLIANCES)**

### **7.1 EVALUATION, TESTING AND APPROVAL OF LIVE-SAVING APPLIANCES AND ARRANGEMENTS**

7.1.1 Except as provided in sections 7.1.5 and 7.1.6, life-saving appliances and arrangements required by this Chapter must be approved under the provisions of the Merchant Shipping (Marine Equipment) Regulations 1999, No. 1957.

7.1.2 Before giving approval to life-saving appliances and arrangements, MCA shall ensure that such life-saving appliances and arrangements are tested to confirm that they comply with the requirements of this chapter, in accordance with the requirements of Council Directive 96/98/EC (9) on marine equipment which includes the IMO Recommendations on Testing of Life-Saving Appliances as amendments.

7.1.3 Before giving approval to novel life-saving appliances or arrangements, MCA shall ensure that such appliances or arrangements:

7.1.3.1 Provide safety standards at least equivalent to the requirements of this chapter and have been evaluated and tested in accordance with the recommendations of the IMO; or

7.1.3.2 Have successfully undergone, to the satisfaction of MCA, evaluation and tests which are substantially equivalent to those recommendations.

7.1.4 Procedures adopted by MCA for approval shall also include the conditions whereby approval would continue or would be withdrawn.

7.1.5 Before accepting life-saving appliances and arrangements that have not been previously approved by MCA, MCA shall be satisfied that life-saving appliances and arrangements comply with the requirements of this Chapter.

7.1.6 Life-saving appliances required by this Chapter shall be to the satisfaction of MCA, taking into consideration the detailed specification as given for those appliances in Chapter III of SOLAS 1974, as amended, and in the IMO International Life-Saving Appliance Code.

7.1.7 Any life-saving appliance carried on board must be type approved, even if it is a spare appliance.

7.1.8 MCA shall require life-saving appliances to be subjected to such production tests as are necessary to ensure that the life-saving appliances are manufactured to the same standard as the approved prototype.

### **7.2 VESSEL REQUIREMENTS**

For a summary of the requirements see Table 5 below. For full details see sections 7.2.1 to 7.2.12

**Table 5 - Life-Saving Appliances Carriage Requirements**

Requirement	75 m and over	Less than 75m, but not less than 45m	Less than 45m
<b>Survival Craft</b> (see 7.2.1)	Lifeboat of 100% capacity on each side	Survival craft of 100% capacity on each side of the vessel	Survival craft of 200% capacity. 100% if can be launched on both sides.
<b>Rescue Boat</b> (see 7.2.1)	YES	YES	YES
<b>Lifejackets</b> (see 7.2.4)	Every Person, plus an additional 10% or 2 extra		
<b>Immersion Suits –</b> (see 7.2.5)	Every person assigned to crew the rescue boat		Not greater than 3 if operating in Southern Region
	And, Every person not accommodated in Lifeboats, Davit-launched liferafts or liferaft served by appliances which do not require entry into the water.		
	And, for each lifeboat, at least 3		
<b>Thermal Protective Aids</b> (see 7.2.5)	One per person assigned to crew the rescue boat		One per person assigned to crew the rescue boat (see 7.2.5.1)
<b>Lifebuoys –</b> (see 7.2.6)	8	6	4
	50% provided with self-activating lights, 2 of these to be provided with self-activating smoke signals capable of quick release from the navigation bridge		
	One on each side be fitted with buoyant lifeline equal in length to at least twice the height from the waterline to the stowage height, or 30m which ever is greater		
<b>Line Throwing Appliances</b> (see 7.2.7)	YES	YES	YES
<b>VHF Radio</b> (see 7.2.9)	At least 3		Maybe reduced to 2
<b>Radar Transponders (SART)</b> (see 7.2.10.1)	One on each side of vessel		
<b>EPIRB</b> (see 7.2.11)	One float free satellite EPIRB, of an approved type		
<b>Retro Reflective Material</b> (see 7.2.12)	. All survival craft, rescue boats, lifejackets and lifebuoys		

**7.2.1 Number and types of survival craft and rescue boats**

7.2.1.1 Every vessel must be provided with at least two survival craft.

7.2.1.2 The number, capacity and type of survival craft and rescue boats of vessels of 75 metres and over shall comply with the following:

- (i) Lifeboat of sufficient aggregate capacity shall be provided on each side of the vessel to accommodate at least the total number of persons on board;
- (ii) However, if the vessel complies with subdivision requirements, damage stability criteria and criteria of increased structural fire protection additional to those stipulated by Chapter 3 and by Chapter 5, and MCA considers that a decrease of the number of survival craft and their capacity will not affect safety, MCA may allow this decrease provided that the aggregate

capacity of survival craft situated on each side of the vessel is sufficient to accommodate at least 50% of the total number of persons on board shall be provided; and

- (iii) A rescue boat must be provided unless the vessel is fitted with a lifeboat which fulfils the requirements for a rescue boat and which is capable of being recovered after the rescue operation.

7.2.1.3 Vessels of less than 75 metres in length (L) but of 45 metres in length (L) and over shall comply with the following:

- (i) Survival craft of sufficient aggregate capacity to accommodate on each side of the vessel at least the total number of persons on board; and
- (ii) A rescue boat.

7.2.1.4 Vessels of less than 45 metres in length (L) shall be provided with:

- (i) Survival craft of sufficient aggregate capacity to accommodate at least 200% of the total number of persons on board. Sufficient of these survival craft to accommodate at least the total number of persons on board shall be capable of being launched from either side of the vessel; and
- (ii) A rescue boat.

7.2.1.5 In lieu of meeting the requirements of sections 7.2.1.2(i), 7.2.1.3(i) or 7.2.1.4(i), vessels may carry one or more lifeboats capable of being free-fall launched over the stern of the vessel of sufficient capacity to accommodate the total number of persons on board and with liferafts of sufficient capacity to accommodate the total number of persons on board.

7.2.1.6 The number of lifeboats and rescue boats that are carried on vessels shall be sufficient to ensure that in providing for abandonment by the total number of persons on board not more than nine liferafts need be marshalled by each lifeboat or rescue boat.

7.2.1.7 In addition to the provisions of sections 7.2.1.2(ii) and 7.2.1.4, for fishing vessels whose hull is built to comply with the rules of a Classification Society for operation in waters with heavy drift ice concentration the rescue boat/lifeboat required in sections 7.2.1.2(ii), 7.2.1.3(i) or 7.2.1.4(ii) shall at least be partially covered and shall have sufficient capacity to accommodate all persons on board.

## 7.2.2 **Availability and stowage of survival craft and rescue boats**

7.2.2.1 Survival craft must:

- (i) be readily available in case of emergency;
- (ii) be capable of being launched safely and rapidly under all conditions;
- (iii) be capable of rapid recovery if fulfilling also the requirements for a rescue boat; and
- (iv) be so stowed that:
  - (a) the marshalling of persons at the embarkation deck is not impeded;
  - (b) their prompt handling is not impeded;
  - (c) embarkation can be effected rapidly and in good order; and

(d) the operation of any other survival craft is not interfered with.

7.2.2.2 Where the distance from the embarkation deck to the waterline of the vessel in the lightest operating condition exceeds 4.5 metres, survival craft, except float-free liferafts, shall be capable of being davit-launched with a full complement of persons or be provided with equivalent approved means of embarkation.

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

7.2.2.4 Survival craft shall:

(i) be stowed:

(a) So that neither the survival craft nor its stowage arrangements will interfere with the operation of any other survival craft or rescue boat at any other launching location;

(b) As near to the water surface as is safe and practicable and, in the case of a survival craft other than a liferaft intended for throw overboard launching, in such a position that the survival craft in its embarkation position is not less than 2 metres above the waterline with the vessel in fully loaded condition under favourable conditions of trim of up to 10° and listed up to 20° either way, or at an angle at which the weatherdeck becomes submerged, whichever is less;

(c) In a state of continuous readiness so that the crew can carry out preparations for embarkation and launching in less than 5 minutes; and

(d) Fully equipped as required by this Chapter.

(ii) Every lifeboat shall be attached to a separate set of davits or approved launching appliance;

(iii) Survival craft shall be positioned as close to accommodation and service spaces as possible, stowed in suitable positions to ensure safe launching, with particular regard to clearance from the propeller. Lifeboats for lowering down the vessel's side shall be stowed with regard to steeply overhanging portions of the hull, so ensuring, as far as practicable, that they can be launched down the straight side of the vessel. If positioned forward, they shall be stowed abaft the collision bulkhead in a sheltered position on suitably strengthened davits;

(iv) The equipment, arrangements and method of launching and recovering of rescue boats shall be approved taking into account the weight of the rescue boat including its equipment and 100% of the number of persons it is certificated to carry, the construction and size of the rescue boat and its position of stowage above the waterline in the vessel's lightest operating condition;

(v) Launching and embarkation appliances and free fall lifeboats shall comply with the requirements of the IMO International Life-Saving Appliance Code;

(vi) *Launching appliances complying with Council Directive 96/98 shall be operationally tested under a load of 1.1 times the total mass of the boat when loaded with its full complement of persons and equipment whenever*

*the release gear is overhauled and at least every five years and conducted in accordance with MSN 1803 Appendix 2.* N

- (viii) **Launching appliances on vessels built before 1 January 1999 must comply with the following:**
- (a) **When not attached to a davit, the boat is to be attached to a device capable of putting the equipped boat and a crew of two into the water. If the device is not capable of putting the boat into the water with its complement of persons, then other suitable means shall be provided for embarking persons into the craft/boat. Such devices are to be marked with a red band 150mm wide on a white background.**
  - (b) **If the launching appliance is a davit, then it is to be tested under a load of 1.1 times the total mass of the boat when it is loaded with its full complement of persons and equipment whenever the release gear is overhauled. Such overhauling and test shall be carried out at least once every five years.**
- (viii) The liferafts must be so stowed:
- (a) as to be readily available in case of emergency;
  - (b) in such a manner as to permit them to float free from their stowage, inflate and break free from the vessel in the event of its sinking;
  - (c) davit-launched liferafts need not float free;
  - (d) lashings, if used, shall be fitted with an automatic (hydrostatic) release system of an approved type;
- (ix) MCA, if it is satisfied that the constructional features of the vessel and the method of fishing operation may render it unreasonable and impractical to apply particular provision of this section, may accept relaxations from such provisions, provided that the vessel is fitted with alternative launching and recovering arrangements adequate for the service for which it is intended. Alternative launching and recovery arrangements, which MCA has allowed under this subsection, shall be notified to the International Maritime Organization for circulation to other Parties.

### 7.2.3 **Embarkation into survival craft**

- 7.2.3.1 Suitable arrangements shall be made for embarkation into the survival craft which shall include:
- (i) 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 MCA is satisfied that the distance from the point of embarkation to the waterborne survival craft is such that a ladder is unnecessary. This ladder to have safe securing and access arrangement;
  - (ii) 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;
  - (iii) arrangements for warning all persons on board that the vessel is about to be abandoned; and

(iv) means for preventing any discharge of water into the survival craft.

#### 7.2.4 **Lifejackets**

7.2.4.1 For every person on board, a lifejacket of an approved type must be carried.

7.2.4.2 An additional 10% or 2 extra lifejackets, whichever is the greater, must be carried.

7.2.4.3 Lifejackets must be stowed either in a deckhouse or other dry and readily accessible position; and have stowage positions clearly and permanently marked. It is strongly recommended that Personal Floatation Devices should be worn when working on deck.

#### 7.2.5 **Immersion suits and thermal protective aids**

7.2.5.1 An approved immersion suit, of an appropriate size, must be provided for every person assigned to crew the rescue boat. For vessels of less than 45 metres in length (L) operating in the Southern Region the number of immersion suits need not be greater than three.

“Southern Region” means the Mediterranean Sea and the coastal areas, within 20 miles from the coast of Spain and Portugal, of the summer zone of the Atlantic Ocean, as defined on the “Chart of zones and seasonal areas” in Annex II to the 1966 International Convention on Load Lines, as amended.

7.2.5.2 Vessels complying with the requirements of sections 7.2.1.2, 7.2.1.3 and 7.2.1.4 must carry immersion suits for every person on board not accommodated in:

(i) lifeboats; or

(ii) davit-launched liferafts; or

(iii) liferafts served by equivalent approved appliances which do not require entry into the water to board the liferaft.

7.2.5.3 In addition to section 7.2.5.2(i), vessels shall carry for each lifeboat at least three immersion suits. In addition to the thermal protective aids required by IMO International Life-Saving Appliance Code, vessels shall carry thermal protective aids for persons to be accommodated in the lifeboats and not provided with immersion suits. These immersion suits and thermal protective aids need not be required if the vessel is equipped with either totally enclosed lifeboats of such aggregate capacity as to accommodate on each side of the vessel at least the total number of persons on board or a free-fall lifeboat of sufficient capacity to accommodate the total number of persons on board.

7.2.5.4 The requirements of sections 7.2.5.2 and 7.2.5.3 do not apply to vessels constantly engaged in warm climates, where, in the opinion of MCA, immersion suits and thermal protective aids are unnecessary.

7.2.5.5 The immersion suits required by sections 7.2.5.2 and 7.2.5.3 may be used to comply with the requirements of section 7.2.5.1.

7.2.5.6 For vessels operating in the Northern Region as defined in section 3.16.3 and including the Southern Ocean South of 60°S, notwithstanding the provisions of sections 7.2.5.1 to 7.2.5.5 and 7.2.5.7 an approved immersion suit, of an appropriate size, must be provided for every person on board.

7.2.5.7 Notwithstanding section 7.1.6 above, all immersion suits as a single unit shall be made of a material with inherent insulation and shall also have sufficient buoyancy and stability in calm fresh water to:

- (i) lift the mouth of an exhausted person or unconscious person not less than 120 millimetres clear of the water with the body inclined backwards at an angle of not less than 20° and not more than 50° from the vertical position; and
- (ii) turn the body of an unconscious person in the water from any position to one where the mouth is clear of the water in not more than 5 seconds.

## 7.2.6 Lifebuoys

7.2.6.1 At least the following number of lifebuoys must be provided:

- (i) eight lifebuoys in vessels of 75 metres in length (L) and over;
- (ii) six lifebuoys in vessels of less than 75 metres in length (L) but 45 metres in length (L) and over;
- (iii) four lifebuoys in vessels less than 45 metres in length (L).

7.2.6.2 At least half of the number of lifebuoys referred to in section 7.2.6.1 must be provided with self-igniting lights.

7.2.6.3 At least two of the lifebuoys provided with self-igniting lights in accordance with section 7.2.6.2 must be provided with self-activating smoke signals and shall, where practicable, be capable of quick release from the navigating bridge.

7.2.6.4 At least one lifebuoy on each side of the vessel shall be fitted with a buoyant lifeline equal in length to not less than twice the height at which it is stowed above the waterline in the lightest seagoing condition, or 30 metres, whichever is greater. Such lifebuoys shall not have self-igniting lights.

7.2.6.5 All lifebuoys shall be so placed as to be readily accessible to the persons on board and shall always be capable of being rapidly cast loose and shall not be permanently secured in any way.

7.2.6.6 All lifebuoys to be marked with name of vessel and port of registry.

## 7.2.7 Line-throwing appliances

7.2.7.1 Every vessel shall carry line-throwing appliances in accordance with the LSA Code.

## 7.2.8 Pyrotechnics

7.2.8.1 Every vessel must be provided, to the satisfaction of MCA, with means of making effective distress signals by day and by night, including at least twelve rocket parachute flares complying with the requirements of the LSA Code. All pyrotechnic distress signals shall be packed in a watertight container and shall be clearly and indelibly labelled to indicate their purpose.

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

## 7.2.9 Radio life-saving appliances

7.2.9.1 At least three two-way VHF radiotelephone apparatus shall be provided on every vessel. Such apparatus shall conform to performance standards not inferior to those

adopted by MCA. If a fixed two-way VHF radiotelephone apparatus is fitted in a survival craft it shall conform to performance standards not inferior to those adopted by MCA.

7.2.9.2 However, for vessels of less than 45 metres in length (L) the number of such apparatus may be reduced to two, if MCA considers the requirement to carry three such apparatus unnecessary taking into account the operation area of the vessel and the number of persons employed on board.

#### 7.2.10 **Radar transponders**

7.2.10.1 At least one radar transponder shall be carried on each side of every fishing vessel. Such radar transponders shall conform to performance standards not inferior to those adopted by MCA. The radar transponders \*\* shall be stowed in such locations that they can be rapidly placed in any survival craft. Alternatively one radar transponder shall be stowed in each survival craft. On every vessel less than 45 metres in length (L) at least one radar transponder shall be carried.

7.2.10.2 *For vessels operating in the Northern Region or Southern Oceans, every lifeboat, rescue boat and liferaft shall permanently be equipped with an approved radar transponder (SART) capable of operating in the 9 GHz band. N*

\*\* One of these may be the radar transponder required by the Merchant Shipping (Radio) (Fishing Vessels) Regulations 1999

#### 7.2.11 **EPIRBs**

7.2.11.1 Every EPIRB shall:

- (i) be fitted with a float free arrangement, whose operation will cause it to activate;
- (ii) be stowed in such a position that it is protected from possible damage and is easily removable from its mounting for placing in any survival craft;
- (iii) have the float-free arrangement routinely replaced or serviced in accordance with the manufacturers instructions;
- (iv) have the power source replaced whenever necessary and at least before its expiry date;
- (v) be registered, reference shall be made to The Merchant Shipping (EPIRB Registration) Regulations 2000, No. 1850 as amended and MSN 1816 (M&F) – Mandatory Registration of Emergency Position Indicating Radio Beacons (EPIRBs);
- (vi) on renewal, conform to IMO Resolution A810 (19)/ETS 300 062 (second edition) and transmit the position obtained from a built-in GPS receiver to satellite.

#### 7.2.12 **Retro-reflective materials on life-saving appliances**

7.2.12.1 All survival craft, rescue boats, lifejackets and lifebuoys shall be fitted with retro-reflective material in accordance with the recommendations on Maritime Guidance Note 105 (M+F). Use and Fitting of Retro-Reflective Material on Life-Saving Appliances.

### 7.2.13 **Rescue Ladders**

7.2.13.1 All boats shall have a permanently mounted rescue ladder or equivalent suitable arrangements which will enable a person who has fallen overboard to get on board again. Convertible rope ladders are not regarded as permanently mounted. The lowest step shall be arranged at least 300 mm below the waterline.

### 7.2.14. **Operational readiness, maintenance and inspections**

#### 7.2.14.1 **Operational readiness**

Before the vessel leaves port and at all times during the voyage, all life-saving appliances, including the spare ones, must be checked to ensure that they are in working order and ready for immediate use.

#### 7.2.14.2 **Maintenance**

- (i) Instructions for on-board maintenance of life-saving appliances shall be provided and maintenance shall be carried out accordingly;
- (ii) MCA may accept, in lieu of the instructions required by subsection (i), a shipboard planned maintenance programme.

#### 7.2.14.3 **Maintenance of falls**

Falls used in launching must be turned end for end at intervals of not more than 30 months and be renewed when necessary due to deterioration of the falls or at intervals of not more than 5 years, whichever is the earlier.

#### 7.2.14.4 **Spares and repair equipment**

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

#### 7.2.14.5 **Weekly inspection**

The following tests and inspections must be carried out weekly:

- (i) all survival craft, rescue boats and launching appliances must be visually inspected to ensure that they are ready for use;
- (ii) all engines in lifeboats and rescue boats shall be run ahead and astern for a total period of not less than 3 minutes provided the ambient temperature is above the minimum temperature required for starting the engine;
- (iii) the general emergency alarm system must be tested.

#### 7.2.14.6 **Monthly inspections**

Inspection of the life-saving appliances, including lifeboat equipment, must 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 logbook.

#### 7.2.14.7 **Servicing of inflatable liferafts, inflatable lifejackets and inflated rescue boats**

- (i) Every inflatable liferaft and inflatable lifejacket must be serviced:
  - (a) at intervals not exceeding 12 months;

- (b) at an approved servicing station which is competent to service them, maintains proper servicing facilities and uses only properly trained personnel.
- (ii) All repairs and maintenance of inflated rescue boats shall be carried out in accordance with the manufacturer's instructions. Emergency repairs may be carried out on board the vessel; however, permanent repairs shall be effected at an approved servicing station.

**7.2.14.8 Periodic servicing of hydrostatic release units**

Disposable hydrostatic release units must be replaced before their date of expiry has passed.

7.2.14.9 If not disposable, hydrostatic release units must be serviced:

- (i) at intervals not exceeding 12 months;
- (ii) at a servicing station which is competent to service them, maintains proper servicing facilities and uses only properly trained personnel.

7.2.14.10 In cases of vessels where the nature of fishing operations may cause difficulty for compliance with the requirements of sections 7.2.12.7 and 7.2.12.9, MCA shall be contacted for guidance.

## **CHAPTER 8 (SHIPBOARD AND FISHING OPERATIONS)**

### **8.1 DEVELOPMENT OF PLANS FOR SHIPBOARD AND FISHING OPERATIONS**

#### **8.1.1. Procedures**

8.1.1.1 The Owner must establish plans and instructions, including checklists as appropriate, for key shipboard and fishing operations concerning the safety of the ship and crew and the prevention of pollution. The various tasks involved shall be defined and assigned to qualified personnel.

#### **8.1.2. Maintenance of the Ship and Equipment**

8.1.2.1 The Owner must establish procedures to ensure that the ship is maintained in conformity with the provisions of the relevant rules and regulations.

8.1.2.2 In meeting these requirements the Owner must ensure that:

- (i) appropriate corrective action is taken; and
- (ii) records of these activities are maintained.

### **8.2. GENERAL EMERGENCY ALARM SYSTEM, MUSTER LIST AND EMERGENCY INSTRUCTIONS**

#### **8.2.1 General**

8.2.1.1 The general emergency alarm system must 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 section 4.2.10.2.

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

8.2.1.3 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 contained in sections 8.2.1.4 and 8.2.1.5.

8.2.1.4 The muster list shall specify details of the general alarm signal prescribed by section 8.2.1.1 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.

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

- (i) closing of watertight doors, fire doors, valves, scuppers, overboard chutes, sidescuttles, skylights, portholes and other similar openings in the vessel;
- (ii) equipping the survival craft and other life-saving appliances;
- (iii) preparation and launching of survival craft;
- (iv) general preparation of other life-saving appliances;
- (v) use of communication equipment; and
- (vi) manning of fire parties assigned to deal with fires.

- 8.2.1.6 The muster list shall specify which officers are assigned to ensure that the life-saving and fire appliances are maintained in good condition and are ready for immediate use.
- 8.2.1.7 The muster list shall specify substitutes for key persons who may become disabled, taking into account that different emergencies may call for different actions.
- 8.2.1.8 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.

## 8.2.2 **Abandon ship training and drills**

### 8.2.2.1 Practice musters and drills:

- (i) Each member of the crew must participate in at least one abandon ship drill and one fire drill every month. The drills of the crew shall take place within 24 hours of the vessel leaving a port if more than 25% of the crew have not participated in abandon ship and fire drills on board that particular vessel in the previous muster. MCA may accept other arrangements that are at least equivalent for those classes of vessel for which this is impracticable;
- (ii) Each abandon ship drill must include:
  - (a) 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;
  - (b) Reporting to stations and preparing for the duties described in the muster list;
  - (c) Checking that crew are suitably dressed;
  - (d) Checking that lifejackets are correctly donned;
  - (e) Lowering of at least one lifeboat after any necessary preparation for launching;
  - (f) Starting and operating the boat engine;
  - (g) Operation of davits used for launching; and
  - (h) Instructions on how to use the Life Saving Appliances Radio Equipment.
- (iii) Each fire drill shall include:
  - (a) Reporting to stations and preparing for the duties described in the fire muster list;
  - (b) Starting of a fire pump, using at least the two required jets of water to show that the system is in proper working order;
  - (c) Checking of firefighter's outfit and other personal rescue equipment;
  - (d) Checking of relevant communication equipment;

- (e) Checking the operation of watertight doors, fire doors, fire dampers and means of escape; and
  - (f) Checking the necessary arrangements for subsequent abandoning of the vessel.
- (iv) Different lifeboats shall, as far as practicable, be lowered in compliance with the requirements of subsection (ii)(e) at successive drills;
  - (v) Drills shall, as far as practicable, be conducted as if there were an actual emergency;
  - (vi) Each lifeboat must be launched with its assigned operating crew aboard and manoeuvred in the water at least once every three months during an abandon ship drill;
  - (vii) As far as is reasonable and practicable, rescue boats other than lifeboats which are also rescue boats, shall be launched each month with their assigned crew aboard and manoeuvred in the water. In all cases this requirement must be complied with at least once every three months;
  - (viii) If lifeboat and rescue boat launching drills are carried out with the vessel making headway, such drills shall, because of the dangers involved, be practised in sheltered waters only and under the supervision of an officer experienced in such drills;
  - (ix) Emergency lighting for mustering and abandonment shall be tested at each abandon ship drill;
  - (x) The drills may be adjusted according to the relevant equipment required by those regulations. However, if equipment is carried on a voluntary basis, it shall be used in the drills and the drills shall be adjusted accordingly;
  - (xi) The training and drills schedule shall include anchoring, person overboard recovery equipment and pollution prevention drills, each to be completed at least every month.
  - (xii) Each anchoring drill shall include:
    - (a) Crew dressed in Personal Protective Equipment (PPE);
    - (b) Anchor handling and methodology safe;
    - (c) Anchor cable marked to show length of cable deployed;
    - (d) Crew aware of length of cable remaining onboard;
    - (e) Communication between wheelhouse and anchor party acceptable; and
    - (f) Anchor deployed safely and operation acceptable;
    - (g) Anchor recovered safely.
  - (xiii) Each Person Overboard drill shall include:
    - (b) The crew are able to quickly launch the rescue boat to recover a person from the water;

- (c) The rescue boat crew are aware of the effects of the hydrostatic squeeze and how it will affect a casualty suffering from hypothermia;
  - (d) Rescue boat stores to scale and serviceable;
  - (e) Rescue boat launched in safe manner, crew suitably dressed;
  - (f) Rescue boat in serviceable condition;
- (xiv) Further Guidance is contained in MGN 430 Fishing Vessels: Checks on Crew Certification and Drills, and any superseding documents.

#### 8.2.2.2 On-board training and instructions

- (i) On-board training in the use of the vessel's life-saving appliances, including survival craft equipment, must be given as soon as possible but not later than two weeks after a crew member joins the vessel. However, if the crew member is on a regularly scheduled rotating assignment to the vessel, such training must be given not later than two weeks after the time of first joining the vessel;
- (ii) 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 two months. Each member of the crew shall be given instructions which shall include but not necessarily be limited to:
  - (a) Operation and use of the vessel's inflatable liferafts, including precautions concerning sharp objects;
  - (b) Problems of hypothermia, cold water shock, first-aid treatment for hypothermia and other appropriate first-aid procedures;
  - (c) Special instructions necessary for use of the vessel's life-saving appliances in severe weather and severe sea conditions.
- (iii) On-board training in the use of davit-launched liferafts must take place at intervals of not more than four months on every vessel fitted with such appliances. Whenever practicable this shall include the inflation and lowering of a liferaft. This liferaft may be a special liferaft intended for training purposes only, which is not part of the vessel's life-saving equipment; such a special liferaft shall be conspicuously marked.

#### 8.2.2.3 Records

The date when musters are held, details of abandon ship drills and fire drills, drills of other life-saving appliances and on-board training shall be recorded in such log-book as may be prescribed by MCA. If a full muster, drill or training session is not held at the appointed time, an entry shall be made in the log-book stating the circumstances and the extent of the muster, drill or training session held.

#### 8.2.2.4 Training manual

- (i) A training manual shall be provided in each crew messroom and recreation room or in each crew cabin. The training manual, which may comprise several volumes, shall contain instructions and information, in easily understood terms illustrated wherever possible, on the life-saving appliances provided in the vessel and on the best methods of survival. Any

part of such information may be provided in the form of audio-visual aids in lieu of the manual. The following shall be explained in detail:

- (a) Donning of lifejackets and immersion suits, as appropriate;
- (b) Muster at the assigned stations;
- (c) Boarding, launching, and clearing the survival craft and rescue boats;
- (d) Method of launching from within the survival craft;
- (e) Release from launching appliances;
- (f) Methods and use of devices for protection in launching areas, where appropriate;
- (g) Illumination in launching areas;
- (h) Use of all survival equipment;
- (i) Use of all detection equipment;
- (j) With the assistance of illustrations, the use of radio life-saving appliances;
- (k) Use of drogues;
- (l) Use of engine and accessories;
- (m) Recovery of survival craft and rescue boats including stowage and securing;
- (n) Hazards of exposure and the need for warm clothing;
- (o) Best use of the survival craft facilities in order to survive;
- (p) Methods of retrieval, including the use of helicopter rescue gear (slings, baskets, stretchers), breeches buoy and shore life-saving apparatus and vessel's line-throwing apparatus;
- (q) All other functions contained in the muster list and emergency instructions;
- (r) Instructions for emergency repair of the life-saving appliances;
- (s) On vessels of less than 45 metres in length (L) MCA may permit relaxation of the requirements of section 8.2.2.4(i). However, appropriate safety information shall be carried on board; and
- (t) Instruction on use and operation of fire appliances.

#### **8.2.2.5 Training in emergency procedures**

MCA shall take such measures as it may deem necessary to ensure that crews are adequately trained in their duties in the event of emergencies. Such training shall include, as appropriate:

- (i) Types of emergencies which may occur, such as collisions, fire and foundering;
- (ii) Types of life-saving appliances normally carried on vessels;

- (iii) Need to adhere to the principles of survival;
- (iv) Value of training and drills;
- (v) Need to be ready for any emergency and to be constantly aware of:
  - (a) the information in the muster list, in particular:
    - each crew member's specific duties in any emergency;
    - each crew member's own survival station; and
    - the signals calling the crew to their survival craft or fire stations.
  - (b) Location of each crewmember's own lifejacket and spare lifejackets;
  - (c) Location of fire alarm controls;
  - (d) Means of escape; and
  - (e) Consequences of panic.
- (vi) Actions to be taken in respect to lifting persons from vessels and survival craft by helicopter;
- (vii) Actions to be taken when called to survival craft stations, including:
  - (a) Putting on suitable clothing;
  - (b) Donning of life jacket; and
  - (c) Collecting additional protection such as blankets, time permitting.
- (viii) Actions to be taken when required to abandon vessel, such as:
  - (a) How to board survival craft from ship and water; and
  - (b) How to jump into the sea from a height and reduce the risk of injury when entering the water.
- (ix) Actions to be taken when in the water, such as:
  - (a) How to survive in circumstances of:
    - fire or oil on the water;
    - cold conditions; and
    - shark-infested waters.
  - (b) How to right a capsized survival craft.
- (x) Actions to be taken when aboard a survival craft, such as:
  - (a) Getting the survival craft quickly clear of the vessel;
  - (b) Protection against cold or extreme heat;

- (c) Using a drogue or sea anchor;
  - (d) Keeping a lookout;
  - (e) Recovering and caring for survivors;
  - (f) Facilitating detection by others;
  - (g) Checking equipment available for use in the survival craft and using it correctly; and
  - (h) Remaining, so far as possible, in the vicinity.
- (xi) Main dangers to survivors and the general principles of survival, including:
- (a) Precautions to be taken in cold climates;
  - (b) Precautions to be taken in tropical climates;
  - (c) Exposure to sun, wind, rain and sea;
  - (d) Importance of wearing suitable clothing;
  - (e) Protective measures in survival craft;
  - (f) Effects of immersion in the water and of hypothermia;
  - (g) Importance of preserving body fluids;
  - (h) Protection against seasickness;
  - (i) Proper use of fresh water and food;
  - (j) Effects of drinking seawater;
  - (k) Means available for facilitating detection by others; and
  - (l) Importance of maintaining morale.
- (xii) Actions to be taken in respect to fire fighting;
- (a) The use of fire hoses with different nozzles;
  - (b) The use of fire extinguishers;
  - (c) Knowledge of the location of fire doors and fire appliances;
  - (d) The use of breathing apparatus; and
  - (e) Location of the isolation valves.

## CHAPTER 9 (COMMUNICATIONS & NAVIGATION)

### 9.1 GENERAL

- 9.1.1 Unless expressly provided otherwise, this chapter shall apply to new and existing vessels.
- 9.1.2 The owner, the charterer, or the company, operating the ship or any other person must not prevent or restrict the skipper of the ship from taking or executing any decision which, in the skipper's professional judgement, is necessary for safe navigation and protection of the marine environment.
- 9.1.3 Ships transiting the region of icebergs guarded by the Ice Patrol during the ice season are required to make use of the services provided by the Ice Patrol.

### 9.2 RADIO EQUIPMENT

- 9.2.1 Every vessel must be capable of maintaining an effective radio watch, including communication, transmission and reception of distress signals in the Global Maritime Distress Safety System (GMDSS) appropriate to the area in which it operates.
- 9.2.2 The vessel's crew must be familiar in the operation of the hand held VHF and the Emergency Position-Indicating Radio Beacon (EPIRB) and SARTs and be trained in the setting up and operation of the portable radio equipment appropriate for their vessel.
- 9.2.3 **Reference shall be made to:**

The Merchant Shipping (Radio)(Fishing Vessels) Regulations 1999, Statutory Instrument 1999 No. 3210.

### 9.3 NAVIGATION LIGHTS, SHAPES AND SOUND SIGNALS

- 9.3.1 Vessels must be equipped to enable display of the navigation lights, shapes and sound signals that are appropriate to all foreseeable modes of operation, in daylight, darkness and in restricted visibility, in accordance with international requirements.
- 9.3.2 A daylight signalling lamp shall be provided, the operation of which is not solely dependent upon the main source of electrical power. The power supply shall in any case include a portable battery.
- 9.3.3 Vessels of 45 metres in length and over shall be provided with a full complement of flags and pennants to enable communications to be sent using the International Code of Signals.
- 9.3.4 Every vessel must, when operating in waters where drift ice may occur, be fitted with at least one search light with a lighting capacity of at least 1 lux, measured at a distance of 750 metres.
- (i) *the search light must have the ability to move, so it can illuminate the area described in section 9.4;* N
- (ii) *In vessels of 45 metres and above these search light must capable of being operated from inside the wheel house* N.

9.3.5 **Reference shall be made to:**

The Merchant Shipping (Distress Signals and Prevention of Collisions) Regulations 1996, Statutory Instrument 1996 No. 75 and MSN 1781.

9.4 **VISIBILITY FROM THE WHEELHOUSE**

9.4.1 *New vessels shall meet the following requirements:* N

- (i) No blind sector caused by fishing gear or other obstructions outside of the wheelhouse forward of the beam which obstructs the view of the sea surface as seen from the conning position, must exceed 10°. The total arc of blind sectors must not exceed 20°. The clear sectors between blind sectors must be at least 5°. However, in the view described in section 9.4.1(i), each individual blind sector must not exceed 5°;
- (ii) The height of the lower edge of the navigating bridge front windows above the bridge deck shall be kept as low as possible. In no case shall the lower edge present an obstruction to the forward view as described in this section;
- (iii) The upper edge of the navigating bridge front windows shall allow a forward view of the horizon for a person with a height of eye of 1.8 metres above the bridge deck at the conning position when the vessel is pitching in heavy seas. However, MCA, being satisfied that a 1.8 metres height of eye is unreasonable and impractical, may reduce the height of eye but not to less than 1.6 metres;
- (iv) The horizontal field of vision from the conning position shall extend over an arc of not less than 225°, that is from right ahead to not less than 22.5° abaft the beam on either side of the vessel;
- (v) From each bridge wing the horizontal field of vision shall extend over an arc of at least 225°, that is from at least 45° on the opposite bow through right ahead and then from right ahead to right astern through 180° on the same side of the vessel;
- (vi) From the main steering position the horizontal field of vision shall extend over an arc from right ahead to at least 60° on each side of the vessel;
- (vii) The vessel's side shall be visible from the bridge wing;
- (viii) Windows must meet the following requirements:
  - (a) Framing between navigating bridge windows shall be kept to a minimum and not be installed immediately forward of any workstation;
  - (b) To help avoid reflections, the bridge front windows shall be inclined from the vertical plane top out, at an angle of not less than 10° and not more than 25°;
  - (c) Polarised glass and tinted windows must not be fitted; and
  - (d) A clear view through at least two of the navigating bridge front windows and depending on the bridge configuration, an additional number of clear view windows must be provided at all times regardless of weather conditions.

- (ix) **Existing vessels shall, where practicable, meet the requirements of section 9.4. However, structural alterations or additional equipment need not be required;** **E**
- (x) On vessels of unconventional design which, in the opinion of MCA cannot comply with this section, arrangements shall be provided to achieve a level of visibility that is as near as practicable to that prescribed in this section;
- (xi) *The view of the sea surface from the conning position shall not be obscured by more than two vessel lengths, or 500 metres, whichever is less, forward of the bow to 10° on either side irrespective of the vessel's draught and trim;*
- (xii) Further guidance is contained in MGN 314 – Wheelhouse Visibility onboard Fishing Vessels and any superseding documents.

## 9.5 NAVIGATIONAL EQUIPMENT

9.5.1 See Table 6 below for vessel navigational equipment requirements.

<b>Table 6 - Requirements for Navigational Equipment<sup>1</sup></b>			
	<b>24m to less than 45m</b>	<b>Less than 75m, but not less than 45m</b>	<b>75m and over</b>
<b>Standard Magnetic Compass<sup>2</sup>,</b>	YES  MCA may exempt vessels and classes of vessels 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.		
<b>Spare Magnetic Compass<sup>2</sup>,</b>	YES  Must be interchangeable with standard compass, unless steering or gyro compass is fitted		
<b>Steering Magnetic Compass<sup>2</sup>,</b>	YES  Unless heading information provided by the standard compass is made available and is clearly readable by the person at the main steering position.		

<sup>1</sup> Except as provided in Section 1.3 of this Code, while all reasonable steps shall be taken to maintain the apparatus referred to in section 9.5.1 in efficient working order, malfunctions of the equipment shall not be considered as making a vessel unseaworthy or as a reason for delaying the vessel in ports where repair facilities are not readily available. All equipment fitted in compliance with this regulation shall be of a type approved by the Certifying Authority. Equipment installed on board vessels on or after 1 September 1984 shall conform to appropriate performance standards not inferior to those adopted by the IMO. Equipment fitted prior to the adoption of related performance standards may be exempted from full compliance with those standards at the discretion of the Certifying Authority, having due regard to the recommended criteria which the IMO might adopt in connection with the standards concerned. Electronic Aids to navigation shall be tested frequently and be well maintained.

<sup>2</sup> Each magnetic compass shall be properly adjusted and its table or curve of residual deviations shall be available at all times

<sup>3</sup>For vessels of 45m and over built on or after 1 September 1984. Vessels of 75m in length and over built before 1 September 1984 shall also comply with the requirements for gyro-compasses.

<sup>4</sup> For vessels of 75m and over built on or after 1 September 1984 the plotting facilities shall be at least as effective as a reflection pointer

<b>Adequate means of communication between Standard Compass position and navigation control position -</b>	YES to the satisfaction of MCA		
<b>Means of taking bearings over an arc of the horizon of 360 degrees</b>	YES As far as practicable		
<b>Radar Installation capable of operating in the 9GHz band, to the satisfaction of MCA</b>	YES		
<b>Facilities for plotting radar readings on the navigating bridge</b>	YES		YES <sup>4</sup>
<b>Gyro Compass<sup>3</sup>, of which the master or a gyro-repeater shall be clearly readable by the person at the main steering position</b>	N/A	YES	YES A Gyro-repeater or Gyro-repeaters shall be provided and placed for taking bearings as nearly as practicable over an arc of 360°
<b>Vessels with emergency steering positions to be provided with telephones or other means of communication for relaying heading information to such positions.</b>	YES	YES Vessels built after 1 February 1992 to be provided with arrangements for supplying visual compass readings to the emergency steering position	
<b>Echo Sounding Device,</b>	Suitable means to determine depth of water	YES, for vessels constructed on or after 25 May 1990	YES, for vessels constructed on or after 25 May 1980

<b>Device to indicate Speed and Distance,</b>	N/A	YES, for vessels constructed on or after 1 September 1984	
<b>Indicators showing Rudder angle, rate of revolution of each propeller and if fitted with variable pitch propellers or lateral thrust propellers, the pitch and operational mode of such propellers.</b>	N/A	YES, for vessels constructed on or after 1 September 1984  All indicators to be readable from the conning position	YES, for all vessels  All indicators to be readable from the conning position
<b>Nautical Publications,</b>	YES	YES	YES

9.5.1.2 Electronic aids to navigation shall be tested frequently and well maintained.

#### 9.5.2 **Nautical Publications**

9.5.2.1 The following must be carried suitable for the intended voyage:

- (i) Set of Admiralty charts to cover all areas of operation, with corrections;
- (ii) International Code of Signals;
- (iii) Merchant Shipping Notices;
- (iv) Mariners Handbook;
- (v) Notices to Mariners;
- (vi) Up to date Nautical Almanac;
- (vii) Navigational tables;
- (viii) Lists of Radio signals;
- (ix) Lists of Land and Earth Stations;
- (x) Lists of Lights;
- (xi) Sailing directions;
- (xii) Tide tables;
- (xiii) Tidal Stream Atlases;
- (xiv) Operating/maintenance instructions for navigational aids carried;
- (xv) Official Log book;
- (xvi) GMDSS radio log; and
- (xvii) This Code of Practice.

- (xviii) Any of the above items can be accepted if they are contained in a Nautical Almanac carried onboard.

### 9.5.3 **The charts to be carried must be those-**

- (i) That are of such a scale and which contain sufficient detail as clearly to show:
  - (a) all navigation marks that may be used by a vessel when navigating the waters that are comprised in the chart;
  - (b) all known hazards affecting those waters; and
  - (c) any information concerning traffic separation schemes, two-way routes, recommended tracks, inshore traffic zones and deep water routes applicable to those waters, as well as areas that are to be avoided.
- (ii) That are either published by the Hydrographer of the Navy or any authority in any country other than the United Kingdom duly exercising functions similar to those of the Hydrographer, and are of a similar scale and contain equivalent detail; and
- (iii) Which, in all cases, are of the latest available edition and have been adequately corrected.

9.5.4 An equivalent electronic chart display and information system (ECDIS) may be accepted as meeting the chart obligations of section 9.5.3.

### 9.5.5 **Reference shall be made to:**

The Merchant Shipping (Safety of Navigation) Regulations 2002 Statutory Instrument 2002 No. 1473.

### 9.5.6 **Records of navigational activities.**

All ships engaged on voyages must keep on board a record of navigational activities and incidents which are of importance to safety of navigation and which must contain sufficient detail to restore a complete record of the voyage, taking into account the recommendations adopted by the IMO.

### 9.5.7 **Distress signals**

9.5.7.1 The skipper of a ship at sea which is in a position to be able to provide assistance, in receiving a signal from any source that persons are in distress at sea, is bound to proceed with all speed to their assistance, if possible informing them or the search and rescue service that the ship is doing so. If the ship receiving the distress alert is unable or, in the special circumstances of the case, considers it unreasonable or unnecessary to proceed to their assistance, the skipper must enter in the log-book the reason for failing to proceed to the assistance of the persons in distress.

9.5.7.2 The skipper of a ship in distress or the search and rescue service concerned, after consultation, so far as may be possible, with the skipper of ships which answer the distress alert, has the right to requisition one or more of those ships as the skipper of the ship in distress or the search and rescue service considers best able to render assistance, and it shall be the duty of the skipper or skippers of the ship or ships requisitioned to comply with the requisition by continuing to proceed with all speed to the assistance of persons in distress.

- 9.5.7.3 Skippers of ships shall be released from the obligation imposed by section 9.5.7.2 on learning that their ships have not been requisitioned and that one or more other ships have been requisitioned and are complying with the requisition. This decision shall, if possible, be communicated to the other requisitioned ships and to the search and rescue service.
- 9.5.7.4 The skipper of a ship shall be released from the obligation imposed by section 9.5.7.1 and, if the skipper's ship has been requisitioned, from the obligation imposed by section 9.5.7.2 on being informed by the persons in distress or by the search and rescue service or by the skipper or Master of another ship which has reached such persons that assistance is no longer necessary.
- 9.5.7.5 An illustrated table describing the distress signals must be readily available to the officer of the watch of every ship to which this chapter applies. The signals shall be used by ships or persons in distress when communicating with life-saving stations, maritime rescue units and aircraft engaged in search and rescue operations.
- 9.5.7.6 The use of an international distress signal, except for the purpose of indicating that a person or persons are in distress, and the use of any signal which may be confused with an international distress signal are prohibited.

## 9.6 **NAVIGATIONAL SAFETY**

### 9.6.1 **Ship's routing systems**

Ship's routing systems when provided are recommended for use by all fishing vessels.

### 9.6.2 **Ship's Reporting Systems**

9.6.2.1 Details of mandatory ship reporting schemes are promulgated through relevant parts of the Admiralty List of Radio Signals, including any amendments, corrections or replacements.

9.6.2.2 The skipper of a ship must comply with the requirements of adopted ship reporting systems and report to the appropriate authority all information required in accordance with the provisions of each such system.

### 9.6.3 **Vessel Traffic Services**

9.6.3.1 All fishing vessels shall participate in Vessel Traffic Services.

9.6.3.2 Information on available Vessel Traffic Services is given in the Admiralty List of Radio Signals (ALRS) Volume 6 parts 1, 2, 3 and 4.

9.6.4 Vessels of 45 metres in length (L) and over shall be provided with a full complement of flags and pennants to enable communications to be sent using the International Code of Signals.

### 9.6.5 **Voyage data recorders (VDR) and Automatic Identification Systems (AIS).**

9.6.5.1 The voyage data recorder (marine "black box") records key navigational information, which can then be used to build up an accurate picture of events preceding an accident and enable investigators to establish the causes.

9.6.5.2 Fishing vessels, of 3000 Gross Tonnes and over constructed on or after 31st July 2002 are required to carry a VDR.

- 9.6.5.3 The voyage data recorder and Navigational equipment fitted on new ships and replacement equipment on existing ships is required to be Type Approved and meet IMO performance standards.
- 9.6.5.4 Voyage data recorders shall be subjected to an annual performance test and a certificate issued.
- 9.6.5.5 AIS shall be fitted to all vessels.
- 9.6.5.6 AIS fitted shall meet IMO performance standards (Class A). AIS shall be maintained operational at all times. IMO Resolution A.917(22) "Guidelines for the onboard use of AIS" contains further information on the use of AIS.

## 9.7 **DANGER MESSAGES**

9.7.1 The skipper of every ship which meets with:

- (i) dangerous ice;
- (ii) a dangerous derelict or any other direct danger to navigation;
- (iii) a tropical storm;
- (iv) sub-freezing air temperatures associated with gale force winds causing severe ice accretion on superstructures; or
- (v) winds of force 10 or above on the Beaufort scale for which no storm warning has been received;

Is duty bound to communicate the information to other ships and competent authorities by any means at their disposal.

9.7.2 All such radio messages shall be preceded by the safety signal, using the procedure.

9.7.3 The transmission of messages respecting the dangers specified is free of cost to the ships concerned.

9.7.4 The skipper's report is to be sent to the appropriate National or NAVAREA Co-ordinator for navigational warnings via a coastal station. For NAVAREA 1 (which includes United Kingdom waters) the NAVAREA Co-ordinators are:

- (i) for dangers to navigation the National Hydrographer, UKHO, Taunton;
- (ii) for meteorological dangers the National Meteorological Centre (NMC) of the Met Office;
- (iii) for other areas and for details of national authorities refer to Volume 1 of the Admiralty List of Radio Signals (ALRS) obtainable from admiralty chart agents or the Hydrographic Office Publications, Hydrographic Office, Admiralty Way, Taunton. Somerset TA1 2DN.

### 9.7.5 **Information required in danger messages**

The following information is required in danger messages:

#### 9.7.5.1 **Ice, derelicts and other direct dangers to navigation:**

- (i) the kind of ice, derelict or danger observed;
- (ii) the position of the ice, derelict or danger when last observed;

- (iii) the time and date (Universal Co-ordinated Time) when the danger was last observed.

**9.7.5.2 Tropical cyclones (storms):**

- (i) a statement that a tropical cyclone has been encountered. This obligation shall be interpreted in a broad spirit, and information transmitted whenever the skipper has good reason to believe that a tropical cyclone is developing or exists in the neighbourhood;
- (ii) time, date (Universal Co-ordinated Time) and position of ship when the observation was taken;
- (iii) as much of the following information as is practicable shall be included in the message:
  - (a) barometric pressure, preferably corrected (stating millibars, millimetres, or inches, and whether corrected or uncorrected);
  - (b) barometric tendency (the change in barometric pressure during the past three hours);
  - (c) true wind direction;
  - (d) wind force (Beaufort scale);
  - (e) state of the sea (smooth, moderate, rough, high);
  - (f) swell (slight, moderate, heavy) and the true direction from which it comes. Period or length of swell (short, average, long) would also be of value;
  - (g) true course and speed of ship.

**9.7.5.3 Winds of force 10 or above on the Beaufort scale for which no storm warning has been received:**

- (i) this is intended to deal with storms other than the tropical cyclones referred to in section 9.7.5.2; when such a storm is encountered, the message shall contain similar information to that listed under the section but excluding the details concerning sea and swell.

**9.7.5.4 Sub-freezing air temperatures associated with gale force winds causing severe ice accretion on superstructures:**

- (i) time and date (Universal Co-ordinated Time);
- (ii) air temperature;
- (iii) sea temperature (if practicable);
- (iv) wind force and direction.

**9.7.5.5 The Skipper is required to report the dangers to navigation specified and to report the information to ships in the vicinity and the competent authorities. The competent authorities are then required to promulgate the information.**

## 9.8 PILOT LADDERS

### 9.8.1 General

- 9.8.1.1 Fishing vessels engaged on voyages in the course of which pilots or fisheries officers are likely to be employed shall be provided with pilot transfer arrangements. All arrangements used for pilot transfer shall efficiently fulfil their purpose of enabling pilots to embark and disembark safely. The appliances shall be kept clean, properly maintained and stowed and shall be regularly inspected to ensure that they are safe to use. They shall be used solely for the embarkation and disembarkation of persons at sea.
- 9.8.1.2 The rigging of the pilot transfer arrangements and the embarkation of a pilot or fishery officer shall be supervised by a responsible officer having means of communication with the navigation bridge who shall also arrange for the escort of the pilot by a safe route to and from the navigation bridge.
- 9.8.1.3 Personnel engaged in rigging and operating any mechanical equipment shall be instructed in the safe procedures to be adopted and the equipment shall be tested prior to use.

### 9.8.2 Transfer arrangements

- 9.8.2.1 Arrangements shall be provided to enable the pilot or fishery officer to embark and disembark safely on either side of the vessel.
- 9.8.2.2 In all fishing vessels where the distance from sea level to the point of access to, or egress from, the vessel exceeds 9 metres, and when it is intended to embark and disembark pilots or fishery officers by means of the accommodation ladder, or other equally safe and convenient means in conjunction with a pilot ladder, the vessel shall carry such equipment on each side, unless the equipment is capable of being transferred for use on either side.
- 9.8.2.3 Safe and convenient access to, and egress from, the vessel shall be provided by either:
- (i) A pilot ladder requiring a climb of not less than 1.5 metres and not more than 9 metres above the surface of the water, so positioned and secured that:
    - (a) it is clear of any possible discharges from the vessel;
    - (b) it is within the parallel body length of the vessel and, as far as is practicable, within the mid-vessel half length of the vessel;
    - (c) each step rests firmly against the vessel's side; where constructional features, such as rubbing bands, would prevent the implementation of this provision, special arrangements shall be made to ensure that persons are able to embark and disembark safely;
    - (d) the single length of pilot ladder is capable of reaching the water from the point of access to, or egress from, the vessel and due allowance is made for all conditions of loading and trim of the vessel, and for an adverse list of 15°; the securing strong point, shackles and securing ropes shall be at least as strong as the side ropes.
  - (ii) An accommodation ladder in conjunction with the pilot ladder, or other equally safe and convenient means, whenever the distance from the surface of the water to the point of access to the vessel is more than 9 m. The accommodation ladder shall be sited leading aft. When in use, the

lower end of the accommodation ladder shall rest firmly against the vessel's side within the parallel body length of the vessel and, as far as is practicable, within the mid-vessel half length and clear of all discharges.

**9.8.3 Access to the vessel's deck**

9.8.3.1 Means shall be provided to ensure safe, convenient and unobstructed passage for any person embarking on, or disembarking from, the vessel between the head of the pilot ladder, or of any accommodation ladder or other appliance, and the vessel's deck. Where such passage is by means of:

9.8.3.1.1 A gateway in the rails or bulwark, adequate handholds shall be provided;

9.8.3.1.2 A bulwark ladder, two handhold stanchions rigidly secured to the vessel's structure at or near their bases and at higher points shall be fitted. The bulwark ladder shall be securely attached to the vessel to prevent overturning.

9.8.3.4 Shipside Doors: Those vessel side doors used for pilot transfer shall not open outwards.

**9.8.4 Associated equipment**

9.8.4.1 The following associated equipment shall be kept at hand ready for immediate use when persons are being transferred:

- (i) two ropes of not less than 28 millimetres in diameter, properly secured to the vessel, if required by the pilot;
- (ii) a lifebuoy equipped with a self-igniting light;
- (iii) a heaving line.

**9.8.5 Lighting**

Adequate lighting must be provided to illuminate the transfer arrangements over side, the position on deck where a person embarks or disembarks and the controls of the mechanical pilot hoist.

## **CHAPTER 10 (CREW ACCOMMODATION)**

### **10.1 GENERAL**

#### **10.1.1 Approval and survey**

10.1.1.1 For all new vessels, drawings together with information about the vessel's service area, expected gross tonnage, length, the number of crewmembers and their distribution by category shall be forwarded to MCA for approval, etc. The drawings shall show the location, size and arrangement of the accommodation, the utilization of the space, the placing of fittings and appurtenances together with the arrangement of heating, ventilation, exits, etc.

10.1.1.2 Equivalent drawings and information shall be submitted to MCA before the accommodation in an existing vessel undergoes alterations and modifications.

10.1.1.3 A complete survey of the accommodation, etc. shall be carried out before the vessel is put into service.

10.1.1.4 Dependent on the circumstances, either a complete or a partial survey shall be carried out following major repairs, alterations or modifications involving considerable changes to the accommodation.

#### **10.1.2 Safe access**

10.1.2.1 An accommodation ladder, gangway with a net underneath or other similar equipment providing an appropriate, safe means of boarding the vessel must be available.

#### **10.1.3. Storage of goods**

10.1.3.1 Toxic, flammable or foul-smelling substances may not be stored in accommodation spaces.

10.1.3.2 Goods or supplies that are not the personal property of the crew shall not be placed in cabins and alleyways.

#### **10.1.4 Reference shall be made to:**

The Merchant Shipping (Crew Accommodation) (Fishing Vessels) Regulations 1975. No. 2220, as amended. The requirements in this chapter are in addition to the requirements of those Regulations and also amend the Statutory Instrument.

### **10.2 LOCATION AND DESIGN, CORRIDORS AND EXITS**

#### **10.2.1 Location**

10.2.1.1 Direct access must not be provided from sleeping quarters, galleys and mess rooms to common toilets, bathrooms, laundry rooms, machinery spaces, fish holds, rooms for storing paint, storerooms, drying rooms or similar rooms.

#### **10.2.2 Corridors, staircases and doors**

10.2.2.1 In general, the width of corridors used for access to the accommodation must not be less than 900 millimetres measured between the restricting bulkheads.

10.2.2.2 In general, staircases shall have a width between the restricting bulkheads of 800 millimetres and at least 700 millimetres free width on staircases used for means/routes of escape. Stairs shall have a suitable rise and be provided with handrails on at least one side.

- 10.2.2 3. Permission shall be granted to place fire alarm boxes, ventilation ducts, cable tracks and the like on the restricting bulkheads when it is considered not to cause inconvenience during passage. However, the room for free passage may not be less than 600 millimetres at any point in a corridor.
- 10.2.2 4 Enclosed corridors that are normally used by only one or two persons, permission may be granted to reduce the width provided that the free passage area is not less than 600 millimetres.
- 10.2.2 5 In vessels of 60 metres in length (L) or more, dead-end corridors must not be longer than 7 metres and in vessels of less than 60 metres in length (L) , such corridors must not be longer than 2.5 metres and never more than 5 metres.
- 10.2.2 6 All corridors and staircases in and to accommodation spaces must be fitted with secure handrails or grips, insofar as possible on both sides.

### 10.2.3 Exits

10.2.3.1 At least two exits must be provided from each part of the accommodation to open deck located as far apart as possible.

10.2.3.2 One of these exits may be an emergency exit through a hatchway/door or porthole/window which must comply with the following requirements:

- (i) A hatchway/door to open deck must have an internal dimension of at least 600 millimetres x 600 millimetres;
- (ii) It must be possible to open the hatchway/door from the inside without using a key or tool. It must also be possible to open the hatchway or the door directly from the outside; however, the handle or another device may be removable and placed in a central place, e.g. in the wheelhouse. The hatchway/door may not be provided with permanent fittings for a padlock;
- (iii) A porthole/window that is used as an emergency exit must have a minimum internal diameter of 450 millimetres for portholes and an internal dimension measured across of 4.5 metres for windows and a grab rail;
- (iv) If the emergency exit is accessed from the accommodation through separate rooms (steering engine room, cabins or the like), it may not be possible to lock doors to such rooms unless they are fitted with a kick-hatch that may be removed in the direction of escape;
- (v) The necessary ladders, steps and handrails must be fitted to make access through the emergency exit easier;
- (vi) Appropriate points, e.g. doors, kick-hatches, windows/portholes, etc. must be labelled "Emergency Exit".

10.2.3.3 The location of the exits must also be such that a fire at one level cannot trap persons at another level.

10.2.3.4 Means must be provided so all exit doors can at all times be operated from within (e.g. thumb locks).

### 10.2.4 Structure

10.2.4.1 If steel decks or steel bulkheads in accommodation spaces form the top or side of an oil tank, they must be coated with a non-combustible material with a thickness of at least 40 millimetres.

10.2.4.2 If anchor cables are carried through an accommodation space, they must be enclosed in watertight steel piping or casings of adequate size which are suitably insulated.

10.2.4.3 All possible measures shall be taken to prevent insects from entering the crew's accommodation.

#### 10.2.5 **Insulation**

10.2.5.1 External bulkheads, the vessel's sides and decks, etc. delimiting accommodation spaces must be insulated with at least 100 millimetres of approved, non-combustible insulating material. In steel vessels, bulkheads between accommodation spaces and machinery or fish holds must be made of steel. In wooden vessels, they may be built of two layers of wood with two intermediate layers of felt or the like or of 60 millimetres of wood with a covering of insulating plates.

10.2.5.2 Care must be taken to provide protection against the effects of heat from steam and/or hot water pipes in accommodation spaces. Where accommodation spaces or corridors leading to accommodation spaces are adjacent to galleys, machinery spaces or casings where the temperature differential between the rooms is particularly large, insulating material of an approved, non-combustible type must be provided between the rooms.

10.2.5.3 The insulation used must not comprise materials containing asbestos.

#### 10.2.6 **Paint**

10.2.6.1 Accommodation spaces, corridors and galleys shall be in light colours. Surface treatment which comes off when touched must not be used.

#### 10.2.7 **Heating**

10.2.7.1 The use of liquid petroleum gas (LPG) as a direct means of heating crew accommodation is not permitted in fishing vessels of 24 metres registered length or over. The main heating system on such vessels must be supplied by steam, hot water, electricity or alternatively by a system supplying warm air (ie fans/ducting).

10.2.7.2 **When furnaces are used, they shall be of sufficient size and be correctly installed and secured, and combustible material must be protected against ignition. The uptake must not be fitted with a damper. Bonnets must, if installed, be of an appropriate design. Spaces where furnaces have been installed shall be sufficiently ventilated letting air both in and out. E**

10.2.7.3 Electrical radiators must be of an approved type, permanently fixed and of a design such that the risk of fire is limited to a minimum.

### 10.3 **VENTILATION AND AIR-CONDITIONING SYSTEMS**

#### 10.3.1 **General**

10.3.1.1 All accommodation spaces must be generally ventilated so that there is both a sufficient supply and discharge of air under all conditions when doors, portholes, skylights or the like are closed.

10.3.1.2 Vent holes for both the supply and discharge of air shall be located so that the space is well ventilated. The vent hole for the supply of air shall be located so that there is no risk of harmful waste gases being sucked in.

10.3.1.3 Vent holes must not exit above or immediately next to a berth.

10.3.1.4 Spaces designed for combustible, corrosive or smelly materials shall be separately ventilated.

#### 10.3.2. **Natural ventilation**

10.3.2.1 In vessels with natural ventilation, the outlet of air may take place via air gratings in the doors or bulkheads leading to corridors from which there is sufficient access to open deck installations.

10.3.2.2 In vessels with natural ventilation, the flow area in both the supply and discharge ducts of sleeping quarters must be at least 75 millimetres<sup>2</sup> for each person for which the space is designed, however not less than 300 millimetres<sup>2</sup>.

10.3.2.3 In the case of natural ventilation, the flow area in both the supply and discharge ducts of dining and mess rooms must be at least 75 millimetres<sup>2</sup> for each seat in the room.

10.3.2.4 In the case of natural ventilation, the ducts must be as short as possible with a minimum of bends.

#### 10.3.3 **Mechanical ventilation**

10.3.3.1 In vessels of a length (L) of or above 45 metres, the ventilation must be mechanical.

10.3.3.2 The mechanical ventilation must be dimensioned such that the air capacity is equivalent to six changes of air per hour in each individual room.

10.3.3.3 The ventilation system shall be adjustable.

10.3.3.4 Supply and discharge ducts must be large enough for the air speed in the ducts not to exceed 6 metres per second.

10.3.3.5 The discharge of air shall be to corridors or directly to the open air.

10.3.3.6 Recirculation of up to 50% of the air supply may be permitted on the condition that toilets and bathrooms are provided with separate mechanical extraction.

10.3.3.7 The ventilation system shall be constantly switched on during the operation of the vessel. Maintenance of the mechanical ventilation shall be ensured by means of the necessary spare-parts.

10.3.3.8 Vessels engaged in trade south of 36°N must be provided with both mechanical and natural ventilation.

#### 10.3.4 **Air conditioning system**

10.3.4.1 Vessels engaged in trade between 36°N and 36°S must be equipped with air conditioning in sleeping quarters, infirmaries, mess rooms, recreation rooms, offices, radio rooms and engine manoeuvring spaces. The same applies to navigation rooms, with the exception of the wheelhouse.

10.3.4.2 The air conditioning system may be a central system or consist of separate units and shall be designed so that, at 35°C and 70% relative humidity outside, it can maintain 29°C and about 50% relative humidity inside. No more than 50% return air must be used.

10.3.4.3 The cooling machinery and air coolers of the system must be designed so that, at 28°C and 80% relative humidity outside, they can maintain 24°C and about 50% relative humidity inside.

10.3.4.4 Ventilation and air-conditioning systems shall be provided with appropriate filters at air inlets, must be designed for the special conditions characteristic of operation at sea and may not cause noise nuisance or vibrations.

10.3.4.5 The following spare-parts shall be carried as a minimum for the air conditioning system:

- (i) 100% supplement of air filters;
- (ii) one set of V-belts of each type;
- (iii) one spares box containing special tools and small spare-parts and O-rings.

#### 10.3.5 **Ventilation in toilets and bathrooms**

10.3.5.1 Toilets and bathrooms must be provided with separate ventilation discharging to the open air.

10.3.5.2 In vessels of a length (L) of or above 45 metres, toilets and bathrooms must be ventilated by means of a special extraction system leading directly to the open air. The extraction system shall be designed for ten changes of air per hour. The intake of air to toilets and bathrooms may be provided via openings under the door from adjacent sleeping quarters or corridors.

#### 10.3.6 **Ventilation in hospitals/treatment rooms**

10.3.6.1 In hospitals, the ventilation must be so arranged that air from such rooms cannot penetrate into other accommodation spaces. Doors from infirmaries/treatment rooms to corridors providing access to other accommodation spaces must not be fitted with ventilation openings. Ventilation ducts serving both these and other accommodation spaces shall be provided with non-return flaps or another arrangement to ensure that the air from infirmaries/treatment rooms does not penetrate into other accommodation spaces.

### 10.4 **SLEEPING QUARTERS, FLOOR AREA, CLEAR HEADROOM, BUNKS, AND FURNITURE.**

#### 10.4.1 **General**

10.4.1.1 Sleeping quarters shall be arranged and fitted out such that it is easy to keep them tidy and that they afford the crew a reasonable level of comfort.

10.4.1.2 The location, structure, soundproofing, means of insulation and layout of the crews' living quarters and facilities, where these exist, and means of access thereto shall be such as to provide adequate protection against weather and sea, vibration, noise and unpleasant odours from other parts of the vessel likely to disturb the crew during their period of rest.

10.4.1.3 Where the design, dimensions and/or purpose of the vessel allow, the crews' living quarters must be located so as to minimize the effects of motion and acceleration.

10.4.1.4 Appropriate measures shall be taken as far as possible to protect non-smokers from discomfort caused by tobacco smoke.

10.4.1.5 The crews' living quarters must be properly ventilated to ensure a constant supply of fresh air and prevent condensation.

10.4.1.6 Appropriate lighting must be provided in the living quarters, with:

- (i) adequate normal general lighting;

- (ii) reduced general lighting to avoid disturbing crew who are resting; and
- (iii) *local lighting in each berth.* N

#### 10.4.2 **Floor area and clear headroom**

10.4.2.1 The floor area for each person in sleeping quarters must in addition to the area taken up by berths and lockers as well as by other fixed items of furniture be at least:

- (i) *In vessels 24 metres in length (L) and up to 45 metres in length (L): 0.9 metres<sup>2</sup>;* N
- (ii) *In vessels of 45 metres in length (L) and above: 1.0 metres<sup>2</sup>.* N

10.4.2.2 *The clear headroom in all accommodation spaces and corridors must be at least 2 metres.* N

#### 10.4.3 **Bunks**

10.4.3.1 Bunks shall not be arranged in tiers of more than two; in the case of bunks placed along the vessel's side, there shall be only a single tier where a sidelight is situated above a bunk.

10.4.3.2 The minimum inside dimensions of a bunk must be at least 2 metres x 0.8 metres;. Under special circumstances, a lower width may be permitted at one end of the bunks.

10.4.3.3 Bunk materials and equipment:

- (i) Each bunk with associated bunk equipment shall be made of suitable materials. The framework and the leeboard, if any, of a bunk shall be of approved material, hard, smooth and not likely to corrode or to harbour vermin;
- (ii) If tubular frames are used for the construction of bunks, they shall be completely sealed and without perforations which would give access to vermin;
- (iii) Each bunk shall be fitted with a spring mattress of approved material or with a spring bottom and a mattress of approved material. Stuffing of straw or other material likely to harbour vermin shall not be used. Flammable foam must not be used.

#### 10.4.4 **Furnishings**

10.4.4.1 Sleeping quarters shall be fitted with clothes lockers with a rod for holding clothes on hangers. There shall be a locker or the like with drawers with a capacity of at least 0.056 metres<sup>3</sup> for each person for which the room is intended. At least one locker or drawer for each person shall be lockable with a separate key.

## 10.5 MESS ROOMS, GALLEYS AND STOREROOMS

### 10.5.1 Mess rooms

10.5.1.1 In vessels carrying a crew of four persons or more, mess rooms shall be separate from sleeping quarters.

10.5.1.2 The dimensions and equipment of each mess room shall be sufficient for the number of persons likely to use it at any time and be equipped with a sufficient number of tables and seats, adequately lit and easy to clean.

10.5.1.3 For mess rooms not located directly next to the galley, there shall be a pantry or mess room with adequate lockers for mess utensils and facilities for washing them.

### 10.5.2 Galleys

10.5.2.1 The galley shall be adequately lit and easy to clean, be equipped with cooking utensils, cupboards and shelves to the extent necessary as well as washing up stands of a rustproof material., Drinking water shall be supplied to the galley via pipelines; if the supply is pressurised, measures must be taken to avoid backflow.

10.5.2.2 The deep fat frying equipment shall so be arranged that it has clear spaces around it to enable it to be easily kept clean. It must be provided with a closing plate to cover the oil reservoir when not in use.

#### 10.5.2.3 Ventilation in galleys

- (i) Where cooking facilities are fitted, a cooker hood with outlet to the open air must be provided above such facilities.
- (ii) In the open air, the duct shall be fitted with an exhaust hood if extraction is not mechanical.
- (iii) The ventilator must be able to be closed in the event of a fire.

#### Duct and dampers

- (i) Ventilation ducts shall be of non-combustible material. However, short ducts, not generally exceeding 2 metres in length and with a free cross-sectional area not exceeding 0.02 metres<sup>2</sup>, need not be non-combustible, subject to the following conditions:
  - (a) the ducts are made of a material which has low flame-spread characteristics;
  - (b) the ducts are only used at the end of the ventilation device; and
  - (c) the ducts are not situated less than 600 millimetres, measured along the duct, from an opening in an "A" or "B" class division, including continuous "B" class ceiling.
- (ii) Arrangement of ducts
  - (a) The galley ventilation systems need not be completely separated, but may be served by separate ducts from a ventilation unit serving other spaces. An automatic fire damper shall be fitted in the galley ventilation duct near the ventilation unit. Ducts must not pass through accommodation spaces, service spaces or control stations unless they comply with the conditions specified below;

- (b) the ducts are constructed of steel having a thickness of at least 3 millimetres and 5 millimetres for ducts the widths or diameters of which are up to and including 300 millimetres and 760 millimetres and over respectively and, in the case of such ducts, the widths or diameters of which are between 300 millimetres and 760 millimetres, having a thickness obtained by interpolation;
  - (c) the ducts are suitably supported and stiffened;
  - (d) the ducts are fitted with automatic fire dampers close to the boundaries penetrated; and
  - (e) the ducts are insulated to "A-60" class standard from the galley to a point at least 5 metres beyond each fire damper; or
  - (f) the ducts are constructed of steel having a thickness of at least 3 millimetres and 5 millimetres for ducts the widths or diameters of which are up to and including 300 millimetres and 760 millimetres and over respectively and, in the case of such ducts, the widths or diameters of which are between 300 millimetres and 760 millimetres, having a thickness obtained by interpolation;
  - (g) the ducts are insulated to "A-60" class standard throughout the accommodation spaces, service spaces or control stations;
  - (h) except that penetrations of main zone divisions shall also comply with the requirements of section 5.1.3.7.
- (iii) Details of duct penetrations
- (a) Where they pass through accommodation spaces or spaces containing combustible materials, the exhaust ducts from galley ranges shall be constructed of "A" class divisions. Each exhaust duct must be fitted with:
    - a grease trap readily removable for cleaning;
    - a fire damper located in the lower end of the duct;
    - arrangements, operable from within the galley, for shutting off the exhaust fans; and
    - fixed means for extinguishing a fire within the duct.

### 10.5.3 **Storerooms**

Refrigerators or other facilities for the storage of foods at low temperature must be provided and fitted with thermometers.

## 10.6. **POTABLE WATER SYSTEM**

### 10.6.1 **Potable water tanks**

10.6.1.1 Fixed potable water tanks must have a cofferdam separating them from tanks that may be used for other liquids. Cofferdams may be dispensed with adjacent to tanks containing seawater. In riveted vessels, the side of the vessel must not form boundaries on a potable water tank. The potable water tanks shall have the necessary access holes, and they shall, as far as possible, be accessible for both external and internal inspection. If their construction and size does not allow access to the inside of the tanks, they must be provided with a sufficient number of cleaning

holes. Access holes and cleaning holes shall be designed so that the accumulation of impurities is avoided. Access hole covers and cleaning hole covers shall be fitted on frames that have a height of at least 50 millimetres and shall be marked "Potable water tank".

10.6.1.2 All steel in potable water tanks must be fully welded. All internal surfaces, including surfaces in small containers, etc., must have a suitable approved finish.

10.6.1.3 Pipes forming part of other pipe systems may not be carried through potable water tanks unless such pipes are carried through a watertight sleeve pipe of a thickness equal to that of the tank bulkhead.

10.6.1.4 The tanks must be fully emptied either by means of suction from the lowest point in the tank or through a bottom valve. If drain plugs are fitted, they shall be of a dimension different from that of the vessels other drain plugs.

#### 10.6.2 **Pipe connections**

10.6.2.1 Filling pipes for tanks which are filled from shore-based plants shall be led up to a height of 400 millimetres above deck and be provided with covers which must be lockable by means of a padlock and be marked "Potable water tank".

10.6.2.2 The tanks shall be provided with sounding pipe or another approved sounding device that shall be designed so that the water may not be polluted by this means. If sounding pipes for sounding rods/tapes have been fitted, the means of closing these must be lockable by means of a padlock and be marked "Potable water tank".

10.6.2.3 For ventilation purposes, potable water tanks shall normally be provided with at least two air pipes that shall be provided with a fine-meshed net.

#### 10.6.3 **Pipe systems**

10.6.3.1 The potable water pipe system must not be connected to other pipe systems in the vessel. Systems made in accordance with a recognized standard may be approved provided that the following conditions are met:

- (i) Pipes that may be exposed to frost must be sufficiently insulated;
- (ii) All pumps must be of the centrifugal-membrane type or another suitable type that does not require lubrication of the parts that are in contact with the potable water;
- (iii) Dead-end service pipes on main pipes (for any later fitting of tapping facilities) shall be provided with a shut-off device at the main pipe;
- (iv) Pipes must not be led through tanks intended for other liquids with the exception of tanks for seawater, or unless such pipes have been carried through a watertight sleeve pipe of a thickness equal to that of the tank bulkhead;
- (v) Disinfecting equipment must, if installed, be of an approved type. Further guidance can be found in MGN 397 - Guidelines for the Provision of Food and Fresh Water on Merchant Ships and Fishing Vessels.

10.6.3.2 The sea suction from the freshwater generator must be placed clear of all drains from the vessel.

## 10.7 TOILETS, BATHROOMS AND LAUNDRY ROOMS.

### 10.7.1 Toilets and bathrooms

10.7.1.1 In vessels of a length (L) of 24 metres but less than 45 metres, the following sanitary facilities must be provided for each number of persons given below or part thereof for all members of the crew who do not have their own sleeping cabin with en-suite toilet and bath:

- (i) a shower for every eight persons;
- (ii) one water closet for every six persons;
- (iii) one wash basin for every four persons.

10.7.1.2 In vessels of a length (L) above 45 metres, an additional separate toilet must be provided conveniently close to the bridge. In vessels of a length (L) of or above 85 metres, an additional separate toilet must be provided conveniently close to the machinery space.

10.7.1.3 Toilets and bathrooms must meet the following requirements:

- (i) Each toilet shall be flushable and conventional sit down arrangement;
- (ii) Each separate toilet room shall be provided with a wash basin;
- (iii) Installations for hot and cold fresh water shall be installed separately for each individual bath and wash basin;
- (iv) Wash basins, shower rooms and baths shall be sufficiently large and made of suitable material;
- (v) The floor shall be of a suitable material and shall be provided with drains. Floor drains are not required in separate toilet rooms;
- (vi) Bulkheads shall be of suitable material and shall be watertight at least 300 millimetres above floor level;
- (vii) Toilets shall be located convenient in relation to sleeping cabins and washrooms but separate from these. Direct access may not be provided from a sleeping cabin intended for more than one person or from other rooms, with the exception of enclosed corridors;
- (viii) Doors to toilets and bathrooms shall be lockable.

10.7.1.4 Floor drains must be of sufficient dimensions and be designed so as to minimize the risk of clogging. They shall also be easy to keep clean. The drains shall not pass through freshwater tanks, and if they are routed through galleys, mess rooms or sleeping quarters, the drains must be insulated and enclosed.

### 10.7.2. Tumble dryers

- (i) vents/outlets must be as short as possible and lead directly to atmosphere;
- (ii) be readily accessible for cleaning.

## 10.8 HOSPITAL

### 10.8.1 General

- 10.8.1.1 In vessels of a length (L) of 45 metres or above, a separate hospital cabin shall be provided. The hospital shall contain one bed when the number of crewmembers is 18 or less, and otherwise two.
- 10.8.1.2 In vessels where each crewmember has their own sleeping cabin with en-suite toilet and bath, a treatment room (casualty room) may be set up instead of the required hospital, regardless of the size of the crew. The treatment room shall be equipped with a single bed and its size and arrangement shall be as that of the hospital.
- 10.8.1.3 The treatment room shall be suitably equipped, including a wash basin and a shower, and it shall have direct access to a toilet room.
- 10.8.1.4 The hospital/treatment room shall be located in a suitable place where inconvenience caused by noise and vibrations is as little as possible so that the patients may be given good conditions and so that they may be properly looked after in all kinds of weather.
- 10.8.1.5 It shall be possible to enter the rooms in a convenient way with a person lying on a stretcher. All doorways from open deck to the hospital must be at least 750 millimetres wide.
- 10.8.1.6 Medical Stores, must be carried in accordance to MSNs 1768 which is entitled Ships Medical Stores, Application of the Merchant Shipping and Fishing Vessels (Medical Stores) Regulations 1995 No. 1802 and the Merchant Shipping and Fishing Vessels (Medical Stores) (Amendment) Regulations 1996 No. 2821. Any subsequent amendments to these regulations and MSN shall also be complied with
- 10.8.1.7 The floor area in infirmaries/treatment rooms shall be at least 6.5 metres<sup>2</sup>. The floor area shall be measured as stipulated in section 10.4.2.1 and the area of the bed(s) may not be included in the area.
- 10.8.1.8 Hospitals/treatment rooms shall be marked as such and may not be used for other purposes.

## CHAPTER 11 (CLEAN SEAS)

### 11.1 CLEAN SEAS

11.1.1 All vessels must comply with international, national, regional and local requirements and applicable sections of MARPOL, for the prevention of marine pollution that are applicable to the vessel and the area in which the vessel is operating. Responsibility for the vessel to be properly equipped and maintained and to ensure that the skipper receives up-to-date and adequate information, rests mainly with the owner.

11.1.2 Oily residues and garbage or refuse and other wastes must be landed ashore at proper disposal facilities and not discharged or dumped into the sea. All vessels operating under this Code must display placards informing the crew of the disposal requirements of garbage under MARPOL.

11.1.3 Owners must comply with their additional obligations under the following in relation to the prevention of pollution from ships:

(i) International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 - MARPOL 73/78

(ii) Oil Pollution - Annex I of MARPOL 73/78. Guidance can be found:

- The Merchant Shipping (Prevention of Oil Pollution) Regulations 1996 No. 2154; as amended by
- The Merchant Shipping (Prevention of Oil Pollution)(Amendment) Regulations 1997 No. 1910;
- The Merchant Shipping (Prevention of Oil Pollution)(Amendment) Regulations 2000 No. 483;
- The Merchant Shipping (Prevention of Oil Pollution)(Amendment) Regulations 2004 No. 303;
- The Merchant Shipping (Prevention of Oil Pollution)(Amendment) Regulations 2004 No. 2110;
- The Merchant Shipping (Prevention of Oil Pollution)(Amendment) Regulations 2005 No. 1916 and
- The Merchant Shipping (Prevention of Oil Pollution)(Amendment) Regulations 2009 No. 1210 and any superseding documents.

In particular, vessels over 400 Gross Tonnes (GT) must comply with Annex I. Those of less than 400GT must comply as far as possible, but appropriate relaxations may be permitted by the Maritime and Coastguard Agency.

(iii) Sewage: Annex IV of MARPOL 73/78. Guidance can be found in:

The Merchant Shipping (Prevention of Pollution by Sewage and Garbage from Ships) Regulations 2008 No. 3257; as amended by

- The Merchant Shipping (Prevention of Pollution by Sewage and Garbage from Ships) Regulations 2010 No.897; and

- The Merchant Shipping (Prevention of Pollution by Sewage and Garbage from Ships) Regulations 2011 No. 3056 and any superseding documents.

In particular, vessels of more than 400GT, or carrying 15 or more persons or engaged on international voyages must comply with Annex IV in its entirety. For further information, see MGN 33 (M+F) or any superseding document.

(iv) Garbage: MARPOL 73/78 – ANNEX V, Guidance can be found in

- MSN 1807 The Merchant Shipping (Prevention of Pollution by Sewage and Garbage from Ships) Regulations 2008 or any superseding documents; and
- MSN 1678 The Special Waste Regulations 1996 or any superseding documents;
- The Merchant Shipping (Prevention of Pollution by Sewage and Garbage from Ships) Regulations 2008 No. 3257 (see above for subsequent amendments); and
- The Merchant Shipping and Fishing Vessels (Port Waste Reception Facilities) Regulations 2003 No 1809; as amended by
- The Merchant Shipping and Fishing Vessels (Port Waste Reception Facilities) Regulations 2009 No 1176 and any superseding documents.

Fishing Vessels are not required to pay the mandatory Port Waste Fee but are still required to land their waste. See also MGN 387 (M+F) or any superseding document.

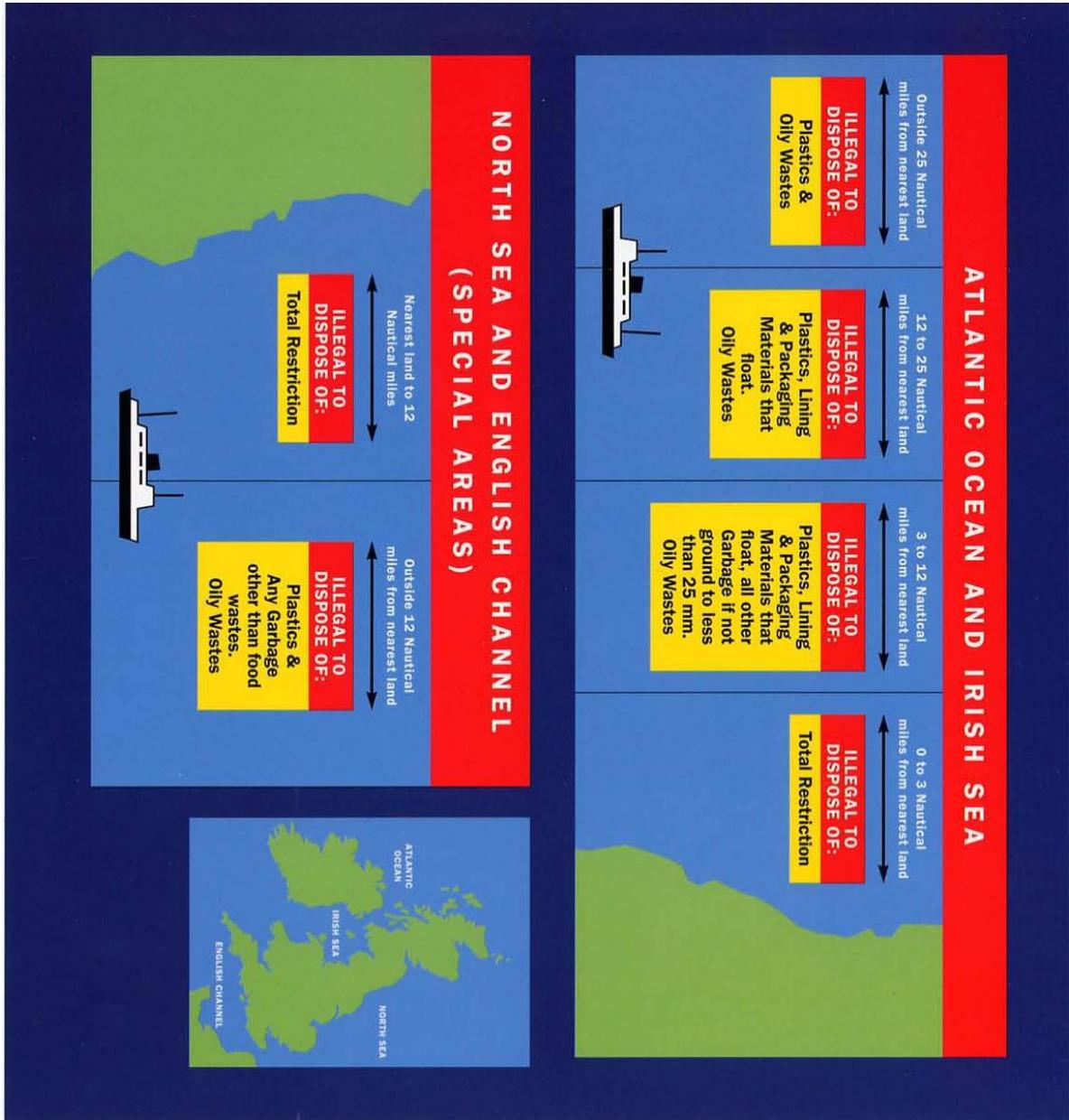
(v) Air Pollution: MARPOL 73/78 – ANNEX VI: Control of Emission of Nitrogen Oxides (NOx) from Marine Diesel Engines, Guidance on application is contained within:

- MGN 142 (M+F) or any superseding document; and
- The Merchant Shipping (Prevention of Air Pollution from Ships) Regulations 2008 No. 2924; as amended by
- The Merchant Shipping (Prevention of Air Pollution from Ships) (Amendment) Regulations 2010 No. 895; and
- The Merchant Shipping (Prevention of Air Pollution from Ships) (Amendment) Regulations 2011 No. 3056; and
- International Convention on the Control of Harmful Anti-fouling Systems on Ships Convention 2001 as implemented by the Merchant Shipping (Anti-fouling Systems) Regulations 2009 No. 2796 as amended by The Merchant Shipping (Prevention of Air Pollution from Ships) (Amendment) Regulations 2011 No. 3056; and

Vessels of more than 24 metres in length but less than 400GT are not subject to survey but are required to carry a declaration. Further guidance will be published in MGNs in due course.

## 11.2 MARPOL PLACARDS

Every vessel shall display a placard displaying the legal requirements of dumping waste in accordance with the requirements of MARPOL. An example placard is shown below.



UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND

## INTERNATIONAL FISHING VESSEL CERTIFICATE (Certificate of Compliance)

Issued under the Provisions of the Fishing Vessels (Codes of Practice) Regulations 20\*\* and confirming compliance of the vessel named hereafter with the provisions of Council Directive 97/70/EC and Council Directive 2002/35, and with the Fishing Vessels (Codes of Practice) Regulations 20\*\* , under the Authority of the Government of the United Kingdom of Great Britain and Northern Ireland by the Maritime and Coastguard Agency, an Executive Agency of the Department for Transport.

## Particulars of Vessel

Name of Vessel			
Official RSS Number		Fishing Number	
Port of Registry		Registered Length	
Overall Length			
Date on which keel was laid or ship was at a similar state of Construction			
Date of building or major conversion contract			
Date of Delivery or completion of major conversion			

**THIS IS TO CERTIFY:**

1. *that the vessel has been surveyed in accordance with Regulation I/6(1) of the Annex to the Torremolinos Protocol 1993 and Regulation 5 of the Fishing Vessels (Code of Practice) Regulations 20\*\*;*
2. *that the survey showed that*
  - 2.1 *the vessel fully complies with the requirements of Council Directive 97/70/EC and the Code of Practice for the Safety Operation of Fishing Vessels of 24m Registered Length and Over; and*
  - 2.2 *the maximum permissible draught associated with each operating condition for the vessel is contained in the approved stability book dated \_\_\_\_\_*
3. *that an Exemption Certificate has/has not been issued*
4. *this Certificate indicates the conditions of the items examined on the day of the survey met the necessary requirements. It does not confirm that these requirements were met after this date.*

This Certificate is valid until \_\_\_\_\_ subject to surveys in accordance with Regulations I/6(1)(b)(ii) and (iii) of the Annex to the Torremolinos Protocol 1993 and Regulation 5 of the Fishing Vessels (Code of Practice Regulations 20\*\*;

Signature \_\_\_\_\_ Name \_\_\_\_\_  
Signature of Authorised Official issuing the Certificate

Place \_\_\_\_\_ Date \_\_\_\_\_

<b>Name of Vessel</b>				
<b>Periodical Equipment Survey</b>				
This is to certify that, at a survey as required by Regulation I/6(1)(b)(ii) of the Annex to the Torremolinos Protocol 1993, the vessel was found to comply with the relevant requirements				
Place	<input type="text"/>	Signed	<input type="text"/>	MCA Stamp
			Signature of Authorised Official	
Date	<input type="text"/>	Name	<input type="text"/>	
<b>Intermediate Survey</b>				
This is to certify that, at a survey as required by Regulation I/6(1)(c) of the Annex to the Torremolinos Protocol 1993, the vessel was found to comply with the relevant requirements				
Place	<input type="text"/>	Signed	<input type="text"/>	MCA Stamp
			Signature of Authorised Official	
Date	<input type="text"/>	Name	<input type="text"/>	
<b>First Periodical Radio Survey</b>				
This is to certify that, at a survey as required by Regulation I/6(1)(b)(iii) of the Annex to the Torremolinos Protocol 1993, the vessel was found to comply with the relevant requirements				
Place	<input type="text"/>	Signed	<input type="text"/>	MCA Stamp
			Signature of Authorised Official	
Date	<input type="text"/>	Name	<input type="text"/>	
<b>Second Periodical Radio Survey</b>				
This is to certify that, at a survey as required by Regulation I/6(1)(b)(iii) of the Annex to the Torremolinos Protocol 1993, the vessel was found to comply with the relevant requirements				
Place	<input type="text"/>	Signed	<input type="text"/>	MCA Stamp
			Signature of Authorised Official	
Date	<input type="text"/>	Name	<input type="text"/>	
<b>Third Periodical Radio Survey</b>				
This is to certify that, at a survey as required by Regulation I/6(1)(b)(iii) of the Annex to the Torremolinos Protocol 1993, the vessel was found to comply with the relevant requirements				
Place	<input type="text"/>	Signed	<input type="text"/>	MCA Stamp
			Signature of Authorised Official	
Date	<input type="text"/>	Name	<input type="text"/>	
<b>Extension of Certificate</b>				
Endorsement to extend the validity of the Certificate for a period of grace where Regulation I/11(1) of the Annex to the Torremolinos Protocol 1993 applies				
This certificate shall in accordance with Regulation I/11(1) of the Annex to the Torremolinos Protocol 1993 be accepted as valid until			Date	
Place	<input type="text"/>	Signed	<input type="text"/>	MCA Stamp
			Signature of Authorised Official	
Date	<input type="text"/>	Name	<input type="text"/>	
<b>Extension of Certificate</b>				
Endorsement to extend the validity of the Certificate until reaching the port of survey or for a period of grace where Regulation I/11(2) or Regulation I/11(4) of the Annex to the Torremolinos Protocol 1993 applies				
This certificate shall in accordance with Regulation I/11(2)/Regulation I/11(4) *of the Annex to the Torremolinos Protocol 1993, be accepted as valid until			Date	
Place	<input type="text"/>	Signed	<input type="text"/>	MCA Stamp
			Signature of Authorised Official	
Date	<input type="text"/>	Name	<input type="text"/>	

\* Delete as appropriate