



MSN 1872 Amndt 1 (F)

The Code of Safe Working Practice for the Construction and Use of Fishing Vessels of 15m Length Overall to less than 24m Registered Length

Notice to all Designers, Builders, Owners, Employers, Skippers and Crew of Fishing Vessels

This notice should be read in conjunction with the Fishing Vessels (Codes of Practice) Regulations 2017 No.943 and the Merchant Shipping (Work in Fishing Convention) Regulations 2018 No.1106 and replaces MSN 1770, The Code of Safe Working Practice for the Construction and Use of 15m Length Overall to less than 24m Registered Length Vessels.

Summary

This Notice provides a Code of Safe Working Practice for the Construction and Use of 15m Length Overall (LOA) to less than 24m Registered Length (L) Vessels and replaces MSN 1770.

The main changes to the Code are as follows:

- Substantial modifications or alterations carried out to the structure or machinery of a vessel to be notified to MCA prior to work taking place;
- If vessels are using shore power while the crew are living aboard this should not affect the early warning safety detection systems;

The wearing of a Personal Floatation Device is mandatory, unless a written risk assessment demonstrates that the risk of going overboard has been eliminated.

A new Annex 4 which replicates the requirements of the Fishing Vessel (Safety Provisions) Rules 1975 that “existing vessels” need to comply with.

The Code also clarifies that EPIRBs shall be capable of transmitting the position obtained from a built-in GPS receiver to a satellite.

The Code also now incorporates additional requirements for Crew Accommodation for new vessels built or subject to substantial modification after 31 December 2018.



1.0 Introduction

1.1 This Merchant Shipping Notice is associated with The Fishing Vessels (Codes of Practice) Regulations 2017 No.943 and the Merchant Shipping (Work in Fishing Convention) Regulations 2018 No.1106. It sets out the full text of the Code of Safe Working Practice for the Construction and Use of 15 metre Length Overall (LOA) to less than 24 metre Registered Length (L) Fishing Vessels (the Code). The original version of this Code came into force on 23 October 2017 and this Amendment comes into force on 31 December 2018.

2.0 Background

2.1 The Regulations give statutory force to the Code and replace the requirements of the following Regulations as they apply to fishing vessels from 15 metres (LOA) to less than 24 metres (L):

- The Fishing Vessels (Safety of 15-24 Metre Vessels) Regulations 2002;
- The Fishing Vessels (Safety Provisions) Rules 1975;

3.0 The Revised Code

3.1 The Code contained within this MSN sets out the full text of the revision to the previous Code as set out in MSN 1770.

3.2 The Fishing Industry Safety Group developed this Code as part of the review of the Fishing Vessels (Safety Provisions) Rules 1975 and other legislation applicable to fishing vessels. The aim of the review was to update existing requirements in order to improve the safety of fishing vessels in foreseeable operating conditions, and the survival of the crew in the event of an accident.

3.3 This Code replaces the previous version published in October 2017.

4.0 Changes applied to the revised Code

4.1 Based on recommendations from the MAIB and investigations of past accidents the Code requires that significant repairs, substantial structural modifications or alterations carried out to the structure or machinery of a vessel, shall only be undertaken after consultation and with the MCA's approval to ensure it complies with the requirements of the Code, as applicable to a new vessel, to the satisfaction of the MCA.

4.2 The wearing of Personal Floatation Devices is mandatory, unless a written risk assessment demonstrates that the risk of going overboard has been eliminated.

4.3 Attention is also drawn to The Merchant Shipping and Fishing Vessels (Personal Protective Equipment) Regulations 1999 which set out the general rule that Personal Protective Equipment must be used when risks cannot be avoided or reduced to an acceptable level.

4.4 There is also a requirement that if vessels are using shore power while the crew are living onboard this shall not affect the early warning safety detection systems.

4.5 "Existing Vessels" as defined in the Code shall comply with this Code, including Annex 4.

4.6 The Code also clarifies that EPIRBs shall be capable of transmitting the position obtained from a built-in GPS receiver to a satellite.



4.7 This Code also includes new requirements for Crew Accommodation which are the result of the implementation of the International Labour Organisation Work in Fishing Convention C.188.

5.0 Vessel Owners Responsibility

5.1 To comply with the Code, vessel owners will be required to:

- meet the requirements for the construction and use of fishing vessels as set out in the Code;
- complete the annual self-certification in the form laid out in Annex 2 of the Code;
- present new vessels for survey during and on completion of construction, or on transfer to the UK Register prior to issue of a UK certificate;
- present the vessel for renewal survey at intervals not exceeding 5 years;
- present the vessel for inspection at the mid-point in the survey cycle;
- present the vessel for survey prior to completing significant repairs or modifications.

More Information

Vessel Standards Branch
Maritime and Coastguard Agency
Bay 2/21
Spring Place
105 Commercial Road
Southampton
SO15 1EG

Tel : +44 (0) 203 8172454
e-mail: david.fenner@mcga.gov.uk

Website Address: www.gov.uk/government/organisations/maritime-and-coastguard-agency

General Enquiries: infoline@mcga.gov.uk

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Safer Lives, Safer Ships, Cleaner Seas







Maritime &
Coastguard
Agency

**THE CODE OF
SAFE WORKING PRACTICE FOR
THE
CONSTRUCTION AND USE
OF
15 METRE (LOA) TO LESS THAN
24 METRE (L) FISHING VESSELS**

VESSEL STANDARDS BRANCH
BAY 2/21
SPRING PLACE
105 COMMERCIAL ROAD SOUTHAMPTON
SO15 1EG
TEL: 0203 817 2000

<https://www.gov.uk/government/organisations/maritime-and-coastguard-agency>

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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 15 metres length overall (LOA) to less than 24 metres registered length (L).
- 1.1.2 Development of the Code by the Maritime and Coastguard Agency was carried out in consultation with the Technical Sub-Group of the Fishing Industry Safety Group.
- 1.1.3 The aim in developing the 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.
- 1.1.4 The Code also gives effect, in part, to the provisions of Council Directive 93/103/EEC and Articles 25 to 28 of the International Labour Organisation, Work in Fishing Convention 188.
- 1.1.5 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 SI 1983 No.478 and SI 2018 No.XXX 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, SI 1999 No. 1957, SI 2000 No.483, SI 2004 No 303, SI 2004 No 2110, SI 2005 No.1916 and SI 2009 No 1210, SI 2014 No.3306, SI 2016 No.1025 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, SI 2001 No.54, SI 2014 No.1616, SI 2015 No.21, SI 2016 No.1692, SI 2016 No.1025, SI 2018 No.XXX 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, SI2016 No.21 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, SI2016 No.1025 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, as amended by SI 2015 No.21 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.680 and SI 2010 No.1075, SI 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, SI 2016 No.68, SI 2016 No.1211 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, SI 2016 No.1025 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, SI 2015 No.21 and any subsequent amendments;

SI 2008 No 2924 The Merchant Shipping (Prevention of Air Pollution from Ships) Regulations, as amended by SI 2010, No. 895, SI 2011 No.3056, SI 2014 No.3306 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, SI 2014 No.30-76, SI 2015 No.3306, SI 2016 No.1025 and any subsequent amendments;

S.I. 2009 No. 1210 The Merchant Shipping (Prevention of Oil Pollution)(Amendment) Regulations 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, SI 2015 No.21 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 SI 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, as amended by SI 2013 No.2882 and any subsequent amendments;

SI 2012 No.2287 The Merchant Shipping (Compulsory Insurance of Shipowners for Maritime Claims) Regulations, and any subsequent amendments;

SI 2016 No.1025 Merchant Shipping (Marine Equipment) Regulations, and any subsequent amendments;

SI 2017 No.943 The Fishing Vessels (Codes of Practice) Regulations.

SI 2018 No.1106 The Merchant Shipping (Work in Fishing Convention) Regulations;

SI 2018 No.1107 The Merchant Shipping (Work in Fishing Convention)(Survey and Certification) Regulations;

SI 2018 No.1108 The Merchant Shipping (Work in Fishing Convention)(Medical Certification) Regulations;

SI 2018 No.1109 The Merchant Shipping (Work in Fishing Convention)(Consequential Provisions) Regulations.

1.1.6 In some sections within this Code, reference is given to the requirements for existing vessels regulations. Where applicable, the requirements, which previously existed in the Fishing Safety (Safety Provisions) Rules 1975, have been reproduced in Annex 4 of this Code, in order that these vessels shall continue to comply.

1.1.7 Where in some sections 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.

1.1.8 Supplementary guidance, instructions and information for fishing vessels is contained in current Merchant Shipping Notices, Marine Guidance Notes and Marine Information Notes.

1.2 DEFINITIONS

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

1.2.2 “A’ class divisions” means those divisions formed by bulkheads and decks which shall comply with the following:

(i) be constructed of steel or other equivalent material;

(ii) be suitably stiffened;

- (iii) be constructed as to be capable of preventing the passage of smoke and flame to the end of the 60 minute standard fire test; and
- (iv) be insulated where necessary with suitable non-combustible materials such that, if the division is exposed to the standard fire test, the average temperature of the unexposed side of the division will rise not more than 139°C above the initial temperature nor will the temperature at any one point, including any joint, rise more than 180°C above the initial temperature within the time listed below:
 - A-60 standard 60 minutes
 - A-30 standard 30 minutes
 - A-0 standard 0 minutes
- (v) 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” means corridors and lobbies, stairways, lavatories, cabins, offices, crew spaces, pantries not containing cooking appliances and spaces similar to any of the foregoing and trunks to such spaces;

1.2.4 “Amidships” is the mid-length of “Length” as defined in Statutory Instrument 1998 No. 1916 The Merchant Shipping (Tonnage) (Fishing Vessels) (Amendment) Regulations 1998;

1.2.5 “Approved” means:

(i) in relation to hull and machinery construction and arrangements:

- approved by one of the following organisations:

- American Bureau of Shipping
- Bureau Veritas
- DNV GL
- Lloyd’s Register of Shipping
- Registro Italiano Navale
- Sea Fish Industry Authority

(ii) in relation to life saving appliances:

- approved by 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 (Marine Equipment) Regulations 2016 No.1025.

(iii) in relation to stability:

- approved by MCA.

1.2.6 “Auxiliary means of actuating 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” means those divisions formed by bulkheads, decks, ceilings or linings that:

- (i) are 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;
- (ii) have an insulation value such that during the standard fire test the average temperature of the unexposed side will not rise more than 140°C above its initial

temperature, nor will its temperature at any one point, including any joint, rise more than 225°C above its initial temperature within the time listed below:

B-15 standard 15 minutes

B-0 standard 0 minutes

- (iii) are constructed of suitable non-combustible materials and their supporting members or structures are also constructed of non-combustible materials;
- 1.2.8 “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 constructed of any other material;
- 1.2.9 “Certifying Authority” means the MCA or a person or organisation authorized by MCA to:
- (i) appoint persons for the purpose of examining vessels and issuing and signing Declarations of Survey; and
- (ii) issue Certificates of Construction and Outfit;
- 1.2.10 “Classification Society” means a Classification Society listed in M Notice No. 1672 or any subsequent amendments;
- 1.2.11 “Code” means this Code, unless another Code is specified;
- 1.2.12 “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;
- 1.2.13 “Collision bulkhead” is a watertight bulkhead up to the working deck in the forepart of the vessel which meets the requirements of 2.1.3.
- 1.2.14 “Crew” means any person carrying out an occupation on board a vessel, including share fishermen, trainees and apprentices but excluding shore personnel carrying out work on board a vessel at the quayside and port pilots;
- 1.2.15 “Crew space” means crew accommodation within the meaning of section 43(7) of the Merchant Shipping Act 1995;
- 1.2.16 “Deadship 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;
- 1.2.17 “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;
- 1.2.18 “Deckhouse” see “Superstructure” as defined in section 1.2.81;
- 1.2.19 “Deepest operating waterline” is the waterline related to the maximum permissible operating draught;
- 1.2.20 “Depth” means the moulded depth amidships;
- 1.2.21 “Draught” means the vertical distance from the moulded base line amid-ships to the operating water line of a vessel;
- 1.2.22 “Enclosed superstructure” means a superstructure with:

- (i) enclosing bulkheads of efficient construction;
- (ii) 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
- (iii) other openings in sides or ends of the superstructure fitted with efficient weathertight means of closing;
- (iv) a bridge or poop should 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;

1.2.23 “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);

1.2.24 “Existing vessel” means a fishing vessel the keel of which was laid or the construction commenced before 23 November 2002;

1.2.25 “F” class divisions means those divisions formed by bulkheads, decks, ceilings or linings that:

- (i) are 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
- (ii) have an insulation value such that during the standard fire test the average temperature of the unexposed side will not rise more than 139°C above its initial 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;

A Certifying Authority may require a test of a prototype division, in accordance with the procedures detailed in the Fire Test Procedures Code, to ensure that it meets the above requirements for integrity and temperature rise;

1.2.26 “Fire Test Procedures Code” means the IMO Code for Application of Fire Test Procedures;

1.2.27 “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);

1.2.28 “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;

1.2.29 “Freeboard” means the distance measured vertically downwards from the upper edge of the freeboard deck to the waterline;

1.2.30 “Freeboard deck” means the lowest complete deck above the deepest operating waterline from which fishing is undertaken. In vessels fitted with two or more complete decks, a Certifying Authority may accept a lower deck as the freeboard deck provided that the deck is situated above the deepest operating waterline;

1.2.31 An “Inclining Test” should be conducted in accordance with MSIS 9 Approval of Stability Information;

- 1.2.32 “Independent” in relation to a pump, means a pump operated by power source other than from the vessel’s main engines: when electrically operated, these shall work independently and only through a different switch board;
- 1.2.33 “Inspection” means an inspection conducted either side of the mid-point between the vessels initial survey date and the certificate expiry date;
- 1.2.34 “Length overall (LOA)” means the distance between the foreside of the foremost fixed permanent structure and the afterside of the aftermost fixed permanent structure; and “fixed permanent structure” includes any portion of the hull which is capable of being detached, but which is fixed in place during the normal operation of the vessel’s;
- 1.2.35 “Length (L)” in relation to a vessel, means “Length between perpendiculars” (LBP);
- 1.2.36 “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;
- 1.2.37 “Registered length” has the same meaning as length in the Tonnage Regulations {SI 1997 No. 1510 - The Merchant Shipping (Tonnage) Regulations} which has the meaning as “Length between perpendiculars” (LBP);
- 1.2.38 “Lifebuoy” means a lifebuoy complying with the requirements of the Life Saving Appliances (LSA) Code as amended;
- 1.2.39 “Lifejacket” means a lifejacket complying with the requirements of the LSA Code as amended or as approved by MCA;
- 1.2.40 “Liferaft” means a liferaft complying with the requirements of the LSA Code as amended;
- 1.2.41 “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;
- 1.2.42 “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;
- 1.2.43 “Line throwing appliance” means an appliance complying with the requirements of the LSA Code as amended;
- 1.2.44 “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;
- 1.2.45 “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;
- 1.2.46 “Machinery space” means the main engine room;
- 1.2.47 “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;

- 1.2.48 "Main switchboard" is a switchboard directly supplied by the main source of electrical power and intended to distribute electrical energy;
- 1.2.49 "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;
- 1.2.50 "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;
- 1.2.51 "MCA" means The Maritime and Coastguard Agency, an executive agency of the Department for Transport or their successors;
- 1.2.52 "Merchant Shipping Act 1995" references to the Merchant Shipping Act 1995 or to rules or regulations which are made or have effect as if made under that Act, are to that act or to those rules or regulations respectively as amended at the date of this Code coming into force;
- 1.2.53 "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;
- 1.2.54 "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;
- 1.2.55 "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 to be 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;
 - (c) where the upper deck is stepped and the raised part of the deck extends over the point at which the moulded depth is to be determined, the moulded depth shall be measured to a line of reference extending from the lower part of the deck along a line parallel with the raised part;
- 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 weather tight 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) "weather tight" means that in any sea conditions water will not penetrate into the ship.
- 1.2.56 "Navigable speed" means the minimum ahead speed at which the vessel can be effectively steered;
- 1.2.57 "New vessel" means a fishing vessel, the keel of which was laid or the construction commenced on or after 23 November 2002;

1.2.58 New Vessels (2018) – See Chapter 10

- (i) The building or major conversion contract has been placed on or after 31 December 2018; or
- (ii) the building or major conversion contract has been placed before 31 December 2018 and which is delivered three years or more after that date; or
- (iii) in the absence of a building contract, on or after 31 December 2018:
 - a. the keel is laid, or
 - b. construction identifiable with a specific vessel begins, or
 - c. assembly has commenced comprising at least 50 tonnes or 1 per cent of the estimated mass of all structural material, whichever is less;

1.2.59 “Non-combustible material” means material that neither burns nor gives off flammable vapours in sufficient quantity for self-ignition when heated to a temperature of 750°C, this being determined in accordance with the IMO Fire Test Procedures Code. Any other material is a combustible material;

1.2.60 “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;

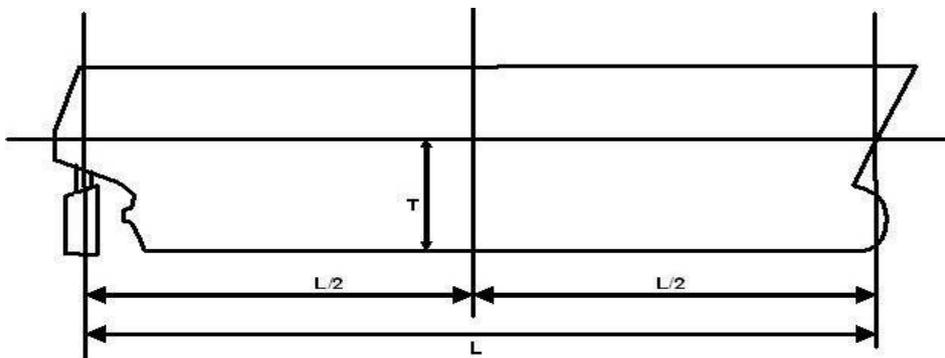
1.2.61 “Owner” means the registered owner of a vessel, unless that vessel has been chartered by demise or is managed, either wholly or in part, by a natural or legal person other than the registered owner under the terms of a management agreement; in that case, the owner shall be construed as the demise charterer or natural or legal person managing the vessel as appropriate;

1.2.62 “Perpendiculars”

1.2.62.1 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;

1.2.62.2 Amidships is the perpendicular to the waterline at a distance 0.5L aft of the forward perpendicular;

1.2.62.3 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;



- 1.2.63 "Power unit" means:
- (i) in the case of electric steering gear, the electric motor and its associated electrical equipment; or
 - (ii) in the case of electro-hydraulic steering gear, the electric motor, its associated electrical equipment and connected pump;
- 1.2.64 "Principal Breadth" (in Annex 4) means the maximum breadth measured in metres on straight line to the outside of the frame lines of a vessel the hull of which is constructed of metal or to the outer surfaces of a vessel the hull of which is constructed of other material;
- 1.2.65 "Principal length" (in Annex 4) means the length measured in metres on a straight line from the fore part of the stem at top to the aftermost side of the transom or stern contour;
- 1.2.66 "Principal Depth" (in Annex 4) means the depth measured in metres at the mid-point of the Principal Length as the vertical distance from the top of the deck beam at side to the top of the keel of line at the intersection of the inside of the shell plating with the keel where a bar keel extends above that line in a vessel the hull of which is constructed of metal or the lower rabbet line of the keel of a vessel the hull of which is constructed of other material;
- 1.2.67 "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;
- 1.2.68 "Retro-reflective material" is a material which reflects in the opposite direction a beam of light directed on it;
- 1.2.69 "Rocket parachute flare" means a pyrotechnic signal complying with the requirements of the LSA Code as amended;
- 1.2.70 "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;
- 1.2.71 "Self-activating smoke signal" means a signal complying with the requirements of the LSA Code as amended;
- 1.2.72 "Self-igniting light" means a light complying with the requirements of the LSA Code as amended;
- 1.2.73 "Settling tank" (in Annex 4) means an oil storage tank in which oil fuel is heated in the course of its preparation for combustion in boilers and machinery in which has a heating surface of not less than 0.18 metres² per tonne of oil capacity;
- 1.2.74 "Service spaces" include galleys containing cooking appliances, lockers and store rooms, paint rooms, workshops (other than those forming part of machinery spaces) and similar spaces;
- 1.2.75 "Skipper" means the certified officer/crew member who commands, or has responsibility of the vessel holding the relevant certificates;
- 1.2.76 "SOLAS 1974 as amended" means the International Convention for the Safety of Life at Sea, 1974;
- 1.2.77 "Standard fire test" is a test in which a specimen of the relevant bulkhead or deck is exposed in a test furnace to temperatures corresponding approximately to a standard time – temperature curve in accordance with the IMO Fire Test Procedures Code;

- 1.2.78 "Standards" such as BS (British Standard), EN (European Standard accepted by the European Committee for Standardisation, CEN), IEC (International Electrotechnical Commission) and 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;
- 1.2.79 "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);
- 1.2.80 "Steering gear power unit," means in the case of:
- (i) Electric steering gear, an electric motor and its associated electrical equipment;
 - (ii) Electro-hydraulic steering gear, an electric motor and its associated electrical equipment and connected pump; and
 - (iii) Other hydraulic steering gear, a driving engine and connected pump;
- 1.2.81 "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;
- 1.2.82 "Superstructure deck" means that complete or partial deck or the top of a superstructure, deckhouse or other erection situated at a height of more than 1.8 metres above the freeboard 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;
- 1.2.83 "Survey" means either an initial survey or a renewal survey conducted at a maximum period of 5 years from the recorded date of issue of the previous UK fishing vessel certificate;
- 1.2.84 "Survival craft" means a craft capable of sustaining the lives of persons in distress from the time of abandoning the vessel;
- 1.2.85 "UK fishing vessel" means a fishing vessel which meets the criteria set out in section 85(2)(a) of the Merchant Shipping Act 1995;
- 1.2.86 "UK Fishing Vessel Certificate" means a certificate issued in respect of a fishing vessel under this Code, refer to Annex 1;
- 1.2.87 "Vessel" means a new or existing fishing vessel;
- 1.2.88 "Vessel Numeral" means the product obtained by multiplying together the Principal Length by the Principal Breadth by the Principal Depth;
- 1.2.89 "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;
- 1.2.90 "Weather deck" means the main deck that is exposed to the elements;
- 1.2.91 "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 The Code applies to all fishing vessels, registered in the UK, of 15 metres in length overall to less than 24 metres registered length.

- 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 **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
- 1.3.1.4 **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 Surveyors (Fishing Vessels) and Fishing Section HQ, to ensure consistency.** E
- 1.3.1.5 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**
- 1.3.1.6 Where any provision of the Code is expressed in the conditional (i.e. “shall”) then this provision shall be a requirement.
- 1.3.1.7 Where a provision in this Code requires equipment, machinery, an arrangement or any other thing to be “to the satisfaction of a Certifying Authority”, this means that a Certifying Authority is to determine whether the equipment or machinery etc. is suitable for its purpose and satisfies the requirements of this Code, at initial survey, during construction and that it shall then be maintained in accordance with the Code at all times to the satisfaction of the MCA.
- 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) is subjected to annual self-certification inspections in accordance with section 1.3.7;
 - (iii) continues to comply with the requirements of the Code in service;
 - (iv) is operated by appropriately qualified and certificated crew who have completed mandatory training courses; and
 - (v) is not operated as a fishing vessel without a valid UK fishing vessel certificate being in force.

1.3.3 **Arrangements for Vessels Operating Solely within Categorised Waters**

1.3.3.1 Vessels operated solely within categorised waters, as defined in Merchant Shipping Notice No. M1837(M) – Categorisation of Waters, may, as an alternative to complying with this Code, comply with the requirements of The Small Fishing Vessel Code of Practice MSN 1871 or any subsequent amendments and have equipment provided onboard, as required for a decked vessel of the maximum length that is covered by that Code.

1.3.4 **Surveys, Inspections and Certification**

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

- (i) an initial survey during and on completion of construction, or on transfer to the UK register prior to the issue of a UK Fishing Vessel Certificate;
- (ii) certificate renewal surveys at intervals not exceeding 5 years;
- (iii) an inspection in accordance with section 1.3.6 below;
- (iv) surveys during major repairs or modifications;
- (v) annual self-certification by the owner or a delegated representative.

1.3.4.2 Applications for survey or inspection shall be made by or on behalf of the owner of the vessel to MCA giving reasonable notice, for the survey or inspection to be carried out, at the port agreed with the MCA.

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

1.3.4.4 An organisation authorised or recognised by the Secretary of State to perform the survey of radio equipment shall carry out a survey at intervals not exceeding five years to ascertain whether the vessel complies with the requirements of the Merchant Shipping (Radio) (Fishing Vessels) Regulations 1999 and this Code. On completion of the Radio Survey the surveyor of the authorised or recognised organisation shall provide the MCA with a declaration of radio survey.

1.3.4.5 Every vessel in respect of which an United Kingdom Fishing Vessel Certificate is in force may be inspected at any time to ascertain that the installations and equipment required by the Merchant Shipping (Radio) Regulations 1999 and this Code are in an effective condition and comply with the applicable requirements regulations.

1.3.4.6 The surveyor from that organisation, if satisfied after each radio inspection that the vessel complies with the requirements shall provide the Secretary of State with a declaration of inspection to that effect.

1.3.5 **Initial Surveys, Surveys for Renewal of Certificates and Surveys during Repairs**

1.3.5.1 At Initial survey, during construction and at completion of build, a Certifying Authority shall survey the vessel in order to verify that the vessel complies with the requirements of such Construction and Outfit Standards 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 Standards and Code.

1.3.5.2 At Initial Survey for the United Kingdom Fishing Vessel Certificate, and at any subsequent survey, a surveyor, appointed by the MCA shall survey the vessel in order to 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.

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

1.3.5.4 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.

1.3.5.5 Substantial repairs, modifications, either funded through grants or other means, or alterations carried out to the structure or machinery of a vessel, shall only be undertaken after consultation and with MCAs 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 **Inspections of Fishing Vessels**

1.3.6.1 Every vessel having a valid United Kingdom Fishing Vessel Certificate shall be inspected at the mid-point of the Certificate by a surveyor or inspector of MCA. The inspection shall verify that the vessel continues to comply with the requirements of the Code. The inspections shall take place in accordance with the following:

- (i) Vessels issued with Certificates of 3 years or more shall be inspected within 6 months either side of the mid-point date between the initial survey date of the Certificate and its expiry;
- (ii) Vessels issued with Certificates of 2 years but less than 3 years shall be inspected within 3 months either side of the mid-point date between the initial survey date of the Certificate and its expiry;
- (iii) Vessels issued with Certificates of less than 2 years shall be inspected within 1 month either side of the mid-point date between the initial survey date of the certificate and its expiry.

1.3.6.2 When a satisfactory inspection has been carried out, the inspector shall endorse the United Kingdom Fishing Vessel Certificate accordingly.

1.3.7 **Annual Self-Certification**

1.3.7.1 In addition to compliance with the survey and inspection requirements that are detailed in sections 1.3.4 and 1.3.5 and 1.3.6 above, the owner or a delegated representative shall check the vessel annually, at intervals of not more than 12 months, to confirm that:

- (i) all fire fighting appliances, life saving appliances and safety equipment that are carried on board the vessel have been suitably maintained and are within date;
- (ii) the Radio equipment is functioning correctly;
- (iii) the shipborne navigational equipment, nautical publications and lights, shapes and sound signal appliances, that are required for compliance with The Merchant Shipping (Distress Signals and Prevention of Collisions) Regulations 1996, No. 75, as amended, or any subsequent documents, are carried on board and are functioning correctly;
- (iv) the risk assessment (see section 6.1.2) remains appropriate to the vessel's fishing method and mode of operation;
- (v) no known alteration, damage or deterioration to the vessel or its equipment has occurred in service that would affect the vessel's compliance with the requirements of the Code or the vessel's stability;
- (vi) weathertight doors and hatches are functioning correctly; and

(vii) crew training and certification are valid.

1.3.7.2 On completion of each annual check, the owner shall sign a declaration (in the format detailed in Annex 2) confirming compliance with section 1.3.7.1 above and retain the declaration for subsequent inspection.

1.3.8 **Certification**

1.3.8.1 **Issue and form of UK Fishing Vessel Certificates**

1.3.8.1.1 If the MCA is satisfied that a vessel has been duly surveyed in accordance with the provisions of this Code and is found to comply with the requirements of the Code and other relevant regulations issued under the powers of the Merchant Shipping Act 1995; a UK Fishing Vessel Certificate, in the format set out in Annex 1, will be issued by MCA to the owner of the vessel.

1.3.8.2 **Duration of certificates**

1.3.8.2.1 A United Kingdom Fishing Vessel Certificate may remain in force for 5 years from the date of its issue or such shorter period as may be specified by the MCA, unless extended or cancelled under sections 1.3.8.3 or 1.3.8.4 respectively.

1.3.8.3 **Extension of certificates**

1.3.8.3.1 The MCA may, in exceptional circumstances, extend the validity of a UK Fishing Vessel Certificate for a period not exceeding two months.

1.3.8.3.2 Subsequent Fishing Vessel Certificates shall be dated to correspond with the original Fishing Vessel Certificate before such an extension.

1.3.8.4 **Cancellation of certificates**

1.3.8.4.1 The MCA may cancel a United Kingdom Fishing Vessel Certificate if satisfied:

- (i) that any declaration of survey on which the certificate was founded has been in any particular 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;
- (iv) that the vessel has been significantly modified or changed its mode of fishing without due authorisation;
- (v) that the certificate has not been endorsed in the manner set out in section 1.3.6;
- (vi) that another Fishing Vessel Certificate has been issued in respect of the vessel;
or
- (vii) that the vessel has ceased to be registered as a fishing vessel in the United Kingdom.

1.3.9 **Change of Ownership**

1.3.9.1 Risk assessments of the vessel are particular to each owner. When a vessel is sold, the new owner shall complete, or arrange for the completion of, a new risk assessment and new annual self-certification.

1.3.10 **Detention and Penalties**

1.3.10.1 A vessel that is found, in the course of inspection, or survey, not to have been equipped, maintained, assessed or self-certificated in accordance with this MSN will be liable to detention under The Fishing Vessels (Codes of Practice) Regulations 2017. An owner who operates a vessel that does not comply with the Code, or who makes a false declaration, 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.

1.3.11 **Certifying Authority**

1.3.11.1 Organisations that are so authorised by MCA may appoint persons for the purpose of surveying vessels for ascertaining compliance with Code provisions as delegated by MCA.

1.3.12 **Appeal Procedures**

1.3.12.1 If an owner is dissatisfied with the results of a survey or inspection, or the issue of a certificate has been refused, or for any other reason and agreement cannot be reached with the attending surveyor, the owner may refer the matter to the Consultant Surveyor (Fishing Vessels) in the Region in which the vessel was inspected.

1.3.12.2 If the above procedure fails 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.

1.3.12.3 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 1.3.12.2, on MCA that their dispute be referred a single arbitrator appointed by agreement between MCA and the owner.

1.3.12.4 A person shall 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.

1.3.12.5 The final allocation of costs will depend on the arbitrator's decision. If the decision is in the favour of the owner, the arbitrator may award the owner such compensation as the arbitrator thinks fit in addition to allocating costs.

1.3.13 **Standards for Vessels "Flagging-in" to UK Registration**

1.3.13.1 *New vessels shall comply with the provisions of the Code wherever the place of construction or origin.* **N**

1.3.13.2 Vessels flagging in will be treated as being new vessels.

1.3.13.3 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 that has not been constructed under the survey of a Classification Society or other organisation with delegated powers granted by a Marine Administration. 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 (i.e. Isle of Man and Channel Islands); or
- (ii) The vessel is certified as being in Class; or
 - (a) the owner is able to demonstrate, to the satisfaction of MCA, that the vessel's structural strength, equipment and machinery are adequate for the intended purpose by meeting Seafish Construction Rules or Classification Society Standards; and
 - (b) **a verifiable record of safe operation for the intended mode of fishing can be provided by the vessel owners.** E

1.3.13.4 The Vessel will be assessed against a Flag in Matrix, 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. E

1.3.14 Updating the Code

1.3.14.1 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.

1.3.14.2 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.

1.3.14.3 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 a Certifying Authority.

2.1.1.2 The owners are to inform a Certifying Authority 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 may 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 a Certifying Authority 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 a Certifying Authority.* **N**

2.1.3.2 *The hull shall be surveyed during construction by a Certifying Authority 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 a UK fishing vessel and the MCA and a Certifying Authority has 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 Freeboard deck

2.1.5.1.1 The freeboard 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.

2.1.5.1.2 The freeboard deck may be stepped, recessed or raised provided the stepped, recessed or raised portion is of watertight construction.

2.1.5.1.3 *Minimum requirements for freeboard are given in section 3.2.* **N**

2.1.5.2 Weather deck

2.1.5.2.1 The weather deck may be the freeboard deck or other watertight deck above that is exposed to the weather.

2.1.6 Watertight Bulkheads

2.1.6.1 *Vessels shall be provided with a watertight collision bulkhead in the fore part of the vessel positioned to the satisfaction of a Certifying Authority.* **N**

- 2.1.6.2 **The bulkhead arrangement of an existing vessel is acceptable provided that such 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.* **N**
- 2.1.6.4 *Such bulkheads shall extend up to the freeboard deck and the number of openings fitted therein shall be the minimum compatible with the safe operational requirements of the vessel.* **N**
- 2.1.6.5 *The strength of the bulkheads shall be adequate to withstand a head of water to the satisfaction of a Certifying Authority.* **N**
- 2.1.6.6 *In vessels constructed of wood, a collision bulkhead and bulkheads at the fore and aft ends of the machinery space, shall be provided. The after bulkhead of the machinery space may terminate on a horizontal, flat that extends aft to the stern, above the line of shafting. The bulkheads and flat referred to in this section shall be of adequate strength and gasketed and/or caulked to prevent significant leaks or flooding.* **N**
- 2.1.6.7 *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. The collision bulkhead shall have valves fitted to all pipe penetrations and these shall be capable of operation from a readily accessible position.* **N**
- 2.1.6.8 *A door fitted in a watertight bulkhead shall be of watertight construction and be kept closed at sea.* **N**
- 2.1.6.9 *Doors are not permitted in the collision bulkhead unless fitted in a bulkhead extension above the freeboard deck, such doors may be of weathertight construction and shall be kept closed at sea.* **N**
- 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 Doors of hinged or sliding type may be used except that doors of the hinged type will only be allowed when there is no operational requirement for the door to be kept open at sea, such doors shall be operable from both sides. Sliding type doors shall be operable from an accessible position above the freeboard deck.
- 2.1.7.3 All 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 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.* **N**

- 2.2.1.3 Particular attention shall be paid to ensure that accesses and openings to machinery spaces are protected by strong and efficient structures which shall contain weathertight or watertight means of closure, dependent on the position of the opening.
- 2.2.1.4 *Vessels with a wheelhouse fitted directly on the freeboard deck shall be provided with a suitable means of closure to any freeboard deck opening within the wheelhouse space. Additionally the means of drainage of the wheelhouse space shall preferably be directly overboard.* **N**
- 2.2.1.5 *Wheelhouses which are fitted over structures above the freeboard deck shall have arrangements to allow water to rapidly drain down to the freeboard deck and then directly over the side.* **N**
- 2.2.1.6 Openings in the freeboard 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 2.2.4.
- 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°.* **N**
- 2.2.2 Hatchway Covers**
- 2.2.2.1 A hatchway that gives access to spaces below the freeboard 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 2.2.4.
- 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 new vessels the covers shall be of steel or equivalent material and of sufficient strength to accommodate the expected service loading.* **N**
- 2.2.2.5 **The covers provided on an existing vessel will be acceptable provided they continue to remain efficient in service.** **E**
- 2.2.2.6 Weathertight hatches on exposed freeboard and superstructure decks shall be kept closed at sea, when not in use.
- 2.2.3 Weathertight Doors**
- 2.2.3.1 All access openings in the external bulkheads of enclosed superstructures and other outer structures protecting openings in the freeboard deck shall be fitted with doors of steel or other equivalent material. These doors shall be permanently and strongly attached to the bulkhead and so framed, stiffened and fitted that the whole structure of which they are part, is of equivalent strength to the unpierced bulkhead and weathertight when closed. The means for securing these doors weathertight shall consist of gaskets and clamping devices or other equivalent means, permanently attached to the bulkhead or to the doors themselves and arranged so that they may be operated easily and rapidly from each side of the bulkhead.
- 2.2.3.2 A coaming height appropriate to the position of the door shall be provided as in section 2.2.4.

2.2.3.3 Weathertight doors on the freeboard deck shall normally be kept closed at sea.

2.2.4 **Heights of Hatchway Coamings and Sills to Weathertight Doors**

2.2.4.1 *Subject to section 2.2.4.2, every hatchway and door sill on the exposed freeboard deck shall have a coaming of substantial construction and the height of the coaming above the deck shall not be less than 460 millimetres. On exposed first tier superstructure decks the height of the coamings shall not be less than 100 millimetres.* **N**

2.2.4.2 *The height of the hatch coamings specified in section 2.2.4.1 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.* **N**

2.2.4.3 *Coamings may also be reduced or omitted for hatches that are provided on freeboard 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.* **N**

2.2.4.4 *The heights of sills to doors provided in exposed companionways, superstructures, deckhouses and machinery casings that give access to spaces leading below the freeboard deck shall not be less than those specified for hatchway coamings in section 2.2.4.1 for a similar position. For other spaces the heights of door sills may be reduced provided:*

(i) *there is no access to spaces leading below the freeboard deck; and*

(ii) *the spaces are small; and*

(iii) *provided the safety of the vessel is not thereby impaired.* **N**

2.2.4.5 *The heights of coamings or sills may be required to be increased when a freeboard of less than that required by section 3.2 has been accepted.* **N**

2.2.4.6 *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**

2.2.4.7 **The coaming heights for doors and hatches on existing vessels shall be maintained in accordance with the requirements of Annex 4.** **E**

2.2.5 **Side scuttles (Portholes) and Windows**

2.2.5.1 Side scuttles to spaces below the freeboard deck and to enclosed superstructures, deckhouses or companionways on the freeboard deck shall be fitted with hinged deadlights capable of being closed watertight.

2.2.5.2 Every side scuttle shall be fitted in a position such that its sill is above a line drawn parallel to the freeboard deck at side having its lowest point 1 metre above the highest load waterline.

2.2.5.3 Side scuttles liable to damage from fishing gear or equipment shall be suitably protected.

2.2.5.4 Side scuttles, glasses and deadlights shall meet the requirements of ISO 21005, ISO 1751 and ISO 5780, type B (medium duty grade), in respect of nominal size and toughened safety glass thickness, or an equivalent standard.

2.2.5.5 Side scuttles fitted in exposed areas and in the forward bulkheads of freeboard deck erections shall be of the non-opening type.

2.2.5.6 Windows shall not be fitted below the freeboard deck.

- 2.2.5.7 If windows are fitted in the forward or after bulkheads of exposed freeboard deck erections, they shall be provided with efficient means of protection.
- 2.2.5.8 Windows and their frames shall meet the requirements of ISO 3903, ISO 21005 and ISO 5779, type E (heavy duty grade), in respect of nominal size and toughened safety glass thickness, or an equivalent standard.
- 2.2.5.9 Wheelhouse windows shall not be fabricated using polarised or tinted glass, although portable tinted screens may be employed if desired.
- 2.2.6 Scuppers, Inlets and Discharges**
- 2.2.6.1 *The number of inlets and discharges shall be kept to the operational minimum.* **N**
- 2.2.6.2 *Each scupper or discharge leading through the hull from spaces below the freeboard deck or from within an enclosed superstructure or deckhouse on the freeboard deck shall have an automatic non-return valve fitted at the hull with a positive means of closure from an accessible position.* **N**
- 2.2.6.3 *Each sea inlet valve shall be fitted with a positive means of closure from an accessible position.* **N**
- 2.2.6.4 *In machinery spaces, controls for main and auxiliary sea inlets essential for the operation of machinery may be controlled locally. The controls shall be readily accessible, above the floor plates, and be provided with indicators showing whether the valves are open or closed.* **N**
- 2.2.6.5 If valves are not fitted above the floor plates, rapid and practical means shall be provided to allow for the valve to be operated from floor plate level. If valves are fitted in wells, extended spindles shall be fitted to a higher level to enable their accessibility if flooding occurs.
- 2.2.6.6 *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 2.2.6.2.* **N**
- 2.2.6.7 If scuppers from open decks penetrate the hull below the freeboard deck they shall be made from piping of substantial thickness.
- 2.2.6.8 Refer also to sections 4.1.11 (Seawater Systems), 4.3.2.10 and 4.3.2.11 (Bilge Systems) and 11.1.3 (Pollution).
- 2.2.6.9 Existing vessel arrangements will continue to be acceptable provided that valves fitted at hull penetrations remain both accessible and efficient in service.** **E**
- 2.2.7 Ventilators**
- 2.2.7.1 The minimum height above deck of ventilators, other than machinery space ventilators, shall be 760 millimetres on an exposed freeboard deck, and 450 millimetres on an exposed first tier superstructure deck.
- 2.2.7.2 *Machinery space ventilators shall be led as high as is reasonable and practicable and preferably be fitted well inboard, the angle of initial downflooding to the machinery spaces shall not be less than 40°.* **N**
- 2.2.7.3 All ventilators shall be of substantial construction and be provided with permanently attached means of weathertight closure except that weathertight closing appliances need not be fitted to ventilators with coamings extending more than 4.5 metres above the freeboard deck or more than 2.3 metres above the superstructure deck. Fireflaps shall be fitted in such coamings in accordance with section 5.3 (Ventilation Systems).

2.2.7.4 Refer also to sections 4.1.14 (Ventilation), 5.3 (Ventilation Systems), 5.8 (Means for Stopping Machinery), 5.9.4.8 (Mechanical Ventilation), 5.9.6.2 (Ventilation of Hazardous Compartments), 6.1.7 (Ventilation of Workplaces), 10.1.1.2, 10.1.1.4 (Ventilation of Crew Accommodation).

2.2.8 Air Pipes

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

2.2.8.2 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.

2.2.8.3 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.

2.2.8.4 Refer also to sections 4.1.13.3, 4.1.13.5, 4.1.13.7, 8 & 9 and 5.9.3.2 & 3 (Air Pipes to Fuel Tanks).

2.3 WATER FREEING ARRANGEMENTS

2.3.1 General

2.3.1.1 When freeboard 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 may 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 a Certifying Authority.

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 metres² 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:*

$$(i) \quad A = K \times l \quad (l \text{ need not be taken as greater than } 0.7 L).$$

Where $K = 0.07$ for vessels of 24 metres in length

$K = 0.035$ for vessels of 12 metres in length

$L =$ registered length of vessel

The value of K shall be obtained by linear interpolation from between the two values of lengths given above.

(ii) (a) *Where the bulwark is more than 1200 millimetres in average height the required area shall be increased by 0.004 metres² per metre of length of well for each 100 millimetres difference in height.*

(b) *Where the bulwark is less than 900 millimetres in average height,*

the required area may be decreased by 0.004 metres² per metre of length of well for each 100 millimetres difference in height. **N**

- 2.3.2.2 *The freeing port area calculated according to section 2.3.2.1 shall be increased where a Certifying Authority considers that the vessel's sheer is not sufficient to ensure that the deck is rapidly and effectively freed of water.* **N**
- 2.3.2.3 *Subject to the approval of Certifying Authority the minimum freeing port area for each well on the superstructure deck shall be not less than one-half the area (A) given in section 2.3.2.1.* **N**
- 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 and length greater than 450 millimetres 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 suitable construction. If devices are considered necessary for locking freeing port covers during fishing operations they shall be arranged to the satisfaction of a Certifying Authority and easily operable from a readily accessible position.* **N**
- 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 a Certifying Authority.
- 2.3.2.8 *If deck erections within a well limit the volume of water that may be retained onboard then the freeing port area may be reduced proportionally provided that such erections do not in themselves contribute to water retention.* **N**
- 2.3.2.8 Where deck level non-return valves would be immersed at an angle of heel of 10° or less in any loading condition the freeboard should be increased or powered drainage pumps, discharging from a point high in the side of the shelter, must be used; and the non-return valves removed and their openings sealed.
- 2.3.2.10 **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**

CHAPTER 3 (STABILITY AND FREEBOARD)

3.1 STABILITY

3.1.1 General

- 3.1.1.1 All vessels shall be provided with approved stability information to the satisfaction of the MCA for the conditions of service for which the vessel is intended.
- 3.1.1.2 The approved stability information shall contain the information and particulars that are detailed in Annex 3.
- 3.1.1.3 **Existing vessels, for which satisfactory stability characteristics have been demonstrated by means of roll testing, shall carry the results of the most recent roll test onboard in lieu of the approved stability information that is required by section 3.1.1.1. E**
- 3.1.1.4 All vessels shall be sufficiently stable when intact in the conditions of service for which they are intended.
- 3.1.1.5 The skipper shall take the precautionary measures necessary to maintain adequate stability of the vessel. In particular, the skipper shall ensure that all catch is efficiently stowed at all stages of loading to prevent the possibility of cargo shift due to vessel motions.
- 3.1.1.6 Information on the vessel's stability shall be available on board and accessible to those on watch.
- 3.1.1.7 Instructions supplied concerning the vessel's stability shall be strictly observed by those on watch.

Further advice on how to maintain the stability of your vessel can be obtained from: <http://rnli.org/safety/respect-the-water/activities/commercial-fishing>

3.1.2 Intact Stability Criteria for Vessels Requiring a Stability Information Booklet

- 3.1.2.1 Vessels shall, for the operating conditions and circumstances set out in Annex 3 including icing allowances when applicable, and in all foreseeable operating conditions, satisfy the following stability criteria after due correction for the free surface effects of liquids in tanks:
- (i) the area under the curve of righting levers (GZ curve) shall not be less than:
 - (a) 0.055 metre-radians up to an angle of 30°;
 - (b) 0.090 metre-radians up to an angle of 40° or such lesser angle of heel at which the lower edges of any openings in the hull, superstructures, deckhouses or companionways, being openings that cannot be closed weathertight, are immersed;
 - (c) 0.030 metre-radians between the angles of heel of 30° and 40° or such lesser angle as defined in (b) above;
 - (ii) the righting lever (GZ) shall be at least 200 millimetres at an angle of heel equal to or greater than 30°;
 - (iii) the maximum righting lever (GZ) shall occur at an angle of heel not less than 25°;
 - (iv) in the upright position the transverse metacentric height (GM) shall not be less than 350 millimetres;

3.1.2.2 If a vessel with beam to depth ratio greater than 2.5, such as a catamaran or multihull type does not meet the stability criteria given in section 3.1.2.1, the vessel should meet the following criteria:-

- (i) the area under the righting lever curve (GZ Curve) should not be less than 0.085 metre radians up to θ_{GZmax} when $\theta_{GZmax} = 15^\circ$ and 0.055 metre-radians up to θ_{GZmax} when $\theta_{GZmax} = 30^\circ$.

When the maximum righting lever, GZ_{max} , occurs between $\theta = 15^\circ$ and $\theta = 30^\circ$ the required area under the GZ Curve up to θ_{GZmax} should not be less than:

$$A = 0.055 + 0.002(30^\circ - \theta_{GZmax}) \text{ metre-radians}$$

where: θ_{GZmax} is the angle of heel in degrees at which the righting lever curve reaches its maximum.

- (ii) the area under the righting lever curve between $\theta = 30^\circ$ and $\theta = 40^\circ$ or between $\theta = 30^\circ$ and the angle of downflooding θ_f , if this angle is less than 40° , should not be less than 0.03 metre-radians;
- (iii) the righting lever GZ should not be less than 0.2 metre at an angle of heel of 30 degrees;
- (iv) the maximum righting lever should occur at an angle not less than 15 degrees; and
- (v) the initial metacentric height GM_0 should not be less than 0.35 metre.

3.1.2.3 For vessels engaged on single or twin boom fishing the values of dynamic stability, righting lever and metacentric height given in sections 3.1.2.1 (i), (ii), (iv) and 3.1.2.2 (i), (ii), (iii), (v) respectively shall be increased by 20%.

3.1.3 Damage Stability Criteria for Multihull vessels

3.1.3.1 This section applies to all new multihull vessels and vessels being significantly modified.

3.1.3.2 Multihull vessels should be fitted with engine rooms that are separated by a watertight bulkhead.

3.1.3.3 In assessing survivability, the following standard permeabilities should be used:-

| Space | Permeability % |
|---|----------------|
| Appropriated for stores | 60 |
| Appropriated for stores but not by a substantial quantity thereof | 95 |
| Appropriated for accommodation | 95 |
| Appropriated for machinery | 85 |

Appropriated for liquids 0 or 95 whichever results in the more onerous requirements

Other methods of assessing floodable volume may be considered, to the satisfaction of the MCA.

3.1.1.4 In assessing survivability the vessel should meet the damage stability criteria for one of two methods. The first (denoted Option 1) considers minor hull damage scenarios with limited equilibrium trim and heel angles after damage. This has historically been used by monohulls and some catamarans. The second method (denoted Option 2) considers minimum length single compartment damage scenarios with more onerous residual stability, combined with increased allowable equilibrium angles after damage. This Option 2 has been developed to address particular stability issues raised by low waterplane area vessels with deep hulls which typically have large intact freeboards such as catamarans.

3.1.3.5. Damaged Stability, Option 1

3.1.3.6 Vessels should be so arranged that after minor hull damage or failure of any one hull fitting in any one watertight compartment, it will satisfy the residual stability criteria below. This may be achieved by fitting water-tight subdivision or alternative methods to the satisfaction of the MCA. Minor damage should be assumed to occur anywhere in the vessel but not on a watertight subdivision.

3.1.3.7 In the damaged condition, the residual stability should be such that:

- (i) the angle of equilibrium does not exceed 7° from the upright;
- (ii) the resulting righting lever curve has a range to the downflooding angle of at least 15° beyond the angle of equilibrium;
- (iii) the maximum righting lever within that range is not less than 100 millimetres;
- (iv) the area under the curve is not less than 0.015 metre radians;
- (v) this damage should not cause the vessel to float at a waterline less than 75 millimetres from the weatherdeck at any point.

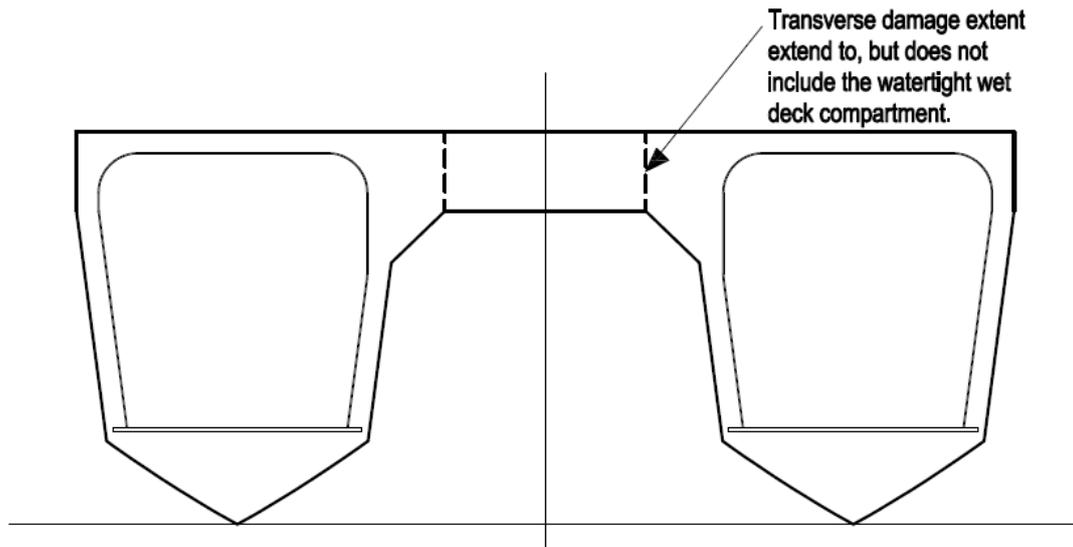
3.1.3.8 Damaged Stability, Option 2 :

3.1.3.9 Damaged Stability should be calculated with any one compartment flooded. The extent of damage should be:

- (i) A damage length of 10% Length should be considered in the calculations. Where the distance between two transverse watertight bulkheads is less than the damage length, one or more bulkheads should be disregarded in the damage stability calculations, such that the compartment length considered is equal to or greater than the damage length. The damage length given above need not be applied within the forepeak and aftpeak compartment/s;
- (ii) The transverse extent of damage should be up to and including the centreline of the vessel. A catamaran need only be considered to have damaged the full width of one hull, provided the two hulls are totally independent i.e. there are no cross connecting spaces that could allow flooding to progress into the other hull. See Figure 1. Trimarans should be considered to have damaged wing and centre compartments up to the centre line of the vessel;
- (iii) The vertical extent of damage should be taken for the full vertical extent of the vessel, and;
- (iv) The shape of the damage should be assumed to be a rectangular block.

Watertight compartments aft of the transom that do not form part of the hull length and do not extend below the design waterline (such as overhangs and appendages) need not be considered in the damaged length assessment.

Figure 1



- 3.1.3.10 Spaces that are normally occupied at sea are to be provided with at least two independent means of escape preferably at opposite sides / ends of the superstructure that allow positive freeboard independent of its location.
- 3.1.3.11 Any weathertight doors or openings leading from undamaged spaces, that are normally occupied at sea, to the weatherdeck should be regarded as downflooding points for the purposes of the damage stability calculation.
- 3.1.3.12 Damage to all the compartments of each hull of a multihull vessel forward of a point 5%L aft of the forward extremity of the watertight hulls shall be assessed to ensure that it does not result in a more onerous damaged stability condition.
- 3.1.3.13 In the damaged condition, the residual stability and damaged waterline should be such that:
- (i) the angle of equilibrium (combined heel and trim) does not exceed 15° from the upright, sufficient non-slip deck surfaces and suitable holding points e.g. rails, grab bars etc., are provided along escape routes and accessing escape routes. Additionally, practical consideration should be given to the means of accessing, launching and embarking liferafts;
 - (ii) the resulting righting lever curve has a range to the downflooding angle of at least 20° beyond the angle of equilibrium;
 - (iii) the maximum righting lever within that range is not less than 200 millimetres; and
 - (iv) the area under the curve is not less than 0.045 metre radians;
 - (v) the final equilibrium waterline should be below the lowest point of any opening which is not closed by an approved watertight closure. This includes air pipes, hatch covers, doors and any other weathertight closure;
 - (vi) this damage should not cause the vessel to float with a freeboard less than 75 millimetres from the lowest point of the weatherdeck. This may be relaxed on application to the Administration, provided that all of the following are met:
 - .1 the immersed portion of the weather deck is not a life saving appliance storage area;

- .2 it is not part of an assembly station, evacuation point or part of an evacuation route; and
- .3 that no more than 10% L of the deck edge on the damaged side is immersed in the process, and that negative freeboard measured from the deck edge is limited to a maximum of 300 millimetres.

3.1.4 **Lightship Particulars**

- 3.1.4.1 The vessels lightship particulars should be determined by inclining on completion of building to the satisfaction of the Certifying Authority. The lightship weight, vertical centre of gravity (VCG) and longitudinal centre of gravity (LCG) should be determined from the results of an inclining experiment. Guidelines for the procedure on carrying out of an inclining experiment can be found in the Instructions for the Guidance of Surveyors on Approval of Stability (MSIS 9), Chapter 1, Annex 3¹.
- 3.1.4.2 The vessels lightship details should be verified at certificate renewal to the satisfaction of the Certifying Authority.
- 3.1.4.3 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 should be made to limiting these effects if lightship growth and the possibility of adverse effects on the vessel's stability are to be avoided.
- 3.1.4.4 An inclining experiment may not produce satisfactory results for vessels such as multihulls where the VCG is less than one third of the GM over the range of standard operating conditions. In such cases the LCG should be obtained by a lightweight survey (MSIS 9 Chapter 1, Annex 1) or by weighing with two gauges (e.g. one fore and one aft). The lightship VCG may be obtained by an accurate weight estimate calculation with a suitable margin added, in no case should the lightship VCG be taken below main deck level. Details of the estimated lightship weight, LCG and VCG should be submitted to the MCA at an early stage for verification.
- 3.1.4.5 The lightship weight may include a margin for growth, up to 5% of the lightship weight at the discretion of the MCA, positioned at the LCG and vertical centre of the weather deck amidships or the lightship VCG, whichever is higher. (The lightweight margin should not be used in practice to increase maximum cargo-deadweight).
- 3.1.4.6 For any newly built ship with known differences from a sister ship, a detailed weights and centres calculation to adjust the lead ship's lightship properties should be carried out.
 - (i) The lightship properties for the new ship may be assessed by carrying out a lightweight survey. The deviation in lightship displacement should not exceed 2% of the lightship displacement of the sister ship. In addition, the deviation in lightship LCG should not exceed 1% of the LBP of the sister ship LCG. Where the deviation is within these limits the actual lightship weight and LCG derived from the lightship check should be used in conjunction with the higher of either the lead ship's VCG or the calculated value.
 - (ii) Subject to the agreement of the MCA, the requirement for an inclining test may be dispensed with in cases where the margins on intact and damage stability are sufficient to permit minor changes in VCG, e.g. a minimum of 10% margin on intact and damage stability criteria requirements, and the weight difference can be accurately assessed to the satisfaction of the MCA. In addition the vessel must be similar in all respects and the MCA must be satisfied with the procedure and accuracy of the original inclining. Small modifications, for which an accurate assessment by calculation may be taken into account, are acceptable. Where lightship particulars of

¹http://www.dft.gov.uk/mca/mcga07-home/shipsandcargoes/mcgashipsregsandguidance/mcga-dqs-ss_guidance_to_surveyors.htm

a vessel are based on a lightship survey the inclining report for the 'lead' sister vessel should be included in the stability information of the subsequent sister/s.

- (iii) Where the deviation exceeds either of these limits, an inclining test should be carried out.

3.1.5 Vessel Modifications Affecting Stability

3.1.5.1 Modifications or alterations affecting the vessel's structure, the removal or repositioning of equipment, changes in the vessel's mode of fishing and/or its gear or the fitting of additional equipment shall be investigated, prior to making any changes, to ensure that the vessel will continue to comply with the required stability criteria. In addition such modifications or alterations shall only be carried out after consultation and with the approval of MCA.

3.1.5.2 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 shall be made to limiting these effects if lightship growth and the possibility of adverse effects on the vessel's stability are to be avoided.

3.1.6 Lifting Operations

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

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

3.1.6.3 *The Trim and Stability Manual shall 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 derricks at their maximum outreach. This is intended to provide a reference throughout the vessel's working life. The calculation shall be carried out for the vessel in the 'arrive fishing grounds' condition.* **N**

3.2 FREEBOARD

3.2.1 Every vessel shall be so designed, constructed and operated as to ensure that in all foreseeable operating conditions the freeboard will be adequate to provide:

- (i) compliance with the stability criteria set out in this section;
- (ii) appropriate safety for the crew working on deck; and
- (iii) appropriate safety to the vessel from the entry of water into enclosed spaces having regard to the closing appliances fitted.

3.2.2 *The minimum freeboard at any point along the freeboard deck (H_{min}) shall be not less than:*

$$H_{min} = LBP/40 \text{ (where LBP is length between perpendiculars)} \quad \mathbf{N}$$

3.2.3 *The minimum freeboard criteria shall be checked at the time of initial build, flag in or after substantial modifications have been made to the vessel. At renewal survey the minimum freeboard shall be not less than that required to comply with the stability criteria or 300 millimetres, whichever is greater.* **N**

3.2.4 *Where a vessel is fitted with bulwarks of at least 1 metre high, extending at least 0.15L abaft the forward perpendicular, the minimum bow height of the freeboard deck above the deepest operational waterline at the forward perpendicular ($H_{f_{min}}$) shall be not less than:*

$$H_{f_{min}} = 0.75 + 6.6LBP/240 \quad \mathbf{N}$$

- 3.2.5 *Where the bulwark height is less than 1 metre, the minimum bow height shall be increased accordingly.* **N**
- 3.2.6 *H_{min} may, in cases where a weathertight forecastle is fitted that extends at least 0.07LBP abaft the forward perpendicular, be measured to the top of the forecastle deck plating.* **N**
- 3.2.7 *The minimum freeboard aft (measured at the after perpendicular) (H_{a min}) shall not be less than:*
- H_{a min} = 0.24 + LBP/37.5* **N**
- 3.2.8 *For vessels with shelters, that do not meet the minimum freeboard requirement, then such shelters shall be of weathertight construction up to the next deck level (i.e. with weathertight doors and hatches, no permanent openings or freeing ports but with suitable drainage being provided).* **N**
- 3.2.9 *Additionally for vessels with particular modes of operation, in which the application of the above minimum freeboard criteria are considered to be unrealistic, then the arrangements may be specially considered and accepted by a Certifying Authority provided that equivalent safety is maintained.* **N**
- 3.2.10 *In such circumstances the coaming heights of doors, hatches, ventilators and air pipes would need to be raised above the rule minimum by an amount equivalent to the freeboard deficiency.* **N**
- 3.2.11 **The freeboards on existing vessels will continue to be accepted providing they are maintained in accordance with the requirements of Annex 4.** **E**

3.3 DRAUGHT MARKS

- 3.3.1 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.
- 3.3.2 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 a Certifying Authority. Reference shall also be made to the vessel's Stability book.

CHAPTER 4 (MECHANICAL & ELECTRICAL INSTALLATIONS)

4.1 MACHINERY

4.1.1 General Requirements

Machinery installations shall comply with the general requirements given below and to the requirements of a Certifying Authority. Other installations proposed may be specially considered, provided that full information is presented to and approved by a Certifying Authority. 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 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.

4.1.2.4 Where risk from over-speeding of machinery exists, provisions shall be made to ensure that the safe speed is not exceeded.

4.1.2.5 Machinery spaces that will be periodically unattended at sea shall be provided with proper alarm, detection and machinery control systems.

4.1.2.6 Means shall be provided to prevent overpressure in any part of the machinery and pressure vessels (refer to section 4.1.5).

4.1.2.7 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.

4.1.2.8 The wheelhouse is considered to be an area that meets the requirements of section 4.1.2.7.

4.1.2.9 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 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.* **N**

4.1.4 Engine Starting

4.1.4.1 Main or auxiliary engines shall be capable of being started from the deadship condition without external aid. Such means shall be either hydraulic, air, hand or electric starting or other means acceptable to a Certifying Authority.

- 4.1.4.2 Main engine starting arrangements shall be adequate to start the main engine or engines not less than six times successively.
- 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. Charging facilities shall be available for the batteries in accordance with the requirements of section 4.2.9.
- 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.
- 4.1.5 **Air Pressure Systems**
- 4.1.5.1 Air pressure systems shall be designed, constructed and pressure tested to the satisfaction of a Certifying Authority.
- 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 and to drain these systems.
- 4.1.5.6 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 a Certifying Authority, 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; and
 - (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 a Certifying Authority.
- 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 a Certifying Authority.

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 a Certifying Authority.

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

4.1.11.2 '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 galvanized internally after all fabrication work is complete.

4.1.11.3 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.

4.1.11.4 Recommendations may also be found in MGN 190 (F): Fishing Vessels – The Premature Failure of Copper Pipes in Engine Cooling Water Systems, or any superseding document.

4.1.11.5 Sea water pipes, wherever practicable, shall be connected by means of bolted flanges, visible and readily accessible for maintenance and inspection purposes as done in section 4.1.12.4.

Existing vessels shall be fitted with such arrangements whenever seawater pipework is renewed. E

4.1.11.6 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 a Certifying Authority.

4.1.11.7 Sea water 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.

4.1.11.8 *New vessels shall be fitted with at least two main seawater cooling inlets, with one inlet fitted on each side of the vessel (except when fitted with 'keel cooling' arrangements).* **N**

4.1.11.9 Refer also to section 2.2.6 (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 or hydraulic oil shall be made of seamless steel or other suitable material and shall be properly 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, 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.

In new vessels it is recommended that such lengths shall not exceed 1500 millimetres.

N

- 4.1.12.5 *Where flexible hydraulic pipes are fitted to new vessels within a high fire risk area, such pipes shall be fire proof and capable of withstanding a fire test to 800°C centigrade for 30 minutes. One of the following standards may be used to verify such a test:*

BS ISO 15540 – Fire resistance of hose assemblies – Test methods; and

BS ISO 15541 – Fire resistance of hose assemblies – Requirements for the test bench.

N

- 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):*

BS EN 853 Rubber covered wire braided reinforced hydraulic type; and

BS EN 856. Rubber covered spiral wire reinforced hydraulic type.

N

- 4.1.12.7 Equivalent or higher standards may be accepted by a Certifying Authority.

- 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 **Existing vessels shall comply with sections 4.1.12.5, 4.1.12.6 and 4.1.12.7 whenever systems are renewed or fitted.**

E

- 4.1.12.10 All hydraulic pumps shall be fitted with a remote stop facility.

- 4.1.12.11 Where tubular gauge glasses are fitted to lubricating oil or hydraulic oil tanks they shall be of substantial construction, adequately protected and, where the capacity of the tank exceeds 40 litres, they shall be fitted with self-closing arrangements on the tank.

- 4.1.12.12 Hydraulic oil tanks with a capacity greater than 65 litres shall comply with section 4.1.13.11

- 4.1.12.13 Hydraulic oil storage 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 storage 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.

- 4.1.12.14 *Hydraulic oil storage tanks, with a capacity greater than 65 litres, shall be fitted with an alarm to detect leakage from the system.*

N

4.1.13 **Oil Fuel Installations**

- 4.1.13.1 Oil fuel used in machinery shall have a flash point of not less than 60°C (Closed Cup Test).

- 4.1.13.2 Oil fuel tanks shall be properly constructed and provided with save-alls or gutters in way of valves and fittings. Such tanks shall not be situated directly above engines, heated surfaces, stairways, ladders or electrical equipment other than unbroken runs of cable.

Prior to installation, tanks shall be subjected to a suitable pressure test to the satisfaction of a Certifying Authority.

- 4.1.13.3 Means shall be provided for measuring the contents of oil fuel tanks and means provided to prevent overpressure in such tanks. The 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.
- 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 2.2.6). 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 a MCA.** **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 those fitted with an outlet valve which may be left open during normal operation of the vessel. Inlet and recirculation valves shall be of the non-return type.
- 4.1.13.12 *Electric driven fuel and oil pumps shall be fitted with a remote stop at a suitable position outside the machinery space.* **N**
- It is recommended that existing vessels are fitted with such an arrangement.** **E**
- 4.1.13.13 *Save-all(s) or equivalent means of containment of spillage shall be provided below fuel pump(s), auxiliary engines, oil pumps and filter(s).* **N**
- Existing vessels shall be fitted with such arrangements, as far as practicable.** **E**
- 4.1.13.14 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.
- 4.1.13.15 Oil fuel filling points shall be so arranged that oil fuel will not readily be spilled, overflow, drain or lodge in any space.

4.1.13.16 Pipes used to convey fuel oil shall, wherever possible, be made of seamless steel or other suitable material and shall be properly installed, 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 a Certifying Authority.

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

4.1.14 **Ventilation**

4.1.14.1 Adequate means of efficiently ventilating the engine room under all operating conditions, with doors and hatches closed, shall be provided.

4.1.15 **Refrigerating Plant**

4.1.15.1 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, are recommended to be fitted (where practicable).

4.1.15.2 Ammonia, methyl chloride or chlorofluorocarbons (CFCs, with ozone depleting potential higher than 5% of CFC-11) shall not be used as refrigerants.

4.1.15.3 Where refrigerating plants are installed they shall be maintained in an efficient working condition and examined at regular intervals.

4.1.16 **Spare Gear**

4.1.16.1 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, and temporary means of repairing pipework, seawater pump spares, bilge pump spares, tool-kit, fuses and light bulbs.

4.2 **ELECTRICAL ARRANGEMENTS**

4.2.1 **General**

4.2.1.1 The electrical arrangements shall be such as to minimise the risk of fire and electric shock and satisfy the requirements of a Certifying Authority. The installation shall also 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.

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 a small vessel 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.* **N**

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.*
N

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.

4.2.3 **Distribution Systems**

4.2.3.1 Main and emergency switchboards shall be suitably guarded and arranged to provide easy access without danger to any person. Adequate non-conducting mats or gratings shall be provided. Exposed parts that may have a voltage between conductors or to earth exceeding 55 volts shall not be installed on the face of any switchboard or control panel.

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 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 the wheelhouse, the machinery space, all means of escape, the survival craft launching and embarkation areas and person-overboard rescue equipment and rescue areas.

- 4.2.4.4 *The stroboscopic effect of fluorescent lighting shall be avoided.* **N**
- 4.2.4.5 Reference shall also be made to section 4.2.10.1.**
- 4.2.5 Hazardous Spaces**
- 4.2.5.1 Electrical equipment, 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 shall comply with a recognised 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 *BS 8450 Code of Practice for the Installation of Electrical and Electronic Equipment in Ships* **N**
- 4.2.6.2 *BS 6883, Specification for elastomer insulated cables for fixed wiring in vessels. (Suitable for lighting, power, control, instrumentation and propulsion circuits).* **N**
- 4.2.6.3 *IEC 600 92-350, Low-voltage 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 0.6/1kV.).* **N**
- 4.2.6.4 *ISO 10133, Small Craft - Electrical systems - Extra-low voltage D.C. installations.* **N**
- 4.2.6.5 *ISO 13297, Small Craft - Electrical systems - Alternating current installations.* **N**
- 4.2.6.6 *BS EN 28846, Small Craft - Electrical devices - Protection against ignition of surrounding flammable gases.* **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.
- 4.2.7.2 Fixed electrical cable shall be of a flame retarding 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.
- 4.2.7.3 Wiring shall be supported in such a manner as to avoid chafing or other damage (refer to section 4.2.6 above).
- 4.2.7.4 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.

- 4.2.7.5 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.
- 4.2.7.6 Every lighting circuit terminating in a fish hold or similar space shall be provided with an isolating switch positioned outside that space.
- 4.2.7.7 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.* **N**

Existing arrangements for existing vessels will continue to be accepted. **E**

- 4.2.8.2 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.
- 4.2.8.3 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.
- 4.2.8.4 *Sources of electrical power shall be so arranged to operate efficiently in the conditions detailed in section 4.1.3.2.* **N**

Existing arrangements for existing vessels will continue to be accepted. **E**

- 4.2.8.5 Where transformers form an essential part of the supply system, they shall be arranged to ensure continuity of supply.
- 4.2.8.6 *Main and emergency lighting systems shall be such that a fire or other incident in the spaces containing either source of supply 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.

4.2.10 **Emergency Power Source**

- 4.2.10.1 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 will 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;

- (iii) the emergency lights (in stairways, exits, machinery spaces, wheelhouse and liferaft launching stations);
- (iv) the radio installation (reference shall be made to The Merchant Shipping (Radio)(Fishing Vessels) Regulations, SI 1999, No. 3210, as amended, or any subsequent documents).

Vessels of 18 metres in length LBP and over, constructed before 23 November 1995, may continue to locate the emergency electrical power source inside the engine room, where structural characteristics do not permit relocation. E

- 4.2.10.2 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.
- 4.2.10.3 If the emergency electrical power source is an accumulator battery and the main electrical power source fails, the accumulator battery shall 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 4.2.10.1, above.
- 4.2.10.4 The generating sets (required in section 4.2.8.1) shall each be capable of charging such accumulator batteries.
- 4.2.10.5 *Adequate means shall be provided to enable regular testing of the emergency source of electrical power. N*
- 4.2.10.6 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.

4.2.11 Shore Power

- 4.2.11.1 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.
- 4.2.11.2 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.
- 4.2.11.3 A permanent cable shall be run from the connection box to the main switchboard and connected via a suitable isolating device.
- 4.2.11.4 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.
- 4.2.11.5 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 incoming supply earth.
- 4.2.11.6 An indicator shall be fitted at the main switchboard to show when the shore supply is live.
- 4.2.11.7 Shore connection boxes are to be fitted with a label detailing the supply requirement of the vessel and the method of connection.

4.3 BILGE PUMPING

4.3.1 General

- 4.3.1.1 A vessel shall 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).

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

4.3.2 **Bilge and Fish Processing Space Pumping Arrangements**

4.3.2.1 Every vessel shall 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 accepted. **E**

- (iii) Weathertight compartments into which processing or wash water is introduced, are required to be provided with an independent pumping capability, regardless of whether scupper valves or similar are fitted. The pumps shall have 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.

4.3.2.2 All vessels shall have:

- (i) Not less than two separate bilge pumps, each having a minimum capacity (Q) calculated as follows: $Q = (0.00575) D_m^2$ (metres³ per hour);

- (ii) where D_m = bilge main diameter (millimetres); and

$$D_m = 30 + 1.68\sqrt{L(B+D)} \text{ or } 50 \text{ millimetres (whichever is the greater)}$$

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

- (iii) *On new vessels, both pumps shall be power driven, with at least one pump driven by independent means;* **N**

- (iv) **On existing vessels, at least one pump shall 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;
or

(d) a hand operated bilge pumping system. **E**

Note: The capacity of systems (a) to (d) above shall satisfy the minimum capacity (Q). If not, a portable salvage pump, satisfying the minimum capacity (Q) shall be provided. A portable salvage pump may also be used as an emergency fire pump and it is 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.

- 4.3.2.3 A general service pump, of minimum capacity (Q), may be used as a power driven bilge pump.
- 4.3.2.4 Bilge ejectors do not meet the requirements of a power driven bilge pump.
- 4.3.2.5 Bilge pumps shall be self-priming. Pumps, whether operated by hand or power, shall be capable of drawing water from any space as required by section 4.3.1.1.
- 4.3.2.6 Distribution boxes, valves and cocks fitted in bilge pumping systems shall be in accessible positions.
- 4.3.2.7 In every vessel
- (i) pipes from the pumps for draining hold spaces or any part of the machinery space shall 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.
- 4.3.2.8 Bilge main pipe diameters shall be in accordance with section 4.3.2.2.

Existing vessels may continue to comply with the requirements of Annex 4. E

- 4.3.2.9 Bilge branch suction pipes diameters shall be not less than:

$$D_b = 35 + 2.15 \sqrt{C(B+D)}$$

Where D_b = internal bilge branch line diameter or 40 millimetres, whichever the greater

C = length of compartment (metres)
 B = breadth of vessel (metres) D= depth
 of vessel (metres)

Existing vessels may continue to comply with the requirements of Annex 4. E

- 4.3.2.10 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 shall be fitted with either a non-return valve or a cock which cannot be opened simultaneously either to the bilges and to the sea or to the bilges and water ballast spaces.
- 4.3.2.11 Valves in bilge distribution boxes shall be of a screw down non-return type. Non-return valves shall be fitted in the discharge lines of hand operated bilge pumps unless the pumps are of suitable design and discharge directly onto the deck.
- 4.3.2.12 All bilge suction shall be fitted with readily accessible strainers. The total area of the perforation in the strainer shall be not less than twice the cross sectional area of the bilge pipe.
- 4.3.3 **Bilge Alarms**
- 4.3.3.1 A bilge alarm sensor shall be fitted in the propulsion machinery space and fish hold(s) of the vessel. These alarms shall be accessible for regular testing.
- 4.3.3.2 To prevent pollution, bilge sensors in compartments containing pollutants shall not automatically start bilge pumps.

- 4.3.3.3 Any auto-start bilge pump serving a clean compartment shall 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.
- 4.3.3.4 Each dry compartment provided with a bilge suction capability (built-in or portable) shall be fitted with a bilge level alarm if the level of bilge water cannot 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.
- 4.3.3.5 A bilge alarm shall provide an audible and visual warning at the control position(s).
- 4.3.3.6 Each engine room bilge alarm system shall be provided with:
 - (i) a secondary, independent bilge alarm system meeting the same requirements as the main alarm system; or
 - (ii) a “fail safe” warning should the bilge alarm circuit become faulty.
- 4.3.3.7 Further guidance for bilge alarms and bilge pumps is provided in MGN 165(F), Fishing Vessels: The Risk of Flooding, or any superseding document.

4.4 STEERING GEAR, RUDDERS, ANCHORS AND CHAIN CABLES

4.4.1 Steering Gear

- 4.4.1.1 Every vessel shall be provided with a main steering gear and an auxiliary means of actuating the rudder to the satisfaction of a Certifying Authority.
- 4.4.1.2 The main steering gear and the auxiliary means of actuating the rudder shall be arranged so that as far as is reasonable and practicable a single failure in one of them will not render the other one inoperative. If electrical power is lost in the wheelhouse, the auxiliary steering shall remain operable.
- 4.4.1.3 In every vessel:
 - (i) the main steering gear including any rudder, stock, tiller and associated fitting shall be of adequate strength and capable of steering the vessel at the maximum ahead service speed and shall be so designed that they are not damaged at maximum astern speed or in any other operating condition;
 - (ii) the auxiliary means of steering shall be capable of being brought rapidly into action and shall enable the vessel to be steered at a navigable speed.
- 4.4.1.4 *The main steering gear shall be capable of turning the rudder from 35° on one side to 35° on the other in 30 seconds when the vessel is at navigable speed and from 20° on one side to 20° on the other in 30 seconds when the vessel is at maximum ahead service speed, with the rudder totally submerged.* **N**
- 4.4.1.5 Every vessel shall have a rudder position indicator in the wheelhouse.

4.4.2 Vessels Fitted with Steering Devices other than Rudders

- 4.4.2.1 If a vessel is fitted with a steering device other than a rudder, the construction and operation of such a device shall be adequate and suitable for its intended purpose.

4.4.3 Electrical and Electro-hydraulic Steering Gear

- 4.4.3.1 Where electrical or electro-hydraulic steering gear is fitted, indicators shall be provided which will show when the power units of such steering gear are in operation. These indicators shall be situated in the machinery control room or other suitable position and in the wheelhouse.

- 4.4.3.2 Where electrical power is the only source of power for steering, in the event of electrical systems failure, either of the following provisions shall be available for emergency steering:
- (i) a portable tiller arm that can mount on the top of the rudder stock and be operated by a block and tackle system; or
 - (ii) a hand pump powered by a hydraulic system with direct connection via a hydraulic ram to the tiller arm (this may be a helm-mounted pump within the steering system).
- 4.4.3.3 An efficient form of communication between the main control position and the emergency steering position shall be provided.
- 4.4.3.4 Each circuit shall be adequate for the most severe load condition; short circuit protection only shall be provided.
- 4.4.4 **Anchors and Cables**
- 4.4.4.1 Every vessel shall be equipped with anchors and chain cables sufficient in weight and strength, having regard to the vessel's size and intended service. Wire rope of suitable strength (e.g. trawl warps) may be substituted for chain cable provided that a length of chain cable is attached between the wire rope and the anchor. The size of this chain shall be appropriate to the anchor weight and length of the chain cable shall not be less than the LOA of the vessel.
- 4.4.4.2 The anchor(s) with the associated cable shall be stowed to enable rapid deployment and be provided with means of retrieval and this shall be demonstrated to the satisfaction of the surveyor.
- 4.4.4.3 *Anchor weights and lengths of cables shall comply with the table 1 on the following page (subject to 4.4.4.4, 4.4.4.5 and 4.4.4.6 below) where:*
- Equipment numeral = $D^{2/3} + 1.6BH + A/10$ Where:*
- A = area (in metres²) in profile view of the hull, superstructures and houses above the deepest operating waterline, having a breadth greater than B/4*
- B = breadth of vessel (in metres)*
- H = freeboard midships (in metres) from the deepest operating waterline to the freeboard deck, plus the sum of the heights, in metres, of each tier of superstructures and houses at the centreline, each tier having a breadth greater than B/4*
- D = displacement, in tonnes, to the deepest operating waterline. **N***
- 4.4.4.4 *Where stud link cable is used, the diameter may be 1.5 millimetres less than the tabular diameter. **N***
- 4.4.4.5 ** Where it is proposed to use high holding power anchors, a reduction in anchor weight of up to 20% will be considered. **N***
- 4.4.4.6 *** U2 Grade refers to special quality steel (wrought/cast with a tensile strength in the range 490 - 690 N/millimetres²).*
- Chain cables constructed of mild steel (U1) (tensile strength in the range 300 – 490 N/millimetres²) shall be increased by 14% in diameter. **N***

4.4.4.7 **The anchor and cable arrangements on existing vessels will be accepted provided those arrangements continue to remain efficient in service.** **E**

TABLE 1 – This table is for bow anchors only, any other anchoring arrangements shall be approved by a Certifying Authority, and anchors selected accordingly.

| EQUIPMENT NUMERAL | TOTAL ANCHOR WEIGHT IN KGs (MINIMUM)* | MIN NO OF ANCHORS | MINIMUM LENGTH OF CABLE IN METRES | SIZE OF CHAIN CABLE IN MM; U2** |
|--------------------------|--|--------------------------|--|--|
| <i>UP TO 60</i> | <i>95</i> | <i>1</i> | <i>82.5</i> | <i>12.0</i> |
| <i>61-80</i> | <i>130</i> | <i>1</i> | <i>82.5</i> | <i>12.0</i> |
| <i>81-90</i> | <i>165</i> | <i>1</i> | <i>82.5</i> | <i>12.0</i> |
| <i>91 -100</i> | <i>190</i> | <i>1</i> | <i>110</i> | <i>14.0</i> |
| <i>101-110</i> | <i>210</i> | <i>1</i> | <i>110</i> | <i>14.0</i> |
| <i>111-120</i> | <i>245</i> | <i>1</i> | <i>110</i> | <i>15.0</i> |
| <i>121 – 130</i> | <i>270</i> | <i>1</i> | <i>110</i> | <i>15.0</i> |
| <i>131 – 140</i> | <i>305</i> | <i>1</i> | <i>137.5</i> | <i>16.0</i> |
| <i>141 – 150</i> | <i>350</i> | <i>1</i> | <i>137.5</i> | <i>16.0</i> |
| <i>151 – 175</i> | <i>435</i> | <i>1</i> | <i>137.5</i> | <i>19.0</i> |
| <i>176-205</i> | <i>520</i> | <i>1</i> | <i>137.5</i> | <i>20.5</i> |
| <i>206-240</i> | <i>590</i> | <i>1</i> | <i>137.5</i> | <i>22.0</i> |
| <i>241-280</i> | <i>660</i> | <i>1</i> | <i>165</i> | <i>24.0</i> |

For intermediate values of equipment numeral, linear interpolation may be carried out for anchor weights, cable lengths and sizes.

4.5 Towing Points

4.5.1 Operations such as towing impose great loads on ropes, warps, gear and equipment. It is recommended that vessels use the updated advice on the safe installation, maintenance and use of mooring, towing and hauling equipment in MGN 308 – Mooring, Towing or Hauling Equipment on All Vessels – Safe Installation and Safe Operation, or any superseding document.

CHAPTER 5 (FIRE PROTECTION, DETECTION & EXTINCTION)

5.1 FIRE

5.1.1 General

- 5.1.1.1 Every vessel shall be so constructed and equipped such that there is no substantial fire risk to the vessel or to persons on board the vessel.
- 5.1.1.2 Consideration shall be given to reducing the use of combustible construction materials when non-combustible equivalents are readily available.
- 5.1.1.3 The insulating materials used in accommodation spaces, service spaces, control stations and machinery spaces shall be non-combustible. The surface of any insulation fitted on the internal boundaries of machinery spaces shall be impervious to oil or oil vapours.
- 5.1.1.4 Within refrigerating compartments, any combustible insulation shall be protected by close fitting linings.
- 5.1.1.5 Exposed surfaces within accommodation spaces, service spaces, control stations, corridor and stairway enclosures and the concealed surfaces behind bulkheads, suspended ceilings, panelling and linings fitted within those spaces shall have low flame spread characteristics.
- 5.1.1.6 *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.* **N**
- 5.1.1.7 Air spaces enclosed behind suspended ceilings, panelling or linings in accommodation spaces, service spaces and control stations shall be divided by close fitting draught stops spaced not more than 7 metres apart.
- 5.1.1.8 Paints, varnishes and other finishes used on exposed interior surfaces shall not constitute a fire hazard and shall not, in a fire, produce excessive quantities of smoke, toxic gases or vapour to the satisfaction of a Certifying Authority.
- In new vessels this shall be determined in accordance with the Fire Test Procedures Code.* **N**
- 5.1.1.9 Primary deck coverings within accommodation and service spaces and control stations, shall be of materials which will not readily ignite or give rise to toxic or explosive hazards at elevated temperatures to the satisfaction of a Certifying Authority.
- In new vessels this shall be determined in accordance with the IMO Fire Test Procedures Code.* **N**
- 5.1.1.10 Curtains, floor coverings and furnishings shall be resistant to flame and ignition to the satisfaction of a Certifying Authority.

In new vessels:

- (i) *curtains shall be resistant to flame propagation in accordance with the IMO Fire Test Procedures Code;*
- (ii) *all surface floor coverings shall have low flame spread; and*
- (iii) *the upholstered parts of furniture shall be resistant to ignition and flame propagation, in accordance with the Fire Test Procedures Code.* **N**

- 5.1.1.11 Pipes conveying oil, combustible liquids or flammable gases shall be constructed from steel or other suitable material. Jointing materials shall not be rendered ineffective by heat.
- 5.1.1.12 Plastic piping may be used for services other than those specified in 5.1.1.11 provided that appropriate fire testing, in accordance with the requirements of the IMO Fire Test Procedures Code, has been carried out to the satisfaction of a Certifying Authority. The integrity of watertight or fire divisions when penetrated by such pipes shall be maintained to the satisfaction of a Certifying Authority.
- 5.1.1.13 Flammable liquids shall always be carried in suitably sealed containers and stowed in a safe position.
- 5.1.1.14 Fire fighting equipment shall always be kept in its proper location, maintained in good working order, and be available for immediate use. Clear operating instructions shall be posted next to fire fighting equipment.
- 5.1.1.15 The crew shall be familiar with the locations of fire fighting equipment, the way it works and how it shall be used.
- 5.1.1.16 The presence of extinguishers and other portable fire fighting equipment shall always be checked before the vessel gets under way.
- 5.1.1.17 Manually operated fire fighting equipment shall be readily accessible, simple to use and shall be indicated by signs of durable construction and appropriately positioned. Reference may be made to The Merchant Shipping and Fishing Vessels (Safety Signs and Signals) Regulations 2001, No. 3444 as amended, or any subsequent documents. (See: Signs section 10.2).
- 5.1.1.18 Fire detection and alarm systems shall be regularly tested and well maintained.
- 5.1.1.19 Visual and audible alarms shall be fitted to warn crew that carbon dioxide is to be discharged into a compartment.
- 5.1.1.20 Fire fighting drills shall be carried out at regular intervals (see section 8.1.2).
- 5.1.1.21 **The fire protection, detection and extinguishing arrangements on existing vessels will continue to be accepted providing they are maintained in accordance with Annex 4, and continue to remain efficient in service. E**

5.2 STRUCTURAL FIRE PROTECTION

5.2.1 Structural Fire Protection for Vessels with Hulls Constructed of Steel or other Equivalent Material

- 5.2.1.1 *In every vessel the superstructure, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material, having due regard to the risk of fire. N*
- 5.2.1.2 *Subject to sections 5.2.1.4 and 5.2.1.8, bulkheads and decks bounding main machinery spaces shall be constructed to "A-0" standard. N*
- 5.2.1.3 *Bulkheads and decks, which separate galleys (or combined galley/mess rooms) from accommodation spaces, service spaces or control stations shall be constructed to "A-30" standard. Alternatively, the 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. Acceptance will be conditional on:*
 - a) *two different types of fire detectors being provided in the galley space, and*
 - b) *where deep-fat cooking equipment is installed, all such installations shall be fitted with:*

- .1 *an automatic or manual fixed extinguishing system (Extinguishing systems for deep fat fryers should meet ISO 15371, 'Fire-extinguishing systems for protection of galley deep fat cooking equipment');*
 - .2 *a primary and back up thermostat with an alarm to alert the operator in the event of failure of either thermostat;*
 - .3 *arrangements for automatically shutting off the electrical power to the deep-fat cooking equipment upon activation of the extinguishing system;*
 - .4 *an alarm for indicating operation of the extinguishing system in the galley where the equipment is installed; and*
 - .5 *controls for manual operation of the extinguishing system which are clearly labelled for ready use by the crew.* **N**
- 5.2.1.4 *Where fishrooms are fitted with combustible insulation, bulkheads and decks separating such spaces from main machinery spaces or galleys (or combined galley/mess rooms) shall be constructed to "A-30" standard.* **N**
- 5.2.1.5 *Bulkheads of corridors serving accommodation spaces, service spaces and control stations, other than bulkheads required to meet the provisions of sections 5.2.1.2 and 5.2.1.3 shall extend from deck to deck and shall be formed of steel, "B-15" class divisions or equivalent.* **N**
- 5.2.1.6 *Interior stairways serving accommodation spaces, service spaces or control stations shall be constructed of steel. The enclosures to such stairways shall be of steel "B-15" class or equivalent and be fitted with a "B-15" class closing arrangement at one end of each stairway.* **N**
- 5.2.1.7 *The number of openings in the bulkheads and decks referred to in sections 5.2.1.2 and 5.2.1.3 shall be the minimum practicable. Such openings shall be fitted with closing arrangements that provide fire protection equivalent to the surrounding structure. Any access doors provided in the casing of the main machinery space or galley (or combined galley/mess) shall be of "A-30" standard and be self-closing except when such a door is required to be of weathertight construction.* **N**
- 5.2.1.8 *Where, due to constraints of design or layout, a life-raft or EPIRB is required to be stowed over the galley or machinery space, such stowage areas and associated access routes shall be insulated to "A-30" standard.* **N**
- 5.2.1.9 *Where combustible material is fitted to boundary bulkheads and decks of spaces adjoining galleys (or combined galley/mess rooms) and main machinery spaces, it shall be protected from the effects of heat that may result from a fire in those spaces.* **N**
- 5.2.1.10 *Where bulkheads or decks, that are required to be of "A" or "B" class divisions, are penetrated by pipes, cables, trunks, ducts etc., arrangements shall be made to ensure that the fire integrity of the division is not impaired.* **N**
- 5.2.1.11 **Where an existing boundary is affected in its entirety during modification or refit to the vessel, that boundary shall, in general, comply with Code requirements.** **E**
- 5.2.2 **Structural Fire Protection for Vessels with Hulls Constructed of Combustible Materials**
- 5.2.2.1 *For vessels primarily constructed of wood and where the superstructure, structural bulkheads and decks over machinery spaces are constructed of steel or other equivalent material, fire protection arrangements shall be fitted as for steel vessels in sections 5.2.1.1 to 5.2.1.10 above.* **N**
- 5.2.2.2 *Subject to section 5.2.2.1 in every vessel, the hull of which is constructed of combustible materials, the decks and bulkheads of machinery spaces and galleys (or a combined*

galley/mess), shall be constructed to meet "F" or "B-15" class standard or equivalent. In addition, such boundaries shall as far as practicable prevent the passage of smoke. **N**

5.2.2.3 Decks and bulkheads separating control stations from accommodation spaces, service spaces or main machinery spaces shall be constructed to meet "F" class standard or equivalent. **N**

5.2.2.4 Bulkheads of corridors serving accommodation spaces, service spaces and control stations shall extend from deck to deck and be formed of "F" or "B-15" class divisions or equivalent. **N**

5.2.2.5 Interior stairways serving accommodation spaces, service spaces or control stations shall be constructed of steel. The enclosures to such stairways shall be of "F" class divisions or equivalent and be fitted with an appropriate "F" or "B-15" class closing arrangement at one end of each stairway. **N**

5.2.2.6 The number of openings in the bulkheads and decks referred to in sections 5.2.2.2 and 5.2.2.3 shall be the minimum practicable. Such openings shall be fitted with closing arrangements that provide fire protection equivalent to the surrounding structure. Any access doors provided in the casing of the main propelling machinery space shall be of "F" or "B-15" class and be self-closing except when such a door is required to be of weathertight construction. **N**

5.2.2.7 Where bulkheads or decks, that are required to be of "F" or "B" class divisions, are penetrated by pipes, cables, trunks, ducts etc., arrangements shall be made to ensure that the fire integrity of the division is not impaired. **N**

5.2.2.8 All exposed surfaces of glass reinforced plastic construction within accommodation and service spaces, control stations, main machinery spaces and other machinery spaces of similar fire risk shall have the final lay-up layer of resin having inherent fire retarding properties or be coated with a suitable fire retardant paint or be protected by non-combustible materials. **N**

5.2.2.9 **Where an existing boundary is affected in its entirety during modification or refit to the vessel, that boundary shall, in general, comply with Code requirements. E**

5.3 VENTILATION SYSTEMS

5.3.1 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. **N**

5.3.2 Ventilation openings may be provided in and under the doors in corridor bulkheads but excluding any doors to stairway enclosures or the machinery space. The net area of any such opening shall not exceed 0.05 metres². **N**

5.3.3 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 accommodation spaces, service spaces or control stations shall not pass through main machinery spaces or galleys. Where a Certifying Authority 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. **N**

5.3.4 Ventilation systems serving machinery spaces shall be independent of systems serving other spaces. **N**

5.3.5 Ventilation systems to spaces containing appreciable quantities of highly flammable products shall 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 open deck away from any source of ignition. Vent motors and equipment provided within the system shall be intrinsically safe. **N**

5.3.6 *When trunks or ducts cross a fire rated division then manual fire dampers shall be fitted to prevent the passage of smoke and flame across the division, the dampers shall be capable of operation from both sides of the bulkhead or deck, when the cross sectional area of any trunk or duct exceeds 0.02 metres² then the damper shall additionally be of the automatic self-closing type.* **N**

5.3.7 *Fire dampers may be omitted if the ducting is of substantial construction and equivalent arrangements have been provided to the satisfaction of a Certifying Authority.* **N**

5.3.8 Refer also to section 2.2.7 (Ventilators).

5.4 **FIRE DETECTION**

5.4.1 For all detection systems, the following functional requirements shall be met:

- (i) fixed fire detection and fire alarm system installations shall be suitable for the nature of the space, fire growth potential and potential generation of smoke and gases;
- (ii) manually operated call points shall be placed effectively to ensure a readily accessible means of notification.

5.4.2 All vessels shall be fitted with efficient automatic fire detection and alarm systems covering machinery spaces, galley, accommodation and service spaces, control stations and spaces containing heaters, open flames devices, areas of concentrated electrical equipment and other areas of fire.

5.4.3 A fixed fire detection and fire alarm system with manually operated call points shall be capable of immediate operation at all times.

5.4.4 Detectors and manually operated call points shall be grouped into sections. A section of fire detectors which covers a control station, a service station or an accommodation space shall not include a machinery space of category A.

5.4.5 Detectors shall be located for optimum performance. Positions near beams and ventilation ducts, or other positions where patterns of air flow could adversely affect performance, and positions where impact or physical damage is likely, shall be avoided. Detectors shall be located on the overhead at a minimum distance of 0.5 m away from bulkheads, except in corridors, lockers and stairways.

5.4.6 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 (analysing the energy emissions in UV and IR frequencies). 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 galley/mess or in some other place where a responsible officer will be on duty.

5.4.7 The fire detection system shall be fit for its intended service and be capable of automatically indicating, in the wheelhouse, the presence of fire. 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.

In new vessels the location of the fire shall also be indicated.

N

- 5.4.8 The indicating system for the detection system shall comprise of both an audible and visual alarm within the wheelhouse.
- 5.4.9 If crews are to live on board fishing vessels in port, it is essential that such vessels are fitted with fully functioning alarm and detection systems that provide the living quarters with early warning of a potential emergency.
- 5.4.10 The system shall be supplied from both the main and emergency sources of electric power.

5.5 FIRE EXTINGUCTION

5.5.1 *Vessels shall be provided with:*

- (i) *a fixed fire extinguishing system for the main machinery space;*
- (ii) *a fixed fire extinguishing system for the galley (or combined galley/mess) subject to section 5.2.1.3;*
- (iii) *a power operated fire pump, delivering a minimum of 15 metres³/h at a pressure of not less than 2kg/metres², supplying a hose or hoses such that a jet of water can reach any part of the vessel accessible to the crew. This pump may be either a general service pump or a bilge pump;*
- (iv) *one spray/jet nozzle (not of aluminium construction);*
- (v) *at least three portable fire extinguishers situated for use in the accommodation and service spaces with an extinguishing medium suitable to the fire risk involved;*
- (vi) *at least two portable fire extinguishers suitable for extinguishing oil fires shall be provided within the machinery space; and*
- (vii) *a fire blanket for the Galley.* **N**

5.5.2 Clear operating instructions shall be posted at the control station for fixed CO₂ extinguishing systems.

5.5.3 In every such vessel a spare charge shall be provided for every portable fire extinguisher except that for each such fire extinguisher which is of a type that cannot readily be recharged while the vessel is at sea, an additional portable fire extinguisher of the same type or its equivalent shall be provided in lieu of a spare charge.

Existing vessels may continue to comply with the requirements of the Annex 4. **E**

5.6 FIRE EXTINGUISHING EQUIPMENT

5.6.1 *A fixed fire extinguishing system for the machinery space shall be either:*

- (i) *a fire smothering gas installation; or*
- (ii) *a high expansion foam installation; or*
- (iii) *a stored pressure water spraying installation; or*
- (iv) *any other fixed fire extinguishing system acceptable to MCA.* **N**

5.6.2 *The equipment, capacities, controls and alarms for such a system shall be arranged and installed to the satisfaction of a Certifying Authority.* **N**

- 5.6.3 Where air pressure systems and storage bottles in machinery spaces are not vented externally to the machinery space, an appropriate allowance shall be made when calculating the required volume of the extinguishing medium required for such spaces.
- 5.6.4 *Operation of such equipment shall be from a position of safety and preferably on the open deck.* **N**
- 5.6.5 *Piping systems and fittings for fire services shall be of materials that are not rendered ineffective by heat. Pipes made of steel shall be galvanized and suitable drainage provided in deck lines to guard against the possibility of frost damage. A valve or cock shall be provided at each delivery position.* **N**
- 5.6.6 *Portable fire extinguishers shall be to BS EN 3 standard with the following capacities:*
- (i) *water, of at least 9 litres capacity;*
 - (ii) *foam, of at least 9 litres capacity;*
 - (iii) *CO₂, of at least 3 kg capacity;*
 - (iv) *dry powder, of at least 4.5 kg capacity;*
 - (v) *multi-purpose with a capacity at least equivalent to a 9 litre fluid fire extinguisher.*
- Note: Extinguishers and equipment carrying the Marine Equipment Directive Stamp ("wheelmark") are acceptable.* **N**
- 5.6.7 **Where vessel refit, alteration or modifications are carried out, existing installations and arrangements may require reconsideration.** **E**
- 5.7 **MEANS OF ESCAPE AND EMERGENCY EXITS**
- 5.7.1 Stairways, ladders and passageways shall be arranged to provide ready means of escape from accommodation spaces and spaces in which the crew is normally employed, to the open deck where the life saving appliances will be available for use.
- 5.7.2 At least two means of escape, which may include the normal means of access, shall be provided from accommodation, service or working spaces or groups of such spaces, situated on any one deck level within either watertight or fire resistant boundaries, except that:
- (i) only one means of escape may be provided where this is considered to be adequate by the MCA having due regard to the nature and location of the space and the number of persons who might be accommodated or employed there;
 - (ii) exceptionally, a suitably sized window may be accepted as a second means of escape for spaces above the weather deck. A grab rail shall be fitted above the window and a suitable hammer positioned in a convenient local position. This "designated window" shall be marked as an escape and provide access onto a decked area, from which the Life Saving Appliances may be easily and safely accessed.
- 5.7.3 Hatches and doors forming part of an escape route shall be readily operable from both sides by any person or by rescue teams.
- 5.7.4 All escape routes shall be kept clear of obstructions and the clear access and dimensions of such routes shall allow for rapid and safe evacuation.
- 5.7.5 At least two suitably located means of escape shall be provided from the main machinery space except that where the size of the machinery space renders this impracticable a single

means of escape may be accepted. Where ladders are provided for escape, they shall be of steel construction.

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

5.7.7 Emergency routes and exits shall be indicated by signs in accordance with The Merchant Shipping and Fishing Vessels (Safety Signs and Signals) Regulations 2001, No. 3444 as amended, or any subsequent documents (see also section 10.2).

5.7.8 All means of escape shall be arranged to the satisfaction of a Certifying Authority.

5.8 MEANS FOR STOPPING MACHINERY

5.8.1 *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 shall be capable of stopping the machinery or pumps in the event of fire.* **N**

5.8.2 *Remote electric stops for ventilation fans serving accommodation spaces shall be operable from outside the space.* **N**

5.9 MISCELLANEOUS FIRE PRECAUTIONS

5.9.1 Space heaters

5.9.1.1 *Electric space heaters, where provided, shall be constructed and fitted to reduce the fire risk to a minimum and where such heaters are situated on decks or bulkheads the structure of such decks or bulkheads shall be protected by non-combustible material. Heaters with exposed elements and open flame fuel heaters shall not be provided.* **N**

5.9.2 Galley area

5.9.2.1 *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.* **N**

5.9.2.2 *Wherever practicable, electrically powered cooking equipment shall be provided in preference to open flame types.* **N**

5.9.2.3 *Curtains, towel rails, hooks and similar arrangements shall be kept well clear of the cooking area.* **N**

5.9.2.4 *Electric stoves and other cooking appliances shall be fitted with an isolation switch outside the galley space.* **N**

5.9.3 Oil fuel installations (cooking ranges and heating appliances)

5.9.3.1 *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 shall 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.* **N**

5.9.3.2 *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. (Refer also to section 2.2.8, Air Pipes)* **N**

- 5.9.3.3 *Adequate means shall be provided for filling every such tank and for preventing overpressure.* **N**
- 5.9.3.4 *Closed flame diesel heaters shall comply with the manufacturer's instructions. Additional guidance is provided in MGN 312 (F) –Use of Liquid Petroleum Gas (LPG) and Diesel Fuelled Appliances on Fishing Vessels, or any superseding document.* **N**
- 5.9.4 **Liquefied Petroleum Gas installations (cooking ranges and heating appliances)**
- 5.9.4.1 *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). All valves, pressure regulators and pipes leading from the cylinders shall be protected against damage.* **N**
- 5.9.4.2 *All liquefied petroleum gas heating appliances used in accommodation spaces, including sleeping quarters, shall be fitted with a flue to the exterior of the vessel via a clear unblocked exhaust.* **N**
- 5.9.4.3 *Spaces where appliances consuming liquefied petroleum gas are used shall be adequately ventilated.* **N**
- 5.9.4.4 *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.* **N**
- 5.9.4.5 *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.* **N**
- 5.9.4.6 *Spaces containing cooking ranges or heating appliances that use liquefied petroleum gas shall 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 audible and visual alarm in the space below.* **N**
- 5.9.4.7 *A device shall 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.* **N**
- 5.9.4.8 *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.* **N**
- 5.9.4.9 *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.* **N**
- 5.9.4.10 *Every space containing a gas-consuming appliance shall be provided with gas detection and audible and visual 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 shall be situated outside the spaces containing the appliance.* **N**

- 5.9.4.11 *Where gas consuming appliances are used in sleeping quarters or in adjacent spaces, an audible alarm shall be fitted in the sleeping quarters in addition to the alarm required by section 5.9.4.10.* **N**
- 5.9.4.12 *Atmospheric monitoring devices (i.e. carbon monoxide sensors) shall be fitted in all compartments where fired heating and cooking appliances are fitted.* **N**
- 5.9.4.13 *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.* **N**
- 5.9.4.14 As far as is practicable, existing vessels shall comply with the requirements of section 5.9.4. However, a shutdown device operated by the alarm stated in section 5.9.4.10, may be used in lieu of a flame failure device required in section 5.9.4.7.** **E**

5.9.5 Portable Plant

- 5.9.5.1 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 gas tight boundaries to adjacent spaces. The locker or enclosure shall be adequately ventilated and drained.
- 5.9.5.2 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.
- 5.9.5.3 Fuel tanks shall be arranged to the satisfaction of a Certifying Authority.
- 5.9.5.4 Portable containers for the carriage of fuel shall be:
- (i) kept to a minimum;
 - (ii) suitable for the carriage of fuel; and
 - (iii) stowed on the weather deck where they can readily be jettisoned and where any spillage will drain directly overboard; and
 - (iv) be clearly marked with their contents.

5.9.6 Storage of flammable liquids, toxic liquids, toxic gases and compressed gases

- 5.9.6.1 Cylinders containing flammable, toxic or other dangerous gases, and expended cylinders shall be clearly marked as to their contents and properly stowed and secured on open decks. All valves, pressure regulators and pipes leading from such cylinders shall be protected against damage. Such cylinders may be stowed in compartments that meet the requirements set out in section 5.9.6.2.
- 5.9.6.2 Cylinders and bottles containing flammable, toxic liquids, toxic gases and liquefied gases, other than liquefied petroleum gas shall be stored in compartments having direct access from open decks. Such compartments shall have boundary bulkheads constructed from non-combustible materials. Pressure adjusting devices and relief valves, if any, shall exhaust within the compartment. Where boundary bulkheads of such compartments adjoin other enclosed spaces they shall be gas-tight and be provided with ventilation arrangements that are separate from other ventilation systems. Ventilation shall be arranged at high and low levels and the inlets and outlets of ventilators shall be positioned in safe areas and fitted with spark arresters.
- 5.9.6.3 Electrical wiring and fittings shall not be installed within compartments containing highly flammable liquids or liquefied gases except where necessary for service within the space. Where such electrical fittings are installed they shall be suitable for use in a flammable atmosphere.

- 5.9.6.4 Compartments containing compressed gas cylinders shall not be used for stowage of other combustible products or for tools or objects not belonging to the gas distribution system.
- 5.9.6.5 Gas welding and cutting equipment, if carried, shall be stowed in a secure manner on the open deck at a safe distance from any potential source of fire and shall have the capability of being readily jettisoned overboard if necessary.
- 5.9.6.6 *Any compartment that contains a gas consuming appliance or any compartment into which flammable gas may leak or accumulate, shall be provided with a hydrocarbon gas detector and alarm.* **N**
- 5.9.7 **Cleanliness of machinery spaces**
- 5.9.7.1 Machinery spaces shall be kept clean, free of rubbish and combustible waste. Bilge levels shall be checked regularly and oily waste and sludge shall be collected and properly disposed of ashore (see also Chapter 11, section 11.1).
- 5.9.7.2 Any oil leakage from machinery, fuel or lubricating oil systems shall be promptly identified and rectified.

CHAPTER 6 (PROTECTION OF THE CREW)

6.1 PROTECTION OF PERSONNEL

6.1.1 General

6.1.1.1 Owners have a duty of care to ensure that their vessels are operated without endangering the safety and health 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 In accordance with the guidance in MGN 588 (F) or any superseding document, unless measures are in place which eliminate the risk of fishermen falling overboard, all fishermen must be provided with and must wear, PFDs or safety harnesses. The measures eliminating the risk of Man Overboard must be documented in a written risk assessment. MGN 571 contains guidance on preventing Man Overboard.. The following is provided as guidance on Personal Flotation 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 of at least 150N or a wearable buoyancy device of at least 50N that provides 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 until recovered.
- (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, 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 fishermen, whether employed, engaged or working in any capacity (except persons solely engaged as pilots) 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 587 (M&F)), or any superseding document.

6.1.2.2 A risk assessment is intended to be a careful examination of the vessel's 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 the 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, MSN 1870, MGN 331 or any superseding documents.
- 6.1.3 **Precautions against falls including Bulwarks, Guard Rails and Hand Rails**
- 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 shall be provided with a combination of bulwarks, guardrails or taut wires of sufficient strength and at a height of at least 1000 millimetres. These bulwarks, rails or wires shall be supported efficiently by stays or stanchions. The openings between the courses of any rails or wires shall not exceed 230 millimetres for the lowest course and 380 millimetres for any other course. When application of such measures would impede the proper working of the vessel, equivalent safety measures may be considered.
- 6.1.3.2 **On vessels constructed before 23 November 1995 the height of the bulwarks, rails or wires referred to in sections 6.1.3.1 and 6.1.3.5 shall be at least 915 millimetres.**
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- 6.1.3.3 If there is a risk that any member of the crew may fall through openings in the deck, or from one deck to another, then so far as is reasonably practicable, adequate protection shall be provided.
- 6.1.3.4 Accesses 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.
- 6.1.3.5 The minimum height above deck of any fixed bulwarks shall be 600 millimetres. All bulwark heights shall be increased as necessary to not less than 1000 millimetres (but see section 6.1.3.2) by adequate stanchions or guard wires.
- 6.1.3.6 Access stairways, ladderways and passageways shall be provided with hand rails as necessary and storm rails shall be fitted on the outside of all deck houses and casings.
- 6.1.3.7 Adequate guard rails, lifelines, 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.

6.1.3.8 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*² and shall be open only for shooting or hauling the nets. See also 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.

6.1.3.9 Stairways and ladders shall be provided of size and strength adequate for the safe working of the vessel at sea and in port. Stairways and ladders shall be provided with non-slip treads and hand rails.

Note: Sections 6.1.3.10 to 6.1.3.12 inclusive apply to all vessels constructed on or after 23 November 1995 and, in so far as the structural characteristics permit, vessels of 18 metres in length LBP and over constructed before that date. N+E

6.1.3.10 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.

6.1.3.11 Handling areas shall be sufficiently spacious, in terms of both height and surface area.

6.1.3.12 A gangway with a net underneath, accommodation ladder or other suitable means, providing an appropriate and safe means of boarding and leaving the vessel shall be available.

6.1.4 Safety Harnesses

6.1.4.1 A vessel shall be provided with at least 2 safety harnesses and additional safety harnesses as necessary for all persons who may be required to work on deck.

6.1.4.2 Efficient and permanent means for securing the lifelines of safety harnesses shall be provided on exposed decks.

6.1.5 Surface of Working Decks

Note: Sections 6.1.5.1 to 6.1.5.2 inclusive apply to all vessels constructed on or after 23 November 1995 and, in so far as the structural characteristics permit, vessels of 18 metres in length LBP and over constructed before that date. N+E

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 nonslip 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 EU Council Directives 1989/391/EEC, 1995/63/EC and 1989/655/EEC as applicable. Reference shall be made to:

- .1 The Merchant Shipping and Fishing Vessels (Provision and Use of Work Equipment) Regulations 2006, No 2183 as amended and MGN 331, or any superseding documents; and

² for vessels constructed on or after 23 November 2002

- .2 The Merchant Shipping and Fishing Vessels (Lifting Operations and Lifting Equipment) Regulations 2006 No.2184 as amended and MGN 332 or any superseding documents.

Note: Sections 6.1.6.3 to 6.1.6.13 inclusive apply to all vessels constructed on or after 23 November 1995 and, in so far as the structural characteristics permit, vessels of 18 metres in length LBP and over constructed before that date. N+E

- 6.1.6.3 All equipment used in hauling and hoisting shall 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 shall 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 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 shall have a clear view of the gear and any crew member working near it.
- 6.1.6.8 If the gear is controlled from the wheelhouse, the operator shall also have a clear view of the crew working it, 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 shall 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 shall 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 immobilize the trawl doors;
 - (ii) devices to control the swinging motion of the codend.
- 6.1.6.13 The crew shall be trained in the use of fishing gear and hauling and hoisting equipment.

Further advice on how to stay safe whilst using Deck Machinery can be seen here <https://www.gov.uk/government/publications/fishermens-safety-guide>

6.1.7 Ventilation of Enclosed Workplaces

Note: Sections 6.1.7.1 to 6.1.7.3 inclusive apply to all vessels constructed on or after 23 November 1995 and, in so far as the structural characteristics permit, vessels of 18 metres in length LBP and over constructed before that date. N+E

- 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.

6.1.8 Temperature of Working Areas

6.1.8.1 The temperature in working areas shall be adequate 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.

6.1.8.2 The temperature in living quarters, sanitary facilities and mess rooms shall, where these areas exist, be appropriate to the particular purpose of such areas.

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 crew's 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, shall 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., shall 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 or any superseding documents.

CHAPTER 7 (LIFE-SAVING APPLIANCES)

7.1 LIFE SAVING APPLIANCES

7.1.1 General

7.1.1.1 Unless stated otherwise, life saving appliances that are required to be of approved type shall either have MCA type approval or be approved to SOLAS 1974 convention requirements, as amended, by a signatory Administration to that convention, or by a recognised Classification Society.

7.1.1.2 Life saving appliances that are not required by this Chapter to be of approved type shall be to the satisfaction of MCA.

7.1.1.3 Adequate instructions for use shall be provided with each life saving appliance and also adjacent to its stowage position when appropriate.

7.1.1.4 Life saving appliances intended for use in the sea shall be fitted with retro reflective markings to the satisfaction of MCA.

7.1.2 Vessel Requirements

7.1.2.1 The following life saving appliances shall be provided:

- (i) at least two liferafts of SOLAS standard and Marine Equipment Directive standard, each able to accommodate all persons onboard. One of the liferafts shall be capable of being launched from either side of the vessel. Vessels which operate in sea area A1³, that are not engaged in trawling with beams may, as an alternative to complying with this requirement, be fitted with just one liferaft, provided it is of sufficient capacity to accommodate all persons on board and capable of being launched from either side of the vessel;
- (ii) a lifejacket of approved type for every person on board plus an additional two lifejackets;
- (iii) at least two lifebuoys, one of which shall be provided with a self-igniting light and self-activating smoke signal and the other provided with a buoyant line of at least 18 metres in length, all of approved type;
- (iv) means of recovering a person from the water⁴;
- (v) a line throwing appliance of approved type, with minimum two shot capability;
- (vi) 6 rocket parachute flares, of approved type; and
2 buoyant smoke signals, of approved type; and
4 red hand flares, of approved type;
- (vii) one hand held VHF radio, of an approved type;
- (viii) one float free satellite EPIRB, of an approved type.

7.1.3 Availability, Stowage and Maintenance of Survival Craft and Life Saving Appliances

7.1.3.1 All items of life-saving and survival equipment required by this Code shall:

- (i) be periodically serviced:

³ sea area A1 as defined in The Merchant Shipping (Radio) (Fishing Vessels) Regulations SI 1999 No. 3210 as amended, meaning an area within the Radiotelephone coverage of at least one VHF coast station in which continuous DSC alerting is available, and specified as such an area in Volume 5 of the Admiralty list of Radio Signals.

⁴ To be replaced by MGN 570 (F) Emergency Drills and MGN 571 – Prevention of Man Overboard

- a) if SOLAS equipment, in compliance with MGN 548 (M+F) “Life-Saving Appliances – Inflatable SOLAS Certificated Liferafts, Lifejackets, Marine Evacuation Systems, and repair of Inflatable Rescue Boats – Servicing Requirements and Approved Service Stations: or
 - b) if non-SOLAS equipment, in accordance with MGN 553 (M+F) “Life-Saving Appliances – Inflatable Non-SOLAS Liferafts, Lifejackets, Marine Evacuation Systems, Danbuoys and Lifebuoys – Technical Standards and Servicing Requirements;
- (ii) be mounted or stowed correctly in their assigned locations;
 - (iii) be maintained in good working order and be ready for use;
 - (iv) be checked before the vessel leaves port and whilst at sea;
 - (v) be inspected at regular intervals.

7.1.3.2 Liferafts shall:

- (i) be readily available for safe and rapid use in an emergency, taking into account any adjacent fire risk;
- (ii) be capable of being launched under unfavourable conditions of trim and with the vessel heeled 15° either way;
- (iii) be stowed 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;
- (iv) be stowed clear of any overhanging projections, gear or rigging that could impede the liferafts float free operation;
- (v) be provided with SOLAS B pack equipment or equivalent.

Refer to MGN 267 (F) – The Location and Stowage of Liferafts and EPIRBs on UK Registered Fishing Vessels, for further guidance on stowage and float free arrangements.

Note: Lashings if used, shall be fitted with an automatic (hydrostatic) release system of an approved type. The liferaft and any hydrostatic securing and release system shall be installed strictly in accordance with the manufacturer’s instructions. Liferafts and serviceable hydrostatic release units shall be serviced annually by an authorised agency. Non-serviceable hydrostatic release units shall be replaced by their expiry date.

7.1.3.3 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 manufacturer’s instructions;
- (iv) be maintained in accordance with the manufacturer’s instructions;
- (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), or any superseding document;

- (vi) on renewal, conform to IMO Resolution A.810 (19). The Radio and Telecommunication Terminal Directive Declaration of Conformity should include reference to IEC 61097-2 or EN 300 066 or the Marine Equipment Directive Annex referenced by the Wheelmark Compliance Certificate shall be A.1/5.6;
- (vii) and transmit the position obtained from a built-in GPS receiver to satellite.
- (viii) EPIRBs that do not meet the criteria of 7.1.3.3 (i) to (vii) above shall be replaced with those that do by the time of the next renewal survey or when the battery expires, whichever is the sooner.

7.1.3.4 Lifejackets shall:

- (i) be stowed either in a deckhouse or other dry and readily accessible position;
- (ii) have stowage positions clearly and permanently marked;
- (iii) be provided with a light complying with SOLAS 1974 as amended;
- (iv) be serviced in accordance with the manufacturer's instructions;

Note: See also Section 6.1.3 above, it is strongly recommended that Personal Flotation Devices are worn when working on deck.

7.1.3.5 Lifebuoys shall:

- (i) be stowed near the bridge or on an exposed working deck;
- (ii) not be permanently secured;
- (iii) be marked with the vessel name and port of registry or fishing vessel number.

7.1.3.6 Line throwing appliances and pyrotechnic signals shall:

- (i) be stowed on or near the bridge in a dry and readily accessible location, clearly marked;
- (ii) be packed in suitable containers.

7.1.4 **Embarkation into liferafts**

7.1.4.1 Arrangements shall be made for warning the crew when the vessel is about to be abandoned.

7.1.4.2 For vessels with embarkation areas, positioned more than 3 metres above the waterline, ladders or other suitable means shall be provided to allow for safe embarkation into the liferafts.

7.1.4.3 Liferaft launching and embarkation positions (including the water into which the liferaft is launched) shall be illuminated by means of both main and emergency sources of power.

CHAPTER 8 (EMERGENCY PROCEDURES)

8.1 EMERGENCY PROCEDURES

8.1.1 Inspections

8.1.1.1 Inspections of the life-saving equipment and fire appliances shall be made at intervals of not more than one month.

8.1.2 Drills

8.1.2.1 The skipper shall ensure that the crew are trained in the use of all lifesaving and fire appliances and equipment with which the vessel is provided and shall ensure that all members of the crew know where the equipment is stowed. Such training shall be carried out in drills, held in port or at sea, at intervals of not more than one month. Flooding drills shall also be incorporated.

8.1.2.2 The drills referred to in section 8.1.2.1 shall ensure that the crew thoroughly understand and are exercised in the duties which they have to perform with respect to the handling and operation of all life-saving, fire fighting, flooding control and survival equipment.

8.1.2.3 If a vessel carries 5 or more crew, a muster list shall be provided with clear instructions for each member of the crew, which shall be followed in case of emergency.

8.1.2.4 Further Guidance is contained in MGN 570 Fishing Vessels: Emergency Drills, or any superseding documents.

8.1.3 Records

8.1.3.1 The times, dates and particulars of inspections and drills shall be recorded and available for future inspection.

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.

9.2 RADIO EQUIPMENT

9.2.1 Every vessel shall be capable of maintaining an effective radio watch, including communication, transmission and reception of distress signals in the Global Maritime Distress Signal System (GMDSS) appropriate to the area in which it operates.

9.2.2 The vessel's crew shall be familiar in the operation of the hand held VHF and the EPIRB and be trained in the setting up and operation of the portable radio equipment.

9.2.3 Reference shall be made to:

The Merchant Shipping (Radio)(Fishing Vessels) Regulations, SI 1999 No. 3210 as amended, or any superseding document.

9.3 NAVIGATION LIGHTS, SHAPES AND SOUND SIGNALS

9.3.1 Vessels shall be equipped to enable display of the navigation lights, shapes and sound signals appropriate to all foreseeable modes of operation, in daylight, darkness and in restricted visibility, in accordance with international requirements.

9.3.2 Reference shall be made to:

The Merchant Shipping (Distress Signals and Prevention of Collisions) Regulations, SI 1996 No. 75 as amended and Merchant Shipping Notice 1781, or any superseding documents.

9.3.3 MGN 393 (M&F) - Navigation Light Units: Maintenance and the Use of New Technology Light Sources, such as Light Emitting Diodes (LEDs), as Navigation Lights on SOLAS and non-SOLAS Vessels (or any superseding document) provides guidance on the requirements and performance standards, for new technology light sources such as LED Lights. In addition, LED lights shall comply with ISO19009.

9.4 VISIBILITY FROM THE WHEELHOUSE

9.4.1 *Every vessel shall be so constructed that the person steering has a clear view to the sea surface, 90 metres ahead, when at the principal steering position from within the wheelhouse.* N

9.4.2 Further guidance is contained in Marine Guidance Note 314 (F): Fishing Vessels: Wheelhouse Visibility, or any superseding document.

9.4.3 *When the ship's bridge is totally enclosed, a sound reception system, or other means, to enable the officer in charge of the navigational watch to hear sound signals and determine their direction, shall be provided.* N

9.5 NAVIGATIONAL EQUIPMENT

9.5.1 Compass

9.5.1.1 Vessels shall be fitted with a properly adjusted standard magnetic compass, or other means independent of any power supply to determine the vessel's heading and display (with electric light) the reading at the main steering position. Vessels fitted with a standard magnetic compass shall have a valid deviation card.

9.5.1.2 A pelorus or compass bearing device, or other means, independent of any power supply, to take bearings over an arc of the horizon of 360°, shall be carried on board.

9.5.2 Other Navigational Equipment

9.5.2.1 Vessels shall be provided with efficient means acceptable to MCA for:

- (i) locating position;
- (ii) measuring speed and distance; and
- (iii) measuring the depth of water.

9.5.2.2 Electronic aids to navigation shall be tested frequently and well maintained. Reference should be made to MGN 379 – Navigation: Use of Electronic Navigation Aids, or any superceding documents.

9.5.3 Nautical Publications

9.5.3.1 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 and Marine Guidance Notes;
- (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.

9.5.3.2 The charts to be carried shall 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.

9.5.3.3 A chart display and information system (ECDIS), with charts conforming to section 9.5.3.2, is also accepted as meeting the chart carriage requirements of section 9.5.3.1.

9.5.3.4 The MCA strongly recommend, to ensure proper use and operation of ECDIS in terms of a thorough understanding and appreciation of its capabilities and limitations, that every officer in charge of a navigational watch is trained and certified in accordance with the objectives of the course IMO Model Training Course - Operational Use of ECDIS. (MIN 503 (M) refers also).

9.5.3.5 An equivalent electronic chart display and information system (Mini-ECDIS), with charts conforming to 9.5.3.2 and in accordance with MGN 319 (M+F)⁵, is also accepted as meeting the chart carriage requirements of section 9.5.3.1.

9.5.3.6 Back-up arrangements to meet the functional requirements of section 9.5.3.2, if this function is partly or fully fulfilled by electronic means detailed in sections 9.5.3.3 and 9.5.3.5:

- (i) an appropriate folio of paper nautical charts, conforming to section 9.5.3.2, may be used. The back-up shall display in graphical (chart) form the relevant information of the hydrographic and geographic environment which are necessary for safe navigation; or
- (ii) an ECDIS as detailed in section 9.5.3.3; or
- (iii) a Mini-ECDIS as detailed in section 9.5.3.5; or
- (iv) an MED approved Chart Radar.

9.5.3.6 Reference should be made to the Merchant Shipping (Safety of Navigation) Regulations 2002 and Chapter V, "Safety of Navigation", of the Annex to the International Convention for the Safety of Life at Sea 1974 (SOLAS 74), or any superseding documents.

⁵ Marine Guidance Note 319 (M+F) - Acceptance of Electronic Chart Plotting Systems for Fishing Vessels Under 24 metres and Small Vessels in Commercial Use (Code Boats) Up To 24 Metres Load Line Length

9.5.4 **Signalling Lamp/Light for Use during Search and Recovery**

9.5.4.1 Vessels shall be provided with either:

(i) a portable waterproof electric torch suitable for morse signalling and a searchlight; or

(ii) an efficient portable daylight signalling lamp with searchlight capability.

9.5.4.2 Portable equipment shall be provided with batteries of sufficient capacity for not less than two hours continuous operation and spare bulbs.

9.5.5 **Miscellaneous Equipment**

9.5.5.1 Vessels shall be provided with a radar reflector, where applicable. – reference shall be made to ISO 8729-1 and ISO 8729-2 and BS 7380.

9.5.6 **Records of navigational activities.**

9.5.6.1 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 **Automatic Identification Systems (AIS)**

9.6.4.1 AIS shall be fitted to all vessels.

9.6.4.2 AIS fitted shall meet IMO performance standards (Class A). IMO Resolution A.1106(29) "Guidelines for the onboard use of Automatic Identification Systems" contains further information on the use of AIS.

9.6.4.3 AIS shall remain on and operational at all times and may only be switched off where the skipper considers this necessary in the interests of the safety and security of the vessel.

9.7 **PILOT LADDERS**

9.7.1 **General**

9.7.1.1 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.

9.7.1.2 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.

9.7.1.3 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.

9.7.2 **Transfer arrangements**

9.7.2.1 Arrangements shall be provided to enable the pilot or fishery officer to embark and disembark safely on either side of the vessel.

9.7.2.2 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.

9.7.2.3 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 metres. 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.

9.7.3 Access to the vessel's deck

9.7.3.1 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:

- (i) A gateway in the rails or bulwark, adequate handholds shall be provided;
- (ii) 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;
- (iii) Shiplide Doors: Those vessel side doors used for pilot transfer shall not open outwards.

9.7.4 Associated equipment

9.7.4.1 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; and
- (iii) a heaving line.

9.7.5 **Lighting**

- 9.7.5.1 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 ACCOMMODATION

10.1.1 Vessel Requirements

10.1.1.1 For all fishing vessels, the following must be appropriate to the service of the vessel and the length of time fishers live on board:

- .1 Maintenance of accommodation and galley spaces with due regard to hygiene and overall safe health and comfortable conditions;
- .2 Ventilation, heating, cooling and lighting;
- .3 Mitigation of excessive noise and vibration;
- .4 Location, size, construction materials, furnishing and equipping of sleeping rooms, mess rooms and other accommodation spaces; and
- .5 Sanitary facilities, including toilets and washing facilities, and supply of sufficient hot and cold water.

10.1.1.2 Where inspection of existing vessels finds that the standards required by paragraphs 10.1.1.1 to 10.1.1.5 above are not being met, and modification to the vessel is required, the surveyor will seek to agree an appropriate time period with the owner for such modifications to be carried out, and an improvement notice will be issued for that period.

Note: Sections 10.1.1.3 to 10.1.1.10 inclusive apply to all vessels constructed on or after 23 November 1995 and, in so far as the structural characteristics permit, vessels of 18 metres in length LBP and over constructed before that date. N+E

10.1.1.3 The crews living quarters, where they exist, shall be such as to minimize noise, vibration, the effects of motion and acceleration and unpleasant odours from other parts of the vessel.

10.1.1.4 On vessels with crew accommodation, toilets, wash basins and if possible a shower shall be installed and the respective areas shall be properly ventilated.

10.1.1.5 Adequate stowage facilities for clothing and personal effects shall be provided for each person on board.

10.1.1.6 The galley and mess room, where these exist, shall be of adequate size, well lit and ventilated and easy to clean.

10.1.1.7 A refrigerator or other low temperature food storage shall be provided.

10.1.1.8 As far as is practicable, technical measures shall be taken to reduce noise levels in working and accommodation spaces.

10.1.1.9 An electric lighting system shall be installed that is capable of supplying adequate light to all enclosed accommodation and working spaces.

10.1.1.10 An adequate supply of fresh drinking water shall be provided.

10.1.2 Additional Requirements for Vessels Constructed on or after 23 November 1995

10.1.2.1 The location, structure, soundproofing, means of insulation and layout of the crew accommodation and means of access 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.

10.1.2.2 Where the design, dimensions or purpose of the vessel allow, the crew accommodation shall be located so as to minimise the effects of motion and acceleration.

- 10.1.2.3 Appropriate measures shall be taken as far as possible to protect non-smokers from discomfort caused by tobacco smoke.
- 10.1.2.4 Appropriate lighting shall be provided within the living quarters such that:
- (i) adequate general lighting is provided;
 - (ii) reduced lighting is provided in way of crew sleeping spaces;
 - (iii) local lighting is provided for each berth.
- 10.1.2.5 On vessels with crew accommodation, shower facilities with hot and cold running water shall be provided.
- 10.1.2.6 Hot water supply systems (if fitted) shall be suitably designed, installed and fit for purpose.
- 10.1.2.7 Crew accommodation spaces shall be properly ventilated to ensure a constant supply of fresh air and to prevent condensation.
- 10.1.3 **Recommendations for Existing Vessels of less than 18m in length LBP that are at sea for more than 24 hours:**
- 10.1.3.1 **When a vessel is intended to be at sea for more than 24 hours an adequate standard of accommodation shall be provided on board. In considering such accommodation, the primary concern shall be directed towards providing facilities that contribute to the health and welfare aspects of those on board i.e. the sleeping accommodation, the ventilation, the sanitary facilities, the lighting and the fresh water and galley services. Whenever possible, consideration shall be given to providing the facilities that are detailed in section 10.1.1. E**
- 10.1.4 **Additional Requirements for New Vessels (2018), vessels joining the UK Register for the first time or re-joining the UK Register after a period of more than 6 months not on the UK Register:**
- 10.1.4.1 There shall be adequate headroom in all accommodation spaces. For spaces where crew are expected to stand for prolonged periods, the minimum shall be prescribed by the MCA.
- 10.1.4.2 There shall be no direct openings into sleeping rooms from fish rooms and machinery spaces, except for the purpose of emergency escape. Where reasonable and practicable, direct openings from galleys, storerooms, drying rooms or communal sanitary areas shall be avoided unless expressly provided otherwise.
- 10.1.4.3 Accommodation spaces shall be adequately insulated; the materials used to construct internal bulkheads, panelling and sheeting, and floors and joinings shall be suitable for the purpose and shall be conducive to ensuring a healthy environment. Sufficient drainage shall be provided in all accommodation spaces.
- 10.1.4.4 All practicable measures shall be taken to protect fishing vessels' crew accommodation against flies and other insects, particularly when vessels are operating in mosquito-infested areas.
- 10.1.4.5 Emergency escapes from all crew accommodation spaces shall be provided as necessary.
- 10.1.4.6 Accommodation spaces shall be ventilated and adequately heated, taking into account climatic conditions.
- 10.1.4.7 Wherever practicable, accommodation spaces shall be lit with natural light in addition to artificial light.
- 10.1.4.8 Emergency lighting shall be provided in sleeping rooms.

- 10.1.4.9 Where a vessel is not fitted with emergency lighting in mess rooms, passageways, and any other spaces that are or may be used for emergency escape, permanent night lighting shall be provided in such spaces.
- 10.1.4.10 Where the design, dimensions or purpose of the vessel allow, the sleeping accommodation shall be located so as to minimize the effects of motion and acceleration but shall in no case be located forward of the collision bulkhead.
- 10.1.4.11 The number of persons per sleeping room and the floor area per person, excluding space occupied by berths and lockers, shall be such as to provide adequate space and comfort for the crew on board, taking into account the service of the vessel.
- 10.1.4.12 To the extent not expressly provided otherwise, the number of persons allowed to occupy each sleeping room shall not be more than six. A separate sleeping room or sleeping rooms shall be provided for officers, wherever practicable.
- 10.1.4.13 The maximum number of persons to be accommodated in any sleeping room shall be legibly and indelibly marked in a place in the room where it can be conveniently seen.
- 10.1.4.14 Individual berths of appropriate dimensions shall be provided. Mattresses shall be of a suitable material.
- 10.1.4.15 Sleeping rooms shall be so planned and equipped as to ensure reasonable comfort for the occupants and to facilitate tidiness. Equipment provided shall include berths, individual lockers sufficient for clothing and other personal effects, and a suitable writing surface.
- 10.1.4.16 Sleeping accommodation shall be situated or equipped, as practicable, so as to provide appropriate levels of privacy for men and for women.
- 10.1.4.17 Mess rooms shall be as close as possible to the galley, but in no case shall be located forward of the collision bulkhead.
- 10.1.4.18 Vessels shall be provided with mess-room accommodation suitable for their service. To the extent not expressly provided otherwise, mess-room accommodation shall be separate from sleeping quarters, where practicable.
- 10.1.4.19 The dimensions and equipment of each mess room shall be sufficient for the number of persons likely to use it at any one time.
- 10.1.4.20 The sanitary accommodation shall be such as to eliminate contamination of other spaces as far as practicable. The sanitary facilities shall allow for reasonable privacy.
- 10.1.4.21 Where sanitary facilities are provided, they shall be fitted with ventilation to the open air, independent of any other part of the accommodation.
- 10.1.4.22 All surfaces in sanitary accommodation shall be such as to facilitate easy and effective cleaning. Floors shall have a non-slip deck covering.
- 10.1.4.23 Amenities for washing and drying clothes shall be provided as necessary, taking into account the service of the vessel.
- 10.1.4.24 Whenever necessary, a cabin shall be made available for a member of the crew who suffers illness or injury.
- 10.1.4.25 A place for hanging foul-weather gear and other personal protective equipment shall be provided outside of, but convenient to, sleeping rooms.
- 10.1.4.26 Appropriate eating utensils, and bedding and other linen shall be provided to all on board. However, the cost of the linen can be recovered as an operational cost if the collective agreement or the work agreement so provides.

- 10.1.4.27 All crew on board shall be given reasonable access to communication facilities, to the extent practicable, at a reasonable cost and not exceeding the full cost to the fishing vessel owner.
- 10.1.4.28 Cooking equipment shall be provided on board. To the extent not expressly provided otherwise, this equipment shall be fitted, where practicable, in a separate galley.
- 10.1.4.29 The galley, or cooking area where a separate galley is not provided, shall be of adequate size for the purpose, well lit and ventilated, and properly equipped and maintained.
- 10.1.4.30 The containers of butane or propane gas used for cooking purposes in a galley shall be kept on the open deck and in a shelter which is designed to protect them from external heat sources and external impact.
- 10.1.4.31 A suitable place for provisions of adequate capacity shall be provided which can be kept dry, cool and well ventilated in order to avoid deterioration of the stores and, to the extent not expressly provided otherwise, refrigerators or other low-temperature storage shall be used, where possible.
- 10.1.4.32 Food and potable water shall be sufficient, having regard to the number of crew, and the duration and nature of the voyage. In addition, they shall be suitable in respect of nutritional value, quality, quantity and variety, having regard as well to the religious requirements and cultural practices in relation to food.
- 10.1.4.33 Accommodation shall be maintained in a clean and habitable condition and shall be kept free of goods and stores which are not the personal property of the occupants or for their safety or rescue.
- 10.1.4.34 Galley and food storage facilities shall be maintained in a hygienic condition.
- 10.1.4.35 Waste shall be kept in closed, well-sealed containers and removed from food handling areas whenever necessary.

10.2 SIGNS

- 10.2.1 The following signs shall be displayed where appropriate;
- (i) "Emergency escape" (Luminescent, Green/White) to indicate escape routes;
 - (ii) "Keep closed at sea" (Blue/White) on both sides of those doors which require to be closed at sea to satisfy stability requirements;
 - (iii) "First Aid" (Green/White) at the first aid locker;
 - (iv) "Fire-fighting equipment", (Red/White) for fire extinguishers, CO2 release stations, fire hydrants and hose stowage and push button alarms;
 - (v) "Oil discharge prohibited at sea" (Blue/White) at overboard discharges that are capable of discharging oily bilge water;
 - (vi) Other signs, when identified through risk assessment.

Refer also to The Merchant Shipping and Fishing Vessels (Safety Signs and Signals) Regulations, 2001 No. 3444 as amended and MGN 556 (M+F), or any superseding document.

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 (Vessel Traffic Monitoring and Reporting Requirements) Regulations 2004 No. 2110;
- The Merchant Shipping (Prevention of Oil Pollution)(Amendment) Regulations 2005 No. 1916 and
- The Merchant Shipping (Implementation of Ship-Source Pollution Directive) Regulations 2009 No. 1210;
- The Merchant Shipping (Prevention of Oil Pollution)(Limits) Regulations 2014 No. 3306;
- The Merchant Shipping (Marine Equipment) Regulations 2016 No.1025; and
- any superseding documents to the above.

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 (Ship Inspection and Survey Organisations) (Revocation) Regulations 2011 No. 3056;
- The Merchant Shipping (Prevention of Pollution)(Limits) Regulations 2014 No. 3306;
- The Merchant Shipping (Marine Equipment) Regulations 2016 No.1025; and
- any superseding documents to the above.

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)(Amendment) Regulations 2009 No 1176
- The Merchant Shipping and Fishing Vessels (Port Waste Reception Facilities)(Amendment) Regulations 2016 No 1211; 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 563 (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;
- The Merchant Shipping (Ship Inspection and Survey Organisations) (Revocation) Regulations 2011 No. 3056;
- The Merchant Shipping (Prevention of Air Pollution from Ships) and Motor Fuel) (Composition and Content) (Amendment) Regulations 2014 No. 3076;

- The Merchant Shipping (Prevention of Pollution) (Limits) Regulations 2014 No. 3306; and
- The Merchant Shipping (Marine Equipment) Regulations 2016 No.1025;
- 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 (Ship Inspection and Survey Organisations) (Revocation) Regulations 2011 No. 3056; and
- The Merchant Shipping (Prevention of Pollution)(Limits) Regulations 2014 No. 3306; and
- any superseding documents to the above

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

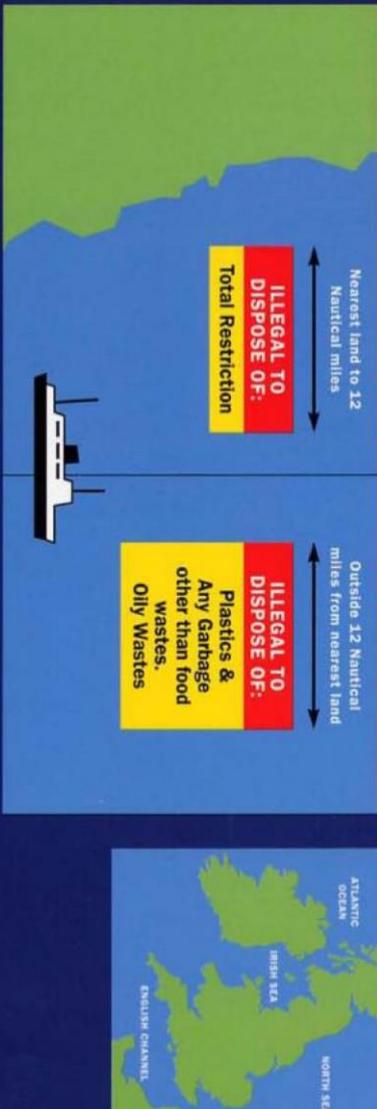
MARPOL PLACARDS

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.

ATLANTIC OCEAN AND IRISH SEA



NORTH SEA AND ENGLISH CHANNEL (SPECIAL AREAS)



UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND

UNITED KINGDOM
FISHING VESSEL CERTIFICATE

Issued under the Provisions of the Fishing Vessels (Codes of Practice) Regulations 2017 No.943 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, Name of Owner, 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

THIS IS TO CERTIFY:

- i) that the vessel has been surveyed in accordance with section 1.3 of the provisions of the Code of Safe Working Practice for the Construction and Use of 15 metres (LOA) to less than 24 metres (L) Fishing Vessels;
ii) that the vessel has been found to comply with the requirements of the Code that are applicable to the vessel, (for vessels that are classed see overleaf);
iii) that the life saving appliances are sufficient for a total of persons;
iv) that the vessel is fitted with the lights, shapes and sound signals to comply with the International Collision Regulations and is fitted with navigational equipment and carries nautical publications in accordance with the Code.
v) that the vessel complies with the requirements of the Merchant Shipping (Radio)(Fishing Vessels) Regulations SI 1999 No.3210 that are applicable to the vessel and is equipped for operation in sea area(s)only.
vi) that the vessel has been assigned the operating limits.....(if applicable)

This Certificate is valid [] until [] subject to a satisfactory inspection in accordance with 1.3.6 of the Code being completed not less than 24 months and not more than 36 months from the recorded date of the renewal survey.

Signature, Name, Signature of Authorised Official issuing the Certificate, Place, Date

Survey completion date.....



Name of vessel.....MSF

Vessels classed with a Classification Society

For vessels which are classed at the time of survey, it is a condition of this certificate that classification of the vessel is maintained throughout the certificate's validity.

Extension of Certificate (Code 1.3.8.3)

The validity of this certificate has been extended until.....

Signature.....

Name

Designation

Existing Vessels constructed before 23 November 2002 (Code 1.3.1.4)

Record of previous exemptions to the Fishing Vessels (Safety Provisions) Rules 1975:

| Rule exemption | Valid until | Subject to the condition(s) |
|----------------|-------------|-----------------------------|
| | | |

Inspection (Code 1.3.6)

It is confirmed that the vessel continues to comply with the requirements of the Code that are applicable to this vessel and that annual self-certification declarations have been completed by the owner.

| Date of Inspection | Place of Inspection | Signature and name of Surveyor |
|--------------------|---------------------|--------------------------------|
| | | |

This Certificate should be framed and posted in a conspicuous place onboard the vessel

Maritime and Coastguard Agency
 An Executive Agency of the Department for Transport

ANNEX 2

ANNUAL SELF-CERTIFICATION UNDER THE CODE OF SAFE WORKING PRACTICE FOR THE CONSTRUCTION AND USE OF 15M (LOA) TO LESS THAN 24M (L) FISHING VESSELS

On satisfactory completion of an annual check on the vessel (required at each anniversary date of expiry of the full term Fishing Vessel Certificate and on change of ownership), the owner should sign the declaration below:

Name of Owner

.....

Address of Owner

.....

.....

Name of Vessel

.....

RSS No **Length Overall**

Registered Length **Date Check Completed**.....

Port letters and number **Mode(s) of Fishing**.....

DECLARATION: I HEREBY CERTIFY THAT:

- i) all fire fighting appliances, life saving appliances and safety equipment that are carried on board the vessel have been suitably maintained and are within date;
- ii) the Radio equipment is functioning correctly;
- iii) the shipborne navigational equipment, nautical publications and lights, shapes and sound signal appliances, that are required for compliance with the International Collision Regulations, are carried on board and are functioning correctly;
- iv) the risk assessment remains appropriate to the vessel's fishing method and mode of operation
- v) no known alteration, damage or deterioration to the vessel or its equipment has occurred in service that would affect the vessel's compliance with the requirements of the Code or the vessel's stability;
- vi) weathertight doors and hatches are functioning correctly; and
- vii) crew training and certification are valid.

1st Annual Signature of Owner **Date**

2nd Annual Signature of Owner **Date**

3rd Annual Signature of Owner **Date**

4th Annual Signature of Owner **Date**

*Notes - This form shall be retained with the Fishing Vessel Certificate for subsequent inspection
- A false declaration may render the owner liable to prosecution*

ANNEX 3 INFORMATION AS TO STABILITY OF FISHING VESSELS

The Stability book to be kept on board the vessel pursuant to the requirements of this Code, shall contain the following information:

1. A statement of the vessel's name, port of registry, official number, registration letters, principal dimensions, date and place of build, gross and net tonnage, displacement and minimum freeboard in the deepest foreseeable operating condition.
2. A profile plan of the vessel drawn to scale showing the names of all compartments, tanks, storerooms, crew accommodation spaces and the position of the mid-point of the length between perpendiculars (LBP).
3. A tabular statement of the capacities and position of the centres of gravity, longitudinally and vertically for every compartment available for the carriage of cargo, fuel, stores, feed water, domestic water, water ballast, crew and effects. The free surface function defined in section 9 below shall also be included for each tank designed to carry liquid. Details of the centroid of the total internal volume of the fish-hold(s) shall be included in such information. The calculation may take into account the effect of assuming a void space between the top of the catch and the underside of the deckhead provided that under normal operating conditions, control of loading in the hold is such that the actual void space above the catch will always be equal to or greater than that assumed in such a calculation.
4. Where deck cargo and/or stores is carried by a vessel the estimated maximum weight and disposition of such deck cargo shall be included in the information in the appropriate operating conditions, and show compliance with the stability criteria set out in the Code.
5. A diagram or tabular statement shall be provided showing for a suitable range of mean draughts and at the trim stated, the following hydrostatic particulars of the vessel:
 - (i) the heights of the transverse metacentres;
 - (ii) moments to change trim one centimetre;
 - (iii) tonnes per centimetre immersion;
 - (iv) longitudinal position of the centre of Flotation;
 - (v) vertical and longitudinal positions of the centre of buoyancy;
 - (vi) displacement in tonnes.

Where a vessel has a raked keel, the same datum (a horizontal line through the intersection of the hull moulded line with the vessel centreline, amidships) shall be used for the hydrostatics as employed in determining the information required in section 3 of this Annex. In such cases full information shall be included in respect of the rake and dimensions of the keel and may be given in the form of a diagram. The positioning of the draft marks relative to this datum shall be included on such a diagram.

6. A diagram or table shall be provided showing cross curves of stability indicating the assumed position of the axis from which the righting levers are measured and the trim which has been assumed. Where a vessel has a raked keel a horizontal datum through the intersection of the hull moulded line with the vessel centreline, amidships, shall be used.

On existing vessels, any datum other than a horizontal line through the intersection of the hull moulded line with the vessel centreline, amidships, shall be clearly defined.

E

7. The information provided under sections 5 and 6 of this Annex shall be at such a nominal trim that represents accurately the vessel in all normal operating trims. Where calculations show that there are significant numerical variations in these operating trims the information

provided under sections 5 and 6 of this Annex shall be repeated over such a range of trims to allow an accurate interpolation of such information at any normal operating trim.

8. Superstructure deckhouses, companionways located on the freeboard deck, including hatchway structures may be taken into account in deriving such crosscurves of stability provided that their location, integrity and means of closure will effectively contribute to the buoyancy.

9. An example shall be included in such information to show the corrections applied to the transverse metacentric height and righting levers (GZ) for the effects of the free surfaces of liquids in tanks and shall be calculated and taken into account as follows:

(i) the metacentric height in metres shall be reduced by an amount equal to the total of the free surface functions for each tank divided by the vessel's displacement in tonnes. For each tank the free surface function is given by:

$1.025 \times \frac{p \cdot i}{\Delta}$ where

p = specific gravity of the liquid;

i = transverse moment of inertia of the surface

(i.e. $i = \frac{LB^3}{12}$ where L=length and B=breadth of the free surface in metres)

i.e. correction = $\frac{\text{Sum of } p_i}{\Delta}$

(ii) the righting lever (GZ) curves shall be corrected by either:

(a) adding the free surface correction calculated under (i) above to the value in metres of the calculated height of centre of gravity of the vessel above datum; or

(b) making direct calculations of the heeling moment due to the liquid surface being inclined at the selected angle of heel where such calculations take proper account of the position of liquid surface in relation to the geometric configuration of the tank. The correction to the righting lever (GZ) at any selected angle of heel shall then be the summation of the individual heeling moments of the tanks considered, divided by the vessels displacement.

10. A stability statement and diagram shall be provided for the usual condition of the vessel:

(i) in the lightship condition:

the vessel shall be assumed to be empty except for liquids in machinery and in piping systems including header tanks. The weight and position of the centre of gravity of any permanent ballast or fishing gear shall be indicated;

(ii) in each of the following circumstances so far as they may be applicable to the vessel in its foreseeable operating conditions:

(a) on departure from port:

the vessel shall be assumed to be loaded with the necessary equipment, materials and supplies including ice, fuel, stores and water;

(b) on arrival at fishing grounds:

as sub-section (a) above but account taken of the consumption of fuel and stores;

(c) on arrival at fishing grounds:

as sub-section (b) above but the appropriate icing-up allowance as set out in section 14 of this Annex shall be taken into account;

(d) on departure from fishing grounds:

the vessel shall be assumed to be loaded with its maximum catch but account taken of the consumption of fuel and stores;

(e) on departure from fishing grounds:

as sub-section (d) above but the appropriate icing-up allowance as set out in section 14 of this Annex shall be taken into account;

(f) on departure from fishing grounds:

the vessel shall be assumed to be loaded with 20% of its maximum catch but account taken of the consumption of fuel and stores;

(g) on departure from fishing grounds:

as sub-section (f) above but the appropriate icing-up allowance as set out in section 14 of this Annex shall be taken into account;

(h) on arrival at port with maximum catch: account shall be taken of the consumption of fuel and stores;

(i) on arrival at port with 20% maximum catch:

account shall be taken of the consumption of fuel and stores;

(j) if any part of the catch normally remains on deck, further statements and diagrams appertaining to that condition in all the appropriate circumstances set out in subsections (d) to (i) above inclusive shall be provided;

The total free surface correction for the effect of liquid in tanks shall be applied to each loading condition set out in the foregoing provisions of this section. The free surface correction shall take into account the amounts of fuel, lubricating oil, feed and fresh water in the vessel in each such loading condition.

(iii) Working instructions, specifying in detail the manner in which the vessel is to be loaded and ballasted, shall be included within the Trim and Stability Manual. The instructions shall generally be based upon the conditions that are specified in section (ii) above. For vessels in which no provision has been made for the carriage of deck cargo, the working instructions shall also contain the following statement:

“Provision has not been made within the vessel’s stability for deck stowage of catch.

Catch landed on deck shall be stowed below as soon as is possible and prior to landing further catch”

11. Where provision is made in a particular area of the vessel for the washing and cleaning of the catch which could lead to an accumulation of loose water a further statement and

diagram shall be provided appropriate to that condition which takes into account the adverse effects of such loose water, it being assumed that:

- (i) the amount of loose water on deck is determined by the size and disposition of the retaining devices; and
- (ii) in all other respects the vessel is loaded in accordance with (d) or (f) of section 10 of this Annex, whichever is the less favourable with regard to the vessels stability.

12. Each stability statement shall consist of:

- (i) a profile drawn to a suitable scale showing the disposition of the deadweight components;
- (ii) a tabular statement of all the components of the displacement including weights, positions of centres of gravity, transverse metacentric height corrected for free surface effects, trim and draughts;
- (iii) a diagram showing a curve of righting levers (GZ), corrected for free surface effects and derived from the cross-curves of stability, showing, if appropriate, the angle at which the lower edges of any opening which cannot be closed watertight will be immersed. The diagram shall also show the corresponding numerical values of the stability parameters defined in section 3.1.2 of this Code.

13. The information provided under sub-section (iii) of section 12 of this Annex shall be supplemented by a graph or tabular statement showing the maximum permissible deadweight moment over a range of draughts which shall cover foreseeable operating conditions. At any given draught this maximum permissible deadweight moment value is the total vertical moment about a convenient base line, of all the component weights of the total deadweight which, at that draught, will ensure compliance with the minimum stability criteria requirements of the Code. If an allowance for the weight due to icing-up is required, this shall be taken into account by a suitable reduction in the permissible moment. Where the stability information is supplied in accordance with the requirements of this section the tabular statement required in accordance with sub-section 12(ii) of this Annex shall include the deadweight moment appropriate to each condition and an example shall be added to the stability information to demonstrate the assessment of the stability.

14. The icing-up allowance which represents the added weight due to ice accretion on the exposed surfaces of the hull, superstructure, deck, deckhouses and companionways shall be calculated as follows:

- (i) full icing allowance:

all exposed horizontal surfaces (decks, house tops, etc.) shall be assumed to carry an ice weight of 30 kg/metre². The projected lateral area of the vessel above the waterline (a silhouette) shall be assumed to carry an ice weight of 15 kg/metre². The height of the centre of gravity shall be calculated according to the heights of the respective areas and in the case of the projected lateral area the effect of sundry booms, rails, wires, etc., which will not have been included in the area calculated shall be taken into account by increasing by 5% the weight due to the lateral area and the moment of this weight by 10%. This allowance shall apply in winter (1st November to 30th April inclusive in the northern hemisphere) to vessels which operate in the following areas:

- (a) the area north of latitude 66°30'N. between longitude 10°W. and the Norwegian Coast;
- (b) the area north of latitude 63°N. between longitude 28°W. and 10°W.;

- (c) the area north of latitude 45°N. between the North American continent and longitude 28°W.;
 - (d) all sea areas north of the European, Asian and North American continents east and west of the areas defined in (a), (b) and (c) above;
 - (e) Bering and Okhotsk seas and Tatar Strait;
 - (f) South of latitude 60°S.
- (ii) Half of the full icing allowance:
- this shall be taken as one half of that calculated under sub-section (i) of this section and shall apply in winter to vessels which operate in all areas north of latitude 61°N. between longitude 28°W. and the Norwegian Coast and south of the areas defined as the lower limit for the full icing allowance between longitude 28°W. and the Norwegian Coast.
- 15.** Information shall be provided in respect of the assumptions made in calculating the condition of the vessel in each of the circumstances set out in section 10 of this Annex for the following:
- (i) duration of the voyage in terms of days spent in reaching the fishing grounds, on the grounds and returning to port;
 - (ii) the weight and disposition of the ice in the hold at departure from port including the heights of stowage;
 - (iii) consumption rates during the voyage for fuel, water, stores and other consumables;
 - (iv) ratio by weight of the ice packed with the catch in the fish hold;
 - (v) melting rates for each part of the voyage of the ice packed with the catch and the ice remaining unused in the hold.
- 16.** A copy of a report of an inclining test of the vessel and the derivation therefrom of the lightship particulars shall be provided.
- 17.** A statement shall be given by or on behalf of the owner of the vessel that the statements and diagrams supplied with respect to the operating conditions set out in section 10 of this Annex are based on the worst foreseeable service conditions in respect of the weights and disposition of fish carried in the hold or on deck, ice in the hold, fuel, water and other consumables.
- 18.** Owners and skippers shall also ensure that they comply with the requirements of M.975 – Freeboard of Fishing Vessels, or any superseding document.
- 19.** Maximum free surface moments should be included within the Loaded Departure condition, and as a minimum, factored according to tank percentage fill for all other conditions.
- 20.** Generally, buoyant structures intended to increase the range of positive stability should not be provided by fixtures to superstructures, deckhouse, masts or rigging.

ANNEX 4 REQUIREMENTS FOR EXISTING VESSELS

1.0 CONSTRUCTION, WATERTIGHT AND WEATHERTIGHT INTEGRITY

1.1 Heights of hatchway coamings, doorways sills

1.1.1 Subject to sections 1.1.2 and 1.1.3 below of this Annex, in every vessel to which this Annex applies every hatchway on the freeboard deck shall have a coaming of substantial construction and the height of the coaming above the deck shall be not less than:

- (i) 300 millimetres for vessels with Vessel Numerals up to and including 200;
- (ii) 380 millimetres for vessels with Vessel Numerals above 200 but no more than 315;
- (iii) 460 millimetres for vessels with Vessel Numerals above 315 but not more than 1400;
- (iv) 600 millimetres for vessels with Vessel Numerals above 1400.

On superstructure decks the height of the coamings shall be not less than 300 millimetres.

1.1.2 In any vessel to which this Annex applies, the height of hatch coamings specified in section 1.1.1 of this Annex may be reduced, or the coamings omitted, where compliance with the requirements of section 1.1.1 of this Annex is not reasonably practicable provided watertight hatch 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 and battened down.

1.1.3 In any vessel to which this Annex applies, the height of sills above the level of the deck in doorways provided in companionways, superstructures, deckhouses and machinery casing which give access to parts of the deck exposed to the weather and sea from spaces below the freeboard deck shall be not less than those specified for hatchway coamings in section 1.1.1 above provided that the height of such sills above deck may be reduced where there is no direct access to spaces leading below the freeboard deck and where the deckhouses, superstructures or companionways on the freeboard deck are sub-divided internally.

1.2 Freeboard

1.2.1 Every vessel to which this Annex applies shall be so designed, constructed and operated as to ensure that in all foreseeable operating conditions the freeboard will be adequate to provide:

- (i) compliance with the stability criteria set out in Chapter 3 of the Code;
- (ii) reasonable safety for men working on deck;
- (iii) reasonable safety to the vessel from the entry of water into enclosed spaces having regard to the closing appliances fitted.

1.2.2 On each side of every such vessel, draught water marks complying with the requirements of section 10 of the Merchant Shipping Act 1995 shall be provided.

1.2.3 For further guidance on Freeboards please refer to MSN 975 or any superseding document.

2.0 Mechanical and Electrical Appliances

2.1 Main and Branch Bilge Suction pipes.

2.1.1 In every such vessel:

- (i) the internal diameter of main and branch bilge suction pipes shall be determined to the nearest 5 millimetres by the following formulae:

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

$$d_b = 25 + 2.15 \sqrt{C(B + D)}$$

where d_m = internal diameter of the main bilge suction pipes in millimetres;

d_b = internal diameter of the branch bilge suction pipes in millimetres;

L = Principal Length of vessel in metres;

B = Principal Breadth of vessel in metres;

D = Principal Depth of vessel in metres;

C = Length of compartment in metres;

- (ii) the inside diameter of the bilge main and bilge suction directly connected to the pump shall be no less than 50 millimetres;

3.0 Fire Protection, Detection and Extinction

3.1 Structural fire protection-general

- 3.1.1 Every vessel to which this Annex applies shall be so constructed and equipped that there is no substantial fire risk to the vessel or to persons on board the vessel.

3.2 Structural fire protection-vessels with hulls constructed of steel or other equivalent material

- 3.2.1 In every vessel to which this Annex applies, the hull of which is constructed of steel or other equivalent material, the superstructure, structural bulkheads, decks and deckhouses shall also be constructed of steel or other suitable material, having regards to the risk of fire.

- 3.2.2 In every vessel to which this Annex applies, the bulkheads and decks separating accommodation spaces, service spaces, control stations and emergency fire pump space from machinery spaces shall be constructed and insulated to A-60 standard, provided that the provisions of this section shall not apply to spaces where the fire risk is minimal.

- 3.2.3 In every vessel to which this Annex applies, the bulkheads of corridors serving accommodation spaces, other than bulkheads required to meet the provisions of section 3.2.2 of this Annex, shall extend from deck to deck and shall be constructed of steel, other equivalent material, or non-combustible material capable of meeting a B-15 standard.

- 3.2.4 In every vessel to which this Annex applies, interior stairways serving accommodation spaces, service spaces or control stations shall be constructed of steel. Such stairways shall be within enclosures formed of steel, other equivalent material, or non-combustible material capable of meeting a B-15 standard, except that a stairway connecting only two decks may be enclosed at one deck only.

- 3.2.5 In every vessel to which this Annex applies the number of openings in the bulkheads and decks referred to in section 3.2.2 of this Annex shall be as few as reasonable practicable. Such openings shall be fitted with closing arrangements which provide protection equivalent to the surrounding structure in resisting fire.

- 3.2.6 In every vessel to which this Annex applies the number of openings of the bulkheads and decks referred to in sections 3.2.3 and 3.2.4 of this Annex shall be as few as reasonable practicable and fitted with closing arrangements which provide protection equivalent to the surrounding structure in resisting fire. Doors fitted to stairway enclosures shall be self-

closing and arrangements, where provided, for holding open the doors shall be such that the doors close automatically in the event of fire.

- 3.2.7 In every vessel to which this Annex applies, lift trunks in accommodation and service spaces shall be constructed of steel or equivalent material and the opening therein shall be provided with adequate means of closing which will contain smoke and draughts within the lift trunks and which provide protection equivalent to the surrounding structure in resisting fire.
- 3.2.8 In every vessel to which this Annex applies, boundary bulkheads and decks of spaces containing emergency sources of power and such bulkheads and decks which separate galley, paint rooms, lamp-rooms or store-rooms containing flammable materials from accommodation spaces, service spaces or control stations shall be constructed to A-60 standard. Bulkheads, other than boundary bulkheads, to paint rooms, lamp-rooms or store-rooms containing flammable materials or products shall be from the open deck and materials or products shall be stored in sealed containers, provided that such an entrance may lead into a passageway if the closing arrangements are adequate.
- 3.2.9 In every vessel to which this Annex applies, bulkheads, linings, ceilings and the support grounds in accommodation spaces, service spaces and control stations shall be constructed of non-combustible material, except that such bulkheads, linings and ceiling may have a combustible veneer the thickness of which shall not exceed 1.5 millimetres.
- 3.2.10 In every vessel to which this Annex applies concealed surfaces behind bulkheads, ceilings, panellings and linings in accommodation spaces, service spaces and control stations, together with all exposed surfaces therein shall be such that a Class 1 or Class 2 surface spread of flame shall not be exceeded. Paints, varnishes and other finishings used on these exposed surfaces shall also be such that a Class 1 or Class 2 surface spread of flame shall not be exceeded.
- 3.2.11 In every vessel to which this Annex applies, deck coverings within accommodation spaces, service spaces and control stations shall be of a type which will not readily ignite.
- 3.2.12 In every vessel to which this Annex applies, curtains, other suspended textile materials and floor coverings shall have fire resistant qualities.
- 3.2.13 In every vessel to which this Annex applies, spaces enclosed behind ceilings, panellings or linings in accommodation spaces, service spaces and control stations shall be suitably sub-divided by close fitting draught stops situated not more than 7 metres apart.
- 3.2.14 In every vessel to which this Annex applies, pipes conveying oil or other combustible liquids or compressed air shall be constructed from steel or other suitable material. Jointing materials used shall be such that they shall not be rendered ineffective by heat.
- 3.2.15 In every vessel to which this Annex applies, overboard scuppers, discharges or other outlets situated below the freeboard deck shall be constructed of steel or other suitable material.
- 3.2.16 In every vessel to which this Annex applies, the hinged portions of skylights serving spaces containing either main propulsion machinery, oil-fired boilers or auxiliary internal combustion machinery shall be capable of being operated from inside and outside such spaces.
- 3.2.17 In every vessel to which this Annex applies, insulation in accommodation spaces, services spaces, control stations and machinery spaces shall be of a non-combustible material and such insulation, fitted on the inside of machinery spaces in positions where oil spillage or the emission of oil vapours may arise, shall have exposed surfaces impervious to oils or oil vapours.

- 3.2.18 In every vessel to which this Annex applies, insulation where fitted in refrigerated compartments or fish hold shall be non-combustible unless the exposed surfaces thereof are protected by close fitting cladding.
- 3.2.19 In every vessel to which this Annex applies, insulation to refrigerated compartments within accommodation spaces need not be non-combustible provided the exposed surfaces are protected by non-combustible cladding.
- 3.2.20 In every vessel to which this Annex applies, an automatic fire detection and alarm system complying with the requirements of section 3.5 of this Annex shall be provided to compartments within accommodation spaces remote from the control stations.

3.3 Structural fire protection-vessels with hulls constructed of a glass reinforced plastic

- 3.3.1 In every vessel to which this Annex applies, the hull of which is constructed of glass reinforced plastic, the hull, superstructure, structural bulkheads, decks and deckhouses shall be provided with fire-resistant properties.
- 3.3.2 In every vessel to which this Annex applies, the following structures shall be so insulated and constructed as to meet a B-30 standard:
- (i) the internal surfaces of the deckhead, boundary bulkheads, side shell down to light waterline level and the casings of the main machinery space;
 - (ii) the adjacent deck areas and bulkheads forming the enclosures to stairways serving accommodation spaces, service spaces or control stations, except that:
 - (a) all stairways shall be constructed of steel;
 - (b) a stairway leading between two decks may be enclosed at one deck only;
 - (iii) bulkheads and decks enclosing the control stations and corridors serving accommodation spaces, service spaces and control stations.
- 3.3.3 In every vessel to which this Annex applies, lift trunks in accommodation and service spaces shall be provided with adequate means of closing which will contain smoke and draughts within the lift trunk.
- 3.3.4 In every vessel to which this Annex applies, structures enclosing the galley and similar spaces adjacent to or within the accommodation spaces, service spaces or control stations shall be adequately insulated.
- 3.3.5 In every vessel to which this Annex applies, exposed surfaces within accommodation spaces, service spaces, control stations or machinery spaces other than those required to be insulated in accordance with sections 3.3.2 and 3.3.4 of this Annex shall have a final layer of suitable fire retardant resin or be coated with a suitable fire retardant paint, except that the foregoing provisions of this section shall not apply to surface laminates which are self-extinguishing.
- 3.3.6 In every vessel to which this Annex applies, the number of openings in the bulkheads and decks shall be as few as reasonably practicable and fitted with closing arrangements which provide protection equivalent to the surrounding structure in resisting fire. Doors fitted to stairway enclosures shall be self-closing and arrangements, where provided, for holding open the doors shall be such that the doors close automatically in the event of fire. Doorways fitted to casings situated above the machinery spaces and extending above the freeboard deck shall be fitted with closing appliances of the self-closing type.
- 3.3.7 In every vessel to which this Annex applies, insulation provided within refrigerated compartments or insulated fish-holds shall be non-combustible unless the exposed surfaces of such insulation are protected by close fitting cladding which shall be non-combustible where fitted in spaces containing fire hazards.

- 3.3.8 In every vessel to which this Annex applies, where ceilings, panellings or linings are fitted in accommodation spaces, service spaces or control stations the requirements of sections 3.2.1 and 3.2.13 of this Annex shall apply to such ceilings, panellings or linings.
- 3.3.9 In every vessel to which this Annex applies, exhaust pipes and ducts which are liable to become heated shall be adequately insulated and properly positioned.
- 3.3.10 In every vessel to which this Annex applies, deck coverings shall comply with the requirements of section 3.2.11 of this Annex.
- 3.3.11 In every vessel to which this Annex applies, an automatic fire detection and alarm system complying with the requirements of section 3.5 of this Annex shall be provided to compartments within accommodation spaces and service spaces remote from the control stations.

3.4 Structural fire protection-vessels with hulls constructed of wood

- 3.4.1 In every vessel to which this Annex applies, the hull of which is constructed of wood:-
- (i) the following structures shall be constructed from steel or other equivalent material in the propelling machinery space:-
 - (a) the casings;
 - (b) the beams supporting that part of the deck which forms the crown of this space, except the half-beams and carlins which may be of hard wood and substantial section:
 - (ii) bulkheads which separate the machinery spaces from adjacent accommodation spaces or control stations shall be constructed of steel, other equivalent material or non-combustible material capable of meeting a B-15 standard. Access doors shall be close fitting and provide protection equivalent to the bulkhead in resisting fire;
 - (iii) the deck of a wheelhouse or control station which forms the crown of the machinery space shall be constructed of steel or other equivalent material.
- 3.4.2 In every vessel to which this Annex applies, where cooking or heating appliances are fitted in galleys, service spaces or any space adjacent to or within accommodation spaces and adjacent to wood structure, such surrounding structure shall be adequately insulated.
- 3.4.3 In every vessel to which this Annex applies, ladders or stairways forming means of escape from below deck shall be constructed of steel and deck openings shall be fitted with closing appliances which provide protection equivalent to the structure in resisting fire.
- 3.4.4 In every vessel to which this Annex applies, in accommodation spaces, service spaces, control stations and machinery spaces in such vessels, paints, varnishes and other finishings used on exposed surfaces shall be such that a Class 1 or Class 2 surface spread of flame shall not be exceeded.
- 3.4.5 In every vessel to which this Annex applies, products and materials which produce smoke or toxic products when exposed to fire shall not be stored in machinery spaces, except those products and materials necessary for operating the machinery.
- 3.4.6 In every vessel to which this Annex applies, insulation provided within refrigerated compartments or insulated fish-holds shall be non-combustible unless the exposed surfaces of such insulation are protected by close fitting cladding in spaces containing fire hazards.
- 3.4.7 In every vessel to which this Annex applies, the number of openings in the bulkheads and decks shall be a minimum and fitted with closing arrangements which provide protection

equivalent to the surrounding structure in resisting fire. Doors in casings extending at least 1.8 metres above the crown of machinery spaces on the freeboard deck shall be fitted with closing appliances of the self-closing type.

- 3.4.8 In every vessel to which this Annex applies, exhaust pipes and ducts which are liable to become heated shall be adequately insulated and properly positioned.
- 3.4.9 In every vessel to which this Annex applies, deck coverings shall comply with the requirement of section 3.2.11 of this Annex.
- 3.4.10 In every vessel to which this Annex applies, an automatic fire detection and alarm system complying with the requirements of section 3.5 of this Annex shall be provided to compartments within accommodation spaces and service spaces remote from the control stations.

3.5 Requirements for fire alarm and fire detection systems

- 3.5.1 In every vessel to which this Annex applies, where an automatic fire alarm and fire detection system is installed it shall comply with the requirements specified in this section and shall be installed and so arranged as to protect all accommodation spaces and service spaces in the vessel provided that the foregoing provisions of this Annex shall not apply:
- (i) to the extent that there is no substantial fire risk in the accommodation spaces and service spaces; or
 - (ii) in respect of any store room which is provided with adequate arrangements for the detection of fire or for the smothering of fire by gas or other suitable means.
- 3.5.2 In every vessel to which this Annex applies, every fire detection system shall be fit for its intended service and be capable of automatically indicating the presence of fire and its location. The indicators shall be positioned in the wheelhouse or they may be distributed among several stations provided such distribution is at least as effective as if the indicators were positioned in the wheelhouse.
- 3.5.3 The indicating system of any fire detecting system in every such vessel shall operate both audible and visible alarms at the stations referred to in section 3.5.2 of this Annex.
- 3.5.4 In every such vessel electrical equipment used in the operation of any fire detection system fitted in compliance with this Annex shall be supplied from two sources of electric power one of which shall be the emergency source of power required by section 4.2.10 of the Code.

3.6 Fire Extinction

- 3.6.1 In every vessel to which this Annex applies a fixed fire smothering gas installation shall be provided in every vessel, the hull of which is constructed of wood or glass reinforced plastic, for the protection of the machinery space. Such installation shall comply with the requirements of section 3.9 of this Annex except that the quantity of free fire smothering gas provided shall be equivalent to at least 60% of the gross volume of the machinery space, or in the case of any such vessel where the machinery space is bounded by steel bulkheads the quantity of fire smothering gas shall be equivalent to at least 40% of the gross volume of that space.
- 3.6.2 In every vessel to which this Annex applies, such vessel fire appliances shall be provided whereby at least one of the jets of water required by this section can reach any part of the vessel normally accessible to the crew while the vessel is being navigated and any store room and any part of any hold space when empty.
- 3.6.3 In every vessel to which this Annex applies, at least one fire pump operated by power shall be provided which shall be capable of delivering at least one jet of water from any fire

hydrant, hose and nozzle provided in the vessel and which shall comply with the requirements of section 3.7 of this Annex.

- 3.6.4 In every vessel to which this Annex applies, if the pump required by section 3.6.3 of this Annex and its source of power and sea connection are not situated outside spaces containing oil-fired boilers or internal combustion type propelling machinery, there shall be provided in a position outside such spaces an additional fire pump and its source of power and sea connection. If this pump is operated by power it shall comply with the requirements of section 3.6.3 of this Annex and if it is manually operated it shall be provided with a hose and a 9.5 millimetre diameter nozzle through which it shall be capable of producing a jet of water having a throw of not less than 6 metres which can be directed on to any part of the vessel.
- 3.6.5 In every vessel to which this Annex applies, a fire main, water service pipes and hydrants shall be provided, which shall comply with the requirements of section 3.8 of this Annex, and at least two fire hoses and one spare fire hose.
- 3.6.6 In every vessel to which this Annex applies, a spray nozzle suitable for use with the fire hoses required by section 3.6.5 of this Annex shall be provided in every such vessel fitted with oil-fired boilers or internal combustion type propelling machinery.
- 3.6.7 In every vessel to which this Annex applies, a sufficient number of portable fire extinguishers shall be provided to ensure that at least one such extinguisher will be readily available for use in any part of the accommodation or service spaces. Not less than three extinguishers shall be provided of which one extinguisher suitable for extinguishing oil fires shall be provided adjacent to any oil-fired central heating appliance which may be fitted. The extinguishing medium provided in any extinguisher placed in an area of fire risk shall be suitable for the type of fire risk involved.
- 3.6.8 In every vessel to which this Annex applies, at least one of the following fixed fire extinguishing installations shall be provided for the protection of any space containing any oil-fired boiler, oil fuel settling tank or oil fuel unit in vessels other than those which comply with section 3.6.1 of this Annex:
- (i) a pressure water spraying system complying with the requirements of section 3.10 of this Annex;
 - (ii) a fire smothering gas or steam installation complying with the requirements of section 3.9 of this Annex;
 - (iii) a foam fire extinguishing installation complying with the requirements of section 3.11 of this Annex.
- If the engine and boiler rooms are not entirely separated from each other by a bulkhead, or if fuel oil can drain from the boiler room into the engine room, the combined engine room and boiler room shall, for the purpose of this section, be regarded as a single space.
- 3.6.9 In every vessel to which this Annex applies, in addition to the requirements of section 3.6.8 of this Annex there shall be provided:
- (i) in each boiler room and in each space which contains any part of any oil fuel installation, at least two portable fire extinguishers suitable for extinguishing oil fires;
 - (ii) in each firing space a receptacle containing at least 0.15 metres³ of sand or other dry material suitable for quenching oil fires together with a scoop for its distribution, or alternatively an additional portable fire extinguisher suitable for extinguishing oil fires.
- 3.6.10 In every vessel to which this Annex applies one portable fire extinguisher suitable for extinguishing oil fires for each 100 bhp or part thereof of such machinery shall be provided

in any space containing internal combustion type machinery, except that not more than seven such fire extinguishers shall be required in any one space and that alternatively there may be provided two such extinguishers together with either:

- (i) one foam fire extinguisher of at least 45 litres capacity; or
- (ii) one carbon dioxide fire extinguisher of at least 16 kg capacity.

3.6.11 In every vessel to which this Annex applies at least one firefighter's outfit shall be provided.

3.6.12 In every vessel to which this Annex applies, a water spray system, independent of any system fitted in machinery space and which may be connected to the fire main, shall be fitted in the net store and be operable from outside the space.

3.7 Requirements for fire pumps

3.7.1 In every vessel to which this Annex applies fire pumps operated by power (other than any emergency fire pump) shall together be capable of delivering for fire-fighting purposes a quantity of water under the conditions and at the pressure specified in section 3.8 of this Annex which shall not be less than quantity obtained from the following formula:

Quantity of water in metres³ per hour = km^2

Where:

$K = 0.008$ for vessels required to be provided with more than one fire pump (excluding any emergency fire pump) and $k + 0.004$ for vessels required to be provided with only one fire pump; and $m = 25 + 1.68 \sqrt{L(B + D)}$ to the nearest 5.

Where

L = Principal Length of the vessel in metres;
 B = Principal Breadth of the vessel in metres;
 D = Principal Depth of the vessel in metres:

Provided that in any such vessel the total capacity of the fire pumps for fire fighting purposes shall not be required to exceed 180 metres³ per hour.

3.7.2 In every vessel to which this Annex applies every fire pump required to be operated by power shall, except as expressly provided otherwise, be operated by a means other than the vessel's main engines. Fire pumps may be sanitary, ballast, bilge or general service 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 oil, suitable changeover arrangements are fitted and operating instructions are conspicuously displayed at the changeover position, stating that the pump shall be flushed through and returned to fire duty immediately after the oil pumping duty is completed.

3.7.3 In every vessel to which this Annex applies:

- (i) where more than one fire pump operated by power is required (other than any emergency pump) every fire pump shall have a capacity of not less than 80% of the total capacity of the fire pumps required by section 3.7.1 of this Annex divided by the number of fire pumps required to be provided. In any vessel where more fire pumps operated by power are provided than are required by this Annex the capacity of any such additional fire pumps may be less than that required by section 3.7.1 of this Annex;
- (ii) every fire pump required to be operated by power shall be capable of producing from any fire hydrant or hydrants at least the minimum number of jets of water

required by this Annex the capacity of any such additional fire pumps may be less than that required by section 3.7.1 of this Annex;

- 3.7.4 In every vessel to which this Annex applies, 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 fire main, water service pipes, hydrants and hoses. These valves shall be placed and adjusted so as to prevent excessive pressure in any part of the fire main system.
- 3.7.5 In every vessel to which this Annex applies, every centrifugal pump connected to the fire main shall be fitted with a non-return valve.
- 3.7.6 In every vessel to which this Annex applies, power pumps driven by the main propulsion machinery shall only be used as fire pumps if the main machinery can be readily disconnected from the propeller shafting.
- 3.7.7 In every vessel to which this Annex applies:
- (i) independent starting arrangements for emergency fire pumps shall be provided and shall be readily accessible and easy to operate;
 - (ii) where the emergency fire pump is electrically driven the emergency generator shall be capable of being started manually;
 - (iii) where the emergency fire pump is driven by a direct or hydraulically coupled diesel engine the engine shall be capable of being started manually;
 - (iv) these pumps shall be positioned so that the supply of water is ensured at all times and pumps are not likely to be cut off by fire or smoke in the compartment containing the main fire pumps;
 - (v) a discharge connection from the emergency fire pump to the fire main shall be fitted and means provided for isolating the machinery spaces from the fire main;
 - (vi) where the emergency fire pump is used for the production of foam for a machinery space fixed foam system, or for recharging a pre-mixed foam installation, the pump capacity shall be sufficient to provide such facility in addition to the jets of water required by this Annex;
 - (vii) any service fuel tank for use with emergency pumping units shall provide at least three hours running on full load and sufficient fuel shall be available to enable the unit to be run at full output for at least 12 hours.

3.8 Requirements for the fire main, water service pipes and hydrants

- 3.8.1 In every vessel to which this Annex applies, where fire pumps are operated by power the diameter of the fire main and of the water service pipes connecting the hydrants thereto shall be sufficient for the effective distribution of the maximum discharge required by this Annex from:
- (i) the power pump where only one pump is required by the Annex; or
 - (ii) both power pumps operating simultaneously where two such pumps are so required

Provided that the diameter of the fire main and of the water service pipes shall be required to be sufficient only for the discharge of 140 metres³ per hour.

- 3.8.2 In every vessel to which the Annex applies, when the fire pumps are discharging the quantity of water required by section 3.8.1 of this Annex through adjacent fire hydrants in

any part of the vessel from nozzles of sizes specified in section 3.8.5 of this Annex following minimum pressure shall be capable of being maintained at any hydrant:

- (i) in vessels of 60 metres in length and upwards-2.6 kg force per centimetre²; or
- (ii) vessels under 60 metres in length-2 kg force per centimetre².

3.8.3 In every such vessel to which this Annex applies fire hoses provided in compliance with this Annex shall not exceed 18 metres in length. These hoses shall be made of closely woven flax canvas or other suitable material and shall be provided with couplings, branch-pipes and other necessary fittings and with a plain nozzle in addition to any spray nozzle required by this Annex.

3.8.4 In every vessel to which this Annex applies, every fire hose, together with the tools and fittings necessary for its use, shall be kept in a conspicuous position near the hydrant or connections with which it is intended to be used.

3.8.5 In every vessel to which this Annex applies:

- (i) fire pumps operated by power shall be provided with nozzles of 12 millimetres, 16 millimetres or 20 millimetres in diameter, or as near thereto in diameter as possible. Nozzles larger in diameter may be provided if the requirements of this Annex relating to the provisions of water for fire-fighting purposes are otherwise met;
- (ii) the diameter of the nozzles for machinery spaces and exterior locations shall be such as to obtain the maximum possible discharge from the minimum number of jets of water and at the pressure required by this Annex from the smallest fire pump permitted by section 3.7.3(i) of this Annex; provided that the diameter of the nozzles shall not be required to be greater than 20 millimetres;
- (iii) the diameter of the nozzles for accommodation and service spaces shall not be required to be greater than 12 millimetres;
- (iv) every spray nozzle shall be capable of producing a water spray suitable for extinguishing oil fires and shall be provided in addition to any plain nozzle required by section 3.8.1 of this Annex; provided that a dual-purpose nozzle capable of producing such a spray a plain water jet may be provided as a substitute.

3.9 Requirements for fixed fire smothering gas and steam installations

3.9.1 In every vessel to which this Annex applies fixed fire smothering gas or steam installations shall where fitted comply with the requirements of this Annex.

3.9.2 In every vessel to which this Annex applies, in every installation provided for the injection of gas or steam into machinery or hold spaces for fire extinguishing purposes, the pipes for conveying the gas or steam shall be provided with control valves or cocks which shall be so placed that they will be easily accessible and not readily cut off from use by an outbreak of fire. These control valves or cocks shall be permanently marked to indicate clearly the compartments to which the pipes are led. Suitable provision shall be made to prevent inadvertent admission of the gas or steam to any compartment.

3.9.3 In every vessel to which this Annex applies, the piping shall be so arranged as to provide effective distribution of fire smothering gas or steam. Where steam is used in any hold exceeding 18 metres in length there shall be at least two pipes one of which shall be fitted in the forward part and one in the after part of the hold.

3.9.4 In every vessel to which this Annex applies:

- (i) where carbon dioxide is used as the extinguishing medium in hold spaces, the quantity of gas available shall be sufficient to give a minimum volume of free gas equal to 30% of the gross volume of the largest hold compartment in the vessel which is capable of being sealed;
- (ii) where carbon dioxide is used as an extinguishing medium for spaces containing boilers or machinery, the quantity of free gas carried shall be sufficient to give a minimum quantity of free gas equal to the larger of the following quantities, either:
 - (a) 40% of the gross volume of the largest space containing boilers or machinery, such volume being measured up to the level at which the horizontal area of the casing is 40% or less the gross area of such space; or
 - (b) 35% of the gross volume of the largest space containing boilers or machinery, including the casing;

provided that the aforesaid percentages may be reduced to 35% and 30% respectively provided that if two or more spaces containing boilers or machinery are not entirely separate they shall, for the purposes of this Annex, be considered as forming one compartment;
- (iii) where carbon dioxide is used as the extinguishing medium for a space containing any oil-fired boiler or oil fuel installation a quantity of gas which can be discharged without danger to the operator shall be available for manual application, by means of a suitable applicator, in the firing area of the boiler and in the vicinity of the oil fuel unit;
- (iv) where carbon dioxide is used as the extinguishing medium both for hold spaces and for spaces containing boilers or machinery the quantity of gas shall not be required to be more than the maximum required either for the largest hold compartment or machinery space. For the purpose of this section the volume of gas shall be calculated at 0.56 metres³ to 1 kg;
- (v) when carbon dioxide is used as the extinguishing medium for any space containing boilers or machinery the fixed piping system shall be such that 85% of the gas required to provide the concentration referred to in section (ii) above, when applied to the space concerned, can be discharged into the space within two minutes;
- (vi) means shall be provided for giving audible warning to persons within the space when carbon dioxide, other than that specified in section (iii) above, is about to be released into working space.

3.9.5 In every vessel to which this Annex applies, when steam is used as the extinguishing medium in hold spaces the boiler or boilers available for supplying steam shall have an evaporation of at least 1 kg of steam per hour for each 0.75 metres³ of the gross volume of the largest hold compartment. The arrangements shall be such that steam will be available immediately and will not be dependent on the lighting of boilers and that it can be supplied continuously until the end of the voyage in the quantity required by this section in addition to any steam necessary for the normal requirements of the vessel including propulsion and that provision is made for extra feed water necessary to meet this requirement.

3.9.6 In every vessel to which this Annex applies, suitable halogenated hydrocarbons in suitable and safe concentrations may be used as a fire extinguishing medium in engine and boiler rooms.

3.9.7 In every vessel to which this Annex applies, operating instructions in clear and permanent lettering shall be affixed to every fixed fire smothering gas installation or in a position adjacent thereto.

3.10 Requirements for fixed pressure water spraying system for machinery spaces

- 3.10.1 In every vessel to which this Annex applies every fixed pressure water spraying system shall be provided with a pump, piping system, control valve and spraying nozzles.
- 3.10.2 In every vessel to which this Annex applies, the spraying nozzles shall be of such a type, sufficient in number and so arranged as to ensure such distribution of water spray as will effectively extinguish oil on fire in the spaces protected thereby. Spraying nozzles shall be fitted above bilges, tank tops and other areas over which oil fuel is liable to spread and above other main fire hazards in the spaces to be protected.
- 3.10.3 In every vessel to which this Annex applies, the water spraying system may be divided into sections and shall be controlled from distribution manifolds, the valves of which shall be capable of being operated from easily accessible positions outside the spaces to be protected, and which will not be readily cut off by an outbreak of fire.
- 3.10.4 In every vessel to which this Annex applies, the water spraying system shall be kept charged at the necessary pressure and the pump supplying the water for the system shall be automatically put into action by a pressure drop in the system.
- 3.10.5 In every vessel to which this Annex applies, the pump shall be capable of supplying water at the necessary pressure simultaneously to all sections of the water spraying system in any one compartment to be protected. The pump and its controls shall be installed outside the space or spaces to be protected. It shall not be possible for a fire in the space or spaces protected by the water spraying system to put the system out of action.
- 3.10.6 Every vessel to which this Annex applies, means shall be provided which will prevent nozzles from becoming clogged by impurities in the water or corrosion of piping, nozzles, valves and pump.
- 3.10.7 In every vessel to which this Annex applies, the water spraying system shall include mobile sprayers ready for immediate use in the firing area of the boiler or in the vicinity of the oil fuel unit.
- 3.10.8 In every vessel to which this Annex applies, operating instructions in clear and permanent lettering shall be affixed to every water spraying system or in a position adjacent thereto.

3.11 Requirements for fixed foam fire extinguishing installations

- 3.11.1 In every vessel to which this Annex applies, every fixed foam fire extinguishing installation shall be capable of discharging through fixed discharge outlets in not more than 5 minutes a quantity of foam sufficient to cover to a depth of 152 millimetres the largest single area over which oil fuel is liable to spread. This installation shall be capable of generating foam suitable for extinguishing oil fires and means shall be provided for the effective distribution of the foam through a permanent system of piping and control valves or cocks to discharge outlets, and for the foam to be effectively directed by fixed sprayers on other main oil fire hazards in the protected space either simultaneously or separately. The installation shall include mobile sprayers ready for immediate use in the firing area of the boiler and in the vicinity of the oil fuel unit.
- 3.11.2 In every vessel to which this Annex applies, every fixed foam fire extinguishing installation shall be so arranged that a fire in any of the spaces it protects will not render the controls inaccessible or put the installation out of action.
- 3.11.3 In every vessel to which this Annex applies, operating instructions in clear and permanent lettering shall be affixed foam fire extinguishing installation or in a position adjacent thereto.