THE JERSEY COMMERCIAL VESSEL CODE OF PRACTICE

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1 Foreword

1.1 This Code of Practice is a means of implementing the requirements of the following Jersey Legislation:

Shipping (Jersey) Law 2002
Shipping (Safety Codes)(Jersey) Order 2005
Shipping (Load Line) (Jersey) Regulations 2004
Shipping (Tonnage) (Jersey) Regulations 2004
Shipping (Local Small Ships Registration)(Jersey) Regulations 2004
Shipping (Registration) (Jersey) Regulations 2004
Shipping (Training, Certification and Manning)(Jersey) Order 2004
Shipping (employment of Young People) (Jersey) Order 2007
And any other relevant legislation from time-to-time in force

1.2 The Code has been developed for application to the following Jersey vessels:
Load Line Convention Commercial Vessels >24M Load Line length up to 150 Gross Tons
Non Load line Convention Jersey vessels of up to 24 metres Load Line length and those >24M Load Line length up to 150 Gross Tons if built before 21st July 1968 (pre Load Line Convention Vessels) and, which are engaged at sea in activities on a commercial basis, which carry cargo and/or not more than 12 passengers, or provide a service in which neither cargo nor passengers are carried, or are Jersey pilot boats of whatever size.

1.3 It should be noted that the class of ship (or type of vessel, i.e. passenger or non-passenger), assigned to a Jersey vessel is very much dependent upon the terms on which those persons forming the crew have been appointed.

1.4 Compliance with the Code in no way obviates the need for vessels and/or skippers to comply with relevant laws made by the port/harbour authority for the area in which the vessel is certificated to operate.

1.5 This code was devised by the Jersey Commercial Vessel Code of Practice Technical Committee

1.6 The primary aim in developing the Code has been to set standards of safety and protection for all on-board and particularly for those who are trainees or passengers. The level of safety it sets out to achieve is considered to be commensurate with the current expectations of the general public. The Code relates especially to the construction of a vessel, its machinery, equipment and stability and to the correct operation of a vessel so that safety standards are maintained.

This Code has been developed, as far as practically possible, on applying the principle of "range and risk" to the key safety related elements (vessels' structural strength, stability, life saving apparatus, etc.). These have been assessed on consideration of the control measures necessary for the safety of the vessel's complement of persons. Clearly these measures should increase in requirement, proportionately with the increase in range of a vessel from a safehaven and/or the risks introduced by the number of persons carried on-board, or the particular type of operation that the vessel is to undertake.

1.8 It will be noted that the Code deals with the equally important subject of manning and of the qualifications needed for the senior members of the crew.

1.9 In addition, however, designers and builders of vessels will need to pay special regard to the intended area of operation and the working conditions to which a vessel will be subjected when selecting the materials and equipment to be used in its construction

1.10 The builder, repairer or owner/managing agent of a vessel, as appropriate, should take all reasonable measures to ensure that a material or appliance fitted in accordance with the requirements of the Code is suitable for the purpose intended, having regard to its location in the vessel, the area of operation and the weather conditions which may be encountered.

1.11 The Jersey Administration can consider equivalent standards in the application of this Code of Practice as follows:-

Any requirement for goods or materials to comply with a specified standard shall be satisfied by compliance with:-

.1 a relevant standard or code of practice of a national standards body or equivalent body of a Member State of the European Community;

.2 any relevant international standard recognised for use in any Member State of the European Community;

.3 a relevant specification acknowledged for use as a standard by a public authority of any Member State of the European Community;

.4 traditional procedures of manufacture of a Member State of the European Community where these are the subject of a written technical description sufficiently detailed to permit assessment of the goods or materials for the use specified; or

.5 a specification sufficiently detailed to permit assessment for goods or materials of an innovative nature (or subject to innovative processes of manufacture such that they cannot comply with a recognised standard or specification) and which fulfil the purpose provided by the specified standard;

provided that the proposed standard, code of practice, specification or technical description provides, in use, equivalent levels of safety, suitability and fitness for purpose.

1.12 It is important to stress that, whilst all reasonable measures have been taken to develop standards which will result in the production of safe and seaworthy vessels, total safety at sea can never be guaranteed. As a consequence, it is most strongly recommended that the owner/managing agent of a vessel should take out a policy of insurance for all persons who are part of the vessel's complement from time to time. Such insurance should provide cover against any foreseeable claims that may arise. If a policy of insurance is in force, a copy of the certificate of insurance should be either displayed or available for inspection by persons on-board the vessel.

1.13 When a vessel to which the Code is applicable is permanently based abroad and subject to Rules, Regulations and examination by the Administration of the country from which it operates, the owner/managing agent may approach an Authorised Person with the purpose of establishing "equivalence" with the Code.

.1 "Equivalence" should be established for the construction of a vessel, its machinery, equipment, stability, correct operation and examination of the vessel.

.2 The Authorised Person, when he/she is satisfied that it is appropriate to do so, may make recommendations in order to issue a certificate based on declaration(s) and report(s) from the administration of the country in which the vessel is permanently based.

.3 The Authorised Person should make his/her recommendations to the Jersey Administration for approval.

It should also be noted that Jersey registered vessels to which this Code applies, when operating outside of Jersey waters, may be subject to additional requirements of the port state or overseas administration, over and above this Code of Practice. Owners/managing agents should contact the administration controlling these waters for further information.

1.14 It is recommended that pleasure vessels comply with the standards of the Code.

1.15 Delegation of Survey and Certification to a Certifying Authority

1.15.1 The Jersey Administration has responsibility and accountability for the Shipping (Jersey) Law 2002 and it's enforcement. The Administration has delegated to MECAL (Jersey Ltd), the examination (survey) and certification of vessels to which this Code applies. The Certifying Authority and the Jersey Administration have a written agreement which defines this relationship. The Jersey Administration, however, retains the enforcement duties of the Code and is responsible for auditing the Certifying Authority.

1.15.2 The appointment of the Certifying Authority has been influenced by the requirement to have a local capability for the efficient handling of the needs of owners/operators of vessels. The Certifying Authority may charge owners/operators of vessels a fee appropriate to the effort which is required from them for a vessel to be examined and issued with a Jersey Certificate.

1.16 Health and Safety Regulations

1.16.1 The owner/skipper of a vessel is responsible for the health and safety of anyone working on the vessel. When the owner/skipper employs crew, the relevant Merchant Shipping Health and Safety Regulations apply.

1.16.2 Every employer is to be aware of any risks affecting workers and ensure that appropriate measures are taken to minimise them through improving procedures or equipment where necessary. Employers must instruct those affected about the risks and how to ensure their own health and safety and the health and safety of others.

1.16.3 Recognising that some vessels operate both at sea and in inland waterways, owners/managing agent(s) of vessels complying with this Code and requiring them to operate in inland waterways should obtain formal clearance from the appropriate inland navigation authority.

2 Definitions

In the Code:-

“Accommodation space” means any space, enclosed on all six sides by solid divisions, provided for the use of persons on-board;

“Administration” means the “Minister” for Economic Development.

“Annual examination” means a general or partial examination of the vessel, its machinery, fittings and equipment, as far as can readily be seen, to ascertain that it had been satisfactorily maintained as required by the Code and that the arrangements, fittings and equipment provided are as documented in the Compliance Examination and Declaration report form SCV2. The hull, shell fittings, external steering and propulsion components of the vessel should be examined out of the water at intervals not exceeding 5 years. The Certifying Authority may stipulate a lesser interval in consideration of hull construction material or the age or the type and service of the vessel;

"Approved" in respect to materials or equipment means approved by the Administration or approved by an administration or organisation which is formally recognised by the Administration;

“Authorised person” means a person who by reason of relevant professional qualifications, practical experience or expertise is authorised by the Administration or the Certifying Authority to carry out examinations required under Section 27 of the Code;

"Auxiliary steering gear" is the equipment other than any part of the main steering gear necessary to steer the ship in the event of failure of the main steering gear but not including the tiller, quadrant or components serving the same purpose;

“Bare boat charter” means a charter for which the charterer provides the skipper and the crew;

“Boats fitted with a buoyant collar” means a rigid inflatable vessel, or a vessel of similar hull form, where the inflatable tubes are replaced by solid, or hollow, buoyant sections;

"Buoyant lifeline" means a line complying with the requirements of the IMO International Life-Saving Appliances Code;

"Buoyant smoke signal" means a pyrotechnic signal complying with the requirements of the IMO International Life-Saving Appliances Code;

"Cargo" means an item(s) of value that is carried from one place and discharged at another place and for which either a charge or no charge is made and is not for use exclusively onboard the vessel;

“Certificate” means the certificate appropriate to a vessel to which the Code is applied. See section 1.1;

“Certifying Authority” means MECAL (Jersey) Ltd, the body authorised by the Jersey Administration to:-

appoint persons for the purpose of examining vessels and issuing and signing Declarations of Examinations; and
issue Certificates.

“Charter” means an agreement between the owner/managing agent and another party which allows that other party to operate the vessel, and the “Charterer” is that other party;

“Code” means this Code unless another Code is specified;

“Compartment” means all living and working spaces within the watertight or fire-resisting boundaries on any one level which have inter-communicating access;

"Competent Authority" in respect of manning qualifications (Annex 6) means the Administration or an organisation that issues Certificates of Competence which has applied for and been granted recognition by the Administration as having the appropriate technical and administrative expertise;

"Compliance examination" means an examination of the vessel, its machinery, fittings and equipment, by an authorised person, to ascertain that the vessel's structure, machinery, equipment and fittings comply with the requirements of the Code. Part of the examination should be conducted when the vessel is out of the water. For vessels of similar type the Certifying Authority may exercise discretion in carrying out the compliance examination entirely out of the water;

"Commercial vessel" means a vessel which is not a pleasure vessel;

"Control stations" are those spaces in which the ship's radio or main navigating equipment or the emergency source of power is located or where the fire recording or fire control equipment is centralised;

"Crew" means a person employed or engaged in any capacity on-board a vessel on the business of the vessel;

"Dead ship condition" is the condition under which the main propulsion plant, boilers and auxiliaries are not in operation due to the absence of power;

"Critical Downflooding" is deemed to occur when openings having an aggregate area, in square metres, greater than:-

$$\frac{\text{vessel's displacement in tonnes}}{1500}$$

are immersed. Moreover, it is the angle at which the lower edge of the actual opening which results in critical flooding becomes immersed. All openings regularly used for crew access and for ventilation should be considered when determining the downflooding angle. Air pipes to tanks can, however, be disregarded. Where an appropriate ISO standard is used, the definition should be taken from those standards as applicable;

"Daylight" means one hour before sunrise until one hour after sunset;

"Decked vessel" means a vessel with a continuous watertight weather deck which extends from stem to stern and has positive freeboard throughout, in any condition of loading of the vessel. Where an appropriate ISO standard is used, the definition should be taken from those standards as applicable;

"Design Category" means a description of the wind and sea conditions for which a vessel is considered suitable under the EU Recreational Craft Directive 94/25/EC of 16th June 1994, and used for the application of relevant ISO and CEN standards. See table below;

Design category	Wind force (Beaufort scale)	Significant wave height (H 1/3, metres)
A - 'Ocean'	Exceeding 8	Exceeding 4
B- 'Offshore'	Up to, and including, 8	Up to, and including 4
C - 'Inshore'	Up to, and including, 6	Up to, and including, 2
D - 'Sheltered waters'	Up to, and including, 4	Up to, and including, 0, 50.3

"Efficient" in relation to a fitting, piece of equipment or material means that all reasonable and practicable measures have been taken to ensure that it is suitable for the purpose for which it is intended to be used;

"Embarkation ladder" means a ladder complying with the requirements of the IMO International Life-Saving Appliances Code;

"Emergency condition" is a condition under which any services needed for normal operational and habitable conditions are not in working order due to failure of the main source of electrical power;

"Emergency source of electrical power" is a source of electrical power intended to supply the services essential to the safety of the vessel and persons on board, in the event of failure of the supply from the main source of electrical power;

"EPIRB" means a satellite emergency position-indicating radio beacon, being an earth station in the mobile-satellite service, the emissions of which are intended to facilitate search and rescue operations, complying with performance standards adopted by the IMO contained in either Resolution A.810(19) or Resolution A.812(19) and Resolution A.662(16), or any Resolution amending or replacing these from time to time and which is considered by the Administration to be relevant, and is capable of:-

(a) floating free and automatically activating if the ship sinks;

(b) being manually activated; and

(c) being carried by one person;

“Existing vessel” means a vessel already in possession of a recognised Commercial Vessel Certificate or Load Line Certificate

“Favourable weather” means wind, sea and visibility conditions which are deemed by the skipper to be safe for a small vessel to operate within the limits applied to it; or, in any other case means conditions existing throughout a voyage or excursion in which the effects either individually or in combination of swell, height of waves, strength of wind and visibility cause no hazard to the safety of the vessel, including handling ability.
In making a judgement on favourable weather, the skipper should have due regard to official weather forecasts for the service area of the vessel or to weather information for the area which may be available from the appropriate coastal safety organisation;

"Fire resisting divisions" are those divisions formed by bulkheads and decks which shall be constructed of materials which by insulation or inherent fire resisting properties satisfy the following requirements;

(a) They shall be suitably stiffened.
(b) They shall be so constructed as to be capable of preventing the passage of smoke and flame up to the end of the appropriate fire protection time.
(c) Where required they shall maintain load carrying capabilities up to the end of the appropriate fire protection time.
(d) They shall have thermal properties such that comply with the requirements of the IMO Fire Test Procedures Code for the appropriate fire protection time.
(e) A test of a prototype bulkhead or deck in accordance with the IMO Fire Test Procedures Code shall be required to ensure that it meets the above requirements.

"Float-free launching" means that method of launching a liferaft whereby the liferaft is automatically released from a sinking ship and is ready for use, complying with the requirements of the IMO International Life-Saving Appliances Code;

Forms used by the Certifying Authority include:-
Application for examination (CV1)
Compliance Examination and Declaration (CV2)
Jersey Commercial Vessel Certificate

"Freeboard" has the meaning given in annex I of ILLC. The freeboard assigned is the distance measured vertically downwards amidships from the upper edge of the deck line to the upper edge of the related load line;

"Freeboard deck" has the meaning given in annex I of ILLC. The freeboard deck is normally the uppermost complete deck exposed to the weather and sea, which has permanent means of closing 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 discontinuous freeboard 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 freeboard deck.
At the option of the owner and subject to the approval of the Administration, a lower deck may be designated as the freeboard deck provided it is a complete and permanent deck continuous in a fore and aft direction at least between the machinery space and peak bulkheads and continuous athwartships.
When a lower deck is designated as the freeboard deck, that part of the hull which extends above the freeboard deck is treated as a superstructure so far as concerns the application of the conditions of assignment and the calculation of freeboard. It is from this deck that the freeboard is calculated;

"Garbage" means all kinds of victual, domestic and operational waste excluding fresh fish and parts thereof, generated during the normal operation of the vessel and liable to be disposed of continuously or periodically, except sewage originating from vessels;

“High Holding Power (HHP) Anchor” means an anchor that can be shown to have holding powers of at least twice those of a standard stockless anchor of the same mass;
"ILLC" means the International Convention on Load Lines, 1966, as amended;

“Immediate family” means, in relation to an individual, the spouse of that individual, a relative of that individual and a relative of the spouse of that individual;

“Immersion Suit” means a protective suit which reduces the body heat-loss of a person wearing it in cold water and complies with the requirements of Schedule 10, Part 1 of MSN 1676 (M);

"IMO" means the International Maritime Organisation, a specialised agency of the United Nations devoted to maritime affairs;

"Inflatable lifejacket" means a lifejacket complying with the requirements of the IMO International Life-Saving Appliances Code;

"Instructions for on-board maintenance" means the instructions complying with the requirements of SOLAS III/Part B – Life Saving Appliances and Arrangements, Regulation 36;

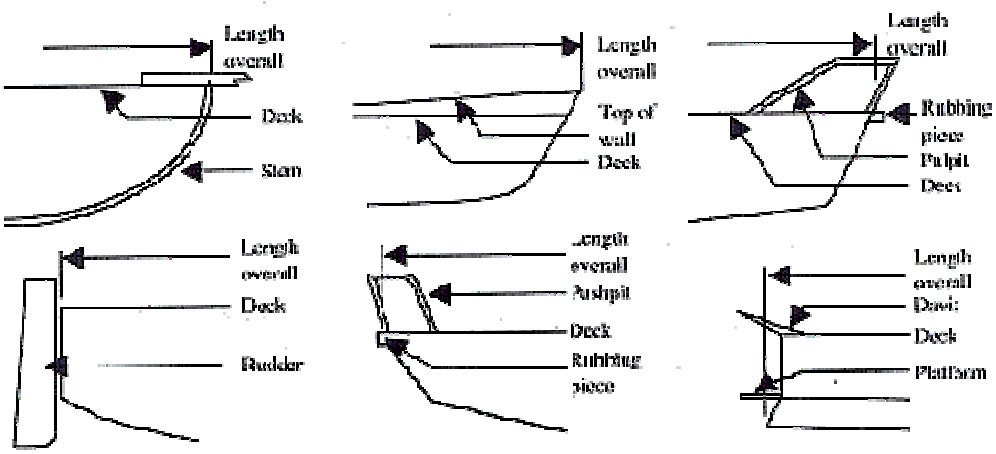
“Inflatable Boat” means a vessel with attains its form through inflatable tubes only, which are not attached to a solid hull;

"Jersey Ship" means a vessel on the Jersey Register or a vessel owned by a resident of Jersey and operating in Jersey waters

“Land” means the sea shore above the line of mean high water mark;

"Launching appliance" means a provision complying with the requirements of the IMO International Life-Saving Appliances Code for safely transferring a lifeboat, rescue boat, or liferaft respectively, from its stowed position to the water and recovery where applicable;

“Length” means the overall length from the foreside of the foremost fixed permanent structure to the aft side of the aftermost fixed permanent structure of the vessel. With regard to inflatable, rigid inflatable boats, or boats fitted with a buoyant collar, length should be taken from the foremost part of tube or collar, to the aft most part of the tube or collar.



"Lifebuoy" means a lifebuoy complying with the requirements of the IMO International Life-Saving Appliances Code, or as specified in this Code;

"Lifejacket" means a lifejacket complying with the requirements of the IMO International Life-Saving Appliances Code, or as specified in this Code;

"Liferaft" means a liferaft complying with the requirements of the IMO International Life-Saving Appliances Code, or as specified in this Code;

"Line throwing appliance" means an appliance complying with the requirements of the IMO International Life-Saving Appliances Code;

"Load Line length", in respect of a ship, means the greater of the following distances –
(a) 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel; or
(b) the length from the fore-side of the stem to the axis of the rudder stock on that waterline,
except that –
(c) if the stem contour of a ship is concave above the waterline at 85% of the least moulded depth, both the forward terminal of the total length and the fore-side of the stem respectively shall be taken at the vertical projection to that waterline of the aftermost point of the stem contour (above that waterline); or
(d) if the ship is designed with a rake of keel, the waterline on which the waterline length is to be measured shall be a line parallel to the designed waterline;

"Long international voyage" means any voyage where a vessel is more than 200 miles from a safehaven, or the length of the voyage from departure to arrival more than 600 miles

"Low flame spread" means that the surface thus described will adequately restrict the spread of flame, this being determined to the satisfaction of the Administration by an established procedure;

"Maritime and Coastguard Agency" means the Maritime and Coastguard Agency (MCA), an executive agency of the UK Department for Transport;

"Machinery spaces" are all machinery spaces of category A and all other spaces containing propelling machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilizing, ventilation and air conditioning machinery, and similar spaces, and trunks to such spaces;

"Machinery spaces of category A" are those spaces and trunks to such spaces which contain:

(a) internal combustion machinery used for main propulsion; or

(b) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 Kw; or

(c) any oil-fired boiler or oil fuel unit;

"Main generating station" is the space in which the main source of electrical power is situated;

"Main source of electrical power" is a source intended to supply electrical power to the main switchboard for distribution to all services necessary for maintaining the ship in normal operational and habitable condition;

"Main steering gear" is the machinery, rudder actuators, 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 ship under normal service conditions;

"Main switchboard" is a switchboard which is directly supplied by the main source of electrical power and is intended to distribute electrical energy to the ship's services;

"Main vertical zone" means those sections into which the hull, superstructure and deckhouses are divided by A class divisions, the mean length of which on any deck does not normally exceed 40 metres;

"MARPOL" means the International Convention for the Prevention of Pollution from Ships, 1973, as amended;

"Maximum permissible weight" means the maximum total permissible weight of passengers and their effects, cargo, and activity related equipment, i.e. diving equipment;
"MED" means the EU Marine Equipment Directive;

"Member State of the European Economic Area" means a State which is a contracting party to the Agreement on the European Economic Area signed at Oporto on 2 May 1992, as adjusted by the Protocol signed at Brussels on 17 May 1993;

"Merchant Shipping Act", "Merchant Shipping Order", "Merchant Shipping Regulations" and "Merchant Shipping Rules" referred to in the Code mean the reference specified and includes the document issued under the appropriate Jersey statutory power which either amends or replaces the reference specified;

"Merchant Shipping Notice" (MSN) means a Notice described as such and issued by the UK MCA, and reference to a specific Merchant Shipping Notice includes reference to any Merchant Shipping Notice amending or replacing that Notice which is considered by the UK Secretary of State to be relevant from time to time and is specified in a Merchant Shipping Notice;

"Mile" means a nautical mile of 1852 metres;

"Motor vessel" means a power driven vessel which is not a sailing vessel;

"Multihull vessel" means any vessel which in any normally achievable operating trim or heel angle, has a rigid hull structure which penetrates the surface of the sea over more than one separate or discrete area;

"New vessel" means a vessel not in possession of a Load Line Certificate or a Commercial Vessel Code Certificate acceptable to the Administration, prior to the date of this Code coming into force;

"Nominated departure point" means the designated point of departure of the vessel, as specified on the vessels certificate. Where this point lies within Category C or Category D waters, it is to be taken as the seaward boundary of these waters.

"Not readily ignitable" means that the surface thus described will not continue to burn for more than 20 seconds after removal of a suitable impinging test flame;

"Owner(s)/managing agent(s)" means the registered owner(s) or the owner(s) or the managing agent(s) of the registered owner(s) or the owner(s) or owner(s) ipso facto, as the case may be;

"Open boat" for the application of the Code means a vessel which within its length is:-

not fitted with a watertight weather deck; or

is fitted with a watertight weather deck over part of its length; or

is fitted with a watertight weather deck over the whole of its length but the freeboard to the deck does not meet the minimum requirement for freeboard (Section 12);

"Owner/managing agent" means the registered owner, or the owner or managing agent of the registered owner or owner, or owner ipso facto, as the case may be, and "Owners/managing agents" should be construed accordingly;

"Passenger" means any person carried on a ship except:

(a) a person employed or engaged in any capacity on the business of the vessel,

(b) a person on board the vessel either in pursuance of the obligation laid upon the master to carry shipwrecked, distressed or other persons, or by reason of any circumstance that neither the master nor the owner nor the charterer (if any) could have prevented or forestalled,

(c) a child of under one year of age

"Pilot boat" means a boat employed or intended to be employed in pilotage services, and "Dedicated pilot boat" means a pilot boat of whatever size which is primarily employed in pilotage services and other occasional services undertaken such as the carriage of personnel, mail, and/or small quantities of stores to or from vessels in the pilotage district;

"personal pleasure vessel" means a ship –
(a) that is wholly owned by an individual or by individuals;
(b) that is not used except for the sport or pleasure of the owner, the immediate family of the owner or friends of the owner; and
(c) that is used on voyages or excursions for which the owner does not receive money to operate the ship or to carry passengers, other than as a contribution to the direct expenses of the operation of the ship incurred during the voyage or excursion with no other payments being made by or on behalf of users of the ship, other than by the owner;

"pleasure vessel" means a club pleasure vessel, a corporate pleasure vessel or a personal pleasure vessel;

"Position 1" means upon exposed freeboard and raised quarter decks and upon exposed superstructure decks situated forward of a point located a quarter of the ship's length from the forward perpendicular;

"Position 2" means upon exposed superstructure decks situated abaft a quarter of the ship's length from the forward perpendicular;

"Power actuating system" is the hydraulic equipment provided for supplying power to turn the rudder stock, comprising a steering gear power unit or units, together with the associated pipes and fittings, and a rudder actuator. The power actuating systems may share common mechanical components, i.e., tiller, quadrant and rudder stock, or components serving the same purpose;

"Radar transponder" means a radar transponder for use in survival craft to facilitate location of survival craft in search and rescue operations;

"Recess" means an indentation or depression in a deck and which is surrounded by the deck and has no boundary common with the shell of the vessel. Where an appropriate ISO standard is used, the definition should taken from those standards as applicable;

“Relative” means brother, sister, ancestor, or lineal descendant;

“Renewal examination” means a similar examination to the Compliance examination;

"Rescue boat" means a boat complying with the requirements of the IMO International Life-Saving Appliances Code and designed to rescue persons in distress and for marshalling liferafts;

"Retro-reflective material" means a material which reflects in the opposite direction a beam of light directed on it;

Rocket parachute flare" means a pyrotechnic signal complying with the requirements of the IMO International Life-Saving Appliances Code;

"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 force of the weather;

“Rigid inflatable boat” means a vessel with inflatable tubes, attached to a solid hull. The tubes are inflated during normal craft operation;

"Sailing vessel" means a vessel which is designed to be navigated under wind power alone and for which any motor provided is an auxiliary means of propulsion and/or which possesses a non-dimensional ratio of (sail area) divided by (volume of displacement)$^{2/3}$ of more than 7;

"Sail training vessel" means a sailing vessel which, at the time, is being used either:-

a) to provide instruction in the principles of responsibility, resourcefulness, loyalty and team endeavour and to advance education in the art of seamanship; or

b) to provide instruction in navigation and seamanship for yachtsmen;

"Self-activating smoke signal" means a signal complying with the requirements of the IMO International Life-Saving Appliances Code;

"Self-igniting light" means a light complying with the requirements of the IMO International Life-Saving Appliances Code;

“Short Range Vessel” means an existing vessel under 500 GT or a new vessel under 300 GT, restricted to operating in forecast or actual wind of a maximum Beaufort Force 4, and within 60 nautical miles of a safehaven. (The Administration may permit operation on specified routes up to 90 nautical miles from a safehaven as appropriate);

“Similar stage of construction” means a stage at which construction identifiable with a specific vessel begins, and assembly of that vessel, comprising at least 1% of the estimated mass of all structural material, has commenced;

“Single handed operation” means operation where no-one other than the skipper is on-board;

"Small vessel" means a vessel of less than 24 metres in load line length, or a vessel of less than 150 tons, where the keel of that vessel was laid, or where the vessel was at a similar stage of construction, before 21st July 1998;

"SOLAS" means the International Convention of Safety of Life at Sea, 1974, as amended;

"SOLAS A emergency pack" means a liferaft emergency pack complying with the requirements of the IMO International Life-Saving Appliances Code;

"SOLAS B emergency pack" means a liferaft emergency pack complying with the requirements of the IMO International Life-Saving Appliances Code;

"Standard fire test" means a test in which specimens of the relevant bulkheads, decks or other constructions are exposed in a test furnace by a specified test method in accordance with the IMO Fire Test Procedures Code.

"Steering gear control system" is the equipment by which orders are transmitted from the navigating bridge to the steering gear power units. Steering gear control systems comprise transmitters, receivers, hydraulic control pumps and their associated motors, motor controllers, piping and cables;

"Steering gear power unit" is:

(a) in the case of electric steering gear, and electric motor and its associated electrical equipment;
(b) in the case of electro-hydraulic steering gear, an electric motor and its associated electrical equipment and connected pump;

(c) in the case of other hydraulic steering gear, a driving engine and connected pump;

"Superstructure" has the meaning given in annex I to ILLC;

"Survival craft" means a craft capable of sustaining the lives of persons in distress from the time of abandoning the ship;

"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) identified in the Code should include any standards which amend or replace them;

"Survival craft" means a craft capable of sustaining the lives of persons in distress from the time of abandoning the ship;

"Trainee" means a person who is undergoing documented and structured training, who has no safety critical responsibilities with regard to the operation of the vessel. The trainee is to be carried on the vessel to undergo training only, and he/she should not be an employee of any other person or body, directly or indirectly concerned with any aspect of the operation of the vessel. The carriage of trainees is also to be subject to agreement with the Administration.
Unless otherwise authorised by the Administration, no person under the upper limit of compulsory school age can be regarded as a trainee. Any persons under such age should be treated as passengers.

"To sea" means beyond protected waters as defined by the Port Authority of the Flag State of the operating area ;

"Two-way VHF radiotelephone set" means a portable or a fixed VHF installation for survival craft complying with the performance standards adopted by the IMO contained in A.762(18) or any Resolution amending or replacing it which is considered by the Administration to be relevant from time to time;

"Void space" is any space, having no practical function on board the vessel, not capable of readily collecting water under normal operating circumstances;
"Watertight" means capable of preventing the passage of water in either direction;

"Weather deck" means the main deck which is exposed to the elements;

"Weathertight" means capable of preventing the admission of a significant quantity of water into the vessel when subjected to a hose test;

"Workboat" in the Code means a vessel in commercial use for purposes other than sport or pleasure other than a dedicated pilot boat.

3. Application and Interpretation

3.1 Application

3.1.1 The Technical Requirements of the Code (from Section 4) have been developed for application to Jersey vessels as follows:

A. – Small Commercial Vessels (non Load Line Convention Vessels)
Vessels of up to 24 metres Load Line length, or vessels <150Gross Tons if built before July21 1968, and which are in commercial use and carry no more than 12 passengers or are Jersey pilot boats (and any such vessel registered or owned in another country when it operates from a Jersey port.

B. – Large Commercial Vessels (Load Line Convention Vessels)
Vessels of 24 metres in load line length and over up to 150 tons gross tonnage and which are in commercial use and carry no more than 12 passengers.

3.1.2 The Regulations apply to vessels operated by owners' clubs, proprietors' clubs and associations.
Pleasure vessels are excepted from the code.

It is the responsibility of the owner/managing agent to ensure that a vessel is properly maintained, examined and manned in accordance with the Code. The Code applies whether the owner/managing agent is corporate, private or of a charitable nature.

3.1.5 Any provision of the Code of Practice which is expressed in the conditional by the use of the word "should" shall be deemed to be a requirement.

3.1.6 A vessel to which the Code applies, but which exceeds the speed/displacement ratio as defined within the IMO Code for High Speed Craft, need not be considered under the IMO Code, if certificated to the requirements of the Jersey Code.

3.2 Areas of Operation

3.2.1 A vessel may be considered for the issue of a Small Commercial Vessel certificate allowing it to operate in one of the following areas:-

Area Category 6 - to sea, within 3 miles from a nominated departure point(s) named in the certificate and never more than 3 miles from land, in favourable weather and daylight;

Area Category 5 – to sea, within 20 miles from a nominated departure point named in the certificate in favourable weather and daylight.

Area Category 4 - Up to 20 miles from a safe haven, in favourable weather and in daylight;

Area Category 3 - Up to 20 miles from a safe haven;

Area Category 2 - Up to 60 miles from a safe haven;

Area Category 1 - Up to 150 miles from a safe haven;
Area Category 0 – Unrestricted service.

3.2.2 Depending on the nature of the vessel and its use, a vessel may be restricted to less than the above specified limits. Such a restriction should be recorded on the Small Commercial Vessel Certificate for the vessel.

3.2.3 A pilot boat should have a valid Pilot Boat Certificate (or Pilot Boat endorsement of a valid Small Commercial Vessel Certificate) allowing it to operate in the area(s) in which it provides a pilotage service, including areas which are not to sea.

3.3 Certification

3.3.1 To be issued with a certificate for a particular area of operation, a vessel must comply with all of the requirements of the Code for that operating area to the satisfaction of the Certifying Authority.

3.3.2 A certificate is to be valid for not more than five years.

3.4 Sports Diving, Sea Angling and Other Water Based Recreational Activities

3.4.1 The Code deals with the safety of the vessel and its occupants but not sport or pleasure activities involving special safety requirements.

3.4.2 When a water based recreation organisation, approved by a National Authority recognised by one of the sports councils of England, Wales, Scotland, or Northern Ireland, operates within Area Category 6, day or night, it shall comply with, and be certificated to the safety standards of that National Authority, provided that such have been formerly approved by the Administration. The certificate must carry text which recognises its authority from the Administration.

3.4.3 Vessel owners/managing agents and charterers are recommended to discuss and agree their respective responsibilities for safety before the vessel goes to sea.

3.5 Water Based Commercial Activities

3.5.1 The Code deals with safety of the vessel and its occupants but the commercial activities other than normal seamanship duties are not considered under the Code e.g. commercial diving.

3.6 Interpretation

3.6.1 Where a question of application of the Code, or an interpretation of a part of the Code arises, the owner/managing agent of the vessel concerned should in the first instance seek clarification from the Certifying Authority. In situations where it is not possible to resolve an issue of interpretation a decision may be obtained on written application to the Jersey Administration, who may consult with others as deemed appropriate.

3.7 Certifying Authorities

3.7.1 MECAL (Jersey) Ltd is tye Jersey appointed Certifying Authority and is responsible for the appointment of competent persons for examining vessels, and for the issue of certificates.

3.8 Updating of the Code

3.8.1 In addition to the guidance on application and interpretation in Section 3.6, the Code requirements will be regularly reviewed by the Jersey Code of Practice Technical Committee. Amendments will be promulgated and a formal review of the Code will be conducted not later than five years from the date of publication, and thereafter at intervals not exceeding five years.

3.8.2 When new standards are developed and finalised by the British Standards Institution (BSI), European Committee for Standardization (CEN), International Maritime Organization (IMO), International Organization for Standardization (ISO) or any other international body, which impact upon the requirements of the Code, amendment of the Code may be considered immediately. In the interim period, draft standards may be applied where the Administration has accepted them as an equivalent standard.

3.9 Vessels Operating in Protected Waters and/or a Restricted Service - Equivalent Safety Standards

3.9.1 When the owner/managing agent of a small commercial vessel which operates in protected waters and/or a restricted service considers that full application of the Code would be inappropriate because other safety provisions have been made, the owner/managing agent may request the Administration, via the Certifying Authority, to consider certification of the vessel in compliance with alternative safety standards.

3.9.2 Guidance on alternative safety standards is given in Annex 4 to the Code.

3.10 Equivalent Standards

3.10.1 When the Code requires that a particular piece of equipment or machinery should be provided or carried in a vessel or that any particular provision should be made, to a specified standard, the Administration may permit any other piece of equipment or machinery to be provided or carried, or any other provision to be made, provided that the Administration is satisfied by trials or otherwise that the alternative is at least as effective as that required by the Code.

3.10.2 For the purpose of the Code, the results of verification and tests carried out by bodies and laboratories of other Recognised Administrations, offering suitable and satisfactory guarantees of technical and professional competence and independence should be accepted.

PART 2 – TECHNICAL REQUIREMENTS

4A. CONSTRUCTION AND STRUCTURAL STRENGTH - NON CONVENTION VESSELS

4A.1 General Requirements

A vessel which operates in Area Category 0, 1, or 2 should be fitted with a watertight weather deck over the length of the vessel, satisfying the requirements of Section 4.3.1, and be of adequate structural strength to withstand the sea and weather conditions likely to be encountered in the intended area of operation.

A vessel which is not fitted with a watertight weather deck in accordance with Section 4.1.1 should normally be restricted to Area Category 3, 4, 5 or 6 and be provided with adequate reserves of buoyancy and stability for the vessel with its full complement of persons to survive the consequences of swamping. An open boat should normally be restricted to service in area categories 4, 5 and 6. A sailing vessel which is not fitted with a watertight weather deck should be limited to Area Category 6.

A vessel restricted by Section 4.1.2 should be considered under one of the following:-

An open boat should not carry cargo, or a combination of passengers and cargo, for which the cargo element is in excess of 1000kg (refer to Section 11 Stability and 12 Freeboard). Such a vessel may not be fitted with a lifting device, or be engaged in towing operations.

A motor vessel fitted with a watertight weather deck, which does not meet the freeboard requirements of Section 12.2, but which possesses adequate reserves of buoyancy above the weather deck, may be considered for the operations defined in Section 4.1.3.1 above, provided the following conditions are satisfied:-

.1 Freeboard to the gunwale edge should meet that required by Section 12.2.2.1.3. Freeboard to the weather deck should be positive in all loading conditions.

.2 The recess bounded by the reserve buoyancy and gunwales should meet the standard for quick-draining cockpits for Category A vessels, within ISO 11812 – 'Small Craft – Watertight Cockpits and Quick-draining Cockpits', or equivalent.

.3 The vessel should comply with the relevant intact stability criteria for transverse stability, and should display positive longitudinal stability, for the duration of the drain time.

A diagram showing a suitable type of arrangement for the purposes of section 4.1.3.2 is shown below. Shaded areas show buoyancy above the watertight deck, in this case at the vessel sides, but which may equally be fore and aft.

4A.2 Structural Strength

4.2.1 General

The design of hull structure and construction should provide strength and service life for the safe operation of a vessel, at its service draught and maximum service speed, to withstand the sea and weather conditions likely to be encountered in the intended area of operation.

4.2.2 Construction materials

4.2.2.1 A vessel may be constructed of wood, fibre reinforced plastic (FRP), aluminium alloy, steel or combinations of such materials. Requirements for materials used for the construction of inflatable and rigid inflatable boats are given in Section 4.5.2.

4.2.2.2 Proposals to use any other material should be submitted to the Certifying Authority for consideration and approval. When the Certifying Authority considers it does not have the necessary expertise to deal with vessels of the hull material proposed, the Administration should be consulted with regard to the procedures to be adopted.

4.2.2.3 The hull of a vessel which has been surveyed and certificated by an recognised Load Line Assigning Authority should be acceptable, subject to presentation of a Certificate of Construction.

Load Line Assigning Authorities include MECAL (Jersey) Ltd, American Bureau of Shipping, Bureau Veritas, Det Norske Veritas, Germanischer Lloyd, Lloyd's Register of Shipping and Registro Italiano Navale.

4.2.2.5 A vessel which has not been built under the survey of a recognised Load Line Assigning Authority will be considered to be of adequate strength after a satisfactory examination by an authorised person and if it has been built:-

.1 in accordance with the hull certification standards for small vessels, recognised by one of the Authorities; or

.2 in general accord with the standard of a vessel which has a record of at least five years' history of safe operation in an area where the sea and weather conditions are no less severe than those likely to be encountered in the intended area of operation.

4.2.2.6 A vessel not built in accordance with either Section 4.2.2.3 or 4.2.2.5 may be specially considered, provided that full information (including calculations, drawings, details of materials and construction) is presented to and approved by the Certifying Authority.

4.2.2.7 A vessel with an existing certificate at the date of coming into force of the Code, or in possession of a valid Load Line Certificate or Load Line Exemption Certificate appropriate to the operational category shall continue to be considered of adequate strength for its existing category.

4A.3 Decks

4.3.1 Weather deck

4.3.1.1 A watertight weather deck referred to in Section 4.1.1 should extend from stem to stern and have positive freeboard throughout, in any condition of loading of the vessel. (Minimum requirements for freeboard are given in Section 12.)
A weather deck may be stepped, recessed or raised provided the stepped, recessed or raised portion is of watertight construction.

4.3.2 Recesses

For water freeing arrangements generally, see Section 6 and for freeboard requirements, see Section 12.

For motor vessels, a recess in a weather deck complying with Section 4.3.1.1, should be of watertight construction and have means of drainage capable of efficient operation when the vessel is heeled to 10°. Such drainage is to have an effective area, excluding grills and baffles, of at least $20cm^2$ for each cubic metre of volume of recess below the weather deck.

For sailing vessels, recesses in the weather deck should be of watertight construction and have:-

.1 a total volume (Vc) which does not exceed the value obtained from the following formula:-

$$V_1 + V_2 + V\ldots + V_n \leq 0.1 \times \text{length of vessel} \times \text{breadth of vessel} \times \frac{(F_1 + F_2 + F\ldots + F_n)}{n}$$

Where:
V is the volume of the recess
F is the freeboard abreast the recess
n is the number of recesses considered.

.2 means of drainage capable of efficient operation when the vessel is heeled to 30°. Such drainage to have an effective area, excluding grills and baffles, of at least $10cm^2$ for a vessel operating in Area Category 2, 3 or 4 and of at least $20cm^2$ for a vessel operating in Area Category 0 or 1.

Alternative arrangements for the size and drainage of a recess may be accepted provided it can be demonstrated that, with the vessel upright and at its deepest draught, the recess drains from a swamped condition within 3 minutes; or the cockpit or recess should comply with ISO 11812 (Small Craft – Watertight and Quick Draining Cockpits) for the relevant design category as shown in the table in Section 11.9.5

4.3.2.4 If a recess is provided with a locker which gives direct access to the interior of the hull, the locker should be fitted with weathertight cover(s). In addition the cover(s) to the locker should be permanently attached to the vessel's structure and fitted with efficient locking devices to secure the cover(s) in the closed position.

4A.4 Watertight Bulkheads

4.4.1 The strength of a watertight bulkhead and the effectiveness of any alternative means should be adequate for the intended purpose and to the satisfaction of the Certifying Authority.

4.4.2 When pipes, cables, etc penetrate watertight bulkheads, they should be provided with valves and/or watertight glands, as appropriate.

A doorway fitted in watertight bulkhead should be constructed so as to be watertight from both sides and be kept closed at sea, unless opened for access only, at the discretion of the skipper. A notice should be fitted to both sides of the door "To be kept closed at sea, open for access only". Sliding watertight doors, where fitted, are to be provided with suitable safety provision to avoid injury to personnel by closure of the door.

4A.5 Inflatable Boats

The following requirements should apply to an inflatable or rigid inflatable boat, other than a tender (dinghy) covered by Section 24.

4.5.1. General

Generally, an inflatable boat or rigid inflatable boat which is intended to operate as an independent vessel in Area Category 2 or 3 (and is not a tender operating from a vessel) should be of a design and construction which would meet the requirements of Chapter III of the 1974 SOLAS Convention, as amended, and the parts of the Annex to IMO Resolution MSC.48(66) – International Life-Saving Appliance Code and MSC.81(70) – Testing and Evaluation of Life–Saving Appliances (as amended) – which are appropriate to the type of boat and subject to the variations which are given in the Code.

In addition, an inflatable boat or rigid inflatable boat may only be considered for operations in Area Category 2 or 3, if additionally fitted with a permanent substantial enclosure for the protection of persons on-board and purpose designed, subject to approval by the Certifying Authority. For Category 3 operation only, alternative provision for enclosures may be considered, with operational/seasonal limitations. Such cases should be agreed by the Administration.

An inflatable boat or rigid inflatable boat, of less than 8 metres in length, which is intended to operate as an independent vessel in Area Category 4, 5 or 6 should be of a design and construction which would meet the requirements of ISO 6185 Part 2 or 3. Inflatable boats or rigid inflatable boats meeting the requirements of ISO 6185 Part 1 are not suitable for operation under the Code of Practice. Vessels over 8 metres in length should be assessed in accordance with Section 4.5.1.1.

4.5.1.3 The structure of the rigid hull of a rigid inflatable boat may alternatively be assessed in accordance with Section 4.2.2.

4.5.1.4 When the production of boats is covered by an approved quality system and boats are built in batches to a standard design, prototype tests on one boat may be accepted for a boat of the same design submitted for compliance with the Code.

4.5.1.5 A boat should be of strength to withstand the sea and weather conditions likely to be encountered in the intended area of operation.

A boat which meets these requirements may be accepted if provided with adequate reserves of buoyancy and stability for the vessel to survive the consequences of swamping, when loaded with all the vessels' equipment, fuel, cargo, activity related equipment (e.g. diving equipment) and number of persons for which it is to be certificated. (See Section 11 and 12 for applicable standard).

4.5.2 Construction materials

4.5.2.1 For boats complying with Section 4.5.1.1, materials should satisfy the requirements of Chapter III of the 1974 SOLAS Convention, as amended (including ISO 15372:2000 Ships and marine technology. Inflatable rescue boats. Coated fabrics for inflatable chambers), except that fire–retarding characteristics are not required for the hull material.

For boats complying with Section 4.5.1.2, materials should satisfy the requirements of ISO 6185 Part 2 or Part 3 as appropriate to the engine size.

4.5.2.2 A new boat of a type certified as a rescue boat under the Merchant Shipping Regulations or provided with a letter of compliance for use as a fast rescue boat for offshore stand-by vessels, or any equivalent certification or compliance, should be accepted as complying with the construction requirements of the Code.

4.5.2.3 A new boat which is not built in accordance with either Section 4.5.1.1 or 4.5.1.2 may be specially considered, provided that full information (including calculations, drawings, details of materials and construction) is presented to and approved by the Certifying Authority.

4.5.2.4 A permanent shelter provided for the protection of persons on-board should be of construction adequate for the intended purpose and the intended area of operation.

4.5.3 Testing

In addition to the survey regime in accordance with Section 27.7 the following should be applied during the life of the certificate:-

.1 Annually (by the owner/managing agent) – An airtightness test as follows;

Inflate each compartment of the boat individually to 120% of the safe working pressure.

Check Integrity of tubes and seams for each compartment with soapy water and, in the case of rigid inflatable boat, the integrity of the joints between the tubes and the hull.

Check that after 30 minutes the pressure is still at 120%.

Inflate all compartments to the safe working pressure, and record the ambient temperature. After 24 hours in this condition, pressures should be rechecked and the ambient temperature retaken. and then check that the pressure is not less than 100% of working pressure.

A declaration should be sent to the Certifying Authority on completion.

.2 At the renewal survey, testing shall be conducted to the satisfaction of the Certifying Authority by a competent person in accordance with the manufacturer's recommendations.

4B. CONSTRUCTION AND STRUCTURAL STRENGTH - CONVENTION VESSELS

4B.1 General Requirements

4.1.1 All vessels should have a freeboard deck.

4.1.2 All vessels should be fitted with a weather deck throughout the length of the vessel and be of adequate strength to withstand the sea and weather conditions likely to be encountered in the declared area(s) of operation.

4.1.3 The declared area(s) of operation and any other conditions which restrict the use of the vessel at sea should be recorded on the load line certificate issued to the vessel.

4.1.4 The choice of hull construction material affects fire protection requirements, for which reference should be made to section 14.

4B.2 Structural Strength

4.2.1 For unlimited operation, all vessels must be surveyed & certificated to the equivalent of class.

4.2.2 For operation within the Short Range Yacht Category, all new vessels must be surveyed & certificated to the equivalent of class.

4.2.3 Existing vessels not surveyed & certificated to the equivalent of class may be considered for restricted operation within the Short Range Category.

4.2.4 Attention should be paid to local or global hull strength requirements for the fitting of ballast.

4B.3 Watertight Bulkheads

Section 11 of the Code deals with subdivision and damage stability requirements which will determine the number and positioning of watertight bulkheads defined below.

4.3.1 Watertight bulkheads should be fitted in accordance with the following requirements.

.1 The strength of watertight bulkheads and their penetrations, and watertight integrity of the division should be to the satisfaction of the Certifying Authority. In general , the requirements of one of a recognised Classification Society would be acceptable.

.2 Generally, openings in watertight bulkheads should comply with the standards required for passenger vessels, as defined in SOLAS regulations II-1.

.3 Approved hinged doors may be provided for infrequently used openings in watertight compartments, where a crew member will be in immediate attendance when the door is open at sea. Audible & visual alarms should be provided in the wheelhouse.

.4 With the exception of doors referred to in section 4.4.1, watertight doors may be approved hinged doors provided that there is an audible and visual alarm on the Bridge indicating when the door is open. The doors are to be kept closed at sea and marked accordingly. A time delay for the alarm is acceptable.

.5 Procedures for the operation of watertight doors should be agreed with the administration and posted in suitable locations. Watertight doors should be normally closed, with the exception of sliding watertight doors providing the normal access to frequently used living and working spaces. Additionally when an access is unlikely to be used for lengthy periods, the door should also be closed.

4B.4 Enclosed Compartments within the Hull and below the Freeboard Deck provided with Access through Openings in the Hull

4.4.1 This would be an unusual arrangement for vessels covered by the Jersey Code. Any such arrangement would be specially considered by the Administration.

4B.5 Rigging on Sailing Vessels

4.5.1 General

The condition of the rig should be monitored in accordance with a planned maintenance schedule. The schedule should include, in particular, regular monitoring of all the gear associated with safe work aloft and on the bowsprit (see 22.3).

4.5.2 Masts and spars

4.5.2.1 Dimensions and construction materials of masts and spars should be to the satisfaction of the Certifying Authority. In general , the requirements of one of a recognised Classification Society or an international standard would be acceptable.

4.5.2.2 The associated structure for masts and spars (including fittings, decks and floors) should be constructed to absorb the forces involved.

4.5.3 Running and standing rigging

4.5.3.1 Wire rope used for standing rigging (stays or shrouds) should not be flexible wire rope (fibre rope core).

4.5.3.2 The strength of all blocks, shackles, rigging screws, cleats and associated fittings and attachment points should exceed the breaking strain of the associated running or standing rigging.

4.5.3.3 Chainplates for standing rigging should be constructed to support and absorb the forces involved. Only one shroud or stay should load an individual attachment point, unless the design specifically allows for more.

4.5.4 Sails

4.5.4.1 Adequate means of reefing or shortening sail should be provided.

4.5.4.2 Sailing vessels operating as Short Range Yachts need not carry storm canvas.

4.5.4.3 All other vessels should either be provided with separate storm sails or have specific sails designated and constructed to act as storm canvas. Such sails must be capable of being handled under storm conditions & should allow the vessel to make to windward

5A WEATHERTIGHT INTEGRITY – NON CONVENTION VESSELS

A vessel should be designed and constructed in a manner which will prevent the ready ingress of sea water and in particular comply with the following requirements. For strength and watertightness purposes only, the requirements of ISO 12216 are considered acceptable.

5A.1 Hatchways and Hatches

5.1.1 General requirements

5.1.1.1 A hatchway which gives access to spaces below the weather deck should be of efficient construction and be provided with efficient means of weathertight closure. For cargo hatchways, reference should be made to Section 25.3.

5.1.1.2 A cover to a hatchway should be hinged, sliding, or permanently secured by other equivalent means to the structure of the vessel and be provided with sufficient locking devices to enable it to be positively secured in the closed position.

5.1.1.3 A hatchway with a hinged cover which is located in the forward portion of the vessel should normally have the hinges fitted to the forward side of the hatch, as protection of the opening from boarding seas. A hatch with the hinges on the after side of the hatch should be secured closed at sea, and be provided with a suitable blank. This is not intended to apply to small technical spaces drained directly overboard, e.g. anchor lockers.

5.1.1.4 Hatches which are used for escape purposes should be capable of being opened from both sides.

5.1.1.5 Hatches in recessed or stepped decks of vessels described in 4.3.1.2, that provide access to sea inlet valves, should have access openings at least 300mm above the minimum freeboard to deck (see 12.2.2), or the sea inlet valves fitted with remote closing devices.

5.1.2 Hatchways which are open at sea

In general, hatches should be kept secured closed at sea. However, a hatch (other than one referred to in Section 5.2.2) which is to be open at sea for lengthy periods should be:-

.1 kept as small as practicable, but never more than 1m² in plane area at the top of the coaming;

.2 located on the centre line of the vessel or as close thereto as practicable;

.3 fitted such that the access opening is at least 300mm above the top of the adjacent weather deck at side.

5A.2 Doorways and Companionways

5.2.1 Doorways located above the weather deck

5.2.1.1 A doorway located above the weather deck which gives access to spaces below should be provided with a weathertight door. The door should be of efficient construction, permanently attached to the bulkhead, not open inwards, and sized such that the door overlaps the clear opening on all sides, and has efficient means of closure which can be operated from either side.

5.2.1.2 A doorway should be located as close as practicable to the centre line of the vessel. However, if hinged and located in the side of a house, the door should be hinged on the forward edge. Doors using articulated systems should be specially considered, in order to provide an equivalent arrangement.

5.2.1.3 A doorway which is either forward or side facing should be provided with a coaming, the top of which is at least 300mm above the weather deck. A coaming may be portable provided it can be permanently secured to the structure of the vessel and can be locked in position whilst at sea.

5.2.2 Companion hatch openings

5.2.2.1 A companion hatch opening from a cockpit or recess which gives access to spaces below the weather deck should be fitted with a coaming or washboard, the top of which is at least 300mm above the sole of the cockpit or recess.

5.2.2.2 When washboards are used too close a vertical opening they should be so arranged and fitted that they will not become dislodged.

5.2.2.3 The maximum breadth of the opening of a companion hatch should not exceed 1m.

5A.3 Skylights

5.3.1 A skylight should be of efficient weathertight construction and should be located on the centre line of the vessel, or as near thereto as practicable, unless it is required to provide a means of escape from a compartment below deck.

5.3.2 When a skylight is an opening type it should be provided with efficient means whereby it can be secured in the closed position.

5.3.3 A skylight which is provided as a means of escape should be capable of being opened from both sides.

5.3.4 Unless the glazing material and its method of fixing in the frame is equivalent in strength to that required for the structure in which it is fitted, a portable "blank" should be provided which can be efficiently secured in place in event of breakage of the glazing.

5A.4 Portlights and Windows

5.4.1 A portlight or window to a space below the weather deck or in a step, recess, raised deck structure, deckhouse or superstructure protecting openings leading below the weather deck should be of efficient construction which provides weathertight integrity (and be of strength compatible with size) for the intended area of operation of the vessel.

5.4.2 A portlight or window should not be fitted in the main hull below the weather deck, unless the glazing material and its method of fixing in the frame are equivalent in strength, with regard to design pressure, to that required for the structure in which it is fitted.

Portlights fitted in the hull of the vessel below the level of the weather deck should be either non-opening or of a non-readily opening type, have a glazed diameter of not more than 250mm, or equivalent area, and be in accordance with a standard recognised by the Administration. Portlights of the non-readily opening type must be secured closed when the vessel is in navigation. Proposals to accept portlights, to a recognised standard, greater than 250mm diameter, up to a maximum of 400mm or equivalent area, maybe considered, with due regard to their fore and aft, and vertical positioning, to the satisfaction of the Certifying Authority. Proposals for larger portlights may be considered by the Administration.

5.4.4 Portlights, windows and their frames should meet the appropriate Marine Standards defined in equivalent British, European, National or International Standards or Classification Society Rules.

5.4.5 A portlight fitted below the weather deck and not provided with an attached deadlight should be provided with a "blank" (the number of blanks should be sufficient for at least half of the number of such portlights of each different size in the vessel), which can be efficiently secured in place in the event of breakage of the portlight. The blank should be of suitable material and strength to the satisfaction of the Certifying Authority.

Such a "blank" is not required for a non-opening portlight which satisfies Section 5.4.2.

5.4.6 A window fitted in the main hull below the weather deck should meet the requirements of Section 5.4.2, or be provided with a blank meeting the requirements of Section 5.4.7.

5.4.7 In a vessel which operates more than 60 miles from a safe haven, portable "blanks" for windows should be provided (the number of blanks should be sufficient for at least half of the number of such windows of each different size in the vessel) which can be efficiently secured in place in the event of breakage of a window.

Such a "blank" is not required for a window which satisfies Section 5.4.2.

5.4.8 For the wheelhouse:-

.1 windows and their frames should meet the requirements of Section 5.4.4, having due regard to the increased thickness of windows comprising one or more laminations in order to achieve equivalent strength;

.2 polarised or tinted glass should not be used in windows provided for navigational visibility (although portable tinted screens may be provided for nominated windows)

5A.5 Ventilators and Exhausts

A ventilator should be of efficient construction and ,where situated on the weather deck and not complying with Section 5.5.3, should be provided with a readily available means of weathertight closure, consideration should be given to requirements of Fire Protection (Section 14).

5.5.2 A ventilator should be kept as far inboard as practicable and the height above the deck of the ventilator opening should be sufficient to prevent the ready admission of water when the vessel is heeled. (See Sections 11.3, 11.4, 11.6, and 11.8.)

5.5.3 A ventilator which must be kept open, e.g. for the supply of air to machinery or for the discharge of noxious or flammable gases, should be specially considered with respect to its location and height above deck having regard to Section 5.5.2 and the downflooding angle. (See Sections 11.3, 11.4, 11.6, and 11.8.)

5.5.4 Motor vessels which are fitted with engine air intakes in the hull side, which do not satisfy the requirements of the Code may be accepted by a Certifying Authority, but restrictions on operations may be necessary.

5.5.5 An engine exhaust outlet which penetrates the hull below the weather deck should be provided with means to prevent backflooding into the hull through the exhaust system. The means may be provided by system design and/or arrangement, built-in valve or a portable fitting which can be applied readily in an emergency.

5A.6 Air Pipes

5.6.1 When located on the weather deck, an air pipe should be kept as far inboard as possible and have a height above deck sufficient to prevent inadvertent downflooding when the vessel is heeled. (See Sections 11.3, 11.4, 11.6, and 11.8.)

5.6.2 An air pipe, of greater than 10mm inside diameter, serving a fuel or other tank should be provided with a permanently attached means of weathertight closure. Means of closure may be omitted if it can be shown that the open end of the air pipe is afforded adequate protection by other means, which will prevent the ingress of water.

5.6.3 An air pipe serving a fuel tank (also see Section 7.4.4) or other tank, where provided with a closing appliance, should be of a type which will prevent excessive pressure on the tank boundaries. Provision should be made for relieving a vacuum when tanks are being drawn from or emptied.

5A.7 Sea Inlets and Discharges

5.7.1 An opening below the weather deck should be provided with an efficient means of closure.

5.7.2 When an opening is for the purpose of an inlet or discharge below the waterline it should be fitted with a seacock, valve or other effective means of closure which is readily accessible.

5.7.3 When an opening is for a log or other sensor, which is capable of being withdrawn, it should be fitted in an efficient watertight manner and provided with an effective means of closure when such a fitting is removed.

5.7.4 Inlet and discharge pipes from marine toilets should be provided with shell fittings as required by Section 5.7.2. When the rim of a marine toilet is less than 300mm above the deepest waterline of the vessel, unless otherwise indicated by manufacturer's recommendations, anti - syphon measures should be provided.

5.7.5 For sailing vessels, overboard inlet and discharge pipes from marine toilets or holding tanks should be looped up within the hull to the underside of the deck.

5A.8 Materials for Valves and Associated Piping

5.8.1 A valve or similar fitting attached to the side of the vessel below the waterline, within an engine space or other high fire risk area, should be normally of steel, bronze, copper, or other non-brittle fire resistant material or equivalent.

5.8.2 When plastic piping is used it should be of good quality and of a type suitable for the intended purpose.

5.8.3 Flexible or non-metallic piping, which presents a risk of flooding, fitted in an engine space or fire risk area should be efficiently insulated against fire, or be of fire resistant material, e.g. ISO Standard 7840 or exhaust quality rubber hosing, or a means should be provided to stop the ingress of water in the event of the pipe being damaged, operable from outside the space. (See Section 5.8.1 for valve requirements.)

5B WEATHERTIGHT INTEGRITY – CONVENTION VESSELS

Virtual Freeboard Deck

For the purposes of this section only, where actual freeboard to the weather deck exceeds that required by Jersey Load Line Regulations by at least one standard superstructure height, openings on that deck, abaft of the forward quarter, may be assumed to be in position 2. This is to be taken, unless otherwise stated, as defined in ICLL 66.

For all vessels certificated under this Code, a standard superstructure height is to be taken as 1.8m.

5B.1 Hatchways and Skylight Hatches

5.1.1 General requirements

5.1.1.1 All openings leading to spaces below the weather deck not capable of being closed weathertight, must be enclosed within either an enclosed superstructure or a weathertight deckhouse of adequate strength meeting with the requirements of the Load Line assigning authority.

5.1.1.2 All exposed hatchways which give access to spaces below the weather deck are to be of substantial weathertight construction and provided with efficient means of closure. Weathertight hatch covers should be permanently attached to the vessel and provided with adequate arrangements for securing the hatch closed.

5.1.1.3 Hatches which are designated for escape purposes should be provided with covers which are to be openable from either side and in the direction of escape they are to be openable without a key. All handles on the inside are to be non removable. An escape hatch should be readily identified and easy and safe to use, having due regard to its position.

5.1.2 Hatchways which are open at sea

In general, hatches should be kept closed at sea. However, hatchways which may be kept open for access at sea are to be kept as small as practicable (a maximum of 1 square metre in clear area), and fitted with coamings of at least 300mm in height. Hatchways should be as near to the centreline as practicable, especially on sailing vessels. Covers of hatchways are to be permanently attached to the hatch coamings and, where hinged, the hinges are to be located on the forward side.

5B.2 Doorways and Companionways

5.2.1 Doorways located above the weather deck

5.2.1.1 Exposed doors in deckhouses and superstructures that give access to spaces below the weather deck, are to be weathertight and door openings should have coaming heights of at least:

Location	Vessels >24m	Short Range Yachts
A	600mm	300mm
B	300mm	150mm
C	150mm	75mm

Location A The door is in the forward quarter length of the vessel and is used when the vessel is at sea.
Location B The door is in an exposed forward facing location aft of the forward quarter length.
Location C Above the surface of the deck when the door is in a protected location aft of the forward quarter length.

5.2.1.2 Weathertight doors should be arranged to open outwards and when located in a house side, be hinged at the forward edge. Alternative closing arrangements will be considered providing it can be demonstrated that the efficiency of the closing arrangements and their ability to prevent the ingress of water will not impair the safety of the vessel.

5.2.1.3 An access door leading directly to the engine room from the weather deck should be fitted with a coaming of height of;

	Vessels >24m	Short Range Yachts
Position 1	600mm	450mm
Position 2	380mm	200mm

5.2.1.4 Coaming height, construction and securing standards for weathertight doors which are provided for use only when the vessel is in port or at anchor in calm sheltered waters and are locked closed when the vessel is at sea, may be considered individually.

5.2.2 Companion hatch openings

5.2.2.1 Companionway hatch openings which give access to spaces below the weather deck should be fitted with a coaming, the top of which is at least 300mm above the deck, or 150mm in the case of Short Range Yachts.

5.2.2.2 Washboards may be used to close the vertical opening. When washboards are used, they should be so arranged and fitted that they will not be dislodged readily. Whilst stowed, provisions are to be made to ensure that they are retained in a secure location.

5.2.2.3 The maximum breadth of an opening in a companion hatch should not exceed 1 metre.

5B.3 Skylights

5.3.1 All skylights should be of efficient weathertight construction and should be located on or as near to the centreline of the vessel as practicable.

5.3.2 If they are of the opening type they should be provided with efficient means whereby they can be secured in the closed position.

5.3.3 Skylights which are designated for escape purposes should be openable from either side and in the direction of escape they are to be openable without a key. All handles on the inside are to be non removable. An escape skylight should be readily identified and easy and safe to use, having due regard to its position.

5.3.4 The skylight glazing material and its method of securing within the frame should meet an appropriate national or international standard. Recognised Classification Society rules for "ships" are considered to meet these requirements. Where a recognised Classification Society produces alternative rules for "pleasure vessels" or "yachts", these are considered appropriate for Short Range Yachts.

A minimum of one portable cover for each size of glazed opening should be provided which can be accessed rapidly and efficiently secured in the event of a breakage of the skylight.

5B.4 Portlights

5.4.1 Portlights should be of strength appropriate to location in the vessel and meet an appropriate national or international standard. Recognised Classification Society rules for "ships" are considered to meet these requirements. Where a recognised Classification Society produces alternative rules for "pleasure vessels" or "yachts", these can be considered appropriate for Short Range Yachts. With regard to structural fire protection, the requirements for the construction of certain portlights should meet the requirements of Section 14.

5.4.2 In general, all portlights fitted in locations protecting openings to spaces below the weather deck or fitted in the hull of the vessel should be provided with a permenantly attached deadlight which is to be capable of securing the opening watertight in the event of a breakage of the portlight glazing. Proposals to fit portable deadlights will be subject to special consideration and approval by the Administration, having regard for the location of the portlights and the ready availability of deadlights. Consideration should be given to the provision of operational instructions to the Master as to when deadlights must be applied to portlights.

5.4.3 Portlights fitted in the hull of the vessel below the level of the freeboard deck should be either non-opening or of a non readily opening type and be in accordance with a standard recognised by the administration. The sill height of the portlights should be at least 500mm or 2.5% of the breadth of the vessel, whichever is the greater, above the all seasons load line assigned to the vessel. Portlights of the non readily opening type must be secured closed when the vessel is in navigation.

5.4.4 Portlights should not be fitted in the hull in way of the machinery space.

5B.5 Windows

5.5.1 Windows should be of strength appropriate to location in the vessel and meet the requirements of a recognised standard e.g. BSMA 25. Where a recognised Classification Society produces alternative rules for "pleasure vessels" or "yachts", these are considered appropriate for Short Range Yachts.

5.5.2 Where the glazing material, glazing thickness, or fixing of the windows does not meet the requirements of a recognised standard, windows may be tested, to the satisfaction of the Administration, at a minimum of 4 times the required design pressure

derived from an appropriate national or international standard. For windows fitted with storm shutters, see 5.5.5, or Short Range Yachts, test pressures may be reduced to 2.5 times the derived design pressure.

5.5.3 In general, windows fitted in superstructures or weathertight deckhouses are to be substantially framed and efficiently secured to the structure. The glass is to be of the toughened safety glass type.

5.5.4 In general, windows should not be fitted in the main hull below the level of the freeboard deck. Proposals to fit windows in the main hull below the level of the freeboard deck will be subject to special consideration and approval by the Administration, having regard for the location and strength of the windows and their supporting structure and, the availability of strong protective covers for the windows. One item of the special consideration should be operational instructions to the Master as to when the strong protective covers must be applied to windows.

5.5.5 For all vessels, other than Short Range Yachts, storm shutters are required for all windows in the front and sides of first tier and front windows of the second tier of superstructures or weathertight deckhouses above the freeboard deck. Where windows are of laminated construction and their equivalent toughened safety glass thickness exceeds the requirements of the applied standard by a minimum of 30%, storm shutters need not be carried, but a blanking plate to be provided for each size of window. When storm shutters are interchangeable port and starboard, a minimum of 50% of each size should be provided.

5.5.6 Side and front windows to the navigating position should not be constructed of polarised or tinted glass. (See Section 18)

5B.6 Ventilators and Exhausts

5.6.1 Adequate ventilation is to be provided throughout the vessel. The accommodation is to be protected from the entry of gas and/or vapour fumes from machinery, exhaust and fuel systems.

5.6.2 Ventilators are to be of efficient construction and provided with permanently attached means of weathertight closure. Generally, ventilators serving any space below the freeboard deck or an enclosed superstructure should have a coaming of minimum height:

900mm in the forward quarter length of the vessel; and
760mm elsewhere.

For Short Range Yachts the required ventilator heights should be taken as half the above requirements.

5.6.3 Ventilators should be kept as far inboard as practicable and the height above the deck of the ventilator opening should be sufficient to prevent the ingress of water when the vessel heels.

5.6.4 The ventilation of spaces such as the machinery space, which must remain open, requires special attention with regard to the location and height of the ventilation openings above the deck, taking into account the effect of downflooding angle on stability standard. (See section 11.)

The means of closure of ventilators serving the machinery space should be selected with regard to the fire protection and extinguishing arrangements provided in the machinery space.

5.6.5 Engine exhaust outlets which penetrate the hull below the freeboard deck should be provided with means to prevent backflooding into the hull through a damaged exhaust system. For vessels operating on unrestricted service a positive means of closure should be provided. The system should be of equivalent construction to the hull on the outboard side of the closure. For Short Range Yachts, where the fitting of a positive closure is not practicable, the exhaust should be looped up above the waterline on the outboard side of the system, to a minimum height of 1000 mm, and be of equivalent construction to the hull.

5B.7 Air Pipes

5.7.1 Air pipes serving fuel and other tanks should be of efficient construction and provided with permanently attached means of weathertight closure. Means of closure may be omitted if it can be shown that the open end of an air pipe is afforded adequate protection by other structure(s) which will prevent the ingress of water.

5.7.2 Where located on the weather deck, air pipes should be kept as far inboard as practicable and be fitted with a coaming of sufficient height to prevent inadvertent flooding. Generally, air pipes to tanks should have a minimum coaming height of:

760mm when sited on the freeboard deck; and
450mm elsewhere.

For Short Range Yachts the required ventilator heights should be taken as half the above requirements.

5.7.3 Air pipes to fuel tanks should terminate at a height of not less than 760mm above either, the top of the filler pipe for a gravity filling tank or, the top of the overflow tank for a pressure filling tank.

5B.8 Scuppers, Sea Inlets and Discharges

The standards of ICLL should be applied to every discharge led through the shell of the vessel as far as it is reasonable and practicable to do so, and in any case, all sea inlet and overboard discharges should be provided with efficient shut-off valves arranged in positions where they are readily accessible at all times.

5B.9 Materials for Valves and Associated Piping

5.9.1 Valves which are fitted below the waterline should be of steel, bronze or other material having a similar resistance to impact and fire.

5.9.2 The associated piping should, in areas as indicated above, be of steel, bronze, copper or other equivalent material.

5.9.3 Where the use of plastic piping is proposed, it will be considered and full details of the type of piping, its intended location, and use, should be submitted for approval. Due regard should be paid to the IMO Fire Test Procedures Code.

5.9.4 The use of flexible piping in any situation should be kept to a minimum compatible with the essential reason for its use. Flexible piping and the means of joining it to its associated hard piping system should be approved as fit for the purpose by the Administration.

5B.10 General Equivalence

Where vessels cannot fully comply with the requirements of this section, equivalent arrangements may be considered by the Administration. Such proposals should take into account the following, although this should not be considered as an exhaustive list:-

Openings to be kept closed at sea
Enhanced Bilge Pumping capacity and additional bilge alarms
Compliance with damage stability if not already a requirement (see Section 11)
Provision of dorade boxes or baffle systems to prevent direct ingress of water
Alternative ventilation for use in bad weather
Consideration of downflooding angle and reduced risk of green sea loads, i.e. protected position
Enhanced survey inspection regime
Operational Limitations

6A WATER FREEING ARRANGEMENTS – NON CONVENTION VESSELS

6A.1 When a deck is fitted with bulwarks such that shipped water may be trapped behind them, the bulwarks should be provided with efficient freeing ports that will ensure the deck can be effectively drained. This section is not intended to apply to inflatable boats or boats fitted with a buoyant collar, as these requirements are dealt with in other parts of the Code.

6A.2 Motor Vessels

6.2.1 In a motor vessel, the area of freeing ports should be at least 4% of the bulwark area and be situated in the lower third of the bulwark height, as close to the deck as practicable.

A vessel of less than 12 metres in length, having a well deck aft which is fitted with bulwarks all round and which is intended to operate no more than 60 miles from a safe haven, (Area Categories 2-6), should be provided with freeing ports required by Section 6.2.1 or may be provided with a minimum of two ports fitted (one port and one starboard), which may be in the transom, each having a clear area of at least 225 cm^2 (0.0225 m^2). Ports may only be fitted in the transom on vessels where the shipping of water will not result in a trim by the head such that water will not drain.

6A.3 Sailing Vessels

In a sailing vessel the area of freeing ports should be at least 10% of that part of the bulwark area which extends for $^2/_3$ of the vessel's length amidships. A freeing port should be located in the lower third of the bulwark height, as close to the deck as practicable. A freeing port should be fitted with a grid which has a spacing of not more than 50mm in any direction.

6.3.2 Where the average height of the bulwark over its length does not exceed 150mm, freeing ports will not be required, however attention should be paid to suitable drainage arrangements.

6A.4 General – All Vessels

6.4.1 Smaller ports may however be accepted in a vessel having only small side deck areas in which water can be trapped, the reduced area being based on the volume of water which is likely to become so trapped. The following correction to the required freeing port area may be applied:-

$$FP_{REQ} = FP_{MAX} * (A_{ACT} / A_{MAX})$$

Where

FP_{REQ} = Freeing port area required
FP_{MAX} = Maximum freeing port area required
A_{ACT} = Actual area of deck fitted with enclosed bulwarks, excluding superstructure or deckhouse area
A_{MAX} = Area of maximum sized well (0.7L x B) where L and B are the dimensions of the vessel

6.4.2 When a non-return shutter or flap is fitted to a freeing port it should have sufficient clearance to prevent jamming and any hinges should have pins or bearings of non-corrodible material.

6.4.3 A decked vessel which does not comply with the freeboard requirements of Section 12, and does not possess reserve buoyancy above the weather deck, as defined in Section 4.1.3.2, should be treated as an open boat and be provided with bilge pumping in accordance with Section 10.4.

6.4.4 In a vessel where freeing ports cannot be fitted, other efficient means of clearing trapped water from the vessel should be provided to the satisfaction of the Certifying Authority.

6.4.5 Structures and spaces considered to be non-weathertight should be provided with efficient drainage.

6.4.6 Where cargo is to be stowed on deck, the stowage arrangement should be such as to not impede the free flow of water from the deck.

6.4.7 A vessel intended to operate in sea areas where ice accretion can occur should be specially considered with regard to water freeing arrangements. (Also see Section 11.1.1.5.)

6B WATER FREEING ARRANGEMENTS – CONVENTION VESSELS

6B.1 The standards for water freeing arrangements should comply with ICLL as far as it is reasonable and practicable to do so.

In any case the intention should be to achieve a standard of safety which is at least equivalent to the standard of ICLL.

In applying freeing port requirements of ICLL, the following correction to the required freeing port area may be applied:-

$$FP_{REQ} = FP_{MAX} * (A_{ACT} / A_{MAX})$$

Where

FP_{REQ} = Freeing port area required
FP_{MAX} = Maximum freeing port area required
A_{ACT} = Actual area of deck fitted with enclosed bulwarks, excluding superstructure or deckhouse area
A_{MAX} = Area of maximum sized well (0.7L x B) where L and B are the dimensions of the vessel

On sailing vessels, where the solid bulwark height does not exceed 150mm, specific freeing ports, as defined above, are not required.

6B.2 In individual cases, when the Administration considers that the requirements of ICLL cannot be met, the Administration may consider and approve alternative arrangements to achieve adequate safety standards. Freeing arrangements may take account of a reduced permeability and volume of the well, when compared to a full size well.

In considering an individual case, the Administration will take into account the vessels past performance in service and the declared area(s) of operation and any other conditions which restrict the use of the vessel at sea which will be recorded on the load line certificate issued to the vessel. (See section 4.1.)

6B.3 Recesses

6.3.1 Any recess in the weathertight weather deck should be of weathertight construction and should be self draining under all normal conditions of heel and trim of the vessel.

A swimming pool or spa bath open to the elements should be treated as a recess.

6.3.2 The means of drainage provided should be capable of efficient operation when the vessel is heeled to an angle of 10^0 in the case of a motor vessel (see 10A.2), and 30^0 in the case of a sailing vessel.

The drainage arrangements should have the capability of draining the recess (when fully charged with water) within 3 minutes when the vessel is upright and at the load line draught. Means should be provided to prevent the backflow of sea water into the recess.

6.3.3 When it is not practical to provide drainage which meets the requirements of 6.3.2, alternative safety measures may be proposed for approval by the Administration. Where the above requirements for quick drainage cannot be met, the effect on intact and damage stability should be considered taking into account the mass of water and its free surface effect.

7A MACHINERY – NON CONVENTION VESSELS

7A.1 General Requirement

7.1.1 Generally, machinery installations should comply with the requirements given below. Other installations proposed may be specially considered, provided that full information is presented to and approved by the Administration.

7.1.2 In motor vessels, the main propulsion machinery and all auxiliary machinery essential to the propulsion and the safety of the vessel should be designed to operate when the vessel is upright and when inclined at any angle of heel and trim up to and including 15 degrees and 7.5 degrees respectively either way under static conditions.

7.1.3 In sailing vessels, the main propulsion machinery and all auxiliary machinery essential to the propulsion and the safety of the vessel should be designed to operate when the vessel is upright and when inclined at any angle of heel up to and including 15 degrees either way under static conditions and 22.5 degrees either way under dynamic rolling conditions and simultaneously inclined 7.5 degrees by bow or stern under dynamic pitching conditions.

7A.2 Diesel Engines

A vessel fitted with either an inboard or an outboard diesel engine should be provided with an engine suitable for marine use and with sufficient fuel tankage for its area of operation.

7A.3 Petrol Engines

7.3.1 A petrol engine may be accepted provided that the engine is a suitable outboard type.

7.3.1.1 A vessel of any type may be fitted with a small engine (usually less than 5 horse power) manufactured with an integral fuel tank, provided a safety warning sign is displayed with details of appropriate precautions to be taken when filling the fuel tank.

7.3.1.2 Vessels other than inflatable boats should supply fuel to the engine from either;

.1 a permanently installed fuel tank constructed to an appropriate standard (see Standards Annex 13) and in the case of vessels fitted with a watertight weather deck shall have arrangements such that spillage during fuel handling will drain directly overboard; or

.2 a portable tank of 27 litres or less in capacity complying to an appropriate standard (see Standards Annex 13).

7.3.1.3 Inflatable boats should supply fuel to the engine from a portable tank of 27 litres or less in capacity complying to an appropriate standard (see Standards Annex 13).

7.3.2 In locations where an accumulation of hydrocarbon vapours is likely to occur, a suitable hydrocarbon gas detector should be fitted under or adjacent to the tank (located in a safe place). The detector components, and any other electrical equipment residing in the vapour area should not be capable of causing ignition.

7.3.3 A vessel should be provided with sufficient fuel tankage for its area of operation, spare portable petrol containers must not be carried onboard unless it is judged to be essential to assure the safe completion of a voyage or excursion (see Section 7.7).

7.3.4 Attention is drawn to the electrical arrangement requirements (Section 8.6).

7A.4 Installation

7.4.1 The machinery, fuel tank(s) and associated piping systems and fittings should be of a design and construction adequate for the service for which they are intended. These should be installed and protected so as to reduce to a minimum danger to persons during normal movement about the vessel, with due regard being paid to moving parts, hot surfaces and other hazards.

7.4.2 Means should be provided to isolate a source of fuel which may feed a fire in an engine space. A valve or cock, which is capable of being closed from a position outside the engine space, should be fitted in the fuel feed pipe as close as possible to the fuel tank.

7.4.3 Fuel filling and venting pipes should be constructed of fuel compatible non-kinking material, adequately supported and of sufficient dimensions to prevent spillage during filling.

7.4.4 A venting pipe should be led to the open atmosphere, terminating in a position level with or higher than the fuel filling mouth and its open end protected against:-

.1 water ingress - by a goose neck or other efficient means; and

.2 for petrol engines or where there is a risk from flame ingress - by a suitable gauze diaphragm (which can be detached for cleaning).

In a fuel supply system unit, where a flexible section of piping is introduced, the flexible pipes should be fire resistant/metal reinforced or otherwise protected from fire (See Applicable Standards Annex). The flexible pipes shall be secured by either metal hose clamps or permanently attached end fittings (e.g. swaged sleeve or sleeve and threaded insert). Where hose clamps are used, the fitting to which the flexible pipe attaches should have a bead, flare, annular grooves or other means of preventing slippage, the anti-slippage arrangement shall not provide a path for fuel leakage.

7.4.6 When the main engine(s) oil fuel system is provided with water separator filter(s) of a type which has plastic or glass bowl(s), it should be located so that it can be easily seen and protected against heat and accidental damage.

7A.5 Engine Starting and Stopping

7.5.1 An engine should be provided with either mechanical, hand starting or electric starting with independent batteries, or other means of starting acceptable to the Certifying Authority.

7.5.2 When the sole means of starting is by battery, the battery should be in duplicate and connected to the starter motor via a 'change over switch' so that either battery can be used for starting the engine. Charging facilities for the batteries should be available. Under normal circumstances it is not recommended to discharge both batteries in parallel.

7.5.3 All internal combustion machinery should have a secure means of remote stopping from outside the engine space.

7.5.4 All inflatable boats, boats fitted with a buoyant collar, and open boats that achieve planing speed, when fitted with remote throttle controls, should be fitted with a kill-cord, to be used at all times during navigation.

7A.6 Portable Equipment

7.6.1 When portable equipment powered by a petrol engine is provided, the unit, unless fully drained of fuel, should normally be stored on the weather deck.

7.6.1.1 Alternatively it may be stowed in a deck locker or protective enclosure which is to the satisfaction of the Certifying Authority and meets the following requirements:-

.1 vapour tight to the vessel's interior;

.2 not openable from the vessel's interior; and

.3 adequately drained overboard and ventilated to atmosphere.

7.6.1.2 A safety warning sign should be displayed with details of appropriate precautions to be taken when filling the fuel tank.

7.6.2 Gas welding and cutting equipment bottles, if carried, should be stowed in a secure manner on the open deck at a safe distance away from any potential source of fire and should have the capability of being readily jettisoned overboard if necessary.

7A.7 Stowage of Petrol

7.7.1 When spare petrol is carried on-board in portable containers, for any purpose, the quantity should be kept to a minimum, the containers should be clearly marked and should normally be stowed on the weather deck where they can readily be jettisoned and where spillage will drain directly overboard.

7.7.2 In small vessels where Section 7.7.1 is not practicable, a 5-litre container of petrol may be stowed in a deck locker which meets the requirements of Section 7.6.1.1.

7B MACHINERY – CONVENTION VESSELS

7B.1 General Requirements

7.1.1 The machinery and its installation should, in general, meet with the requirements of the Certifying Authority. For existing and new vessels which operate with periodically unattended machinery spaces, the machinery and its installation should meet the standards of SOLAS regulations II-1/Part E - Additional requirements for periodically unattended machinery spaces, so far as is reasonable and practicable to do so.

Plastic piping may be accepted where the piping and the arrangements for its use meet the requirements of the IMO Fire Test Procedures Code.

7.1.2 The requirements for main propulsion are based upon the installation of diesel powered units. When other types of main propulsion are proposed, the arrangements and installation should be specially considered. Where gas turbines are to be fitted, attention should be paid to the guidance contained within the IMO High-speed Craft Code, and installation is to be to the satisfaction of the Administration.

7.1.3 Notwithstanding the requirements of paragraph 7A.1.1, in a fuel supply system to an engine unit, where a flexible section of piping is provided, connections should be of a screw type or equivalent approved type. Flexible pipes should be fire resistant/metal reinforced. Materials and fittings should be of a suitable recognised national or international standard.

7B.2 Installation

7.2.1 Notwithstanding the requirements referred to in 7A.1, the machinery, fuel tanks and associated piping systems and fittings should be of a design and construction adequate for the service for which they are intended, and should be so installed and protected as to reduce to a minimum any danger to persons during normal movement about the vessel, due regard being made to moving parts, hot surfaces, and other hazards.

7.2.2 Means should be provided to isolate any source of fuel which may feed a fire in an engine space fire situation. A fuel shut-off valve(s) should be provided which is capable of being closed from a position outside the engine space. The valve(s) should be fitted as close as possible to the fuel tank(s).

7.2.3 All external high pressure fuel delivery lines between the high pressure fuel pumps and fuel nozzles should be protected with a jacketed tubing system capable of containing fuel resulting from a high-pressure line failure. The jacketed tubing system should include means for collection of leakage and arrangements should be provided for an alarm to be given in the event of a fuel line failure.

7.2.4 When a glass fuel level gauge is fitted it should be of the "flat glass" type with self closing valves between the gauge and the tank.

8A ELECTRICAL INSTALLATIONS – NON CONVENTION VESSELS

8A.1 General

8.1.1 Electrical arrangements should be such as to minimise the risk of fire and electric shock. Tanks, machinery or other metallic objects which do not have good electrical continuity with the water surrounding the vessel should have special earthing arrangements to reduce such risks.

8.1.2 The electrical systems described in this section are the most common types suitable for small vessels, i.e. 12V to 24V direct current systems. However, a vessel may have alternating current electrical equipment of much higher voltage, in which case compliance with an applicable standard will be necessary (see Standards Annex).

8.1.3 For general guidance, a number of the most common standards which are appropriate to a small vessel are listed in the Standards Annex 13. (Other standards which are considered more appropriate and safe for a particular application may be used, provided they are acceptable to the Certifying Authority.)

8A.2 Systems

8.2.1 Systems should be two conductor, except that single conductor systems are acceptable for engine circuits comprising engine mounted equipment which have a return connection made at the engine itself.

8.2.2 A system in which there is no intentional connection of the circuit to earth (an insulated system) should be provided with double pole switches, except that single pole switches may be used in the final sub-circuit.

8.2.3 Single pole switches are only acceptable when used in the 'live' (+) conductor in a system with one pole earthed. Fuses should not be installed in an earthed conductor.

8.2.4 All circuits, except the main supply from the battery to the starter motor and electrically driven steering motors, should be provided with electrical protection against overload and short circuit, (i.e. fuses or circuit breakers should be installed). The rating of over current protection devices should not exceed the rated current capacity of the conductor being protected. Short circuit protection should be suitable for the total rated current of the consumers in the circuit protected. Where a single outboard engine is installed, and fitted with in-line fuses, suitable procedures should be established to enable the engine to be started in the event of a damaged fuse.

8.2.5 Steering circuits, the loss of which would lead to steering failure, should have an overload alarm in lieu of overload protection (this does not apply to auto-pilot motors). However all circuits should be protected against short circuit events.

8A.3 Lighting

8.3.1 When general lighting within a vessel is provided by a centralised electrical system, an alternative source of lighting (which may be a suitable portable battery operated lamp(s) if practical, taking into consideration the size and complexity of the vessel) should be provided. This alternative source of lighting should be sufficient to:-

.1 enable persons to make their way to the open deck;
.2 illuminate survival craft launching and embarkation;
.3 illuminate man-overboard rescue equipment and rescue areas;
.4 permit work on essential machinery.

8A.4 Batteries

8.4.1 Battery system requirements

8.4.1.1 Batteries and battery systems should be provided as indicated in Section 7.5.1, 7.5.2 and 16.2.6.

8.4.1.2 The battery terminals should be protected against accidental contact with metallic objects.

8.4.1.3 Battery charging systems should be fitted with circuitry to prevent overcharging**.**

8.4.1.4 A battery cut-out switch should be provided for all systems. It is preferred that this switch acts as an isolator, i.e. it is double pole, however, single pole is acceptable on the positive conductor. If a battery change-over switch is fitted and is provided with an "off" position, this may serve as the cut-out switch also.

8.4.1.5 Batteries supplying essential services (emergency lighting, steering systems, navigation and communications equipment) should be located in a position not likely to flood in normal operations or in the event of minor damage.

8.4.1.6 In the case of a sailing vessel, batteries should be of the sealed type to prevent electrolytic loss in the event of a knockdown or immersion.

8.4.2 Battery stowage

8.4.2.1 All batteries should be secured firmly to avoid movement when the vessel is subjected to sudden acceleration or deceleration, a large angle of heel, trim and in the case of sailing vessels, knockdown or inversion.

8.4.2.2 Where the maximum charging power output is less than 0.2 kW the batteries may be located in any suitable space without any special container requirements.

8.4.2.3 Where the maximum charging power output is between 0.2 and 2.0 kW the batteries should be located in the machinery space or other well-ventilated space in a box or locker.

8.4.2.4 Where the maximum charging power output exceeds 2 kW the batteries shall be placed in a suitably ventilated dedicated compartment within the vessel or a locker on the open deck, in either case stowage space is to be for batteries only.

8.4.3 Ventilation

8.4.3.1 To ensure that any evolved hydrogen is expelled, battery compartments, lockers and containers should be exhausted from the highest point of the space and air supplied at a level below the top of the batteries.

8.4.3.2 If mechanical means are employed to ventilate a battery compartment directly, then the components must not be a potential source of ignition. Reference should be made to the requirements of the ATEX Directive (EC Directive 94/9/EC concerned with equipment and protective systems intended for use in potentially explosive atmospheres).

8A.5 Cables

8.5.1 Electric cables should be constructed to a recognised standard for marine use in small vessels.

8.5.2 Cables which are not provided with electrical protection should be kept as short as possible and should be "short circuit proofed", e.g. single core with an additional insulated sleeve over the insulation of each core. Normal marine cable, which is single core, will meet this requirement without an additional sleeve, since it has both conductor insulation and a sheath.

8.5.3 Note that when selecting cables, particular attention should be given to environmental factors such as temperature and contact with damaging substances, e.g. polystyrene, which degrades PVC insulation.

8.5.4 Adequate provision should be made for securing electrical connections, e.g. by use of locking washers.

8A.6 Hazardous Spaces

8.6.1 Where practicable, electrical equipment should not be installed in a space where petroleum vapour or other hydrocarbon gas is likely to accumulate. When equipment is installed in such a space it must comply with a recognised standard for prevention of ignition of a flammable atmosphere.

8.6.2 Any compartment which contains a gas consuming appliance or any compartment into which flammable gas may leak or accumulate, should be provided with a hydrocarbon gas detector and alarm. The detector and alarm should be designed to comply with a recognised standard in accordance with Section 8.6.1. (Refer to Section 14.5).

8A.7 `Lightning Protection

Where a considerable risk of lightning strike is identified, it is recommended that attention is paid to lightning strike protection. For information on lightning protection, reference should be made to ISO 10134 'Small Vessels – Electrical Devices – Lightning Protection'

8B ELECTRICAL INSTALLATIONS – CONVENTION VESSELS

8B.1 Installation

8.1.1 Particular attention should be paid to the provision of overload and short circuit protection of all circuits, except engine starting circuits supplied from batteries.

8.1.2 Electrical devices working in potentially hazardous areas, into which petroleum vapour or other hydrocarbon gas may leak, should be of a type certified safe for the hazard.

8B.2 Lighting

8.2.1 Lighting circuits, including those for emergency lighting, should be distributed through the spaces so that a total blackout cannot occur due to failure of a single protective device

8.2.2 An emergency source of lighting should be provided which should be independent of the general lighting system. This source should be sufficient for up to 3 hours duration and should include navigation light supplies. The lighting is to provide sufficient lighting for personnel to escape from the accommodation or working spaces to their muster station, launch and board survival craft. Additionally, this light, supplemented by torches, should be sufficient to permit emergency repairs to machinery, etc. The emergency source of power should be independent of the main power supply, external to the engine room, and with separate distribution.

8B.3 Batteries

Batteries of a type suitable for marine use and not liable to leakage should be used. Areas in which batteries are stowed should be provided with adequate ventilation to prevent an accumulation of gas which is emitted from batteries of all types. Reference should also be made to Section 14.1.5.

9A STEERING GEAR, RUDDER AND PROPELLER SYSTEMS – NON CONVENTION VESSELS

9A.1 Steering

9.1.1 A vessel should be provided with efficient means of steering.

9.1.2 The control position should be located so that the person conning the vessel has a clear view for the safe navigation of the vessel.

9.1.3 When steering gear is fitted with remote control, arrangements should be made for emergency steering in the event of failure of the control. Arrangements may take the form of the following, and be to the satisfaction of the Certifying Authority:-

.1 a tiller to fit the head of the rudder stock; or

.2 a rod attachment which may be fitted to a Z-drive framework; or

.3 a steering oar; or

.4 in the case of twin screw vessels manipulation of power distribution between the drives. In the case of twin stern-drive arrangements, means should be provided to lock the drives in the midships position; or

.5 in the case of a vessel fitted with outboard(s), a means to control the direction of thrust.

9.1.4 If emergency steering is impractical, alternative safety measures and/or procedures to deal with any steering failure situation should be agreed with the Certifying Authority. (The Certifying Authority may consider the application of restrictions to the service area of the vessel.)

9.1.5 Steering systems should comply with an appropriate standard for small craft steering systems (see Standards Annex 13).

9A.2 Rudder System

9.2.1 As appropriate to the vessel, the rudder and rudder stock construction materials, design in total (including tiller head attachments, bearings and pintles) and the supporting structures should be adequate for the operating conditions of the vessel. Recognised design standards should be used.

9.2.2 Construction and fittings should be to an appropriate standard, to the satisfaction of the Certifying Authority.

9A.3 Propeller System

9.3.1 As appropriate to the vessel, propeller line shaft(s) construction materials and design in total (including shaft brackets, propeller securing, bearings, sterntube and thrust block) and supporting structures should be adequate for the operating conditions for the vessel. Recognised design standards should be used.

9.3.2 Construction and fittings should be to an appropriate standard, to the satisfaction of the Certifying Authority.

9B STEERING GEAR, RUDDER AND PROPELLER SYSTEMS – CONVENTION VESSELS

9B.1 General Requirements

The steering gear and its installation should, in general, meet with the requirements the Certifying Authority

In the event that the above requirements cannot be met on an existing vessel, the Administration may be requested to consider and approve alternative arrangements to achieve adequate safety standards.

9B.2 Vessels should be provided with means for directional control of adequate strength and suitable design to enable the heading and direction of travel to be effectively controlled at all operating speeds. When appropriate to the safe steering of the vessel, the steering gear should be power operated in accordance with the requirements of the Administration.

9B.3 When the steering gear is fitted with remote control, arrangements should be made for emergency steering in the event of a failure of such control.

10A BILGE PUMPING – NON CONVENTION VESSELS

10A.1 General System Requirements

10.1.1 A vessel should have an efficient bilge pumping system, with suction pipes so arranged that any compartment (other than a tank permanently used for the carriage of liquids which is provided with efficient means of pumping or drainage) can be drained.

10.1.2 Provided the safety of a vessel is not impaired, the Certifying Authority may permit dispensation from the means of pumping or drainage of particular compartments.

10.1.3 A bilge pump (other than a portable pump) should be capable of being operated with all hatchways and companionways closed.

10.1.4 When considered necessary to protect the bilge suction line from obstruction, an efficient strum box should be provided.

10.1.5 When considered necessary, to prevent back flooding, bilge suction valves should be of non return type.

10.1.6 Means of providing efficient bilge pumping other than those described in this text may be considered provided that full information is submitted to and approved by the Certifying Authority.

10.1.7 Reference should be made to Section 29.2 which contains requirements for prevention of pollution of the sea.

10.1.8 Unless otherwise stated, pump capacities should meet the following minimum requirements

10 litres per minute for vessels of 6 metres in length or less
15 litres per minute for vessels of between 6 and 12 metres in length
30 litres per minute for vessels of 12 metres in length or greater

10A.2 Vessels Carrying 16 or More Persons or Operating in Area Category 0 or 1

10.2.1 A vessel should have at least one hand bilge pump and one engine driven or independent power bilge pump, situated in not less than two separate spaces . All pumped spaces should be capable of being drained after the failure of one pump.

10.2.2 For motor vessels, all compartments shall be able to be drained when the vessel is heeled up to an angle of +/– 10 degrees.

10.2.3 For vessels carrying cargo exceeding 1000kg, towing or carrying out lifting operations (excluding own anchors), in addition to the above, the bilge pumps should have a combined capacity of not less than 210 litres per minute. One pump should be power driven with a capacity not less than 140 litres per minute, and the other(s) may be hand pump(s) suitable for the suction lift head and of capacity not less than 70 litres per minute.

10A.3 Vessels Carrying 15 or Less Persons and Operating in Area Category 2 to 6

10.3.1 Unless otherwise specified in Section 10.4, a vessel should be provided with at least two bilge pumps, one of which may be power driven situated in two separate spaces. All pumped spaces should be capable of being drained after the failure of one pump.

10.3.2 For vessels carrying cargo exceeding 1000kg or towing or carrying out lifting operations (excluding own anchors) in addition to the above the bilge pumps should have a combined capacity of not less than 140 litres per minute. One pump may be power driven and the other(s) should be hand pump(s) suitable for the suction lift head and of capacity not less than 70 litres per minute.

10A.4 Open Boats, Inflatable Boats and Boats with a Buoyant Collar

10.4.1 All open boats, of 6 metres in length and over, should carry a hand bailer or bucket in addition to the bilge pumping requirements in Section 10.2 and 10.3.

10.4.2 For vessels of less than 6 metres in length, operating in Category 6, a minimum of one hand powered bilge pump or a bailer or a bucket is to be provided.

10.4.3 Buckets required for this section may be also be counted in any requirements for buckets given in Section15.

10A.5 Bilge Alarm

10.5.1 A bilge alarm should be fitted;

.1 in any watertight compartment containing propulsion machinery; or

.2 in any other compartment likely to accumulate bilge water, i.e. where a skin fitting is present, excluding void spaces, where the bilge level cannot be readily seen

10.5.2 To prevent pollution, compartments containing potential pollutants should not be fitted with auto-start bilge pumps.

10.5.3 An auto-start bilge pump serving a clean compartment where a significant quantity of water could accumulate unnoticed, should be fitted with an audible alarm at the control position(s). Should a number of such locations/alarms be present, then visual alarm indication should also be fitted to enable rapid location of the source of the alarm.

10.5.4 The alarm should provide an audible warning, and preferably a visual warning also, at the control position.

10B BILGE PUMPING – CONVENTION VESSELS

10B.1 General Requirements

The bilge pumping equipment and its installation should be to the satisfaction of the Certifying Authority. In general, the requirements of a recognised Classification Society would be accepted. Either the vessel should be in class or a statement of compliance issued by one of the Societies should be provided to the Administration

In the event that the above requirements cannot be met on an existing vessel, the Administration may be requested to consider and alternative arrangements to achieve adequate safety standards.

10B.2 All vessels should be provided with at least two fixed and independently powered pumps, with suction pipes so arranged that any compartment can be effectively drained when the vessel is heeled to an angle of 10°. For Short Range Yachts, the second pump and suction pipes may be portable.

10B.3 The location of pumps, their individual power supplies and controls, including those for bilge valves, should be such that in event of any one compartment being flooded another pump is available to control any leakage to adjacent compartments.

10B.4 Each bilge pump suction line should be fitted with an efficient strum box.

10B.5 In the case of a vessel where the propulsion machinery space may be unmanned at any time, a bilge level alarm should be fitted. The alarm should provide an audible and visual warning in the Master's cabin and in the wheelhouse. The audible and visual alarm may be accepted elsewhere if it is considered that such a location may be more appropriate.

10B.6 Pumping and piping arrangements for bilges into which fuel or other oils of similar or higher fire risk could collect, under either normal or fault conditions, should be kept clear of accommodation spaces and separate from accommodation bilge systems. Bilge level alarms meeting the requirements of 10A.5 should be fitted to all such bilges.

11A STABILITY – NON CONVENTION VESSELS

11A.1 General

11.1.1.1 The standard of stability to be achieved by a new vessel should be dependent on the maximum number of persons permitted to be carried and the intended area of operation.

11.1.1.2 The following vessels are required to be provided with a stability information booklet which is approved by the Certifying Authority:-

.1 operation in Category 0 or 1; or

.2 carrying 16 or more persons; or

.3 carrying cargo greater than 1000kg; or

.4 fitted with a lifting device as defined in 11.6.

.5 vessels towing where the towed object's displacement is greater than twice the displacement of the towing vessel. See Section 11.7.

.6 seagoing pilot boats

Note: Motor vessels covered by .1 or .2 are not required to carry stability information booklets if the stability is assessed under section 11.3.8 using ISO 12217 Part 1 'Small craft - Stability and buoyancy assessment and categorisation - Non-sailing boats of hull length greater than or equal to 6 metres'.

11.1.1.3 A vessel carrying 15 or less persons, carrying 1000kg or less of cargo, and operating in Area Categories other than 0 or 1 shall either comply with Section 11.1.1.2 or be subject to a simplified assessment of stability, and is not required to be provided with approved stability information.

11.1.1.4 If a vessel cannot meet the stability criteria given within Section 11, it should be specially considered by the Certifying Authority, and such cases should be reported to the Administration.

11.1.1.5 Sailing vessels fitted with non-fore and aft rigs, or moveable/variable ballast are to be specifically considered on application to the Administration

11.1.1.6 Stability of a vessel which will operate in sea areas where ice accretion can occur should be specially considered by the Administration with regard to icing allowance and stability standard. (See also Section 6.10)

11.1.1.7 For stability requirements for an inflatable vessel or a vessel fitted with a buoyant collar, see Section 11.5. For stability requirements for a decked vessel fitted with a lifting device, see Section 11.6 and for a decked vessel engaged in towing, see Section 11.7.

11.1.1.8 A sailing multihull over 6m in length should be provided with a Stability Information Booklet approved by the Certifying Authority.

11.1.1.9 Where a monohull vessel cannot comply with the specified criteria, due to its hullform displaying stability characteristics similar to that of a multihull vessel, the stability criteria for a multihull vessel may be applied, as appropriate for sailing or motor vessels.

11.1.1.10A motor multihull type vessel failing to comply with the criteria of either Section 11.3.6 or 11.3.7 may be given special consideration. In such a case, calculations should be submitted to the Administration for assessment.

11.1.1.11All vessels, other than those vessel's deemed unsuitable for carriage of the booklet by the Certifying Authority (i.e. vessels with no cabin or shelter), are required to carry the relevant copy of the MCA Stability Guidance Booklet (Motor or Sail). Where a booklet is not carried on board a copy is to be made available to crew ashore. These booklets are available free of charge from the MCA or Certifying Authority. Although they contain generic safety advice, the stability and freeboard data already generated during the survey process should be appended to the booklet in the relevant section. It is the responsibility of the Certifying Authority to supply this information, and the owner/managing agent is to ensure this data is included.

11A.2 Damage Survivability

11.2.1 This applies to all monohull vessels carrying 16 or more persons and those operating in Area Category 0 or 1, with 7 or more persons, subject to minimum safe manning levels being agreed by the Certifying Authority.

11.2.1.1 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 Certifying Authority. Minor damage should be assumed to occur anywhere in the length of the vessel but not on a watertight subdivision.

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 Certifying Authority.

11.2.1.3 In the damaged condition, the residual stability should be such that the angle of equilibrium does not exceed 7 degrees from the upright, the resulting righting lever curve has a range to the downflooding angle of at least 15 degrees beyond the angle of equilibrium, the maximum righting lever within that range is not less than 100mm and the area under the curve is not less than 0.015 metre radians. This damage should not cause the vessel to float at a waterline less than 75mm from the weatherdeck at any point. Proposals to accept reduced freeboard or immersion of the margin line may be accepted subject to special consideration.

11.2.2 Multihull vessels

Generally, the requirements of Section 11.2.1 for a monohull vessel should apply to a multihull motor vessel carrying 16 or more persons or operating in Area Category 0 and 1, with 7 or more persons. Damage and inverted stability requirements for multihull sailing vessels are contained in Section 11.10. If a multihull vessel is of unconventional design or cannot meet the damage criteria given in Sections 11.2.1.1 and 11.2.1.2, the results of the calculations should be submitted to the Administration for assessment.

11A.3 Motor Vessels Complying with Section 11.1.1.2

11.3.1 The lightship weight, vertical centre of gravity (KG) and longitudinal centre of gravity (LCG) of a monohull vessel should be determined from the results of an inclining experiment.

11.3.2 The LCG of a multihull vessel should be obtained by a displacement check or by weighing. The KG should be determined either by calculation or by experimental means, noting however that a conventional inclining experiment may not produce satisfactory results.

11.3.3 The lightship weight may include a margin for growth, up to 5% of the lightship weight at the discretion of the Certifying Authority, positioned at the LCG and vertical centre of the weather deck amidships or KG, whichever is the higher. (The lightweight margin should not be used in practice to increase maximum cargo-deadweight.)

11.3.4 Curves of statical stability (GZ curves) should be produced for:-

.1 Loaded departure, 100% consumables;

.2 Loaded arrival, 10% consumables;

.3 Anticipated service conditions; and

.4 Conditions involving lifting appliances (when appropriate).

In addition, simplified stability information in the form of a Maximum KG Curve should be provided, including a worked example to illustrate its use.

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.

11.3.5 Generally, buoyant structures intended to increase the range of positive stability should not be provided by fixtures to superstructures, deckhouse, masts or rigging.

11.3.6 The curves of statical stability for the loaded conditions should meet the following criteria:-

.1 the area under the righting lever curve (GZ curve) should be not less than 0.055 metre – radians up to 30 degrees angle of heel and not less than 0.09 metre – radians up to 40 degrees angle of heel or the angle of downflooding if this angle is less;

.2 the area under the GZ curve between the angles of heel of 30 and 40 degrees or between 30 degrees and the angle of downflooding if this less than 40 degrees, should be not less than 0.03 metre – radians;

.3 the righting lever (GZ) should be at least 0.20 metres at an angle of heel equal to or greater than 30 degrees;

.4 the maximum GZ should occur at an angle of heel of not less than 25 degrees; and

.5 after correction for free surface effects, the initial metacentric height (GM) should not be less than 0.35 metres.

11.3.7 If a vessel of catamaran or multihull type does not meet the stability criteria given in Section 11.3.6, the vessel should meet the following criteria:-

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

When the maximum righting lever, GZmax, occurs between $\phi = 15^o$ and $\phi = 30^o$ the required area under the GZ Curve up to ϕ_{GZmax} should not be less than:

$A = 0.055 + 0.002(30^o - \phi_{GZmax})$ metre-radians

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

.2 the area under the righting lever curve between $\phi = 30^o$ and $\phi = 40^o$ or between $\phi = 30^o$ and the angle of downflooding ϕ_f, if this angle is less than 40^o, should not be less than 0.03 metre-radians;

.3 the righting lever GZ should not be less than 0.2 metre at an angle of heel of 30 degrees;

.4 the maximum righting lever should occur at an a angle not less than 15 degrees; and

.5 the initial metacentric height GM_o should not be less than 0.35 metre.

11.3.8 Vessels complying with ISO 12217 Part 1 'Small craft - Stability and buoyancy assessment and categorisation - Non-sailing boats of hull length greater than or equal to 6 metres', assessed using Options 1 or 2 of Section 5.3 – `Test and calculations to be applied', may as an alternative, after verification of the stability assessment by the Certifying Authority, be assigned an area of operation in accordance with Section 11.3.9.

Permitted areas of operation.

Permitted Area of Operation	MCA Code Category	ISO 12217 Design Category
Unrestricted	0	A
Up to 150 miles from a safe haven	1	A
Up to 60 miles from a safe haven	2	B
Up to 20 miles from a safe haven	3	B

Up to 20 miles from a safe haven in favourable weather and daylight	4	C
Up to 20 miles from a nominated departure point in favourable weather and daylight	5	C
Up to 3 miles from a nominated departure point in favourable weather and daylight	6	C

11A.4 Motor Vessels Complying with Section 11.1.1.3

11.4.1 A vessel should be tested in the fully loaded conditions (which should correspond to the freeboard assigned) to ascertain the angle of heel and the position of the waterline which results when all persons which the vessel is to be certificated to carry are assembled along one side of the vessel. (The helmsman may be assumed to be at the helm.) Each person may be substituted by a mass of 75kg for the purpose of the test.

The vessel will be judged to have an acceptable standard of stability if the test shows that:-

.1 the angle of heel does not exceed 7 degrees; and

.2 in the case of a vessel with a watertight weather deck extending from stem to stern, as described in Section 4.1.1, the freeboard to deck is not less than 75mm at any point.

.3 The angle of heel may exceed 7 degrees, but should not exceed 10 degrees, if the freeboard in the heeled condition is in accordance with that required by Section 12 in the upright condition.

11.4.2 Additionally, for vessels over 15 metres in length, the heeling moment applied during the test described in 11.4.1 should be calculated. Using the formula below, the vessel should attain a value of initial GM not less than 0.5m if using an estimated displacement, or 0.35m if the displacement of the vessel is known and can be verified by the Certifying Authority.

$$GM = \frac{57.3 \times HM}{\Delta \times \theta}$$

where: HM = Heeling moment in kilogramme-metres
θ = angle of heel in degrees obtained from the test as defined in 11.4.1
Δ = the displacement of the vessel in kilogrammes, either estimated, or measured and verified by the Certifying Authority

11.4.3 For vessels carrying a combination of passengers and cargo, for which the cargo element does not exceed 1000kg (see definitions), the test defined in Section 11.4.1 should be carried out with the full complement of passengers and cargo, and additionally with passengers only. For the purposes of these tests the cargo may be assumed to retained at its normal stowage position.

In all cases, the maximum permissible weights of passengers and/or cargo derived from the tests conducted shall be recorded on the certificate. Vessel loading will be restricted by the position freeboard mark and maximum permissible weight, and thus for the purposes of this test, attention should be paid to any activity related equipment where this may be significant, e.g. diving equipment.

11.4.4 It should be demonstrated by test or by calculation that an open boat, when fully swamped, is capable of supporting its full outfit of equipment, the total number of persons for which it is to be certificated and a mass equivalent to its engine and full tank of fuel.

11.4.5 Vessels complying with ISO 12217 Part 1 'Small craft - Stability and buoyancy assessment and categorisation - Non-sailing boats of hull length greater than or equal to 6 metres', assessed using any Option of Section 5.3 – `Test and calculations to be applied', may as an alternative, after verification of the stability assessment by the Certifying Authority, be assigned an area of operation in accordance with Section 11.3.9.

11A.5 Inflatable Boats or Boats Fitted With a Buoyant Collar

These requirements apply to an inflatable boat, rigid inflatable boat or those vessels with a buoyant collar. Unless a boat to which the Code applies is completely in accordance with a standard production type, for which the Certifying Authority is provided with a certificate of approval for the tests which are detailed below, the tests required to be carried out on a boat floating in still water are shown below. In all cases, the maximum permissible weights of passengers and/or cargo derived from the tests conducted shall be recorded on the certificate. Vessel loading will be restricted by the position freeboard mark and maximum permissible

weight, and thus for the purposes of this test, attention should be paid to any activity related equipment where this may be significant, e.g. diving equipment.

11.5.1 Stability Tests

11.5.1.1 The tests should be carried out with all the vessels' equipment, fuel, cargo, activity related equipment (e.g. diving equipment) and number of persons for which it is to be certificated, on-board. The engine, equipment and cargo may be replaced by an equivalent mass. Each person may be substituted by a mass of 75kg for the purpose of the tests:-

The maximum number of persons for which a boat is certified should be crowded to one side, with half this number seated on the buoyancy tube. This procedure should be repeated with the persons seated on the other side and at each end of the inflatable boat, rigid inflatable boat or vessel with a buoyant collar. For the purposes of these tests the cargo, or equivalent alternative mass, should be retained at its normal stowage position. In each case the freeboard to the top of the buoyancy tube should be recorded. Under these conditions the freeboard should be positive around the entire periphery of the boat.

11.5.2 Damage tests – inflatable boats

11.5.2.1 The tests should be carried out with all the vessels' equipment, fuel, cargo, activity related equipment (e.g. diving equipment) and number of persons for which it is to be certificated, on-board. The engine, equipment and cargo may be replaced by an equivalent mass. Each person may be substituted by a mass of 75kg for the purpose of the tests:-

The tests will be successful if, for each condition of simulated damage, the persons for which the inflatable boat or rigid inflatable boat is to be certificated are supported within the inflatable boat or rigid inflatable. The conditions are:-

.1 with forward buoyancy compartment deflated (both sides if appropriate);

.2 with the entire buoyancy, from the centreline at the stem to the transom, on one side of the inflatable boat or rigid inflatable boat deflated.

11.5.2.2 Purely inflatable boats failing to meet Section 11.5.2.1 may be specially considered by the Certifying Authority, taking into account operational service limitations.

11.5.3 Swamp test

It should be demonstrated that, when fully swamped, the vessel is capable of supporting its full outfit of equipment, the total number of persons and equivalent mass of cargo for which it is to be certificated, and a mass equivalent to its engine and full tank of fuel.

11.5.3.2 In the swamped condition the inflatable boat, rigid inflatable boat or vessel with a buoyant collar, should not be seriously deformed.

11.5.3.3 An adequate means of draining the boat should be demonstrated at the conclusion of this test.

11.5.4 Person recovery stability test

Two persons should recover a third person from the water into the vessel. The third person should feign to be unconscious and be back towards the inflatable boat or rigid inflatable boat so as not to assist the rescuers. Each person involved should wear an approved lifejacket. The vessel should remain stable throughout the operation, and should not capsize.

11A.6 Vessel Fitted with a Deck Crane or other Lifting Device

11.6.1 For the purposes of Section 11 only, a lifting device does not include a person retrieval system, the vessel's own anchor handling equipment, or davits for tenders, where judged by the Certifying Authority not to have a detrimental effect on the stability of the vessel.

11.6.2 Reference should be made to Section 25.4 for requirements for safety standards other than stability for a vessel fitted with a deck crane or other lifting device.

11.6.3 A vessel fitted with a deck crane or other lifting device should be a decked vessel (or assessed in accordance with Section 4.1.3.2) and comply with the general requirements of Section 11, which are appropriate to it.

In addition, with the vessel in the worst anticipated service condition for lifting operations, compliance with the following criteria should be demonstrated by a practical test or by calculations.

.1 With the crane or other lifting device operating at its maximum load moment, with respect to the vessel, the angle of heel generally should not exceed 7 degrees or that angle of heel which results in a freeboard to deck edge anywhere on the periphery of the vessel of 250mm, whichever is the lesser angle. (Consideration should be given to the operating performance of cranes or other lifting devices of the variable load-radius type and the load moment with respect to the vessel for lifting devices situated off centreline).

.2 When an angle of heel greater than 7 degrees but not exceeding 10 degrees occurs, the Certifying Authority may accept the lifting condition providing that all the following criteria are satisfied when the crane or other lifting device is operating at its maximum load moment:-

.1 the range of stability from the angle of static equilibrium to downflooding or angle of vanishing stability, whichever is the lesser, is equal to or greater than 20 degrees;

.2 the area under the curve of residual righting lever, up to 40 degrees from the angle of static equilibrium or the downflooding angle, if this is less than 40 degrees, is equal to or greater than 0.1 metre-radians; and

.3 the minimum freeboard to deck edge fore and aft throughout the lifting operations should not be less than half the assigned freeboard to deck edge at amidships. For vessels with less than 1000mm assigned freeboard to deck edge amidships the freeboard fore or aft should not be less than 500mm.

.4 The freeboard to deck edge anywhere on the periphery of the vessel is at least 250mm.

11.6.4 Information and instructions to the skipper on vessel safety when using a deck crane or other lifting device should be included in the Stability Information Booklet. The information and instructions should include:-

.1 the maximum permitted load and outreach which satisfy the requirements of Section 11.6.2, or the Safe Working Load (SWL), whichever is the lesser (operating performance data for a crane or other lifting device of variable load-radius type should be included as appropriate);

.2 details of all openings leading below deck which should be secured weathertight; and

.3 the need for all personnel to be above deck before lifting operations commence.

11.6.5 Requirements for a lifting system which incorporates counterbalance weight(s) or vessels that cannot comply with the requirements of Section 11.6.2 but is deemed to have adequate residual stability should be specially considered by the MCA.

11A.7 Vessel Engaged in Towing

Reference should be made to Section 25.2 for requirements for safety standards other than stability for a vessel engaged in towing.

11.7.2 Generally, a vessel engaged in towing should be a decked vessel (or assessed in accordance with Section 4.1.3.2) and comply with the general requirements of Section 11 which are appropriate to the vessel.

11.7.3 The danger to safety of deck edge immersion makes an open boat (other than those assessed in accordance with Section 4.1.3.2) unsuitable for towing other vessels or floating objects.

11A.8 Sailing Monohull Vessels Complying with Section 11.1.1.2

11.8.1 The centre of gravity (KG) of a vessel should be established by an inclining experiment and curves of statical stability (GZ curve) for the loaded departure 100% consumables and loaded arrival 10% consumables should be produced.

Notes:- 1. The above condition may include a margin for growth up to 5% of the lightweight, at the discretion of the Certifying Authority, with the VCG positioned at the upper deck amidships.

2. Buoyant structures intended to increase the range of positive stability should not be provided by fixtures to either a mast, rigging, or superstructure.

3. For standard production series built vessels, the statical stability (GZ) may be derived from an inclining experiment conducted on another vessel of the series, subject to corrections for differences in outfit, to the satisfaction of the Certifying Authority.

4. Maximum free surface moments should be included within the loaded departure condition, and as a minimum, factored according to tank percentage fill for the loaded arrival condition.

11.8.2 The GZ curves required by Section 11.8.1 should have a positive range of not less than the angle determined by the formula in the table in Section 11.9.5, or 90°, whichever is the greater.

11.8.3 In addition to the requirements of Section 11.8.2, the angle of steady heel obtained from the intersection of a "derived wind heeling lever" curve with the GZ curves referred to in Section 11.8.1 above should be greater than 15 degrees (see Figure 11.1).

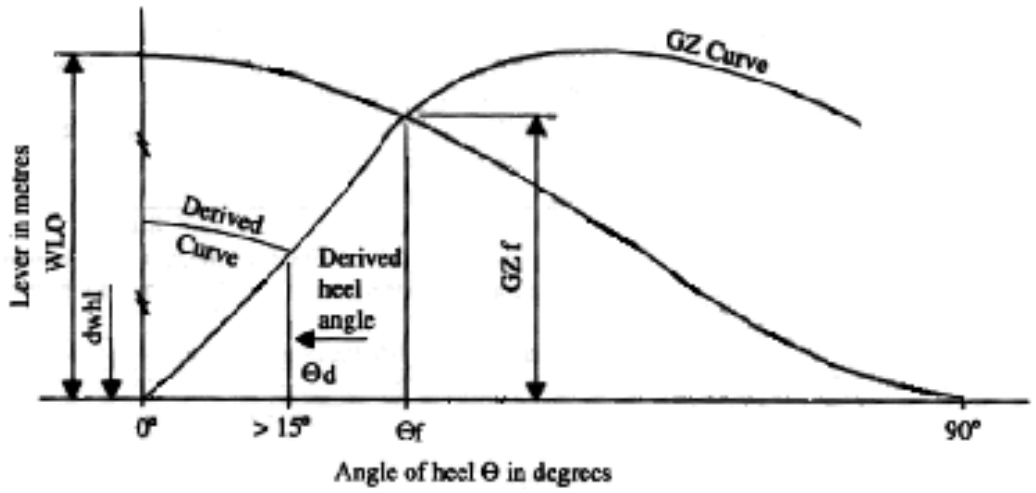
In Figure 1

`DWHL' = the "derived wind heeling lever" at any angle θ degrees

$$= 0.5 \times WL0 \times \cos^{1.3}\theta$$

where $WL0 = \frac{GZf}{\cos^{1.3}\theta f}$

FIGURE 11.1



Noting that, when using this method:-

WL0- is the magnitude of the actual wind heeling lever at 0 degrees which would cause the vessel to heel to the `down flooding angle' (θf) or 60 degrees whichever is least.

GZf is the lever of the vessel's GZ at the `down flooding angle' (θf) or 60 degrees whichever is least.

θd- is the angle at which the `derived wind heeling' curve intersects the GZ curve. (If θd is less than 15 degrees the vessel will be considered as having insufficient stability for the purpose of the Code).

θf- is the `critical down flooding angle' and is deemed to occur when openings having an aggregate area, in square metres, greater than:-

$$\frac{\text{vessel's displacement in tonnes}}{1500}$$ are immersed.

Moreover, it is the angle at which the lower edge of the actual opening which results in critical flooding becomes immersed. All openings regularly used for crew access and for ventilation should be considered when determining the downflooding angle. No opening regardless of size which may lead to progressive flooding should be immersed at an angle of heel of less than 40 degrees. Air pipes to tanks can, however, be disregarded.

If as a result of immersion of openings in a deckhouse a vessel cannot meet the required standard, those deckhouse openings may be ignored and the openings in the weather deck used instead to determine θf. In such cases the GZ curve should be derived without the benefit of the buoyancy of the deckhouse.
It might be noted that provided that the vessel complies with the requirements of Section 11.8.1, 11.8.2 and 11.8.3 and it is sailed with an angle of heel which is no greater than the 'derived angle of heel', it should be capable of withstanding a wind gust equal to 1.4 times the actual wind velocity (i.e. twice the actual wind pressure) without immersing the `down flooding openings', or heeling to an angle greater than 60 degrees.

11.8.4 Vessels complying with ISO 12217 Part 2 'Small craft - Stability and buoyancy assessment and categorisation - Sailing boats of hull length greater than or equal to 6 metres', assessed using Options 1 and 2 of Section 6.1 – `Requirements to be applied', may as an alternative and in lieu of 11.8.2, be assigned a permitted area of operation in accordance with section 11.9.5, provided that the righting lever curve produced for this standard, is verified and corrected in accordance with Annex 12 before performing the calculations . In this case the calculated steady heel angle required by 11.8.3 is to be reduced by 10%.

11.8.5 A Stability Information Booklet, based on the Administration's model booklet, should be submitted to and approved by the Certifying Authority and placed on-board the vessel. The booklet should include details of the maximum steady angle of heel for the worst sailing condition. The steady angle of heel is to be calculated in accordance with Section 11.8.3 or 11.8.4. The booklet should also include curves of maximum recommended steady angle of heel for the prevention of down flooding in the event of squall conditions. Details of the development of such curves are given in the Model Stability Information Booklet.

11A.9 Sailing Monohull Vessels Complying with Section 11.1.1.3

11.9.1 General

The stability of a vessel should be determined by one of the methods discussed below and its area of operation should be dependent upon the standard which it is shown to achieve.

11.9.2 Vessels without external ballast keels

Method 1

.1 The centre of gravity (KG) of a vessel should be established by an inclining experiment of statical stability (GZ curves) for the loaded departure with 100% consumables and loaded arrival 10% consumables, should be produced.

Notes:- 1. The above conditions may include a margin for growth up to 5% of the lightweight, at the discretion of the Certifying Authority, with the VCG positioned at the upper deck amidships.

2. Buoyant structures intended to increase the range of positive stability should not be provided by fixtures to either a mast, rigging, or superstructure.

3. For standard production series built vessels, the statical stability (GZ) may be derived from an inclining experiment conducted on another vessel of the series, subject to corrections for differences in outfit, to the satisfaction of the Certifying Authority.

.2 Permitted area of operation

The permitted area of operation is dependent upon a vessel's range of stability as indicated in the table in Section 11.9.5. (The range of stability is to at least 90° in all cases)

.3 For Category 6 vessels, it may be demonstrated by test or calculation, that an open sailing boat when fully swamped is capable of supporting its full outfit of equipment and the total number of persons for which it is to be certificated. Sailing dinghies (small non-decked boats generally in the range of 2.5 to 6 metres in length which are not mechanically propelled) and small un-ballasted sailing dayboats are to be capable of being righted by their crew after inversion.

Method 2

.1 By the full application verified or performed by a Certifying Authority as required, of ISO12217 Part 2 'Small craft – Stability and buoyancy assessment and categorisation – Sailing boats of hull length greater than or equal to 6 metres', in accordance with Section 11.9.5. Vessels under 6 metres in length may not be considered by this method.

.2 The permitted area of operation is dependent upon a vessel's assigned Design Category as indicated in the table in Section 11.9.5.

11.9.3 Vessels fitted with external ballast keels

The stability assessment of a vessel may be made by any one of the following methods:-

Method 1 - as for vessels without external ballast keels, see 11.9.2 above;

Method 2 - by the full application verified or performed by a Certifying Authority as required, of ISO12217 Part 2 'Small Craft – Stability and Buoyancy Assessment and Categorisation – Sailing Boats of hull length greater than or equal to 6m' in accordance with 11.9.5. Vessels under 6m in length may not be considered by this method.

Method 3 - by the `STOPS' Numeral developed by the Royal Yachting Association (RYA) and discussed in Section 11.9.4.

Notes:- For vessels fitted with one or more top-weight items, examples of which are given below, the ballast ratio should be modified as follows:-

Moments are to be taken about the vertical centre of gravity (KG) of the vessel, which is assumed to be at the waterline. The heeling moments attributed to the top-weight items are resolved, and the ballast weight is reduced, using the formula below.

$$CBW = \frac{TW \times H}{(DCB + DK/2)}$$

Noting that:-

CBW is the correction to the ballast weight

TW is the weight of the top-weight items being considered

H is the height of the vertical centre of gravity above the waterline.

DCB is the draught of the canoe body, taken by measuring the maximum draught at $^1/_8$ of the full beam from the centreline in way of the transverse section, at greatest beam.

DK is the depth of the keel, taken as the distance between the draught of the canoe body and the bottom of the keel.

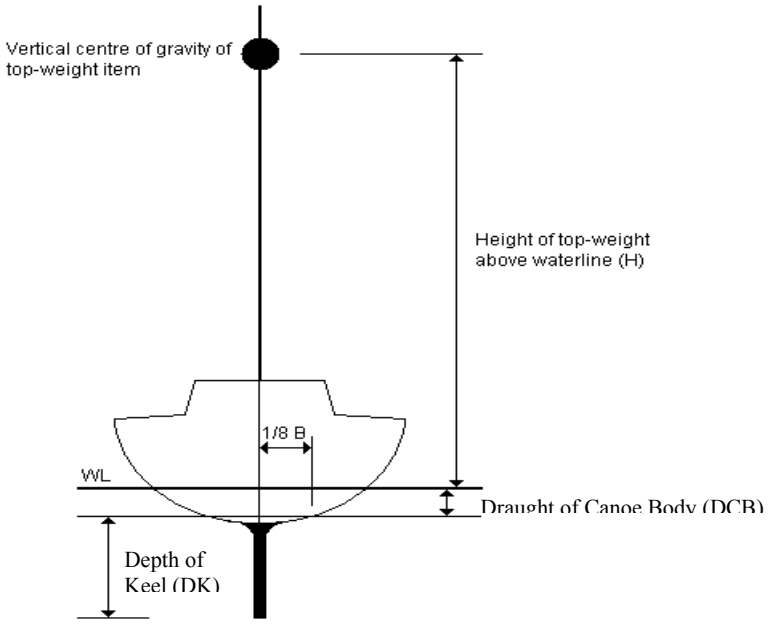


Figure 11.2

Examples of top-weight items are given below:-

roller furling headsail;

in-mast or behind-mast roller furling mainsail;

a radar antenna mounted higher than 30% of the length of the vessel above the waterline.

Ballast weight reductions are to be conducted to the satisfaction of the Certifying Authority.

.2 Permitted area of operation

The permitted area of operation is dependent upon a vessel's range of stability, STOPS Numeral, or Design Category as indicated in the table in 11.9.5.

11.9.4 Assessment using the RYA `STOPS' numeral or use of SSS numeral calculated by the Royal Ocean Racing Club.

.1 A vessel can have its area of operation based upon the RYA STOPS Numeral.

Information on the derivation of the STOPS numeral may be obtained from the Certifying Authority.

Once the STOPS Numeral has been determined, it is necessary to study the table in Section 11.9.5 to ascertain the permitted area of operation.

.2 A SSS numeral calculated by the RORC will be accepted in place of a STOPS numeral, provided that it includes a self righting factor based on an inclining experiment and shown on a valid IRC or IMS rating certificate.

11.9.5 Table showing permitted areas of operation, STOPS Numerals and Design Categories .

		Minimum Required Standard			Permitted ISO Stability Assessment Options
Permitted Area of Operation	MCA Code Category	Range of Stability	Stops Numeral	ISO 12217 Design Category	
Unrestricted	0	90+60x(24-LOA)/17	N/A	A	1
Up to 150 miles from a safe haven	1	90+60x(24-LOA)/17	N/A	A	1
Up to 60 miles from a safe haven	2	90+60x(24-LOA)/20	30	B	1
Up to 20 miles from a safe haven	3	90+60x(24-LOA)/25	20	B	1
Up to 20 miles from a safe haven in favourable weather and daylight	4	90+60x(24-LOA)/25	20	C	1 and 2
Up to 20 miles from a nominated departure point in favourable weather and daylight	5	90+60x(24-LOA)/25	20	C	1 and 2
Up to 3 miles from a nominated departure point in favourable weather and daylight	6	90+60x(24-LOA)/25	14	C	1,2,5 and 6

11A.10 Sailing Multihull Vessels

The stability of multihull sailing vessels over 6m in length should be assessed using ISO 12217 – Part 2, which includes a requirement that the vessel shall float after an inversion without the benefit of any trapped air pockets other than dedicated air tanks or watertight compartments. Vessels under 6m are to be specially considered by the Administration.

11.10.1 A multihull vessel should be provided with a Stability Information Booklet based on the Administration's model booklet, giving details of the maximum advised mean apparent windspeeds for each expected combination of sails that may be set, as derived from ISO 12217 – 'Part 2 - Small craft - Sailing and buoyancy assessment and Categorisation sailing boats of hull length greater than or equal to 6 metres'. These wind speeds should be presented in knots, and be accompanied by the note, "In following winds, the tabulated safe wind speed for each sail combination should be reduced by the boat speed".

11.10.2 For the purposes of the application of ISO 12217 to coded vessels, the maximum safe wind speed shall be taken as the lesser of the values calculated by the formulae below, instead of those given in G.1 of the ISO standard. Both pitch and roll moments shall be calculated for all vessels.

$$v_W = 1.5\sqrt{\frac{LM_R}{A'_S\, h\cos\phi_R + A_D b}}$$

or

$$v_W = 1.5\sqrt{\frac{LM_P}{A'_S\, h\cos\phi_P + A_D b}}$$

where

v_W = *maximum safe apparent wind speed (knots)*
LM_R = *limiting restoring moment in roll*
LM_P = *limiting restoring moment in pitch*
A'_S = *area of sails set including mast and boom (square metres)*
h = *height of centroid of sails and spars above the waterline*
ϕ_R = *heel angle at maximum roll righting moment (in conjunction with LM_R)*
ϕ_P = *limiting pitch angle used when calculating LM_P (in conjunction with LM_P)*
A_D = *plan area of the hulls and deck (square metres)*
b = *distance from centroid of A_D to the centreline of the leeward hull*

Derivation of the maximum advised apparent windspeeds, and the Stability Information Booklet, is to be submitted to the Certifying Authority for approval. Evidence should be provided as to the derivation of the stability data.

The permitted area of operation should be determined with reference to the following table, including the maximum safe apparent wind speed with no sails set (bare poles condition):-

Permitted Area of Operation	MCA Code Category	ISO 12217 Design Category	"Bare Poles" safe wind speed should exceed
Unrestricted	0	A	36 knots
Up to 150 miles from a safe haven	1	A	36 knots
Up to 60 miles from a safe haven	2	B	32 knots
Up to 20 miles from a safe haven	3	B	28 knots
Up to 20 miles from a safe haven in favourable weather and daylight	4	C	25 knots
Up to 20 miles from a nominated departure point in favourable weather and daylight	5	C	25 knots
Up to 3 miles from a nominated departure point in favourable weather and daylight	6	C	25 knots

11.10.3 Trimarans operating in Areas 0 or 1 shall have sidehulls each having a total buoyant volume of at least 200% of the displacement volume in the fully loaded condition. Trimarans operating in Area 2 shall have sidehulls each having a total buoyant volume of at least 150% of the displacement volume in the fully loaded condition.

11A.11 Approval of Intact and Damage Stability

11.11.1 A vessel not required to have an approved Stability Information Booklet.
A vessel for which stability is assessed on the basis of practical tests or simplified methods, defined in Section 11 of the Code, conducted by a competent person(s), should be approved by the Certifying Authority. In order to give approval, the Certifying Authority should be satisfied that the requirements have been met, accepting the results obtained and keeping a detailed record of the procedure of the tests or calculations and the results which were accepted.

The Certifying Authority should file the details in the records retained for the vessel, and these details are to be entered on the certificate. See section 11.1.1.10 for requirements for the carriage of a Stability Guidance Booklet.

11.11.2 A vessel required to have an approved Stability Information Booklet.

11.11.2.1 The owner(s) should be responsible for the inclining test of a vessel to be undertaken by competent persons and for the calculation of the lightship particulars, which are used in the stability calculations.

11.11.2.2 A person competent to the satisfaction of the Certifying Authority should witness the inclining test of a vessel and be satisfied as to conditions and the manner in which the test is conducted.

11.11.2.3 The owner(s) of a vessel should be responsible for the submission of the Stability Information Booklet, based on the Administration's model booklet prepared by a competent person(s), the content and form in which stability information is presented, its accuracy and its compliance with the requirements of Section 11 for the standard required for the vessel. The owner(s) should submit three (3) copies of the booklet to the Certifying Authority for approval.

When satisfied with the form and content of the Stability Information Booklet (including satisfaction with the competency of the person(s) who produced the booklet, methods and procedures used for calculations, the stability standard achieved and instructions which may be given to the skipper but excluding accuracy of hull form data), the Certifying Authority should stamp the booklet with an official stamp which contains the name of the Certifying Authority, the date of approval, a file (or record) reference, number of pages in the booklet and "APPROVED FORM AND CONTENT".

Two (2) copies of the approved booklet should be returned to the owner(s). The owners should be instructed to confirm that one (1) copy has been placed on the vessel and will be retained on the vessel at all times for use by the skipper. The second booklet is for the record of the owner(s).

The Certifying Authority should retain the third copy of the approved booklet in the records kept for the vessel.

11.11.3 A vessel required to have approved damage stability information

11.11.3.1 The owner(s) of a vessel should be responsible for the submission of the damage stability calculations prepared by a competent person(s), their accuracy (including methods and procedures used for calculations) and compliance with the requirements of Section 11.2.

The owner(s) should submit two (2) copies of the calculations to the Certifying Authority for approval.

11.11.3.2 The Certifying Authority should approve the results of the damage stability cases provided that the results meet the standard defined in Section 11.2.

Approval (of the results but not the accuracy of the calculations) should be given in a formal letter from the Certifying Authority to the owner(s) and a copy of the calculations returned marked with the name of the Certifying Authority, the date and "RESULTS APPROVED".

11.11.4 Guidance on stability assessment

It should be noted that the Certifying Authority may require a full stability analysis for a vessel which has been modified from the original design, particularly if the freeboard has been significantly reduced or the modification has involved the addition of, for example, a mast-furled main sail, a roller-reefing headsail, a radar antenna or any other item of equipment which may have caused the position of the vertical centre of gravity to be situated at a higher level than that intended by the designer.

11B STABILITY – CONVENTION VESSELS

11B.1 General

11.1.1 This section deals with the standards for both intact and damaged stability.

11.1.2 An intact stability standard proposed for assessment of a vessel type not covered by the standards defined in the Code should be submitted to the Administration for approval at the earliest opportunity.

11.1.3 If used, permanent ballast should be located in accordance with a plan approved by the Administration and in a manner that prevents shifting of position. Permanent ballast should not be removed from the ship or relocated within the ship without the approval of the Administration. Permanent ballast particulars should be noted in the ship's stability booklet. Attention should be paid to local or global hull strength requirements from the fitting of additional ballast.

11B.2 Intact Stability Standards

11.2.1 Motor vessels

11.2.1.1 Monohull Vessels

The curves of statical stability for seagoing conditions should meet the following criteria:-

.1 the area under the righting lever curve (GZ curve) should not be less than 0.055 metre-radians up to 30^o angle of heel and not less than 0.09 metre-radians up to 40^o angle of heel, or the angle of downflooding, if this angle is less;

.2 the area under the GZ curve between the angles of heel of 30^o and 40^o or between 30^o and the angle of downflooding if this is less than 40^o, should not be less than 0.03 metre-radians;

.3 the righting lever (GZ) should be at least 0.20 metres at an angle of heel equal to or greater than 30^o;

.4 the maximum GZ should occur at an angle of heel of preferably exceeding 30^o but not less than 25^o;

.5 after correction for free surface effects, the initial metacentric height (GM) should not be less than 0.15 metres; and

.6 In the event that the vessels intact stability standard fails to comply with the criteria defined in .1 to .5 the Administration may be consulted for the purpose of specifying alternative but equivalent criteria.

11.2.1.2 Monohull Vessels operating as Short Range Yachts

Where Short Range Yachts are unable to meet the criteria above, the following criteria may be used:-

.1 the area under the righting lever curve (GZ curve) should not be less than 0.07 metre-radians up to 15^o angle of heel, when maximum GZ occurs at 15°, and 0.055 metre-radians up to 30^o angle of heel, when maximum GZ occurs at 30° or above. Where the maximum GZ occurs at angles of between 15° and 30°, the corresponding area under the GZ curve, A_{req} should be taken as follows:-

$$A_{req} = 0.055 + 0.001(30° - \theta_{max}) \quad \text{metre-radians}$$

where θ_{max} is the angle of heel in degrees where the GZ curve reaches its maximum.

.2 the area under the GZ curve between the angles of heel of 30^o and 40^o or between 30^o and the angle of downflooding if this is less than 40^o, should not be less than 0.03 metre-radians;

.3 the righting lever (GZ) should be at least 0.20 metres at an angle of heel equal to or greater than 30^o;

.4 the maximum GZ should occur at an angle of heel not less than 15°;

.5 after correction for free surface effects, the initial metacentric height (GM) should not be less than 0.15 metres.

11.2.1.3 Multi-hulls

The curves of statical stability for seagoing conditions should meet the following criteria:-

.1 the area under the righting lever curve (GZ curve) should not be less than 0.075 metre-radians up to an angle of 20^o when the maximum righting lever (GZ) occurs at 20^o and, not less than 0.055 metre-radians up to an angle of 30^o when the maximum righting lever (GZ) occurs at 30^o or above. When the maximum GZ occurs at angles between 20^o and 30^o the corresponding area under the GZ curve, A_{req} should be taken as follows:-

$$A_{req} = \{0.055 + 0.002(30 - \theta_{max}) \text{ metre radians;}$$

where θ_{max} is the angle of heel in degrees where the GZ curve reaches its maximum.

.2 the area under the GZ curve between the angles of heel of 30^o and 40^o or between 30^o and the angle of downflooding if this is less than 40^o, should not be less than 0.03 metre-radians;

.3 the righting lever (GZ) should be at least 0.20 metres at an angle of heel where it reaches its maximum;

.4 the maximum GZ should occur at an angle of heel not less than 20^o;

.5 after correction for free surface effects, the initial metacentric height (GM) should not be less than 0.15 metres; and

.6 if the maximum righting lever (GZ) occurs at an angle of less than 20^o approval of the stability should be considered by the Administration as a special case.

11.2.1.4 For the purpose of assessing whether the stability criteria are met, GZ curves should be produced for the loading conditions applicable to the operation of the vessel.

11.2.1.5 Superstructures.

11.2.1.5.1The buoyancy of enclosed superstructures complying with regulation 3(10)(b) of the ICLL may be taken into account when producing GZ curves.

11.2.1.5.2Superstructures, the doors of which do not comply with the requirements of regulation 12 of ICLL , should not be taken into account.

11.2.1.6 High Speed Vessels

In addition to the criteria above, designers and builders should address the following hazards which are known to effect vessels operating in planing modes or those achieving relatively high speeds:-

.1 directional instability, often coupled to roll and pitch instabilities;

.2 bow diving of planing vessels due to dynamic loss of longitudinal stability in calm seas;

.3 reduction in transverse stability with increasing speed in monohulls;

.4 porpoising of planing monohulls being coupled with pitch and heave oscillations;

.5 generation of capsizing moments due to immersion of chines in planing monohulls (chine tripping).

11.2.2 Sailing vessels

11.2.2.1 Monohulls

.1 Curves of statical stability (GZ curves) for at least the Loaded Departure with 100% consumables and the Loaded Arrival with 10% consumables should be produced.

.2 The GZ curves required by .1 should have a positive range of not less than 90^o. For vessels of more than 45m, a range of less than 90^o may be considered but may be subject to agreed operational criteria .

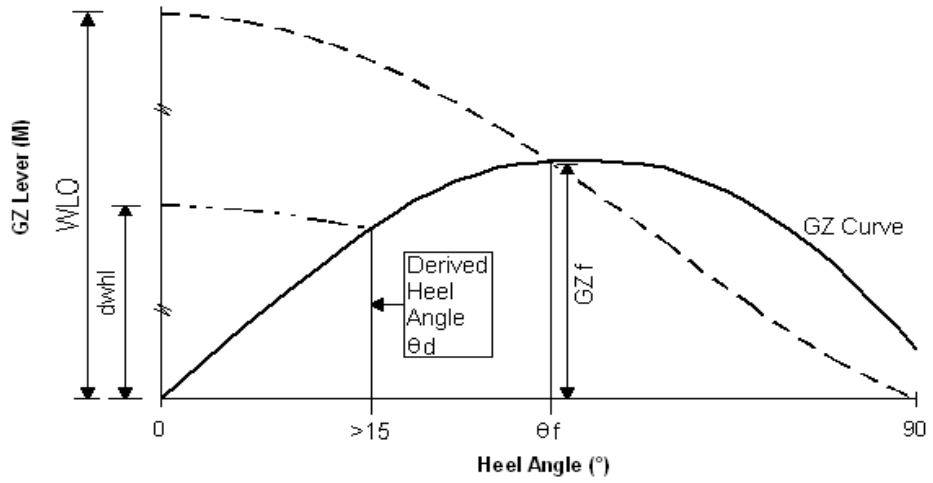
.3 In addition to the requirements of .2, the angle of steady heel should be greater than 15 degrees (see figure). The angle of steady heel is obtained from the intersection of a "derived wind heeling lever" curve with the GZ curve required by .1.

In the figure:-

'dwhl' = the "derived wind heeling lever" at any angle θ°

= 0.5 x WLO x $Cos^{1\cdot3}\theta$

where WLO = $\frac{GZ_f}{Cos^{1.3}\theta_f}$



Noting that:-

WLO - is the magnitude of the actual wind heeling lever at 0° which would cause the vessel to heel to the 'down flooding angle' θ_f or 60° whichever is least.

GZ_f is the lever of the vessel's GZ at the down flooding angle (θ_f) or 60° whichever is least.

θ_d - is the angle at which the 'derived wind heeling' curve intersects the GZ curve. (If θ_d is less than 15° the vessel will be considered as having insufficient stability for the purpose of the Code).

θ_f - the 'down-flooding angle' is the angle of heel causing immersion of the lower edge of openings having an aggregate area, in square metres, greater than:-

$\frac{\Delta}{1500}$ where Δ = vessels displacement in tonnes

All regularly used openings for access and for ventilation should be considered when determining the downflooding angle. No opening regardless of size which may lead to progressive flooding should be immersed at an angle of heel of less than 40°. Air pipes to tanks can, however, be disregarded.

If as a result of immersion of openings in a superstructure a vessel cannot meet the required standard those superstructure openings may be ignored and the openings in the weather deck used instead to determine θ_f. In such cases the GZ curve should be derived without the benefit of the buoyancy of the superstructure.

It might be noted that provided the vessel complies with the requirements of 11.2.2.1.1, 11.2.2.1.2 and 11.2.2.1.3 and is sailed with an angle of heel which is no greater than the 'derived angle of heel', it should be capable of withstanding a wind gust equal to 1.4 times the actual wind velocity (i.e. twice the actual wind pressure) without immersing the 'down flooding openings', or heeling to an angle greater than 60°.

Multi-hull

.1 Curves of statical stability in both roll and pitch shall be prepared for at least the Loaded Arrival with 10% consumables. The VCG shall be obtained by one of the three methods listed below:-

.1 inclining of complete craft at heel in air on load cells, the VCG being calculated from the moments generated by the measured forces, or

.2 separate determination of weights of hull and rig (comprising masts and all running and standing rigging), and subsequent calculation assuming that the hull VCG is 75% of the hull depth above the bottom of the canoe body, and that the VCG of the rig is at half the length of the mast (or a weighted mean of the lengths of more than one mast), or

.3 a detailed calculation of the weight and CG position of all components of the vessel, plus a 15% margin of the resulting VCG height above the underside of canoe body.

.2 if naval architecture software is used to obtain a curve of pitch restoring moments, then the trim angle must be found for a series of longitudinal centre of gravity (LCG) positions forward of that necessary for the design waterline. The curve can then be derived as follows:

$$GZ\ in\ pitch = CG' \times \cos\left(trim\ angle\right)$$

$$trim\ angle = \tan^{-1}\left(\frac{T_{FP} - T_{AP}}{L_{BP}}\right)$$

where: CG'= shift of LCG forward of that required for design trim, measured parallel to baseline
T_{FP}= draught at forward perpendicular
T_{AP}= draught at aft perpendicular
L_{BP}= length between perpendiculars

Approximations to maximum roll or pitch moments are not acceptable.

.3 Data shall be provided to the user showing the maximum advised mean apparent wind speed appropriate to each combination of sails, such wind speeds being calculated as the lesser of the following:

$$v_W = 1.5\sqrt{\frac{LM_R}{A'_S\, h\cos\phi_R + A_D b}}$$

or

$$v_W = 1.5\sqrt{\frac{LM_P}{A'_S\, h\cos\phi_P + A_D b}}$$

where:

v_W = maximum advised apparent wind speed (knots)

LM_R = maximum restoring moment in roll (N-m)

LM_P = limiting restoring moment in pitch (N-m), defined as the pitch restoring moment at the least angle of the following:

a) angle of maximum pitch restoring moment, or
b) angle at which foredeck is immersed
c) 10° from design trim

A'_S = area of sails set including mast and boom (square metres)

h = height of combined centre of effort of sails and spars above the waterline

ϕ_R = heel angle at maximum roll righting moment (in conjunction with LM_R)

ϕ_P = limiting pitch angle used when calculating LM_P (in conjunction with LM_P)

A_D = plan area of the hulls and deck (square metres)

b = distance from centroid of A_D to the centreline of the leeward hull

This data shall be accompanied by the note:

In following winds, the tabulated safe wind speed for each sail combination should be reduced by the boat speed.

.4 If the maximum safe wind speed under full fore-and-aft sail is less than 27 knots, it shall be demonstrated by calculation using annex D of ISO 12217-2 (2002) that, when inverted and/or fully flooded, the volume of buoyancy, expressed in cubic metres (m3), in the hull, fittings and equipment is greater than:

1.2 x (fully loaded mass in tonnes)

thus ensuring that it is sufficient to support the mass of the fully loaded vessel by a margin. Allowance for trapped bubbles of air (apart from dedicated air tanks and watertight compartments) shall not be included.

.5 The maximum safe wind speed with no sails set calculated in accordance with .3 above should exceed 36 knots. For Short Range Yachts this wind speed should exceed 32 knots

.6 Trimarans used for unrestricted operations should have sidehulls each having a total buoyant volume of at least 150% of the displacement volume in the fully loaded condition.

.7 The stability information booklet shall include information and guidance on:

.1 the stability hazards to which these craft are vulnerable, including the risk of capsize in roll and/or pitch;
.2 the importance of complying with the maximum advised apparent wind speed information supplied;
.3 the need to reduce the tabulated safe wind speeds by the vessel speed in following winds;
.4 the choice of sails to be set with respect to the prevailing wind strength, relative wind direction, and sea state;
.5 the precautions to be taken when altering course from following to a beam wind.

.8 In vessels required to demonstrate the ability to float after inversion (according to .3 above), an emergency escape hatch shall be fitted to each main inhabited watertight compartment such that it is above both upright and inverted waterlines.

11B.3 Damaged Stability

The following requirements are applicable to all vessels, other than those operating as Short Range Yachts. It should be noted that compliance with the damage stability criteria is not required for vessels that obtain full compliance with the ICLL conditions of assignment.

11.3.1 The watertight bulkheads of the vessel should be so arranged that minor hull damage that results in the free flooding of any one compartment, will cause the vessel to float at a waterline which, at any point, is not less than 75mm below the weather deck, or bulkhead deck if not concurrent.

11.3.2 Minor damage should be assumed to occur anywhere in the length of the vessel, but not on a watertight bulkhead.

11.3.3 Standard permeabilities should be used in this assessment, as follows:-

Space	Percentage Permeability
Stores	60
Stores but not a substantial quantity thereof	95
Accommodation	95
Machinery	85

11.3.4 In the damaged condition, considered in 11.3.1, the residual stability should be such that any angle of equilibrium does not exceed 7° from the upright, the resulting righting lever curve has a range to the downflooding angle of at least 15° beyond any angle of equilibrium, the maximum righting lever within that range is not less than 100mm and the area under the curve is not less than 0.015 metre radians.

11.3.5 A vessel of 85 metres and above should meet a SOLAS 1-compartment standard of subdivision, calculated using the deterministic damage stability methodology.

11.3.6 Whilst short range yachts are not required to meet the damage stability criteria defined above, ultimate survivability after minor damage or flooding is recommended.

11B.4 Elements of Stability

11.4.1 Unless otherwise specified, the lightship weight, vertical centre of gravity (KG) and longitudinal centre of gravity (LCG) of a vessel should be determined from the results of an inclining experiment.

11.4.2 An inclining experiment should be conducted in accordance with a detailed standard which is approved by the Administration and, in the presence of an authorised surveyor.

11.4.3 The report of the inclining experiment and the lightship particulars derived should be approved by the Administration prior to its use in stability calculations.

At the discretion of the owner(s)/managing agent(s) and prior to approval of the lightship particulars by the Administration, a margin for safety may be applied to the lightship weight and KG calculated after the inclining experiment. Such a margin should be clearly identified and recorded in the stability booklet.

A formal record should be kept in the stability booklet of alterations or modifications to the vessel for which the effects on lightship weight and vertical centres of gravity are offset against of the margin.

11.4.4 When sister vessels are built at the same shipyard, the Administration may accept a lightweight check on subsequent vessels to corroborate the results of the inclining experiment conducted on the lead vessel of the class.

11B.5 Stability Documents

11.5.1 A vessel should be provided with a stability information booklet for the Master, that is to be approved by the Administration.

11.5.2 The content, form and presentation of information contained in the stability information booklet should be based on the model booklet for the vessel type (motor or sailing) published by/for the Administration.

11.5.3 A vessel with previously approved stability information which undergoes a major refit or alterations should be subjected to a complete reassessment of stability and provided with newly approved stability information.

A major refit or major alteration is one which results in either a change in the lightship weight of 2% and above and/or the longitudinal centre of gravity of 1% and above (measured from the aft perpendicular) and/or the calculated vertical centre of gravity rises by 0.25% and above (measured from the keel).

11.5.4 Sailing vessels should have, readily available, a copy of the Curves of Maximum Steady Heel Angle to Prevent Downflooding in Squalls, or in the case of a multihull, the values of maximum advised mean apparent windspeed, for the reference of the watchkeeper. This should be a direct copy taken from that contained in the approved stability booklet.

11.5.5 The overall sail area and spar weights and dimensions should be as documented in the vessel's stability information booklet. Any rigging modifications that increase the overall sail area, or the weight/dimensions of the rig aloft, must be accompanied by an approved updating of the stability information booklet.

12A. FREEBOARD AND FREEBOARD MARKING – NON CONVENTION VESSELS

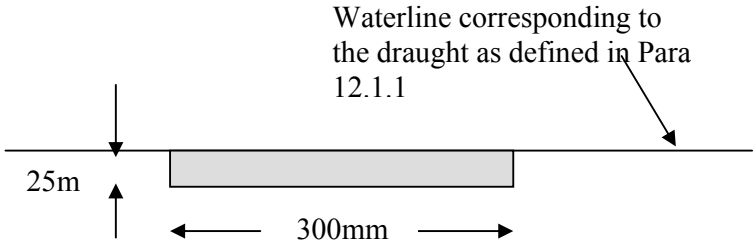
12A.1 Sailing Vessels

12.1.1 General

A sailing vessel required to be provided with an approved Stability Information Booklet, other than a vessel assessed in conjunction with Section 11.8.4, should have a freeboard mark placed on each side of the hull at the longitudinal position of the longitudinal centre of flotation for the maximum draught at which the stability of the vessel has been determined. In no case should this draught be greater than the draught corresponding to the maximum displacement for which the scantlings have been approved.

12.1.2 Freeboard mark and loading

The freeboard mark referred to above should measure 300mm in length and 25mm in depth. The marking should be permanent and painted black on a light background or in white or yellow on a dark background. The top of the mark should be positioned at the waterline corresponding to the draught given in Section 12.1.1, at the position of the longitudinal centre of flotation, as shown in the sketch below:-



A vessel should not operate in any condition which will result in its freeboard marks being totally submerged when it is at rest and upright in calm sea water.

Sailing vessels with variable ballast are to be specially. considered by the Administration

12A.2 Motor Vessels

12.2.1 General

Section 12.2.2 defines the requirements for minimum freeboard for a motor vessel whose stability has not been assessed using ISO 12217 'Small craft - Stability and buoyancy assessment and categorisation' Part 1. Section 12.2.3 defines how and when the freeboard mark, and deck line, should be applied. Requirements for an inflatable boat or boat fitted with a buoyant collar, not requiring an approved Stability Information Booklet, are contained within Section 12.2.4.

t should be noted that for vessels whose freeboard is not determined using Section 12.2.2.2, and are not provided with an approved stability information booklet, although requirements exist for minimum freeboard, such vessels are not required to be marked with a freeboard mark. In such cases the loading of the vessel is governed the maximum permissible weight, in accordance with Section 11, as identified on the vessel's certificate.

12.2.2 Minimum freeboard

The freeboard , for a motor vessel whose stability has not been assessed in conjunction with Sections 11.3.8 or 11.4.5, should be not less than that determined by the following requirements:-

12.2.2.1 Vessels which carry cargo or a combination of passengers and cargo for which the cargo element does not exceed 1000kg.

A vessel, other than an inflatable or rigid inflatable boat covered by Section 12.2.4, when fully loaded with cargo and non-cargo deadweight items certificated to be carried (each person taken as 75kg) should be upright and:-

.1 in the case of a vessel with a continuous watertight weather deck in accordance with Section 4.3.1.1, which is neither stepped or recessed or raised, have a freeboard measured down from the lowest point of the weather deck of not less than 300 mm

for vessels of 7 metres in length or under and not less than 750 mm for vessels of 18 metres in length or over. For a vessel of intermediate length the freeboard should be determined by linear interpolation;

.2 in the case of a vessel with a continuous watertight weather deck in accordance with Section 4.3.1.2, which may be stepped, recessed, or raised, have a freeboard measured down from the lowest point of the weather deck, of not less than 200 mm for vessels of 7 metres in length or under and not less than 400 mm for vessels of 18 metres in length or over. For a vessel of intermediate length the freeboard should be determined by linear interpolation. The raised portion(s) of the watertight weather deck should extend across the full breadth of the vessel and the average freeboard over the length of the vessel should comply with .1 above for a vessel with a continuous watertight weather deck;
.3 in the case of an open boat, have a clear height of side (i.e. the distance between the waterline and the lowest point of the gunwale*) of not less than 400mm for vessels 7 metres in length or under and not less than 800mm for vessels 18 metres in length or over. For a vessel of intermediate length the clear height should be determined by linear interpolation;

*(The clear height of the side should be measured to the top of the gunwale or capping or to the top of the wash strake if one is fitted above the capping.)

12.2.2.2 Vessels which carry cargo or a combination of passengers and cargo for which the cargo element exceeds 1000kg, or those that cannot comply with Section 12.2.2.1.

Freeboard should be assigned in accordance with the Merchant Shipping (Load Line) Regulations 1998.

Such vessels should have a scale of draught marks marked clearly at the bow and stern.

12.2.2.3
A vessel required to be provided with an approved Stability Information Booklet should be assigned a freeboard which corresponds to the draught of the vessel in sea water when fully loaded (each person taken as 75kg), but which in no case should be less than the freeboard required by Section 12.2.2.1 or 12.2.2.2, nor that corresponding to the scantling draught.

12.2.3 Freeboard mark and loading

12.2.3.1 A vessel assigned a freeboard in accordance with Section 12.2.2.2 should be marked with a freeboard mark in accordance with the Merchant Shipping (Load Line) Regulations 1998 and have a scale of draught marks marked clearly at the bow and stern, on both sides of the vessel. The longitudinal position of the draught marks, relative to the longitudinal datum for the hydrostatic data, should be recorded in the Stability Information Booklet, where provided.

Where it is considered that the addition of a scale of draught marks is neither practicable or meaningful, for example, due to restricted loading variations, application for special consideration should be made to the Administration.

Additionally, where the line of the deck is not immediately discernable, a vessel should be provided with a deck line. The deck line and freeboard mark should be permanent and painted on a contrasting background.

The freeboard mark shall consist of a ring 300 millimetres in outside diameter and 25 millimetres wide, intersected by a horizontal line 450 millimetres long and 25 millimetres wide the upper edge of which passes through the centre of the ring. The top of the intersecting line should be positioned at the waterline corresponding to the assigned freeboard to deck edge at amidships.

No mark should be applied for fresh water allowance.

The assigning letter marking on the bar of the ring and bar should be D on the left and T on the right when the MCA is the Certifying Authority. In the case of any other Certifying Authority, the assigning letters should be U on the left and K on the right.

12.2.3.2 The freeboard mark for a vessel required to be provided with an approved Stability Information Booklet, other than a vessel complying with Section 12.2.3.1 should be a bar of 300mm in length and 25mm in depth.
The marking should be permanent and painted black on a light background or in white or yellow on a dark background. (No assigning letter marking should be placed on the bar marking.)

The top of the mark should be positioned at the waterline corresponding to the draught referred to in Section 12.2.2.3, at amidships.

Additionally, where the line of the deck is not immediately discernable, a vessel should be provided with a deck line. The deck-line shall be marked amidships on each side of the ship so as to indicate the position of the freeboard deck. The mark need not be of contrasting colour to the surrounding hull.

Where the design of the vessel, or other circumstances, render it impracticable to mark the deck line, the Certifying Authority may direct that it be marked by reference to another fixed point as near as practicable to the position described above.

12.2.3.3 A vessel should not operate in a condition which will result in its freeboard marks being totally submerged when it is at rest and upright in calm sea water.

12.2.4 Inflatable boats and boats fitted with a buoyant collar

12.2.4.1 The freeboard of an inflatable boat or boat fitted with a buoyant collar should be not less than 300mm measured from the upper surface of the buoyancy tubes and not less than 250mm at the lowest part of the transom with all its equipment, fuel, cargo, activity related equipment (e.g. diving equipment) and the number of persons for which it is to be certificated onboard, with the boat re-trimmed as necessary to represent a normal operating condition, and with the drainage socks (if fitted) tied up.

12.2.4.2 A freeboard mark is not required. The minimum freeboards recorded during the tests of Section 12.2.4.1 and the permissible maximum weight which can be carried should be recorded on the certificate for the vessel.

12.2.4.3 For boats operating in Category 6 only, which do not meet the freeboard requirement of Section 12.2.4.1 at the transom, may still be accepted by the Certifying Authority provided it can be demonstrated that the boat is self-draining when moving ahead, and has a substantial reserve of buoyancy. The Certifying Authority should record such an acceptance in its report for the vessel (report form SCV2).

12B - FREEBOARD AND FREEBOARD MARKING – CONVENTION VESSELS

12B.1 General

12.1.1 The freeboard for the vessel and its marking should be approved by the Assigning Authority for the assignment of freeboard and issue of the International Load Line Certificate (1966).

12.1.2 Vessels should comply with ICLL for the assignment of a freeboard mark which corresponds to the deepest loading condition included in the stability information booklet for the vessel.

12.1.3 The freeboard assigned should be compatible with the strength of hull structure, intact and damage stability requirements for the vessel, and is to ensure minimum bow height requirements are met.

12.1.4 The Assigning Authority should provide the owner(s)/managing agent(s) of the vessel with a copy of the particulars of the freeboard assigned and a copy of the record of particulars relating to the conditions of assignment.

12B.2 Freeboard Mark and Loading

12.2.1 The freeboard mark applied should be positioned port and starboard at amidships in the load line length and may be an all-seasons mark. The mark should be a permanent disc and be of contrasting colour to the hull of the vessel in way of the mark.

12.2.2 The fresh water freeboard allowance should be obtained by deducting from the all-seasons freeboard assigned, the quantity

$$\frac{\Delta}{4T} \text{ millimetres}$$

where-

Δ is the displacement in salt water in tonnes at the all-seasons draught

T represents tonnes per centimetres immersion at the all seasons load waterline

Alternatively the deduction may be taken as 1/48th of the all-seasons draught of the ship at amidships.

12.2.3 A vessel should not operate in any condition which will result in its appropriate freeboard marks being submerged when it is at rest and upright in calm water.

12B.3 Datum Draught Marks

12.3.1 Datum draught marks should be provided at the bow and stern, port and starboard, and be adequate in number for assessing the condition and trim of the vessel. Such draught marks may be single datum lines.

12.3.2 The marks should be permanent and easily read but need not be of contrasting colour to the hull. The marks need not be at more than one draught at each position but should be above and within 1000mm of the deepest load waterline.

12.3.3 The draught to which marks relate should be indicated either above the mark on the hull and/or in the stability information booklet for the vessel. The position of the marks should be verified at initial placement by the Administration or the vessel's Assigning Authority.

13A LIFE-SAVING APPLIANCES – NON CONVENTION VESSELS

13.A1 General

13.1.1 All life-saving equipment must be marked in accordance with the guidelines in Marine Guidance Note MGN 105 (M+F) - Use and Fitting of Retro-reflective Material on Life-saving Appliances. See Annex 1 for extract MGN 105 (M+F) for guidelines.

13.1.2 The minimum required life-saving equipment is indicated in Table 13.1.

13A.2 Liferafts

13.2.1 Category 0:-

.1 should be provided with liferafts of such number and capacity that, in the event of any one liferaft being lost or rendered unserviceable, there is sufficient capacity remaining for all on board;

.2 the liferafts provided should be constructed to SOLAS standard, Wheelmarked or National Maritime Authority approved, have insulated floor and canopy and be equipped with a "SOLAS A pack";

.3 the liferafts should, in general, be contained in FRP containers (which may be a suitable container other than a SOLAS container) stowed on the weather deck or in an open space and should be fitted with float free arrangements (hydrostatic release units) so that the liferafts float free and inflate automatically;

.4 stowage and release mechanisms other than .3 above will be considered when they can be demonstrated, to the satisfaction of the Administration, to give an equivalent level of safety.

13.2.2 Category 1:-

.1 the liferaft requirements are as Section 13.2.1 except that, the liferaft need not have an insulated floor or insulated canopy where the vessel operates exclusively in waters having a temperature of 10°C or higher (see notes). The certification shall clearly show this limitation.

.2 where the vessel is certificated to carry less than 16 persons, the liferaft requirement may be satisfied by a single liferaft. The liferaft capacity should accommodate at least the total number of persons on board.

.3 Existing vessels using ORC liferafts (ISAF OSR Appendix A Part 1), manufactured before the date of this Code coming into force are not required to upgrade that equipment until the end of its serviceable life. This is also applicable to vessels where the liferaft is supplied on a hired basis. Such liferafts are to be serviced annually at a service station approved by the manufacturer.

13.2.3 Categories 2, 3, 4, 5 & 6:-

.1 should be provided with liferaft capacity to accommodate at least the total number of persons on board;

.2 the liferaft(s) provided should be either:-

i) in accordance with Section 13.2.1 (.2) except that the liferaft(s) should be equipped with “SOLAS B PACK” ;or

ii) built to the International Sailing Federation (ISAF), Offshore Special Regulations (OSR) Appendix A Part 2 requirements. Liferaft(s) should be equipped to a level equivalent to that of a "SOLAS B PACK". This may, where necessary, include a "grab bag" to supplement the equipment integral to the liferaft.

.3 Liferafts carried in vessels which operate in Categories 2 and 3 outside a National Maritime Authority Search and Rescue Region, where the sea temperature is less than 10°C, shall have an insulated floor and insulated canopy. (See notes).

.4 Liferafts should be carried either:-

i) in approved FRP containers stowed on the weather deck or in an open space, and fitted with float free arrangements so that the liferafts float free and inflate automatically; or

ii) in FRP containers or valise stowed in readily accessible and dedicated weathertight lockers opening directly to the weather deck.

.5 Existing vessels using ORC liferafts (ISAF OSR Appendix A Part 1) manufactured before the date of the this Code coming into force are not required to upgrade that equipment until the end of its serviceable life. This is also applicable to vessels where the liferaft is supplied on a hired basis. Such liferafts are to be serviced annually at a service station approved by the manufacturer.

.6 Vessels operating in Category 6 only, may utilise open reversible liferafts, constructed to SOLAS standard, Wheelmarked or National Maritime Authority approved. Liferaft(s) should be equipped to a level equivalent to a "DTLR E pack". This may, where necessary, include a "grab bag" to supplement the equipment integral to the liferaft.

13.2.4 All liferafts, other than those covered in 13.2.2.3 or 13.2.3.5, should be serviced at a service station approved by the manufacturer and at the manufacturers recommended intervals, however where the liferaft(s) are stored in valises this should be at least annually.

13.2.5 Inflatable liferaft hydrostatic release units (other than the types which have a date limited life and are test fired prior to disposal) should be serviced annually at a service station approved by the manufacturer.

13.2.6 Liferafts provided on sailing multihull vessels should be located so that they are accessible when the vessel is either upright or after an inversion.

Notes: Sea temperature data may be found in sources such as the Admiralty Pilot for a given sea area and period.

To facilitate rapid abandonment in an emergency where a 'grab bag' is provided it should be in an accessible position known to all on board.

13A.3 Lifebuoys

13.3.1 Lifebuoys should be marked with the vessel's name and one other means of identification, e.g. Port of Choice, home port, etc.

13.3.2 Vessels certified to operate in Categories 4, 5 & 6 need not carry lifebuoys fitted with lights.

13.3.3 Buoyant lines, where fitted, should not be less than 18 metres in length.

13.3.4 Where light-weight lifebuoys (e.g. horseshoe type) are used, if not fitted with a buoyant line, they shall be fitted with a drogue (the drogue is required to prevent the lifebuoy being blown across the sea surface at high speed).

13.3.5 For sailing vessels, the Dan-buoy should be attached to one of the lifebuoys and where applicable, a light.

13A.4 Lifejackets

13.4.1 Lifejackets should be National Maritime Authority or MED approved ("Wheelmarked") or should comply with BS EN 396 of 150N or BS EN 399 of 275N or equivalent ISO/CEN standard.

13.4.2 Lifejackets that comply with BS 3595, and with a current servicing certificate where applicable, may continue to be used where already fitted on a vessel at the time of the Code coming into force.

13.4.3 All lifejackets should be fitted with a whistle, retro-reflective materials and, if operating in Categories 0, 1, 2 or 3, a light.

13.4.4 If the lifejackets are the inflatable type, an additional 10% or 2, whichever is the greater, should be provided.

13.4.5 Inflatable lifejackets for new vessels and new inflatable lifejackets for existing vessels are to be of the compressed gas inflation type, with either manual or automatic inflation, and fitted with oral top up valves. On existing vessels, where orally inflated lifejackets (no compressed gas inflation) are carried, these are to be inflated at all times when worn on deck, and should be replaced with compressed gas inflatable lifejackets, fitted with oral top up valves, at the end of their service life.

13.4.6 Compressed gas inflatable lifejackets should be serviced within one month either side of the Compliance, Renewal and Intermediate examination. In the intervening years they are to be examined annually to the manufacturer's recommendation. Certification/declaration of servicing must be available for inspection by the Certifying Authority/Administration. As far as is reasonable and practicable, visual examinations should be carried out weekly by the owner/managing agent to determine whether they are safe to use.

13.4.7 A suitable lifejacket should be provided for each person on board under 32 kilogrammes.

13.4.8 It is strongly recommended that no more than two different types of lifejacket are permitted on any vessel, to limit any confusion in use.

13A.5 Thermal Protective Aids

13.5.1 TPAs may be stowed in the 'grab bag'

13.5.2 When immersion suits are provided for all onboard, as part of the vessel's equipment, only 2 TPAs need to be provided for the use of injured persons.

.1 Immersion suits may be of the non insulated type.

.2 Immersion suits are to be compatible with the lifejackets provided.

.3 Immersion suits may be provided to satisfy the personnel clothing requirements of Section 22.9.

13.5.3 Vessels operating in Category 6 between 1st November and 31st March, using open reversible liferaft(s) in accordance with Section 13.2.3.6, should carry TPAs for all persons on board. Vessels operating in Category 6 outside this period or those fitted with a canopied liferaft need not carry any TPAs.

13A.6 Portable VHF

Reference should be made to Section 16 Table 16.1.

13A.7 406MHz or Inmarsat E EPIRB

13.7.1 The 406MHz or Inmarsat E EPIRB should be installed in an easily accessible position ready to be manually released, capable of being placed in a liferaft, and capable of floating free and automatic activation if the vessel sinks.

13.7.2 Where compliance with Section 13.7.1 is not practicable and the vessel carries less than 16 persons, the EPIRB may be stowed in an accessible place and be capable of being placed readily in a liferaft without being capable of floating free.

13.7.3 All EPIRBS should be maintained in accordance with the manufacturer's recommendations. Batteries should be replaced as required by a manufacturers approved service **station. Additionally, it** is a requirement that all EPIRBs are registered with the Administration.

13A.8 SART

A SART (Category 0 and 1) is not required if the EPIRB provided has a 121.5 MHz frequency transmitting capability and is of the non-float free type for placing in a liferaft.

13A.9 General/Fire Alarm

The General/Fire Alarm may be a bell or Klaxon or consist of the vessel's whistle or siren providing it can be heard in all parts of the vessel.

13A.10 Pyrotechnics

Parachute flares, red hand flares, smoke signals, and other pyrotechnics should be MED approved ("Wheelmarked") or should comply with MSN 1676, "The Merchant Shipping (Life-Saving Appliances for Ships Other Than Ships of Classes III to VI(A)) Regulations 1999 , or equivalent (Note - Hand held smoke signals need not be approved to the MED or MSN 1676)

13A.11 Training Manual

13.11.1 A training and instruction manual should contain instructions and information on the life-saving appliances provided in the vessel and also contain information on the best methods of survival.

13.11.2 It may take the form of instructions from the manufacturers of the life-saving equipment provided, as a minimum, with the following explained in detail:-

.1 donning of lifejackets;

.2 boarding, launching, and clearing the survival craft from the vessel;

.3 illumination in launching areas;

.4 use of all survival equipment;

.5 use of all aids to location

.6 use of sea anchors;

.7 recovery of persons from the water;

.8 hazards of exposure and the need for warm clothing;

.9 best use of the survival craft facilities in order to survive;

.10 methods of retrieval, including the use of helicopter rescue gear (slings, baskets, stretchers), breeches-buoy and shore life-saving apparatus;

.11 instructions for emergency repair of the life-saving appliances;

.12 "Personal Survival at Sea" booklet, e.g. MCA Booklet MCA/075.

13A.12 Instruction Manual (on board maintenance)

13.12.1 The manual should contain instructions for onboard maintenance of the life-saving appliances and should include, as a minimum, the following where applicable:-

.1 a check list for use when carrying out the required inspections;

.2 maintenance and repair instructions;

.3 schedule of periodic maintenance;

.4 list of replaceable parts;

.5 list of sources for spare parts;

.6 log of records of inspection.

13.12.2 The manual may be kept ashore by the owner/managing agent in the case of an open boat.

13.12.3 Vessels operating on bare-boat charter should be provided with the manual whether an open boat or otherwise.

TABLE13A.1

LIFE-SAVING APPLIANCES

Area of Operation Category		6	5	4	3	2	1	0
m=nautical miles		<3m NDP daylight & favourable weather	<20m NDP daylight & favourable weather	<20m daylight & favourable weather	<20m	≥ 20m & < 60m	≥ 60m & < 150m	Unrestricted
Liferafts (see 13.2)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Total Number of Lifebuoys	<16 persons	2	2	2	2	2	2	2
	≥ 16 persons	4	4	4	4	4	4	4
Lifebuoy with Dan-buoy (see 13.3)	<16 persons	Sail 1 Motor 0	Sail 1 Motor 0	Sail 1 Motor 0	NA	NA	NA	NA
	≥ 16 persons	Sail 1 Motor 0	Sail 1 Motor 0	Sail 1 Motor 0	NA	NA	NA	NA
Lifebuoy with Dan-buoy and light (see 13.3)	<16 persons	NA	NA	NA	Sail 1 Motor 0	Sail 1 Motor 0	Sail 1 Motor 0	Sail 1 Motor 0
	≥ 16 persons	NA	NA	NA	Sail 1 Motor 0	Sail 1 Motor 0	Sail 1 Motor 0	Sail 1 Motor 0
Lifebuoy With light (see 13.3)	<16 persons	NA	NA	NA	Sail 0 Motor 1	Sail 0 Motor 1	Sail 0 Motor 1	Sail 0 Motor 1
	≥ 16 persons	NA	NA	NA	Sail 1 Motor 2	Sail 1 Motor 2	Sail 1 Motor 2	Sail 1 Motor 2
Lifebuoy with buoyant line (see 13.3)	<16 persons	1	1	1	1	1	1	1
	≥ 16 persons	1	1	1	1	1	1	1
Lifebuoys without attachments (see 13.3)	<16 persons	Sail 0 Motor 1	Sail 0 Motor 1	Sail 0 Motor 1	Sail 0 Motor 0	Sail 0 Motor 0	Sail 0 Motor 0	Sail 0 Motor 0
	≥ 16 persons	Sail 2 Motor 3	Sail 2 Motor 3	Sail 2 Motor 3	Sail 1 Motor 1	Sail 1 Motor 1	Sail 1 Motor 1	Sail 1 Motor 1
Additional Buoyant Line	<16 persons	0	0	0	0	0	0	0
	≥ 16 persons	1	1	1	1	1	1	1
Lifejacket (see 13.4)		100%	100%	100%	100%	100%	100%	100%
Parachute Flares		0	0	0	4	4	6	12
Red hand Flares		2	2	2	6	6	6	6
Smoke signals		2 buoyant or hand held	2 buoyant or hand held	2 buoyant or hand held	2 buoyant or hand held	2 buoyant or hand held	2 buoyant	2 buoyant
Thermal protective aids (TPA) (see 13.5)		See 13.5.3	100%	100%	100%	100%	100%	100%

Portable VHF	Required on all vessels see Section 16						
EPIRB (see 13.7)	None	None	None	None	None	1	1
SART (see 13.8)	None	None	None	None	None	1	1
Area of Operation Category	6	5	4	3	2	1	0
General Alarm ≥ 16 persons	None	None	None	None	Yes	Yes	Yes
General Alarm > 750 kW installed power	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Life-saving signals table 2 X SOLAS No.2 or 1 x SOLAS No. 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Training Manual (see 13.10)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Instructions for onboard maintenance (see 13.11)	Yes	Yes	Yes	Yes	Yes	Yes	Yes

13B LIFE-SAVING APPLIANCES – CONVENTION VESSELS

13B.1 General Requirements

13.1.1 Life-Saving Appliances should be provided in accordance with Table 1 - Life-Saving Appliances.

13.1.2 All equipment fitted should be of a type which has been accepted by the Administration as complying with IMO Lifesaving Appliances Code and IMO Resolution MSC.81(70).

13.1.3 Additional life-saving equipment which is provided should meet the requirements of
When personal safety equipment is provided for use in water sports activities, arrangements for its stowage should ensure that it will not be used mistakenly as life-saving equipment in an emergency situation.

13.1.4 All life-saving equipment carried should be fitted with retro-reflective material in accordance with the recommendations of IMO Resolution A.658(16) as amended.

13.1.5 Liferaft embarkation arrangements should comply with the following:

.1 Where the distance between the embarkation deck and the top of the liferaft buoyancy tube exceeds 1 metre with the vessel in its lightest condition, an embarkation ladder is to be provided. A means for fastening is to be provided and ladders are to be readily available for use at all times.

.2 Where the distance between the embarkation deck and the top of the liferaft buoyancy tube exceeds 4.5 metres with the vessel in its lightest condition, at least one launching appliance for launching a davit launched liferaft is to be provided on each side of the vessel.

13.1.6 Falls for launching devices are to comply with IMO Lifesaving Appliances Code. When falls are of stainless steel, they should be renewed at intervals not exceeding the service life recommended by the manufacturer, or where no service life is stated be treated as galvanised steel falls. Falls of alternative materials may be considered by the Administration.

13.1.7 Every inflatable or rigid inflatable rescue boat, inflatable boat, liferaft, inflatable and hydrostatic release unit should be serviced, at intervals not exceeding 12 months, at a service station approved by the manufacturer. Hydrostatic release units which have been approved for a service life of 2 years and which should be replaced at the end of their life, need not be serviced after 1 year.

13.1.8 Maintenance of equipment should be carried out in accordance with the instructions for onboard maintenance.

13.1.9 The stowage and installation of all life-saving appliances is to be to the satisfaction of the Administration.

13.1.10 All life-saving appliances should be in working order and be ready for immediate use at the commencement of, and at all times during, the voyage.

13.1.11 For a vessel equipped with stabiliser fins or having other projections at the sides of the hull, special consideration should be given and provisions made as necessary to avoid possible interference with the safe evacuation of the vessel in an emergency.

13.1.12 Means should be provided to prevent overboard discharge of water into survival craft.

Table 13B. 1 - LIFE-SAVING APPLIANCES

VESSEL SIZE	Short Range Vessel	All other Vessels <150 ton
LIFEBOATS (see 13.2.1)		
LIFERAFTS (see 13.2.2)	YES	YES
MANOVERBOARD RECOVERY SYSTEM (see 13.2.3.3)	YES	
RESCUE BOAT (see 13.2.3)		YES
LIFEJACKETS (see 13.2.4)	YES	YES
IMMERSION SUITS (see 13.2.5)	YES	YES
LIFEBUOYS (TOTAL)	4	4
LIFEBUOYS WITH LIGHT AND SMOKE (see 13.2.6.1)	2	2
LIFEBUOYS WITH LIGHT		
LIFEBUOYS WITH BUOYANT LINE (see 13.2.6.2)	2	2
SET OF LINE THROWING APPLIANCES (4 lines plus 4 charges)	1	1
ROCKET PARACHUTE FLARES	6	6
TWO-WAY RADIOTELEPHONE SETS	2	2
EPIRB (see 13.2.7)	1	1
SART (see 13.2.8)	1	1
GENERAL ALARM (see 13.2.9)	YES	YES
LIGHTING (see 13.2.10)	YES	YES
POSTERS AND SIGNS SHOWING SURVIVAL CRAFT AND EQUIPMENT OPERATING INSTRUCTIONS	YES	YES
TRAINING MANUAL	YES	YES
INSTRUCTIONS FOR ONBOARD MAINTENANCE	YES	YES
LIFESAVING SIGNALS AND RESCUE POSTER - SOLAS No 1 IN WHEELHOUSE (see 13.2.11)	YES	YES

13B.2 Equipment Carriage Requirements

13.2.1 Lifeboats (Not required for vessels < 85m in length)

13.2.2 Liferafts

13.2.2.1 The liferafts carried are to be stowed in GRP containers and must contain the necessary "emergency pack". For Short Range Vessels, liferafts provided may be equipped with a "SOLAS B PACK". For all other vessels, liferafts should be equipped with a "SOLAS A PACK".

13.2.2.2 Liferaft approval includes approval of their stowage, launching and float-free arrangements.

13.2.2.3 For vessels of less than 85m in length, a sufficient number of liferafts should be provided so that in the event of any one liferaft being lost or rendered unserviceable, sufficient aggregate capacity remains on either side of the vessel for all persons on board. This may be achieved by transferring liferafts from one side to the other. Where liferafts are transferable, this requirement may be met by the ability of the rafts to be transferred within 5 minutes, as below:-

Liferafts of 6 - 15 persons capacity to be carried by 2 persons
Liferafts of more than 15 persons capacity to be carried by 4 persons.

13.2.2.4 GRP containers containing liferafts should be stowed on the weatherdeck or in an open space and fitted with hydrostatic release units so that the liferafts will float free of the vessel and automatically inflate.

13.2.2.5 Liferafts may form part of an approved Marine Evacuation System (MES). A sufficient number of systems should be provided, such that In the event of any one entire system being lost or rendered unserviceable, sufficient aggregate capacity remains on either side of the vessel for all persons on board.

13.2.2.7 For vessels operating with reduced personnel aboard (e.g when off charter), attention is drawn to the dangers associated with the use of large capacity liferafts with small numbers of persons embarked.

13.2.3 Rescue Boats and Recovery of Persons from the Sea

Means should be provided for the recovery of a person from the sea to the vessel and it should be assumed that the person is unconscious or unable to assist in the rescue. This requirement is satisfied by the following sections as appropriate to the size of the vessel. If an overside boarding ladder or scrambling net is provided the ladder or net should extend from the weather deck to at least 600mm below the lowest operational waterline.

All rescue boats covered within this section are to be equipped to the requirements of the IMO Lifesaving Appliance Code Ch V/5.1.2. Additionally, rescue boats need not be capable of being launched from both sides, and means to lower the boat from within the boat is not required.

13.2.3.1 Vessels under 150 GT

Vessels under 150 GT should be provided with a rescue boat either meeting the requirements of the following:-

A boat which is not SOLAS approved but which is suitable for rescue purposes. The boat should have a capacity for not less than 4 persons, one of which should be assumed to be lying down or on a stretcher, and may be rigid, rigid inflatable or inflatable. Tubes of rigid inflatable or inflatable boats should have a minimum of 3 buoyancy compartments. The boat is to be capable of displaying a highly visible colour. If stowed in a grab bag, required equipment need not be permanently stowed in the boat.

Launching appliances should be either of an approved type or comply with the following requirements:-

The appliance should be able to launch the boat within 5 minutes. When a power operated device is fitted, it should be capable of operation either by hand or by an emergency source of power in the event of a main power failure. The routing of the emergency source of power should be considered in respect of damaged waterlines and fire. The launching appliance and its attachments should be constructed to withstand a static proof load on test of not less than 2.2 times the maximum working load. Acceptable factors of safety are 6 for wires, hooks and sheaves, and 4.5 for the remainder of the launching appliance. The appliance and its attachments should also be tested dynamically to 1.1

times the working load. It should be noted that there is no requirement to recover the rescue boat provided that the casualty and the boat's crew can be recovered on board from the boat in the water.

The design of the falls and winch system should take account of the principles of IMO Lifesaving Appliances Code Ch VI/6.1.2

Where it is proposed to use the running rigging on sailing vessels, the above requirements should also be met

13.2.3.2 Short Range Vessels

Vessels operating as Short Range Vessels should comply either comply with requirements of 13.2.3.1 or the following:-

The vessel should have sufficient mobility and manoeuvrability in a seaway to enable persons to be retrieved from the water. For assessing this ability it is not considered acceptable to retrieve persons over the stern of the vessel or adjacent to the propeller(s). The recovery location should be visible from the conning position at all times during the recovery, although this may be achieved by the use of remote controls where necessary.

The vessel should be provided with suitable equipment and/or arrangements to enable the person(s) to be recovered without further persons entering the water.

13.2.4 Lifejackets

13.2.4.1 One adult SOLAS approved lifejacket should be provided for each person onboard plus spare adult lifejackets sufficient for at least 10% of the total number of persons onboard or two, whichever is the greater. Each lifejacket should be fitted with a light and whistle.

13.2.4.2 Included in the above number of lifejackets there should be at least two SOLAS approved inflatable lifejackets for use of the crew of any rescue boat or inflatable boat carried on board.

13.2.4.3 In addition to the adult lifejackets, a sufficient number of children's lifejackets should be provided for children carried on the vessel.

13.2.5 Immersion Suits

13.2.5.1 One approved immersion suit should be provided for each person onboard.

However, these need not be provided if -

(a) Totally enclosed or partially enclosed lifeboats are fitted; or

(b) Davit launched liferafts are provided; or

(c) The vessel is operating in water of surface temperatures of 20°C or more.

In the case of a vessel which is provided with means for dry-shod emergency evacuation covered by (a) or (b), sufficient suits should be provided for use by the crew of the rescue boat (see 13.2.2).

13.2.6 Lifebuoys

13.2.6.1 Lifebuoys port and starboard provided with combined light and smoke signals should be capable of quick deployment from the navigating bridge.

13.2.6.2 The attached buoyant line required on each of two of the lifebuoys is to have a minimum length of 30 metres.

13.2.7 EPIRB

An approved EPIRB should be installed in an easily accessible position ready to be manually released, capable of being placed in a survival craft and floating free if the vessel sinks. All EPIRBs should be registered with the Administration.

13.2.8 Radar Transponders (SART)

The SART is to be stowed in an easily accessible position so that it can be rapidly placed in any survival craft. Means to be provided in order that it can be mounted in the survival craft at a height of at least 1 metre above sea level.

13.2.9 General Alarm

13.2.9.1 This alarm may consist of the ship's whistle or siren providing it can be heard in all parts of the vessel.

13.2.10 Lighting

13.2.10.1Alleyways, internal and external stairways and exits giving access to and including the muster and embarkation stations should be adequately lit.

13.2.10.2Adequate lighting is to be provided in the vicinity of survival craft, launching appliance(s) (when provided) and the overside area of sea in way of the launching position(s). The lighting should be supplied from the emergency source of power.

13.2.11 Life-saving Signals and Rescue Poster

When display space in the wheelhouse is restricted, the 2 sides of a SOLAS No.2 poster (as contained in liferaft equipment packs) may be displayed in lieu of a SOLAS No. 1 poster.

14A FIRE SAFETY – NON CONVENTION VESSELS

14A.1 General

14.1.1 The boundary of the engine space should, with special consideration given to fire flaps, be arranged to contain the fire extinguishing medium i.e. the engine space should be capable of being closed down in order that the fire extinguishing medium cannot escape. Any fans located within or feeding a machinery space should be capable of being stopped from outside the space in the event of a fire. Systems compromising automatic stopping of fans in the event of a fire should be supplemented with a manual override.

14.1.2 Where it is not practical to have a machinery space, the engine should be enclosed in a box. The box should perform the same function as the machinery space boundaries in Section 14.1.1 above.

14.1.3 Combustible materials and liquids should not be stowed in the engine space. If non-combustible materials are stowed in the engine space, they should be adequately secured against falling on machinery and cause no obstruction to access to or from the space.

14.1.4 Portlights or windows should not be fitted in the boundary of the engine space except that an observation port having a maximum diameter of 150mm may be fitted in an internal boundary bulkhead, provided that the port is of the non-opening type, the frame is constructed of steel or other equivalent material and the port is fitted with permanently attached cover with securing arrangements. Only fire rated toughened safety glass (rated A0 in accordance with the FTP Code) should be used in an observation port.

14A.2 Vessels Operating in Category 0 and 1 and in any other Category Where the Total Installed Power Exceeds 750 kW, or in any Category Carrying 16 or More Persons.

14.2.1 Steel Construction: Vessels which have the machinery space boundaries constructed of steel, require no additional fire protection. However, surfaces on the opposite side of the machinery space should only be coated with finishes which have a Class 1 surface spread of flame rating when tested in accordance with Standards Annex 13.

14.2.2 Fibre Reinforced Plastic (FRP) Construction: Machinery space boundaries should prevent the passage of smoke and flame for 15 minutes, when tested in accordance with the procedure shown in Annex 9. Fire resistance of FRP may be achieved by the use of woven roving glass layers or additives (which must be added strictly in accordance with the manufacturer's requirements) to the resin. Intumescent polyester, epoxy, vinyl ester or phenolic resin surface coatings may also be used; however, solvent borne intumescent paints are not acceptable. The Certifying Authority may waive the requirement for the test described in Annex 9 (Fire Test) if the construction complies with an ISO or equivalent standard to give at least the same level of protection.

14.2.3 Aluminium and Wood Construction: Machinery space boundaries should have an equivalent level of fire protection when compared to FRP construction.

14.2.4 Where insulation is fitted to provide an equivalent level of fire protection to that required in Section 14.2.2 or 14.2.3 the insulation need not be fitted lower than 300 mm below the waterline. (It should be noted that insulation approved by the Administration as satisfying the requirements of an A or B Class division for the construction material, and division scantlings, will exceed these requirements.)

14A.3 Insulation

14.3.1 Thermal or acoustic insulation fitted inside the engine space should be of non-combustible material when tested in accordance with Annex 10.

14.3.2 Insulation should be protected against impregnation by flammable vapours and liquids. Where insulation is cut, the edges should be protected against such impregnation, e.g. by the use of non-combustible tape. Where the insulation is vulnerable to damage it should be protected.

14A.4 Cleanliness (and Pollution Prevention)

14.4.1 Provision should be made to retain any oil leakage within the confines of the engine space.

14.4.2 In a vessel constructed of wood, measures should be taken to prevent absorption of oil into the structure.

14.4.3 When it is impracticable to fit a metal drip tray in way of the engine, the use of the engine bearers as a means of containment of the oil may be accepted when they are of sufficient height and have no limber holes. Provision should be made for the clearing of spillage and drainage collected in the engine space.

14.4.4 Efficient means should be provided to ensure that all residues of persistent oils are collected and retained on-board for discharge to collection facilities ashore. Reference should also be made to Section 29, Clean Seas.

14.4.5 The engine space should be kept clean and clear of oily waste and combustible materials.

14.4.6 Where petrol engines are installed, reference should be made to Section 7.3.2.

14.4.7 Auto pumping of machinery space or other oily bilges is prohibited

14A.5 Open Flame Gas Appliances

14.5.1 Open flame gas appliances provided for cooking, heating or any other purposes should comply with the requirements of EC Directive 90/396/EEC ("Council Directive of 20 June 1990 on the approximation of the laws of the Member States relating to appliances burning gaseous fuels"), so far as the requirements of the Directive apply to any particular appliance and be suitable for marine use and installation in boats. An equivalent national standard can be considered by the Administration.

Installation of a gas appliance should be in accordance with a recognised standard listed in the Standards Annex 13 or equivalent and Annex 5 Gas Installations.

14.5.3 Materials which are in the vicinity of open flame cooking or heating appliances should be non-combustible, except that these materials may be faced with any surface finish having a Class 1 surface spread of flame rating when tested in accordance with a recognised standard, see Standards Annex 13.

14.5.4 Combustible materials and other surfaces which do not have a surface spread of flame rating should not be left unprotected within the following distances of a standard cooker:-

.1 400mm vertically above the cooker, for horizontal surfaces, when the vessel is upright;

.2 125mm horizontally from the cooker, for vertical surfaces.

14.5.5 Curtains or any other suspended textile materials should not be fitted within 600mm of any open flame cooking, heating or other appliance.

14.5.6 With regard to Section 14.5.4 and 14.5.5 above, ISO 9094 will be taken as acceptable.

14A.6 Furnishing Materials

14.6.1 It is recommended that Combustion Modified High Resilient (CMHR) foams are used in upholstered furniture and mattresses.

14.6.2 Upholstery covering fabrics should satisfy the cigarette and butane flame tests of a recognised standard, see Annex 10 or equivalent.

14A.7 Fire Detection

14.7.1 All Category "A" machinery spaces should be fitted with efficient fire detectors.

14.7.2 In a vessel carrying 16 or more persons, or operating in area category 0 or 1, efficient fire detectors should be fitted in the engine space(s) and spaces containing open flame devices.

14.7.3 On any vessel, where an area is identified by the Certifying Authority as posing a fire risk to either passengers or crew (e.g. galleys, sleeping accommodation), fire detection equipment shall be installed to protect that area.

14.7.4 The fire detectors should be appropriate to the hazard identified and should give an audible warning that can be heard in the space concerned and in the control position when the vessel is in operation.

14.7.5 Efficient fire detectors may be required in order to comply with Section 14.8.2

14A.8 Means of Escape

14.8.1 Two means of escape should be provided in:-

.1 accommodation spaces used for sleeping or rest; and

.2 other accommodation spaces affected by a fire risk; and

.3 machinery spaces affected by a fire risk except:

i) those spaces visited only occasionally or unmanned during normal operation, and where the single access gives ready escape, at all times, in the event of fire; or

ii) those spaces where any person entering and moving about the space is within 5 metres of the single entrance, at all times.

The means of escape should be such that a single hazardous event will not cut-off both escape routes. Only in the exceptional case, such that the overall safety of the vessel would be diminished, should means of escape contrary to Section 14.8.1.1, .2 or .3 be accepted.

14.8.2 In the exceptional case where a single means of escape from accommodation spaces is accepted, efficient fire detectors should be provided as necessary to give early warning of a fire emergency which could cut off that single means of escape, and a fire extinguisher or other appropriate device should be positioned locally ready for immediate use.

14.8.3 Means of escape should be clearly marked for their purpose on both sides, and the function of each escape route demonstrated by practical tests to the satisfaction of the Certifying Authority.

14.8.4 All sailing multihulls over 12 metres length shall be fitted with an emergency escape hatch in each main inhabited watertight compartment to permit the exit of personnel in the event of an inversion. Such escape hatches shall be located above both upright and inverted waterlines. See section 11.10 for inverted stability and buoyancy requirements.

14B FIRE SAFETY – CONVENTION VESSELS

14B.1 Protection of spaces containing vehicles or craft with fuel in their tanks or lockers storing such fuels

14.1.1 Special consideration should be given to safe conditions of carriage of petrol and other highly flammable liquids either in hand portable containers/tanks or in the tanks of vehicles (such as personal water craft, motor cars and helicopters) which may be transported. This is not considered applicable to diesel stowage.

14.1.2 The quantity of petrol and/or other highly flammable liquids carried should be kept to a minimum, up to 150 litres maximum.

14.1.3 Containers used for the carriage of flammable liquids should be constructed to a recognised standard appropriate to the contents and each container clearly marked to indicate its contents

14.1.4 Small lockers on open deck for the stowage of hand portable containers of petrol should be located away from high risk area, have no electrical fittings, and be provided with the following:-

1. Natural ventilation openings top and bottom.
2. Drainage leading overboard.
3. Means of securing the fuel containers.

4. A facility to boundary cool the locker.

14.1.5 Enclosed spaces, and larger lockers on open deck, designated for the safe carriage of petrol or similar fuel or vehicles with fuel in their tanks should be fitted with:-

.1 a manual water spray system giving a coverage of 3.5 ltr/m^2/minute over the total area of deck which may be taken from the fire main with the isolating valve located outside the garage. An equivalent arrangement may be considered. Adequate provision should be made for drainage of water introduced to the space. This should not lead to machinery or other spaces where a source of ignition may exist.

.2 A fixed fire detection and fire alarm system complying with the requirements of SOLAS regulations II-2/Part A. The system within the space should also comply with 14.1.5.5.

.3 A ducted mechanical continuous supply of air ventilation, which is isolated from other ventilated spaces, should provide at least 6 air changes per hour (based on the empty space) and for which reduction of the airflow should be signalled by an audible and visual alarm on the navigating bridge and at the "in port" control station(s). Exhaust ducting should be arranged to include the area low over the bilge. If the fan motors are located in the space or in the ventilation duct they should be certified safe to the correct designation for the flammable liquid. The ventilation fans should be of a non-sparking type and the ventilation system should be capable of rapid shut down and effective closure in event of fire.

.4 A low level gas detection system is to be provided, with audible and visual alarm in the wheelhouse and where it may always be observed by the crew.

.5 All electrical equipment located up to 450 mm above the deck should be certified safe for petrol vapours. Electrical equipment located higher than 450 mm above the deck should either,

(a) be to [IP55] standard of construction (BSEN 60529:1992), or,

(b) provided with easily accessible means of isolation (on all poles) located outside the space. These isolators should be grouped together as far as practicable and be clearly marked. This option should not be used for safety systems such as steering motors, rudder indicators, etc.

.6 Regardless of the height of installation it is considered that the following equipment located within the space should be certified safe for the flammable vapours:-

(a) gas detection system
(b) bilge alarm
(c) fire detection system
(d) one light fitting (possibly emergency)

It should be noted that electrical equipment includes starters, distribution boxes, etc

14B.2 Miscellaneous

14.2.1 Construction and arrangement of saunas

14.2.1.1 The perimeter of the sauna should be of "A" class boundaries and may include changing rooms, showers and toilets. The sauna should be insulated to A-30 for vessels under 150GT, against other spaces except those inside of the perimeter.

14.2.1.2 Bathrooms with direct access to saunas may be considered as part of them. In such cases, the door between sauna and the bathroom need not comply with fire safety requirements.

14.2.1.3 Wooden linings on bulkheads and ceilings are permitted. The ceiling above the oven should be lined with a non-combustible plate with an air gap of at least 30 mm. The distance from the hot surfaces to combustible materials should be at least 500 mm or the combustible materials should be protected (e.g. non-combustible plate with an air gap of at least 30 mm).

14.2.1.4 Wooden benches are permitted.

14.2.1.5 The sauna door should open outwards by pushing.

14.2.1.6 Electrically heated ovens should be provided with a timer.

14.2.1.7 All spaces within the perimeter of the sauna are to be protected by a fire detection and alarm system and an automatic sprinkler system.

14.2.2 Construction and arrangement of Thermal Suite (e.g. Steam Room).

14.2.2.1 The perimeter of the thermal suite may include changing rooms, showers and toilets.

14.2.2.2 Bathrooms with direct access to suite may be considered as part of it. In such cases, the door between suite and the bathroom need not comply with fire safety requirements.

14.2.2.3 If the steam generator is contained within the perimeter, the suite boundary should be constructed to an A-0 standard. If the steam generator is not contained within the perimeter then the boundaries of the space should be constructed of B-0 class divisions, and the steam generator should be protected by A-0 standard divisions.

14.2.2.4 If a suite arrangement contains a sauna then the requirements contained in 14.2.1 are applicable, regardless of the steam generator location.

14.2.2.5 All spaces within the perimeter are to be protected by a fire detection and alarm system and an automatic sprinkler.

14.2.3 [Deep Fat Fryers – IMO Circular]

14B.3 Fire Control Plan(s)

14.3.1 A fire control (general arrangement) plan(s) should be permanently exhibited for the guidance of the Master and crew of the vessel. The content of the plan(s) should adequately show and describe the principal fire prevention and protection equipment and materials. As far as practical, symbols used on the plans should comply with a recognised international standard. The fire control plan may be a combined Fire & Safety Plan, which should show the positions of stowage of the life-saving and fire appliances

14.3.2 For each deck, the plan(s) should show the position of control stations; sections of the vessel which are enclosed respectively by "A" class divisions and "B" class divisions; location of flammable liquid storage (see 14.1.); particulars of and locations of fire alarms, fire detection systems, sprinkler installations, fixed and portable fire extinguishing appliances; fireman's outfit(s); means of access and emergency escapes for compartments and decks; locations and means of control of systems and openings which should be closed down in a fire emergency.

14.3.3 The plan(s) required by 14.3.1 should be kept up to date. Up-dating alterations should be applied to all copies of the plan(s) without delay. Each plan should include a list of alterations and the date on which each alteration was applied.

14.3.4 A duplicate set of the plan(s) should be permanently stored in a prominently marked external weathertight enclosure readily accessible to assist non-vessel fire-fighting personnel who may board the vessel in a fire emergency.

14.3.5 Instructions valid to the maintenance and operation of all the equipment and installations onboard for the fighting and containment of fire should be kept in one document holder, readily available in an accessible location.

14B.4 Structural Fire Protection

14.4.1 General

14.4.1.1 Terms used in this section should have the same meaning as defined in SOLAS.

14.4.2 Structure

Purpose

The purpose of this section is to contain a fire in the space of origin. For this purpose, the following functional requirements should be met:
the vessel should be subdivided by thermal and structural boundaries as required by this section;
thermal insulation of boundaries should have due regard to the fire risk of the space and adjacent spaces;
the fire integrity of the divisions should be maintained at openings and penetrations.

14.4.2.1 Forms of construction - Fire divisions

Note: Initial/additional guidance on consideration of decks and bulkheads between spaces posing different risks can be found in Annex "Fire Integrity of bulkheads and decks" to this section. However, departures from this guidance will be considered on a case by case basis.

.1 Fire divisions required by 14.4.2.2 are to be constructed in accordance with the remaining paragraphs of this sub-Section.

.2 Fire divisions using steel equivalent, or alternative forms of construction may be accepted if it can be demonstrated that the material by itself, or due to non-combustible insulation provided, has the fire resistance properties equivalent to those divisions required by 14.4.2.2 as appropriate.

.3 Insulation required by 14.4.2.2 is to be such that the temperature of the structural core does not rise above the point at which the structure would begin to lose its strength at any time during the applicable exposure to the standard fire test. For 'A' Class divisions, the applicable exposure is 60 minutes, and for 'B' Class divisions, the applicable exposure is 30 minutes.

.4 For aluminium alloy structures, the insulation is to be such that the temperature of the structural core does not rise more than 200°C above the ambient temperature at any time during the applicable fire exposure.

.5 For composite structures, the insulation is to be such that the temperature of the laminate does not rise more than the minimum temperature of deflection under load of the resin at any time during the applicable fire exposure. The temperature of deflection under load is to be determined in accordance with a recognised international standard.

.6 Insulation need only be applied on the side that is exposed to the greatest fire risk, ie inside the engine room , a division between two such spaces should however be insulated on both sides unless it is a steel division.

.7 Special attention is to be given to the fixing of fire door frames in bulkheads constructed of materials other than steel. Measures are to be taken to ensure that the temperature of the fixings when exposed to fire does not exceed the temperature at which the bulkhead itself looses strength.

14.4.2.2 Structural fire protection

.1 Category 'A' machinery spaces and spaces containing internal combustion machinery or oil fired boilers, are to be enclosed by 'A-30' Class divisions .

.2 For Short Range Vessels, category 'A' machinery spaces and spaces containing internal combustion machinery or oil fired boilers, are to be enclosed by 'B-15' Class divisions .

.3 Openings in 'A' and 'B' Class divisions are to be provided with permanently attached means of closing that are to be at least as effective for resisting fires as the divisions in which they are fitted.

.4 Where 'A' Class divisions are penetrated for the passage of electric cables, pipes, trunks, ducts, etc., or for girders, beams or other structural members, arrangements are to be made to ensure that the fire resistance is not impaired.

.5 Where 'B' Class divisions are penetrated for the passage of electric cables, pipes, trunks, ducts, etc., or for the fitting of ventilation terminals, lighting fixtures and similar devices, arrangements are to be made to ensure that the fire resistance is not impaired.

.6 Where the structure or 'A' Class divisions are required to be insulated, it is to be ensured that the heat from a fire is not transmitted through the intersections and terminal points of the divisions or penetrations to uninsulated

boundaries. Where the insulation installed does not achieve this, arrangements are to be made to prevent this heat transmission by insulating the horizontal and vertical boundaries or penetrations for a distance of 450 mm (this may be reduced to 380mm on steel divisions only).

14.4.2.3 Materials

.1 Except in refrigerated compartments of service spaces, all insulatiion (e.g. fire and comfort) is to be of not readily-ignitable materials .

.2 Pipes penetrating 'A' or 'B' Class divisions are to be of approved materials having regard to the temperature such divisions are required to withstand.

.3 Pipes conveying oil or other combustible liquids through accommodation and service spaces are to be of approved materials having regard to the fire risk and, as far as practicable, not contain other than welded joints.

.4 Materials readily rendered ineffective by heat are not to be used for overboard scuppers, sanitary discharges, and other outlets which are close to the waterline and where the failure of the material in the event of fire would give rise to danger of flooding.

.5 Vapour barriers and adhesives used in conjunction with insulation, as well as insulation of pipe fittings for cold service system need not be non-combustible, but they are to be kept to the minimum quantity practicable and their exposed surfaces are to have low flame spread characteristics.

.6 Upholstery composites (fabric in association with any backing or padding material) used throughout the vessel should be approved in accordance with the IMO FTP Code, Annex 1, Part 8, or equivalent. This does not apply to spaces fitted with sprinklers or equivalent approved fixed fire extinguishing systems.

.7 It is recommended that organic foams used in upholstered furniture and mattresses are of the combustion modified type.

.8 Suspended textile materials such as curtains or drapes should be approved in accordance with the IMO FTP Code, Annex 1, Part 7, or equivalent. This does not apply to spaces fitted with sprinklers or equivalent approved fixed fire extinguishing systems.

14.4.2.4 Surface of Insulation

In spaces where penetration of oil products is possible, the surface of insulation is to be impervious to oil or oil vapours. Insulation boundaries are to be arranged to avoid immersion in oil spillages

14.4.2.5 Fuel arrangements

.1 Arrangements for the storage, distribution and utilisation of oil fuel are to be such as to minimise the risk of fire or explosion. Flanged joints should be protected to avoid the possibility of sprays or leaks on to electrical equipment or hot surfaces.

.2 Oil fuel tanks situated within, or adjacent to, the boundaries of Category 'A' machinery spaces are not to contain oil fuel having a flashpoint of less than 60°C.

.3 Oil fuel, lubricating oil and other flammable oils are not to be carried in fore peak tanks.

.4 Remotely operated quick closing valves should be fitted on all tanks other than double bottom tanks supplying fuel to the engine and any auxiliaries in the event of a fire within the machinery space. The cut off valve should be sited as close to the tank as possible.

.5 Means are to be provided to stop fuel transfer pumps, oil fired boilers and separators from outside the machinery space.

.6 Fuel filter bowls should be of a heat-resisitant glass, or metal, construction.

14.4.2.6 Surface of insulation

.1 In spaces where penetration of oil products is possible, the surface of insulation is to be impervious to oil or oil vapours. Insulation boundaries are to be arranged to avoid immersion in oil spillages.

14.4.3 Means of escape

14.4.3.1 Purpose

The purpose of this section is to provide means of escape so that persons onboard can safely and swiftly escape to the liferaft embarkation deck. For this purpose, the following functional requirements should be met:
safe escape routes should be provided;
escape routes should be maintained in a safe condition, clear of obstacles; and
additional aids for escape should be provided as necessary to ensure accessibility, clear marking, and adequate design for emergency situations.

14.4.3.2 Requirements

.1 Stairways, ladders and corridors serving all spaces normally accessible are to be arranged so as to provide ready means of escape to a deck from which embarkation into survival craft may be effected.

.2 The arrangement of the vessel should be such that all compartments are provided with a satisfactory means of escape. In the case of the accommodation, two means of escape from every restricted space or group of spaces should be provided. Concealed escapes and escape routes are to be clearly marked to ensure ready exit.
Category 'A' machinery spaces should be provided with two means of escape except where impracticable for reasons of size of the space.

(a) The normal means of access to the accommodation and service spaces below the open deck is to be arranged so that it is possible to reach the open deck without passing through a galley, engine room or other space with a high fire risk, wherever praticable.

(b) Where accommodation arrangements are such that access to compartments is through another compartment, the second escape route is to be as remote as possible from the main escape route. This may be through hatches of adequate size, leading to the open deck or separate space to the main escape route.

(c) In exceptional circumstances a single means of escape may be accepted for spaces other than accommodation spaces that are entered only occasionally, if the escape route does not pass through a galley, machinery space or watertight door.

(d) No escape route should be obstructed by furniture or fittings. Additionally, furniture along escape routes should be secured in place to prevent shifting if the yacht rolls or lists.

(e) All doors, hatches and windows in escape routes are to be openable from either side. In the direction of escape they are all to be openable without a key. All handles on the inside of weathertight doors and hatches are to be non removable. Where doors are lockable measures to ensure access from outside the space are to be provided for rescue purposes.

.3 Lifts are not considered as forming a means of escape.

.4 Where escape routes are not short and direct, the provision of emergency low level lighting is recommended.

14.4.4 Ventilation systems

14.4.4.1 Ventilation fans for machinery spaces and enclosed galleys are to be capable of being stopped, and main inlets and outlets of ventilation systems closed, from outside the spaces being served. This position should not be readily cut off in the event of a fire in the spaces served.

14.4.4.2 Ventilation ducts for Category 'A' machinery spaces, galleys of significant fire risk, spaces containing vehicles or craft with fuel in their tanks, or lockers storing such fuels, are generally not to pass through accommodation spaces, service spaces or control stations Where this is unavoidable, the trunking should be constructed of steel at least 3mm thick or equivalent to the satisfaction of the administration. The ducting within the accommodation should be fitted with:

.1 fire insulation to A-30 (B-0 on Short Range Vessels) standard to a point at least 5 metres from the machinery space or galley; and

.2 automatic fire dampers located in the deck or bulkhead within the accommodation where the trunking passes from the machinery space or galley into the accommodation. These automatic fire dampers are also to be manually closable from outside the galley or machinery space.

14.4.4.3 Ventilation ducts for accommodation spaces, service spaces or control stations are not to pass through Category 'A' machinery spaces, spaces containing vehicles or craft with fuel in their tanks, or lockers storing such fuels, unless the ducts are constructed of steel and arranged to preserve the integrity of the division.

14.4.4.4 Store-rooms containing highly flammable products are to be provided with ventilation arrangements that are separate from other ventilation systems. Ventilation is to be arranged to prevent the build up of flammable vapours at high and low levels. The inlets and outlets of ventilators are to be positioned so that they do not draw from or vent into an area which would cause undue hazard, and are to be fitted with spark arresters.

14.4.4.5 Ventilation systems serving Category 'A' machinery spaces are to be independent of systems serving other spaces.

14.4.4.6 All enclosed spaces containing free standing fuel tanks are to be ventilated independently of systems serving other spaces.

14.4.4.7 Ventilation is to be provided to prevent the accumulation of dangerous concentrations of flammable gas which may be emitted from batteries.

14.4.5 Arrangements for gaseous fuel for domestic purposes

14.4.5.1 Where gaseous fuel is used for domestic purposes, the arrangements for the storage, distribution and utilisation of the fuel is to be such that, having regard to the hazards of fire and explosion which the use of such fuel may entail, the safety of the yacht and the persons onboard is preserved. The installation is to be in accordance with recognised National or International Standards. Hydrocarbon gas detectors and carbon monoxide detectors should be provided.

14.4.5.2 Storage lockers for gas cylinders are to be provided with:

(a) Permanently open effective low level ventilation to open deck or overside; and

(b) an outward-opening door accessible directly to the open deck; and

(c) gas-tight boundaries, including doors and other means of closing any openings therein, which form boundaries between such lockers and adjoining spaces.

14.4.6 Open Flame Appliances

14.4.6.1 An open flame gas appliance provided for cooking, heating or any other purpose should comply with the requirements of EC Directive 90/396/EEC or equivalent.

The installation of an open flame gas appliance should comply with the appropriate provisions of Annex 4.

14.4.7 Space heaters

14.4.7.1Space heaters, if used, are to be fixed in position and so constructed as to reduce fire risks to a minimum. The design and location of these units is to be such that clothing, curtains or other similar materials cannot be scorched or set on fire by heat from the unit.

14.4.8 Fixed fire detection and fire-alarm systems

14.4.8.1 The purpose of this section is to detect a fire in the space of origin and to provide for alarm for safe escape and fire-fighting activity.

14.4.8.2 A fixed fire detection and fire-alarm system is to be fitted in all enclosed spaces except those containing no significant fire risk (toilets, bathrooms, void spaces, etc). The fixed fire detection and fire-alarm system is to be installed in accordance with the requirements of SOLAS II-2/7 and the IMO FSS Code, Chapter 9.

14.4.9 Fixed fire-extinguishing systems not required by this Section

Where a fixed fire-extinguishing system not required by this Chapter, is installed, the arrangement is to be to the satisfaction of the administration.

ANNEX - Fire integrity of bulkheads and decks

1 In addition to complying with the specific provisions for fire integrity of bulkheads and decks mentioned elsewhere in this section, the minimum fire integrity of bulkheads and decks should be as prescribed in tables 1 and 2.

2 The following requirements should govern application of the tables:

.1 Tables 1 and 2 should apply respectively to the bulkheads and decks separating adjacent spaces.

.2 For determining the appropriate fire integrity standards to be applied to divisions between adjacent spaces, such spaces are classified according to their fire risk as shown in categories (1) to (9) below. The title of each category is intended to be typical rather than restrictive. The number in parentheses preceding each category refers to the applicable column or row in the tables.

(1) *Control stations*

- Spaces containing emergency sources of power and lighting.
- Wheelhouse and chartroom.
- Spaces containing the vessel's radio equipment.
- Fire-extinguishing rooms.
- Fire control rooms and fire-recording stations
- Control room for propulsion machinery when located outside the machinery space.
- Spaces containing centralized fire alarm equipment.

(2) *Corridors and lobbies*

- Guest and crew corridors and lobbies.

(3) *Accommodation spaces*

- Cabins, dining rooms, lounges, offices, pantries containing no cooking appliances (other than equipment such as microwave cookers and toasters), and similar spaces..

(4) *Stairways*

- Interior stairways, lifts and escalators (other than those wholly contained within the machinery space(s)) and enclosures thereto.
- In this connection, a stairway which is enclosed only at one level should be regarded as part of the space from which it is not separated by a fire door.

(5) *Service spaces (low risk)*

- Lockers and store-rooms not having provisions for the storage of flammable liquids and having areas less than 4m² and drying rooms and laundries.

(6) *Machinery spaces of category A,*

- Spaces so defined.

(7) *Other machinery spaces*

- Spaces so defined, excluding machinery spaces of category A.
- Sprinkler, drencher or fire pump spaces.

(8) *Service spaces (high risk)*

- Galleys, pantries containing cooking appliances, paint and lamp rooms, lockers and store-rooms having areas of 4m² or more, spaces for the storage of flammable liquids,

workshops other than those forming part of the machinery spaces, and spaces containing vehicles or craft with fuel in their tanks, or lockers storing such fuels storage lockers for gaseous fuels for domestic purposes.

(9) *Open decks*

- Open deck spaces and enclosed promenades having no fire risk. Air spaces (the space outside superstructures and deckhouses).

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

4 External boundaries which are required to be of steel or other equivalent material may be pierced for the fitting of windows and portlights provided that there is no requirement for such boundaries to have "A" class integrity elsewhere in this section. Similarly, in such boundaries which are not required to have "A" class integrity, doors may be of combustible materials, substantially constructed.

Table 1 - Fire integrity of bulkheads separating adjacent spaces

Spaces	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Control stations (1)	A-0_c	A-0	A-60	A-0	A-15	A-60	A-15	A-60	*
Corridors and lobbies (2)		C_e	B-0_e	A-0_a B-O_e	B-0_e	A-60	A-0	A-0	*
Accommodation spaces (3)			C_e	A-0_a B-0_e	B-0_e	A-60	A-0	A-0	*
Stairways (4)				A-0_a B-0_e	A-0_a B-0_e	A-60	A-0	A-0	* *
Service spaces (low risk) (5)					C_e	A-60	A-0	A-0	*
Machinery spaces of category A (6)						*	A-0	A-60	*
Other machinery spaces (7)							A-0_b	A-0	*
Service spaces (high risk) (8)								A-0_b	*
Open decks (9)									

Notes: To be applied to both tables 1 and 2, as appropriate.

a For clarification on which applies, see 14B.3.4 and 14B.3.7.

b Where spaces are of the same numerical category and subscript $_b$ appears, a bulkhead or deck of the rating shown in the tables is only required when the adjacent spaces are for a different purpose, e.g in category (9). a galley next to a galley does not require a bulkhead but a galley next to a paint room requires an "A-0" bulkhead.

c Bulkheads separating the wheelhouse and chartroom from each other may be "B-0" rating.

e For the application of 14B.3.3.1, "B-O" and "C", where appearing in table 1, should be read as "A-0".

f Fire insulation need not be fitted if the machinery space in category (7), in the opinion of the Administration, has little or no fire risk.

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

For the application of 14B.3.3.1 an asterisk, where appearing in table 2, except for category (9), should be read as "A-0".

Table 2 - Fire integrity of decks separating adjacent spaces

7 Spaces above Spaces below	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Control stations (1)	A-0	A-0	A-0	A-0	A-0	A-60	A-0	A-0	*
Corridors and lobbies (2)	A-0	*	*	A-0	*	A-60	A-0	A-O	*
Accommodation spaces (3)	A-60	A-0	*	A-0	*	A-60	A-0	A-0	*
Stairways (4)	A-0	A-0	A-0	*	A-0	A-60	A-0	A-0	*
Service spaces (low risk) (5)	A-15	A-0	A-0	A-0	*	A-60	A-0	A-0	*
Machinery spaces of category A (6)	A-60	A-60	A-60	A-60	A-60	*	$A\text{-}60_f$	A-60	*
Other machinery spaces (7)	A-15	A-0	A-0	A-0	A-0	A-0	*	A-0	*
Service spaces (high risk) (8)	A-60	A-0	A-0	A-0	A-0	A-60	A-0	A-0	*
Open decks (9)	*	*	*	*	*	*	*	*	-

15A FIRE APPLIANCES – NON CONVENTION VESSELS

15A.1 General

A vessel should be provided with efficient fire fighting equipment in accordance within this Section. All equipment is to be serviced at the manufacturers recommended service intervals by a service station approved by the manufacturer.

15A.2 Vessels Less than 6 metres in Length Operating in Category 6 Waters

15.2.1 In a vessel of less than 6 metres in length, which is not fitted, or is only partially fitted with a watertight weather deck and with no cooking appliances, a single extinguisher capable of discharging into the engine space is to be fitted. The extinguisher should be suitably sized for the engine space, but be a minimum of 34B.

15.2.2 In a non-decked (or partially decked) sailing vessel with no engines and no cooking appliances, no fire extinguisher is required.

15A.3 Open Vessels, Inflatable Boats and Boats with a Buoyant Collar up to 8m in Length not Fitted with a Substantial Enclosure.

An open vessel, inflatable boat or boat with a buoyant collar up to 8m in length, not fitted with a substantial enclosure, with no cooking appliances, should be fitted with a minimum of two fire extinguishers, each with a minimum rating of 5A/34B

15A.4 Vessels Less than 15 metres in Length and Carrying 15 or Less Persons, not covered by Sections 15.2 or 15.3

15.4.1 One hand fire pump (outside engine space)* or one power driven fire pump (outside engine space)*, with sea and hose connections, capable of delivering one jet of water to any part of the ship through hose and nozzle. One fire hose of adequate length with 10mm nozzle and suitable spray nozzle;

or

One multi-purpose fire extinguisher to a recognised standard, see Standards Annex 13, with minimum fire rating of 13A/113B or smaller extinguishers giving the equivalent fire rating (in addition to that required below).

15.4.2 Not less than one multi-purpose fire extinguisher to a recognised standard, see Standards Annex 13, with minimum fire rating of 5A/34B provided at each exit from accommodation spaces to the open deck. In no case should there be less than two such extinguishers provided.

15.4.3 At least two fire buckets with lanyards. Buckets may be of metal, plastic or canvas and should be suitable for their intended service.

15.4.4 One fire blanket of a recognised standard, see Standards Annex 13, in galley or cooking area, where a fire risk can be identified.

15A.5 Vessels 15 metres or More in Length or Carrying 16 or More Persons

15.5.1 One hand fire pump (outside engine space)* or one power driven fire pump (outside engine space)*, with sea and hose connections, capable of delivering one jet of water to any part of the ship through hose and nozzle. One fire hose of adequate length with 10mm nozzle and suitable spray nozzle.

or

Not less than two multi-purpose fire extinguishers to a recognised standard each with minimum fire rating of 13A/113B or smaller extinguishers giving the equivalent fire rating (in addition to that required below).

15.5.2 Not less than two multi-purpose fire extinguishers to a recognised standard, see Standards Annex 13, with a minimum fire rating of 13A/113B.

15.5.3 At least two fire buckets with lanyards. Buckets may be of metal, plastic or canvas and should be suitable for their intended service.

15.5.4 One fire blanket of a recognised standard, see Standards Annex 13, in galley or cooking area, where a fire risk is identified.

Note * This may be one of the pumps required by Section 10 (Bilge Pumping), when fitted with a suitable change over arrangements which is readily accessible.

15A.6 Provision for Fire Extinguishing in Machinery Spaces

15.6.1 Fixed fire extinguishing in engine space, which may consist of a portable extinguisher suitably sized for the space being protected and arranged to discharge into that space, shall be provided for vessels fitted with inboard engines. An additional extinguisher, or one of the multi-purpose fire extinguishers required in 15.2, 15.3, 15.4 or 15.5, can also be the extinguisher required for discharge into the engine space, providing it is a suitable type (B) and suitably sized and stowed in a location appropriate to its dual use.

15.6.2 When a fixed fire extinguishing system (which is not a portable extinguisher) is installed in a machinery space, it should be a MCA or equivalent approved type appropriate to the space to be protected and be installed and maintained in accordance with the manufacturer's requirements.

Requirements for fixed fire extinguishing installations are detailed in the Merchant Shipping Regulations, (e.g. the Merchant Shipping (Fire Protection – Small Ships) Regulations 1998 SI 1998 No. 1011 and in the 1999 edition of the "Fire Protection Arrangements" of the Instructions for the Guidance of Surveyors" (HMSO publication ISBN 5520007).

Fixed installations in machinery spaces covered by the references are:-

.1 low expansion foam;

.2 medium expansion foam;

.3 high expansion foam;

.4 carbon dioxide;

.5 pressure water spraying;

.6 vaporising fluids (HFC's hydrofluorocarbons);

.7 aerosols (solid pyrotechnic type).

15A.7 Informative Notes

15.7.1 Multi-purpose fire extinguishers have a capability to deal with both Category A fires involving solid materials and Category B fires involving liquids or liquefiable solids may be marked with the multipurpose rating, e.g. 13A/113B in Section 15.4.1 above; and 5A/34B in Section 15.4.2 above.

15.7.2 BS EN 3:1996 - Portable fire extinguishers, became a national standard in August 1996. The previous standard, BS 5423:1987, was withdrawn on 1 January 1997. The principal difference between the two standards is the colour coding of the body of the extinguisher which, for BS EN 3, is red.

15.7.3 BS EN 3 allows a zone of colour of up to 5% of the external area of the extinguisher body to be used to identify the extinguishing agent. Manufacturers have complied with this by printing the operating instructions in the appropriate extinguishing agent colour.

15.7.4 Manufacturers producing extinguishers certified and marked to BS EN 3 cannot revert to the colour schemes contained in the withdrawn BS 5423:1987. Owners of vessels must not overpaint red BS EN 3 extinguishers to the "old" colours.

15.7.5 EC Regulation 2037/ 2000 prohibits the sale and use of halons, including material that has been recovered or recycled, from 31st December 2002. All fire-fighting equipment containing halons must be decommissioned . Marine Guidance Note MGN 191 provides further information. For vessels operating permanently outside the EC, the appropriate Flag State requirements relating to the continued use of Halon should be respected.

15B FIRE APPLIANCES – CONVENTION VESSELS

15B.1 General Requirements

15.1.1 Fire appliances are to be of an approved type and should be provided to the minimum requirements listed in Table 1 and the specific requirements of 15B.2.

15.1.2 Fire appliances provided in addition to those required by 15.1.1 should be of a type acceptable to the Administration.

15.1.3 The location of concealed fire appliances should be clearly marked.

Table 1 - FIRE APPLIANCES

1	PROVISION OF WATER JET – sufficient to reach any part of vessel	1
2	POWER DRIVEN FIRE PUMP - engine or independent drive	1
3	ADDITIONAL INDEPENDENT POWER DRIVEN FIRE PUMP, POWER SOURCE AND SEA CONNECTION - not located in the same space as item 2	1
4	FIREMAIN & HYDRANTS -	Sufficient to achieve item 1 with a single length of hose
5	HOSES - with jet/spray nozzles each fitted with a shut-off facility	3
6	FIRE EXTINGUISHERS - portable, (accommodation and service spaces)	1 within 10m of any position within an accommodation or service space
7	FIRE EXTINGUISHERS - for a machinery space containing internal combustion type machinery - the options are: (a) a fixed fire extinguishing system approved in accordance with the IMO Fire Safe Systems Code; and (b) (i) 1 portable extinguisher for oil fires for each 74.6kw power; or (ii) 2 portable extinguishers for oil fires together with either - 1 foam extinguisher of 45l capacity; or 1 CO_2 extinguisher of 16kg capacity	 7 (max) 2 + 1
8	FIREMANS OUTFIT - to include two approved breathing apparatus	2[1]
9	FIRE BLANKET - in galley	1

Notes:-
1 A minimum of two breathing apparatus are to be provided. In vessels where stowage considerations do not allow the carriage of two apparatus, proposals to carry a single unit should be agreed with the Administration.

15B.2 Specific Requirements

15.2.1 Provision of water jet

At least one jet of water, from a single length of hose, should be able to reach any part of the vessel normally accessible to passengers or crew while the vessel is being navigated and, any store room and any part of a storage compartment when empty.

15.2.2 Fire pumps

15.2.2.1 The power driven fire pump should have a capacity of -

$$2.5x\{1+0.066x(L(B+D))^{0.5}\}^2 \ m^3/hour$$

where:

L is the length
B is the greatest moulded breadth
D is the moulded depth measured to the bulkhead deck at amidships.

When discharging at full capacity through 2 adjacent fire hydrants, the pump should be capable of maintaining a water pressure of $0.2N/mm^2$ at any hydrant, provided the fire hose can be effectively controlled at this pressure.

15.2.2.2 The second fire pump, which may be portable, should have a capacity of at least 80% of that required by 15.2.2.1 and be capable of input to the fire main. A permanent sea connection, external to the machinery space, should be provided. "Throw-over" sea suctions are not acceptable.

15.2.3 Firemain and hydrants

15.2.3.1 A firemain, water service pipes and fire hydrants should be fitted.

15.2.3.2 The fire main and water service pipe connections to the hydrants should be sized for the maximum discharge rate of the pump(s) connected to the main.

15.2.3.3 The fire main, water service pipes and fire hydrants should be constructed such that they will:

.1 not be rendered ineffective by heat;

.2 not readily corrode; and

.3 be protected against freezing.

15.2.3.4 When a fire main is supplied by 2 pumps, 1 in the machinery space and 1 elsewhere, provision should be made for isolation of the fire main within the machinery space and for the second pump to supply the fire main and hydrants external to the machinery space. Isolation valve(s) should be manually operated valves fitted outside the machinery space in a position easily accessible in the event of a fire.

15.2.3.5 The fire main should have no connections other than those necessary for fire fighting or washing down.

15.2.3.6 Fire hydrants should be located for easy attachment of fire hoses, protected from damage and distributed so that a single length of the fire hoses provided can reach any part of the vessel

15.2.3.7 Fire hydrants should be fitted with valves that allow a fire hose to be isolated and removed when a fire pump is operating.

15.2.4 Fire hoses

15.2.4.1 Fire hoses should not exceed 18 metres in length and, generally, the diameter of a lined hose for use with a powered pump should not be less than 45mm.

15.2.4.2 Fire hoses and associated tools and fittings should be kept in readily accessible and known locations close to the hydrants or connections on which they will be used. Hoses supplied from a powered pump should have jet/spray nozzles (incorporating a shut-off facility) of diameter 19mm, 16mm or 12mm depending on fire fighting purposes. For accommodation and service spaces, the diameter of nozzles need not exceed 12mm. For machinery spaces and exterior locations, the nozzle size should be as to obtain the maximum discharge possible from two jets at the pressure referred to in 15A.2.2.1, from the smallest pump.

15.2.4.3 Hydrants or connections in interior locations on the vessel should have hoses connected at all times. For use within accommodation and service spaces proposals to provide smaller diameter of hoses and jet/spray nozzles will be considered.

15.2.4.4 The number of fire hoses and nozzles provided should correspond to the functional fire safety requirements but, be at least 3.

15.2.5 Portable fire extinguishers for use in accommodation and service spaces

15.2.5.1 The number, location, fire extinguishing medium type and capacity should be selected according to the perceived fire risk but one portable extinguisher should be available for use within a distance of 10 m from any location. A minimum of at least 3 portable fire extinguishers should be provided. As far as practical, the fire extinguishers provided should have a uniform method of operation and should be of an approved type and capacity.

15.2.5.2 Portable fire extinguishers of carbon dioxide type should not be located or provided for use in accommodation spaces.

15.2.5.3Except for portable extinguishers provided in connection with a specific hazard within a space when it is manned (such as a galley), portable extinguishers generally should be located external to but adjacent to the entrance of the space(s) in which they will be used. Extinguishers should be stowed in readily accessible and marked locations.

15.2.5.4 Spare charges should be provided onboard for at least 50% of each type and capacity of portable fire extinguisher onboard. When an extinguisher is not of a type which is rechargeable when the vessel is at sea, an additional portable fire extinguisher of the same type (or its equivalent) should be provided.

15.2.6 Fire extinguishing in machinery spaces

15.2.6.1 In a machinery space containing internal combustion type machinery fire appliances should be provided at least to the extent listed in item 7 of Table 1 - Fire Appliances.

15.2.6.2 In a machinery space containing an oil fired boiler, oil fuel settling tank or oil fuel unit, a fixed fire extinguishing system complying with SOLAS regulations II-2/Part A should be installed.

15.2.6.3 Portable fire extinguishers should be installed and the number, location, fire extinguishing medium type and capacity should be selected according to the perceived fire risk in the space. (Spare charges or spare extinguishers should be provided per 15A.2.5.4.)

In any case, portable fire extinguishers for extinguishing oil fires should be fitted:

.1 in a boiler room - at least 2;

.2 in a space containing any part of an oil fuel installation - at least 2; and

.3 in a firing space - at least 1.

16A. RADIO EQUIPMENT – NON CONVENTION VESSELS

16A.1 General Requirements

16.1.1 Radio equipment carried by a vessel shall be capable of fulfilling the following functional requirements with respect to distress and safety communications when the vessel is at sea:-
.1 Provide for the safety of the vessel by:-
i) transmitting ship-to-shore distress alerting;
ii) transmitting ship-to-ship distress alerting;
iii) transmitting and receiving on-scene communications, including appropriate search and rescue co-ordinating communications; and
iv) transmitting locating signals.
2. Assist other vessels in distress by:-
i) receiving shore-to-ship distress alerting; and
ii) receiving ship-to-ship distress alerting.
3. Receive navigational and meteorological warnings and urgent safety information (Maritime Safety Information).
16.1.2 The Global Maritime Distress and Safety System (GMDSS) was implemented on 1 February 1999. The implementation of the GMDSS has involved the adoption of Digital Selective Calling (DSC) for distress alerting in maritime radio frequency bands, e.g. VHF.
Whilst the UK Coastguard will continue coverage of VHF channel 16 for the foreseeable future, the Coastguard watch on channel 16 is now a dedicated headset watch or a loudspeaker watch. Ships are currently obliged to keep a listening watch on channel 16 only where practicable. For vessels permanently based outside EC waters, consideration should be given to local VHF safety coverage when selecting radio equipment.
For vessels where a fixed VHF is required, it is strongly recommended that vessels are equipped with VHF DSC with its significant benefits in distress situations.

Other than vessels operating in Category 6, all new vessels and all those replacing VHF radios, must have installed VHF DSC by February 2005. Where GMDSS equipment is installed, it should be provided with automatic position updating information from the onboard navigational receiver, or procedures put in place to ensure positional information is manually updated at intervals not exceeding 4 hours.

16A.2 Radio Installation

16.2.1 Table 16.1 lists the minimum and recommended radio equipment for the Code area of operation categories, which fulfil the functional requirements specified in Section 16.1.
16.2.2 VHF transmission and reception ranges are reliable only within the line of sight ranges (see the MCA's Marine Guidance Note MGN 22[1] – Proper use of VHF channels at sea).
16.2.3 Aerials should be mounted as high as is practicable to maximise performance. When the main aerial is fitted to a mast, which is equipped to carry sails, an emergency aerial should be provided.

16.2.4 Skippers, owners and managing agents should be aware of VHF coverage in the intended area of operation. Where the certainty of good VHF coverage in the operating area is in doubt, skippers owners and managing agents should seek advice from the National Maritime Administration e.g. whether Medium Frequency (MF) or other equipment with long range transmission capability should be carried (i.e. Inmarsat Ship Earth Station, EPIRB etc).

16.2.5 When batteries are used for the electrical supply to radio equipment, the batteries, when fully charged, should provide sufficient hours of operation to ensure effective use of the GMDSS installation bearing in mind the distance from shore that the vessel can operate. Appropriate charging facilities or a duplicate battery of capacity sufficient for the voyage shall be provided.

The battery electrical supply (reference should be made to Section 8) to the radio equipment should be protected against flooding/swamping as far as practicable and arranged so that radio communications are not interrupted in adverse conditions.

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[1] Available on the MCA web site at http://www.mcga.gov.uk/mgn/mgn0022.pdf. You will need an Adobe Acrobat reader to view the document. A free copy of the reader is downloadable from the MCA web site.

16.2.6 A fixed radio installation should be clearly marked with the vessel's call sign, any other codes applicable to the use of the radio, and MMSI number where applicable. A card or cards giving a clear summary of the radio distress, urgency and safety procedures should be displayed in full view of the radio operating position(s).[2] Brief and clear operating instructions should also be provided for the hand-held VHF (which is part of the vessels Life Saving Appliances) as required by Table 16.1.

[2] Radiotelephony procedures are set out in Merchant Shipping Notice No. M.1646 published in November 1996. This is currently being revised to take account of the introduction of DSC (Digital Selective Calling).

TABLE 16A.1
MINIMUM AND RECOMMENDED RADIO EQUIPMENT

Area of operation category	6	3, 4 & 5	2	1	0	
m = nautical miles	Up to 3m	Up to 20m	Up to 60m	Up to 150m	Unlimited	Notes
VHF fixed radio installation[1].	R	1	1	1	1	See 16.1.2
Portable VHF[3]	1	1	1	1	1	It is recommended that, where practicable, vessels carrying more than one liferaft carry one portable VHF per raft.
MF SSB radio installation with DSC[1].	None	None	R[2]	1[2]	1[2,4]	HM Coastguard ceased keeping a MF Distress watch (2182 kHz) at 23:59 UTC on 31 May 2002.
Inmarsat Ship Earth Station[1,4] (or an MF/HF transceiver with DSC) [1]	None	None	None	R	R	
NAVTEX receiver	None	R	R	1	1	

R = Recommendation only
1 = Number required to be fitted

[1]An appropriate GMDSS certificate should be carried by any person operating this equipment. The MCA can give advice on suitable training courses.
[2]or an Inmarsat Ship Earth Station

[3] Arrangements should be provided to protect the portable VHF from water damage e.g. waterproof cover.
[4] When a vessel operates higher than 70 degrees North or South, i.e polar regions, an INMARSAT Ship Earth Station is not acceptable due to lack of coverage

16B. RADIO EQUIPMENT – CONVENTION VESSELS

All vessels should comply with the requirements of the SOLAS IV Global Marine Distress and Safety System (GMDSS) requirements for Sea Areas A1, A2, A3 or A4 as appropriate for the area of the voyage undertaken.

When a vessel operates higher than 70 degrees North or South, i.e polar regions, an INMARSAT Ship Earth Station is not acceptable due to lack of coverage

17A. NAVIGATION LIGHTS, SHAPES AND SOUND SIGNALS – NON CONVENTION VESSELS

17.1 A vessel should comply with the requirements of the International Regulations for the Prevention of Collision at sea e.g. as set out in Shipping (Distress Signals and Prevention of Collision) (Jersey) Order 2004.

17.2 A vessel which operates only between sunrise and sunset and in favourable weather is not required to carry navigation lights.

17.3 Sound signalling equipment should comply with the Regulations. A vessel of less than 12 metres in length is not obliged to carry the sound signalling equipment required by the Regulations, provided that some other means of making an efficient sound signal is provided.

17.4 If it can be demonstrated to the Certifying Authority that, for a particular vessel, full compliance with the Regulations is impracticable, then application should be made to the MCA via the Certifying Authority for consideration of equivalent arrangements, taking into account the nature of the operation of the vessel concerned.

17.5 Table 17.1 is a summary table of navigation lights, shapes and sounds signalling appliances for vessels. This Table is for guidance only and does not cover all possible operations, i.e. diving. Reference should be made to the regulations stated in Section 17.1 for all operations not covered.

TABLE 17.1 - Lights, shapes and sound appliances (see Section 17.4)

Overall length	Power vessels when underway (and Sailing Vessels when under power, see Note d)	Sailing vessels when under sail	At anchor[4]	Not under command[7]	Aground[9]	Sound appliances
Less than 7m	All round white + sidelights[1, 2]	Sidelights[1] + stern light OR Combined lantern at masthead[3] (tricolour) OR White light where the above are not practicable	**Required[5, 6]**	**Not required**	**Not required**	**Means to make an efficient sound signal required**
7m - 12m	All round white + sidelights[1] OR Masthead (vis 2 miles) + sidelights[1] + stern light OR (if lights have to be offset from centreline) combined lantern sidelights plus either all round white or masthead and stern light	Sidelights[1] + stern light (sidelights may be combined) OR Combined lantern at masthead[3] (tricolour)	**Required[6]**	**Not required**	**Not required**	**Means to make an efficient sound signal required**
12m - 20m	Masthead (vis 3 miles) + sidelights + stern light	Sidelights + stern light (sidelights may be combined) OR Combined lantern at masthead[3] (tricolour)	**Required[6]**	**Required[6]**	**Required[6,8]**	**Whistle and bell required**
20m - 24m	Masthead (vis 5 miles) + sidelights + stern light	Sidelights + stern light **may show (in addition to other lights) two all-round lights near masthead, the upper red and the lower green.**	**Required**	**Required**	**Required**	**Whistle and bell required approved by UK nominated bodies**

1 Range of sidelight is 1 mile.

2 Vessels not exceeding 7 knots maximum speed should show sidelights if practicable.

3 If not using a tricolour masthead lantern, a sailing vessel may show (in addition to other lights) two all-round lights near masthead, the upper red and the lower green.

4 By night, all round white light where best seen; by day one black ball (0.6 metres in diameter) in the fore part.

[5] Anchor light is required only when anchored in or near a narrow channel, fairway or anchorage or where other vessels normally navigate.

[6] Size of the daytime shapes and distances apart may be reduced commensurate with size of vessel.

[7] By night, two all round red lights in a vertical line two metres apart and the lowest not less than four metres above the hull (weatherdeck); by day two black balls (0.6 metres in diameters) in a vertical line, 1.5 metres apart.

[8] The distances for the lights may be reduced to one metre apart and two metres above the hull (weatherdeck).

[9] By night two all round red lights in a vertical line 2 metres apart plus anchor light; by day three black balls (0.6 metres diameter) in a vertical line, 1.5 metres apart.

Notes

a Sidelights, stern light and all round lights have range of 2 miles unless indicated otherwise.

b Range of all round white or anchor or Not Under Command lights is 2 miles in all cases.

c All lights (and whistles and bells when they are required to be carried) must be type approved for the size of vessel on which they are fitted.

d For sailing vessels, attention should be paid to light arrangements when under power i.e. steaming lights in place of masthead light

e For vessels engaged in other activities i.e. towing, pilotage, attention should be paid to requirements for lights and shapes arrangements.

f If a sailing vessel is using its engine as well as sails, then a cone, apex downwards in the fore part, should be displayed in the forepart of the vessel.

g In the case of open boats, vertical heights should be measured from gunwale, and in the case of inflatable boats, or boats fitted with a buoyant collar, from the top of the collar or tubes.

17B NAVIGATION LIGHTS, SHAPES AND SOUND SIGNALS – CONVENTION VESSELS

Every vessel should comply with the requirements of the International Regulations For Preventing Collisions At Sea, 1972, as amended.

All navigation lights should be provided with main and emergency power supply.

With due regard to accessibility the requirement for duplication for navigation lights required to be shown whilst underway may be satisfied by having a spare lamp that can be easily fitted within three minutes.

For vessels where compliance is impracticable alternatives may be considered by application to the Administration.

18A NAVIGATIONAL EQUIPMENT – NON CONVENTION VESSELS

18A.1 Magnetic Compass

18.1.1 A vessel should be fitted with an efficient magnetic compass, or other means of determining its heading, as well as means of correcting heading and bearings to true at all times (e.g. a valid deviation card for a magnetic compass):-

.1 A properly adjusted standard magnetic compass or other means, independent of the vessels main power supply, to determine the ship's heading and display the reading at the main steering position.

.2 In a steel vessel, it should be possible to correct the compass for co-efficients, B, C and D and heeling error.

.3 The magnetic compass or a repeater should be positioned so as to be clearly readable by the helmsman at the main steering position. For vessels operating in Categories 0, 1, 2, and 3, a compass light should be fitted.

.4 Means should be provided for taking bearings as nearly as practicable over an arc of the horizon of 360 degrees. (This requirement may be met by the fitting of a pelorus or, in a vessel other than a steel vessel, a hand bearing compass.)

18A.2 Fluxgate Compass

18.2.1 Fluxgate compasses are acceptable under the Code, as an alternative to that required in 18.1, provided that a suitable back-up power supply is available to power the compass in the event of failure of the main electrical supply.

18.2.2 Where a Fluxgate compass incorporates a capability to measure magnetic deviation by undertaking a calibration routine, and where the deviation figures are recorded within the device, a deviation card is not required.

18A.3 Other Equipment

18.3.1 All vessels should be fitted with an echo sounder, or other means, to measure the available depth of water. See section 25.6.3 for requirements for dedicated pilot vessels.

18.3.2 A vessel which operates more than 20 miles from land (Area Category 0, 1 or 2) should be provided with:-

.1 A receiver for a global navigation satellite system or a terrestrial radionavigation system, or other means suitable for use at all times throughout the intended voyage to establish and update the vessel's position at all times.

.2 A distance measuring log; except that this need not be provided where the navigational aid in Section 18.3.2.1 provides reliable distance measurements in the area of operation of the vessel.

18B NAVIGATIONAL EQUIPMENT – CONVENTION VESSELS

18B.1 Navigational Equipment

18.1.1 A vessel should be fitted with the following:-

.1 A properly adjusted standard magnetic compass or other means, independent of any power supply to determine the ship's heading.

.2 In a steel vessel, it should be possible to correct the compass for co-efficients, B, C and D and heeling error

.3 The magnetic compass or a repeater should be so positioned as to be clearly readable by the helmsman at the main steering position. It should also be provided with an electric light, the electric power supply to be twin wire type.

18.1.2 A vessel should be fitted with, the following additional equipment:

.1 an echo sounder.

.2 a receiver for a global navigation satellite system or a terrestrial radio-navigation system, or other means suitable for use at all times throughout the intended voyage to establish and update the ship's position by automatic means;

.3 a distance measuring log;

.4 a gyro compass or spare magnetic compass bowl;

.5 a rudder angle indicator; and

.6 a 9 GHz radar.

18.1.3 For vessels of less than 150gt the equipment specified in 18.1.1 and 18.1.2 need not be of an approved type.

18.1.4 Means should be provided for taking bearings as near as practicable over an arc of the horizon of 360°. This requirement may be met by the fitting of a pelorus compass, or, on a vessel other than a steel vessel, with a hand bearing compass.

18.1.5 For vessels under 150gt the requirements of 18.1.2.4 may be met by the use of a fluxgate compass, provided that a suitable back up power supply is available to power the compass in the event of failure of the main electrical supply. Where such a compass incorporates a capability to measure, magnetic deviation by undertaking a calibration routine, and where the deviation figures are recorded within the device, a deviation card is not required.

18.1.6 Attention should be paid to magnetic effects on magnetic compasses, including fluxgate compasses, when operating in Polar Regions. (i.e. north of 70° N, or south of 70° S).

18B.2 Bridge Visibility

18.2.1 Navigation bridge visibility should comply with SOLAS Chapter V. Vessels under 45m in length should comply as far as reasonable and practicable

18.2.2 Windows may be inclined from the vertical plane provided that, where necessary, appropriate measures are taken to avoid adverse reflections from within.

18.2.3 Windows to the navigating position should not be of either polarised or tinted glass (see 5.5.5) Portable tinted screens may be provided for selected windows.

19A. MISCELLANEOUS EQUIPMENT – NON CONVENTION VESSELS

19A.1 Nautical Publications

Charts and other nautical publications to plan and display the vessel's route for the intended voyage and to plot and monitor positions throughout the voyage should be carried. The charts must be of such a scale and contain sufficient detail to show clearly all relevant navigational marks, known navigational hazards and, where appropriate, information concerning ship's routeing and ship reporting schemes. Nautical publications may be contained within a consolidated publication. However, vessels operating in Area Category 6 need not carry publications. An electronic chart plotting system, complying with the requirements detailed in Marine Guidance Note MGN 262, may be accepted as meeting the chart carriage requirements of this sub-paragraph.

19A.2 Signalling Lamp

A vessel should be provided with an efficient waterproof electric lamp suitable for signalling.

19A.3 Radar Reflector

A vessel is to be provided with a radar reflector approved to current IMO performance standards, or other means, to enable detection by ships navigating by radar. For Category 6 vessels only, where it is not practicable for an efficient radar reflector to be fitted, they must not put to sea in fog, and if visibility starts to deteriorate they are to return to shore.

19A.4 Measuring Instruments

19.4.1 Other than a dedicated pilot boat, a vessel operating in Area Category 0, 1, 2 or 3 should carry a barometer.

19.4.2 A sailing monohull vessel operating in Area Category 0 or 1, or carrying 16 or more persons should be provided with an inclinometer.

19.4.3 A sailing monohull vessel operating in Area Category 0, 1, 2 and 3 should be provided with an anemometer.

19.4.4 A sailing multihull vessel should be provided with an anemometer providing a continuous indication of apparent windspeed, with the display clearly visible at each control position.

19A.5 Searchlight

A vessel operating in Area Category 0, 1, 2 or 3 should be provided with an efficient fixed and/or portable searchlight suitable for use in man-overboard search and recovery operations.

19A.6 Sailing Vessels – Wire Cutting Equipment

A sailing vessel must carry appropriate wire cutting equipment, or equivalent means to clear rigging, for use in the event of dismasting.

19B MISCELLANEOUS EQUIPMENT – CONVENTION VESSELS

19B.1 Nautical Publications

Every vessel should carry nautical charts and nautical publications to plan and display the ship's route for the intended voyage and to plot and monitor positions throughout the voyage.

An electronic chart system may be accepted as meeting these chart carriage requirements. It is recommended that this system is to be of an approved type (ECDIS).

Back-up arrangements to meet these functional requirements should be provided where this function is partly or fully filled by electronic means.

19B.2 Measuring Instruments

Every vessel should carry a barometer. Every sailing vessel should carry an anemometer and an inclinometer.

19B.3 Signalling Lamp

Every vessel should carry a daylight signalling lamp, or other means to communicate by light during day and night using an energy source of electrical power not solely dependent upon the ship's power supply. The signalling lamp may be the searchlight required by 19.4.

19B.4 Searchlight

Every vessel should carry an efficient fixed or portable searchlight suitable for man-overboard search and rescue operations.

20A. ANCHORS AND CABLES – NON CONVENTION VESSELS

20A.1 General

The requirements given in Table 20.1 are for a vessel of normal form which may be expected to ride-out storms whilst at anchor. The anchors and cables are not designed to hold a vessel off exposed coasts in rough weather nor stop a vessel that is moving.

20.1.2 Provision is to be made for the secure storage of the anchor and its cable.

20A.2 Anchors

20.2.1 The Tabulated values for anchor masses refer to High Holding Power anchors. Anchors of other designs may be accepted based on the stated holding power.

20.2.2 When a fisherman type of anchor is provided, the mass given in Table 20.1 should be increased by 1/3 but the diameter of the anchor cable need not be increased.

20.2.3 For vessels with an unusually high windage, due to high freeboard, a large rig, large deckhouses or superstructures, the mass of the anchor and the anchor cable diameter should be increased above that required in Table 20.1 to correspond to the increased wind loading. The increase in anchor mass and corresponding cable strength is to be to the satisfaction of the Certifying Authority.

20.2.4 For vessels of unusual or non-conventional ship form (including pontoon barges) the anchor and cable size should be to the satisfaction of the Certifying Authority.

20.2.5 Anchors are to be rigged ready for use. Only where the particular operating patterns dictate may the anchor be left unready, e.g. Pilot boat duties.

20.2.6 The design of the anchor is to be acceptable to the Certifying Authority.

20.2.7 Stainless steel and aluminium anchors will be separately considered dependent upon the test loads for which the anchor has been designed.

20A.3 Cables

20.3.1 The length of anchor cable attached to an anchor should be appropriate to the area of operation but generally should be not less than 4 x the vessel's mean length or 30 metres, whichever is the longer, for each of the main and kedge anchors. (For a definition of mean length see Note 4 of Table 20).

The cable for main anchors and for kedge anchors may be of chain or rope.

20.3.3 When the anchor cable is of fibre rope or wire, there should be not less than 10 metres or 20% of the minimum required cable length, whichever is the greater, of chain between the rope and the anchor. Where the anchor cable is wire then proposals to substitute the chain tail by an anchor and/or chain of enhanced mass will be considered to the satisfaction of the Certifying Authority, with special attention paid to the anchor performance, i.e. catenary.

20.3.4 The strength, form and material of the anchor cable and its attachments to the anchor and the vessel should be approved by the Certifying Authority.

Anchoring systems incorporating a windlass should have the bitter end of the cable secured to the vessel's structure and capable of being released in an emergency.

20.3.6 Anchor steel wire rope is to be fitted with thimbles at both ends.

20A.4 Tow line

20.4.1 A vessel should be provided with a towline of not less than the length and diameter of the kedge anchor cable. The towline may be the warp for the second anchor and in the case of Pilot Boats, the tow line may be the kedge anchor rope.

20A.5 Operations

20.5.1 When an anchor mass is more than 30kg, an efficient mechanical means should be provided for handling the anchor.

20.5.2 There should be a strong securing point on the foredeck or equivalent structure and where appropriate a fairlead or roller at the stem head.

20.5.3 Area of Operation Category 0,1,2, or 3

.1 A vessel should be provided with at least two anchors (one main and one kedge or two main) and cables, subject to Section 20.1 and in accordance with the requirements of Table 20.1.

.2 Anchors of equivalent holding power may be proposed and provided, subject to approval by the Certifying Authority.

20.5.4 Area of Operation Category 4 and 5

A vessel should be provided with at least two anchors (one main and one kedge or two main), the masses of which may not be less than 90% of the requirements of Table 20.1, with corresponding cables and subject to approval by the Certifying Authority.

20.5.5 Area of Operation Category 6

An anchor of sufficient mass for the size and type of vessel must be provided, and as a minimum the mass should correspond to that of a kedge, as illustrated in the table.

TABLE 20A.1
ANCHORS AND CABLES

	Anchor Mass		Anchor Cable Diameter			
Mean Length (See note 4)	Main	Kedge	Main Chain	Rope	Kedge Chain	Rope
(metres)	(kg)	(kg)	(mm)	(mm)	(mm)	(mm)
6	8	4	6	12	6	10
7	9	4	8	12	6	10
8	10	5	8	12	6	10
9	11	5	8	12	6	10
10	13	6	8	12	6	10
11	15	7	8	12	6	10
12	18	9	8	14	8	12
13	21	10	10	14	8	12
14	24	12	10	14	8	12
15	27	13	10	14	8	12
16	30	15	10	14	8	12
17	34	17	10	14	8	14
18	38	19	10	16	8	14
19	42	21	12	16	10	14
20	47	23	12	16	10	14
21	52	26	12	16	10	14
22	57	28	12	19	10	16
23	62	31	12	19	10	16
24	68	34	12	19	10	16

Notes:-

Chain cable diameter given is for short link chain. Chain cable should be sized in accordance with EN 24 565:1989 (covering ISO 4565: 1986 and covered by BS 7160:1990 – Anchor chains for small craft), or equivalent.

The rope diameter given is for nylon construction. When rope of another construction is proposed, the breaking load should be not less than that of the nylon rope specified in the table.

When anchors and cables are manufactured to imperial sizes, the metric equivalent of the anchor mass and the cable diameter should not be less than the table value.

For the purposes of this section, mean length is defined as:-

$$\frac{\text{Length + Length on waterline}}{2}$$

20B ANCHORS AND CABLES – CONVENTION VESSELS

20B.1 Equipment

20.1.1 Vessels will be considered to have adequate equipment if fitted out in accordance with standards for such equipment, set by an approved Classification Society.

20.1.2 Vessels not built in accordance with 20.1.1 may be specially considered by the Administration, provided full information is submitted for approval.

20.1.3 All vessels are to have at least 2 anchors, one of which must be ready for use at all times. Any powered deployment system should be connected to an emergency power supply or be capable of being manually operated.

20B.2 Sailing Vessels

20.2.1 The sizing of anchors and cables for sailing vessels should take into account the additional windage effect of the masts and rigging.

20.2.2 Typically, for square rigged sailing vessels, experience based guidance on approximate increase in anchor mass and cable strength required is:

for vessels up to 50 metres in length, typically 50% above the requirements for a typical motor vessel having the same total longitudinal profile area of hull and superstructure as the square rigged sailing vessel under consideration; and

21A. ACCOMMODATION – NON CONVENTION VESSELS

21A.1 General

21.1.1 Hand holds and grab-rails

There should be sufficient hand holds and grab-rails within the accommodation to allow safe movement when the vessel is in seaway.

21.1.2 Securing of heavy equipment

21.1.2.1 Heavy items of equipment such as batteries, cooking appliances etc. should be securely fastened in place to prevent movement due to severe motions of the vessel. In the case of a sailing vessel, the severe motions should include motions leading to inversion.

21.1.2.2 Stowage lockers containing heavy items should have lids or doors with secure fastenings.

21.1.3 Access/escape arrangements

Means of escape from accommodation spaces should satisfy the requirements of Section 5.3.1, 5.3.3 and 14.8.

21.1.4 Ventilation

There should be adequate ventilation in all accommodation spaces.

21.1.5 Hot water systems

Hot water supply systems (if any) should be designed, installed and maintained for the pressure and temperature at which they are to operate.

21A.2 Vessels at Sea for More than 24 Hours

When a vessel is intended to be at sea for more than 24 hours, an adequate standard of accommodation for all on board should be provided. In considering such accommodation, primary concern should be directed towards ensuring the health and safety aspects of persons, e.g. the ventilation, lighting, water services, galley services and the access/escape arrangements. In particular the following standards should be observed:-

21.2.1 Ventilation

Where air conditioning systems are not fitted, mechanical ventilation should be provided to accommodation spaces which are situated completely below the level of the weather deck on vessels making long international voyages or operating in tropical waters, and which carry 9 or more berthed persons below deck. As far as practicable, such ventilation arrangements should be designed to provide at least 6 changes of air per hour when the access openings to the spaces are closed.

21.2.2 Lighting

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

21.2.3 Water services

21.2.3.1 An adequate supply of fresh drinking water should be provided and piped to convenient positions throughout the accommodation spaces.

21.2.3.2 In addition, an emergency (dedicated reserve) supply of drinking water should be carried at the rate of 2 litres per person on board.

21.2.4 Sleeping accommodation

A bunk or cot should be provided for each person on board and at least 50% of those provided should be fitted with lee boards or lee cloths.

21.2.5 Galley

21.2.5.1 A galley should be fitted with a means for cooking and a sink and have adequate working surface for the preparation of food.

21.2.5.2 When a cooking appliance is gimballed it should be protected by a crash bar or other means to prevent it being tilted when it is free to swing, and a strap, portable bar or other means should be provided to allow the cook to be secured in position, with both hands free for working, when the vessel is rolling. A means should be provided to lock the gimbal mechanism to prevent movement.

21.2.5.3 There should be secure storage for food in the vicinity of the galley.

21.2.6 Toilet facilities

21.2.6.1 Adequate toilet facilities, separated from the rest of the accommodation, should be provided for persons on board.

21.2.6.2 In general, there should be at least one flushing marine toilet and one wash hand basin for every 12 persons.

21.2.6.3 Due consideration should be given to the requirements of Section 29 Clean Seas.

21.2.7 Stowage facilities for personal effects

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

21B ACCOMMODATION – CONVENTION VESSELS

21B.1 General

21.1.1 An adequate standard of accommodation should be provided to ensure the comfort, recreation, health and safety of all persons on board.

21.1.2 Attention is drawn to the achievement of appropriate standards for means of access and escape, lighting, heating, food preparation and storage, messing, safety of movement about the vessel, ventilation and water services.

21.1.3 Generally, accommodation standards for the crew should be at least equivalent to the standards set by the International Labour Organisation conventions for crew accommodation in merchant ships. The ILO Convention provisions generally apply to vessels greater than 500 gt For smaller vessels, particularly sailing ships, the standards should be applied where possible When it is neither reasonable nor practicable to site crew sleeping accommodation amidships or aft and above the deepest waterline as required, measures taken to ensure an equivalent level of crew health and safety should be agreed with the Administration. Sleeping accommodation with the deck head lining below the deepest waterline is not permitted. It is recommended that where such accommodation is sited partially below the deepest waterline it should be arranged such that in the event of damage to the watertight compartment in which the accommodation space is situated, the lining should not be immersed.

21.1.5 Crew accommodation should not be sited within hazardous spaces.

The following standards are described by general principles which need to be expanded to meet the requirements which relate to the use and areas of operation of particular vessels.

21B.2 Access/Escape Arrangements

See 14B.4

21B.3 Lighting

An electric lighting system should be installed which is capable of supplying adequate light to all enclosed accommodation and working spaces. The system should be designed and installed in accordance with section 8.

21B.4 Heating

As considered appropriate, an adequate heating installation should be provided.

21B.5 Food Preparation, Storage and Messing

The galley floor should be provided with a non-slip surface and provide a good foothold.

All furniture and fittings in the Galley shall be made of a material which is impervious to dirt and moisture. All metal parts of furniture and fittings shall be rust resistant.

The ventilation in the galley shall be so arranged as to ensure an adequate supply of fresh air and the efficient discharge of fumes into the open air (see also 21.7).

When a cooking appliance is gimballed it should be protected by a crash bar or other means to prevent personal injury. Means should be provided to lock the gimballing mechanism.

Means should be provided to allow the cook to be secured in position, with both hands free for working, when the vessel motions threaten safe working.

Secure and hygienic storage for food and garbage should be provided.

A messing area(s) should be provided, each messing area shall be large enough to accommodate the greatest number of persons likely to use it at any one time.

21B.6 Hand Holds and Grab Rails

There should be sufficient hand holds and grab rails within the accommodation to allow safe movement around the accommodation at all times. Stairways should be specially considered

21B.7 Ventilation

Effective means of ventilation should be provided to all enclosed spaces which are entered by personnel.

Mechanical ventilation should be provided to all accommodation spaces on vessels which are intended to make long international voyages or operate in tropical waters.

As a minimum, mechanical ventilation should be capable of providing 6 changes of air per hour, when all access and other openings (other than ventilation intakes) to the spaces are closed.

Air conditioning systems are to provide a minimum of $25m^3$ of air per hour, per person accommodated in the ventilated space during normal operating conditions.

Enclosed galleys are to be specially considered, and where air conditioning is not fitted should have, as a minimum, a mechanical supply of 20 fresh air changes per hour and a mechanical exhaust of 30 changes.

21B.8 Water Services

An adequate supply of fresh drinking water should be provided and piped to convenient positions throughout the accommodation spaces.

In addition, an emergency reserve supply of drinking water should be carried, sufficient to provide at least 2 litres per person. The installation of Fresh Water making machines and disinfection arrangements are to be to the acceptance of the Administration. (For the purposes of this silver ionisation or chlorination would be considered acceptable.)

21B.9 Sleeping Accommodation

An appropriately sized bed (bunk or cot) should be provided for every person on board, with due regard for the guidance produced by the International Labour Organization (ILO). Where considered appropriate, means for preventing the occupants from falling out, should be provided.

There shall be no direct access into sleeping rooms from spaces for machinery, galleys, paint rooms or from engine, deck, and other bulk storerooms, drying rooms, communal wash places or water closets.

In crew accommodation, wherever possible, the maximum number of persons per sleeping room is to be two and there should be unobstructed access to at least one side of each bed. Any increase in the maximum number of persons per sleeping room should be agreed with the Administration

21B.10 Toilet Facilities

Adequate sanitary toilet facilities should be provided on board. The facilities should be at least one water closet, one shower for every 8 persons or part thereof, and one wash basin for every 6 persons or part thereof.

In vessels where a sanitary system, including a holding tank, are provided, care should be taken to ensure that there is no possibility of fumes from the tank finding their way back to a toilet, should the water seal at the toilet be broken.

21B.11 Stowage Facilities for Personal Effects

Adequate stowage facilities for clothing and personal effects should be provided for every person on board.

21B.12 Securing of Heavy Equipment

All heavy items of equipment such as ballast, batteries, cooking stove, etc, should be securely fastened in place. All stowage lockers containing heavy items should have lids or doors which are capable of being securely fastened.

22A. PROTECTION OF PERSONNEL – NON CONVENTION VESSELS

22A.1 Deckhouses

A deckhouse used for the accommodation of persons must be constructed of adequate strength to withstand the forces of weather and sea to which it will be subjected in use.

22A.2 Bulwarks, Guard Rails and Handrails (General)

22.2.1 Bulwarks, guardrails and guardwires should be supported efficiently by stays or stanchions. When application of such measures would impede the proper working of the vessel, alternative safety measures should be considered, for guidance ISO 15085 refers.

22.2.2 To protect persons from falling overboard, and when the proper working of the vessel is not impeded and there are persons frequently on the deck, bulwarks or three courses of rails or taut wires should be provided and the bulwark top or top course should be not less than 1000mm above the deck (in accordance with Load Line rules). The distance between the lowest course and the deck should not exceed 230mm and the distance between other courses should not exceed 380mm.

22.2.3 In a vessel fitted with a cockpit which opens aft to the sea, additional guardrails should be fitted so that there is no unprotected vertical opening (i.e. between vertical 'members') greater than 500mm in width.

22.2.4 For vessels operating in Category 6, where it is impractical and unnecessary to fit guardrails, alternative arrangements may be acceptable subject to the Certifying Authority being satisfied as to the adequacy of the proposed arrangements. For example, on small motor vessels with narrow side decks alongside a deck house, a handrail on the side of the deckhouse may be fitted. On the foredeck, a centreline handrail may be considered more workable.

22.2.5 Handrails should be provided for access stairways, ladderways, passageways and for decks without bulwarks or guardrails. This provision should not be used in lieu of guardrails and bulwarks where required by the Code.

22.2.6 In an inflatable boat or a rigid inflatable boat, handgrips, toeholds and handrails should be provided as necessary to ensure safety of all persons on board during transit and the worst weather conditions likely to be encountered in the intended area of operation.

22A.3 Sailing Vessels

22.3.1 When the proper working of a sailing vessel may otherwise be impeded, bulwarks or two courses of rails or taut wires should be fitted around the working deck and the height of the protection should be not less than 600mm above the deck. Rails or wires should be supported at intervals not exceeding 2.2 metres.

22.3.2 When the proper working of a vessel of less than 9 metres in length may otherwise be impeded, and for vessels in which the crew do not leave the cockpit, bulwarks or a single rail or taut wire may be fitted around the working deck with the height of the protection being not less than 450mm above the deck but with no vertical opening greater than 560mm.

22.3.3 In a vessel fitted with a headstay, a fixed or drop-nosed bow pulpit should be provided forward of the headstay of at least the same height as the guardrails, except in way of a substantial bowsprit. A drop-nosed pulpit with an opening wider than 250mm should be provided with a means of closure at guardrail height, for use at sea.

22.3.4 When it is desired to move forward of a pulpit to access a bowsprit or to assist with docking operations, it should be permissible to arrange the pulpit with an opening in its forward-most part. In this case, an efficient means of closure of the opening and jackstays provided in accordance with Section 22.4.8.

22A.4 Safety Harnesses

22.4.1 A vessel should be provided with safety harnesses as necessary for all persons who may be required to work on deck, with a minimum number of 2.

22.4.2 A sailing vessel should carry a safety harness for each person on board.

22.4.3 Efficient means for securing the life lines of safety harnesses should be provided on exposed decks, and grabrails provided on the sides and ends of a deckhouse.

22.4.4 Fastening points for the attachment of safety harness life lines should be arranged having regard to the likely need for work on or above deck. In general, securing points should be provided in the following positions:-

.1 close to a companionway; and

.2 on both sides of a cockpit.

22.4.5 When guard rails or wires are not otherwise provided, or do not meet the requirements of Section 22.2 or 22.3, jackstays (which may be fixed or portable) secured to strong points, should be provided on each side of the vessel to enable crew members to traverse the length of the weather deck in bad weather.

22.4.6 For sailing vessels operating in Area Category 0, 1, 2 or 3, jackstays must be provided.

22.4.7 Motor vessels with guardrails of a height less than that required by Section 22.2 may be accepted for areas where passengers are not normally allowed. These areas should be restricted to crew use only and alternative arrangements provided onboard for their protection.

22.4.8 When a sailing vessel is provided with an open fronted pulpit, jackstays should be carried sufficiently far forward to protect persons working in the vicinity of the pulpit.

22A.5 Toe Rails

When appropriate to the working of a vessel provided with a sailing rig, a toe rail of not less than 25mm in height should be fitted around the working deck.

22A.6 Safe Location

In a non-decked vessel or rigid inflatable, it is the owner's/operator's responsibility to ensure that a safe location aboard the boat is provided for all persons.

22A.7 Surface of Working Decks

22.7.1 The surface of a working deck should be non-slip.

22.7.2 Acceptable surfaces are: chequered plate, unpainted wood; a non-skid pattern moulded into FRP; non-slip deck paint; or an efficient non-slip covering.

22.7.3 Particular attention should be paid to the surface finish of a hatch cover when it is fitted on a working deck and, for sailing vessels, to sloping coach roof sides where these effectively constitute a working deck when the vessel is heeled.

22.7.4 In an inflatable boat or rigid inflatable boat the upper surface of the inflatable buoyancy tube should be provided with a non-slip finish.

Recovery of Persons from the Water

An overside boarding ladder or scrambling net which extends from the weather deck to at least 600mm below the operational waterline, or other means to aid the recovery of an unconscious person from the water, should be provided to the satisfaction of the Certifying Authority.

22A.9 Personal Clothing

22.9.1 It is the responsibility of an owner/managing agent/skipper to advise that the following requirements for items of personal clothing should be met:

.1 Each person on board a vessel should have protective clothing appropriate to the prevailing air and sea temperatures.

.2 When a vessel is operating in waters of sea surface temperature of 10°C or less, each person on board should have either an approved immersion suit, a dry suit or other efficient garment to reduce the likelihood of hypothermia should the wearer enter the sea. Sea temperature data may be found in sources such as the Admiralty Pilot for a given sea area and period.

.3 Each person on board a vessel should have footwear having non-slip soles, to be worn on board.

22A.10 Noise

Attention is drawn to the second edition of the "Code of Practice for Noise Levels in Ships" (Noise Code) published by HMSO in 1990 and Merchant Shipping Notice No. M.1415 - Code of Practice for Noise Levels in Ships.

22.10.1 Vessels covered by this Code should meet the recommendations of the Noise Code so far as is reasonable and practicable.

22.10.2 The Noise Code recognises that the scope for strict application of recommended noise levels on small vessels is usually limited and deals with the means of protecting the seafarer from the risk of noise-induced hearing loss under conditions where, at the present time, it is not technically feasible to limit the noise to a level which is not potentially harmful. Factors which are taken into account include voyages of short duration and vessels without sleeping accommodation which are crewed on a shift basis.

22.10.3 For safe navigation, it is important that sound signals and VHF communications can be heard, at the navigating position in normal operating conditions.

22.10.4 For machinery spaces, workshops and stores which are manned either continuously or for lengthy periods, the recommended limits are 90dB(A) for machinery spaces and 85dB(A) for workshops and stores.

For machinery spaces which are not intended to be continuously manned or are attended for short periods only, the recommended limits are 110dB(A).

22.10.5 To indicate the need to wear ear protectors, BS 5378 - Safety signs, a sign with symbol and supplementary warning notice should be displayed at all entrances to enclosed spaces in which the noise level exceeds 85dB(A).

22.10.6 Annex 11 contains extracts from the Noise Code which indicate the maximum daily noise doses for unprotected ears, based on dB(A) sound energy received and examples of noise levels in different locations which may enable personnel to gauge potentially harmful noise exposure.

22B PROTECTION OF PERSONNEL – CONVENTION VESSELS

22B.1 Deckhouses and Superstructures

The structural strength of any deckhouse or superstructure should comply with the requirements of one of the Classification Societies listed in 4.2.1.1, as appropriate to the vessel and its areas of operation.

22B.2 Bulwarks and Guard Rails

22.2.1 Bulwarks and/or guardrails on all accessible decks should be 1000 mm high except that on vessels built to 1959 Load Line Rules these may be 915mm high. Any opening should not exceed 380 mm. Where no bulwarks are fitted, or bulwark height is less than 230mm, the lowest opening should not exceed 230mm. They should be supported at intervals not exceeding 2.2 metres. Intermediate courses of rails or wires should be evenly spaced.

22.2.2 Satisfactory means (in the form of guard rails, life lines, gangways or underdeck passages, etc.) shall be provided for the protection of the crew in getting to and from their quarters, the machinery space and all other parts used in the necessary work of the craft.

22.2.3 Where the function of the vessel would be impeded by the provision of bulwarks and/or guard rails complying with 22.2.1, alternative proposals detailed to provide equivalent safety for persons on deck should be submitted to the Administration for approval.

22B.3 Safe Work Aloft, Overside, and on the Bowsprit of Sailing Vessels

22.3.1 When access to the rig, bowsprit, or overside working is required, provision should be made to enable people to work safely, in accordance with national standards, see National Annex.

22.3.2 The arrangements provided should be based on established safe working practices for the type of vessel. The arrangements may include but not be limited to:-

.1 Safety nets below the bowsprit.

.2 Safety grabrails in wood (or jackstays in metal) fixed along the bowsprit to act as handholds and safety points for safety harnesses.

.3 Mandatory use of safety harnesses aloft, overside, and for work on the bowsprit.

.4 Sufficient footropes and horses in wire (or rope) permanently rigged to enable seamen to stand on them whilst working out on the yards or on the bowsprit.

.5 Safety jackstays (in metal) fixed along the top of the yards, to provide handholds and act as strong points for safety harnesses.

.6 Means of safely climbing aloft, such as:-

(i) fixed metal steps or ladders attached to the mast; or

(ii) traditional ratlines (rope) or, rattling bars (wood/steel), fixed across the shrouds to form a permanent ladder.

22B.4 Personal Clothing

It should be the responsibility of an owner/managing agent/skipper to advise that the following requirements for items of personal clothing should be met:

.1 Each person on board a vessel should have protective clothing appropriate to the prevailing air and sea temperatures.

.2 Each person on board a vessel should have footwear having non-slip soles, to be worn on board.

22B.5 Noise

Attention is drawn to the IMO Code on Noise Levels on Board Ships, Resolution A.468 (XII), published 1982.

22.5.1 Vessels covered by this Code should meet the recommendations so far as is reasonable and practicable.

22.5.2 The IMO Code on Noise on Board Ships promotes the control of noise within the framework of internationally agreed guidelines, whilst recommending methods of measuring noise at listening posts.

22.5.3 For safe navigation, it is important that sound signals and VHF communications can be heard, at the navigating position in normal operating conditions.

22.5.4 For machinery spaces, workshops and stores which are manned either continuously or for lengthy periods, the recommended limits are 90dB(A) for machinery spaces and 85dB(A) for workshops and stores.

For machinery spaces which are not intended to be continuously manned or are attended for short periods only, the recommended limits are 110dB(A).

The limits have been set from hearing damage risk considerations and the use of suitable ear protectors.

22.5.5 To indicate the need to wear ear protectors, safety signs, sign with symbol and supplementary warning notice should be displayed at all entrances to spaces in which the noise level exceeds 85dB(A).

23A. MEDICAL STORES – NON CONVENTION VESSELS

23A.1 Medical stores should be carried in accordance with the requirements of a recognised standard e.g. as set out in a Merchant Shipping Notice, currently MSN 1768 (M+F). This requires the carriage of medical stores according to the distance from shore that a vessel operates. For vessels in Area Categories 2,3,4,5 and 6 Category C stores are required, as listed in Annex 2. For vessels in Area Category 1, Category B stores are required, and for Area Category 0, Category A stores are required. For details of the requirements for Category A and B stores reference should be made to MSN 1768 (M+F). For vessels operating in categories O and 1, a full copy of MSN 1768 should be carried with the medical stores. The notice can be obtained from the MCA website at www.mcga.gov.uk or from any Marine Office. Vessels operating in all other categories need carry Annex 6 and 7 of that notice relating to the use of the stores themselves. The owners/managing agent should retain a full copy at the shore base for checking purposes.

23A.2 It is intended that the requirements for medical equipment reflect the type of vessel, it's operation & the nature of voyages undertaken. The notes to the MSN 1768 explain the flexibility available, under the MSN, in terms of the selection of medicines and medical equipment to be carried. Where, because of the particular type of vessel or operation, and based on a risk assessment and professional medical advice, it is considered impractical or unsafe to carry a specific item, this may be omitted. Where any item is omitted, this should be stated on the medical stores, with a note indicating the specific item that is omitted and that its omission is based on risk assessment and medical advice. The MSN 1768 is currently under review with the intention of adopting a more risk based approach to medical kit requirements

23B MEDICAL STORES – CONVENTION VESSELS

A vessel should carry medical stores as required by the Administration.

Medical training requirements for members of the complement of the vessel are given in the Manning Section of the National Annex.

24A. TENDERS AND DINGHIES – NON CONVENTION VESSELS

24A.1 When a ship's tender or dinghy is provided (towed or carried by a vessel) it must be clearly marked with the permissible maximum weight which can be safely carried and with the name of the parent vessel.

24A.2 All tenders or dinghies should be fit for the purpose intended, regularly inspected by the owner/managing agent and maintained in a safe condition. An inflatable tender is not required to meet the requirements for inflatable boats or rigid inflatable boats in Section 4A.5.

24A.3 It is strongly recommended that a sailing vessel should carry (or tow) one or more rigid or inflatable tenders.

24B. SHORE-SHIP TRANSFER OF PERSONNEL – CONVENTION VESSELS

24B.1 Tenders (Dinghies)

24.1.1 When a vessel carries a rigid or inflatable tender, it should be fit for its intended use, regularly inspected by the owner/managing agent, and maintained in a safe condition

24.1.2 Safety equipment should be provided in the tender as appropriate to its intended range and areas of operation.

24.1.3 Each tender should be clearly marked with the number of persons (mass 75 kg) that it can safely carry, and the name of the parent vessel.

24.1.4 In the case of petrol-engined tenders, see section 14 for the safety requirements for the carriage of petrol.

24B.2 Helicopter

24.2.1 When provision is made for helicopter operations to/from the vessel, the arrangements should comply with SOLAS II-2/18. (Currently refers to IMO Resolution A.855(20)). Attention is also drawn to the International Civil Aviation Organisation (ICAO) Annex 14 of the Convention on International Civil Aviation, Volume 2 'Heliports'.

24.2.2 If it is proposed to provide refuelling facilities for a helicopter whilst it is onboard the vessel, approval should be sought from the Administration.

24B.3 Pilot for Vessel

Boarding arrangements provided for pilots should have due regard for SOLAS Chapter V, Regulation 23 and IMO Resolution A.889 (21) "Pilot transfer arrangements", International Maritime Pilots' Association (IMPA) recommendations, or any documents replacing them. Also see National Annex for any national requirements.

24B.4 Gangways, Passerelles, and Accommodation Ladders

24.4.1 A safe means of access is to be provided at all times when in port, either deployed or available for deployment. If the safe means of access is not deployed, there shall be a means provided for communication between those on the quay and those on board.

24.4.2 When provided, gangways, passerelles, and accommodation ladders should be manufactured to a recognised national or international standard, and be clearly marked with the manufacturer's name, the model number and the maximum design angle of use and the maximum safe loading by number of persons and by total weight. Side screens or handrail(s) should be provided.

24.4.3 Where gangways, passerelles or ladders do not comply with national or international standards, a manufacturer's test load certificate should be provided. Alternatively practical tests may be carried out to the satisfaction of the Administration. In all cases the maximum design angle, maximum number of persons, and the maximum total weight should be clearly marked, and be used in accordance with the manufacturer's instructions.

24.4.4 Access equipment and immediate approaches to it should be adequately illuminated.

24.4.5 Reference standards include:

BSMA 78:1978 - Gangways (excluding the maximum overall widths specified in table 2); and
BSMA 89:1980 - Accommodation Ladders.
ISO 7061:1993 -Shipbuilding - Aluminium shore gangways for seagoing vessels
ISO 5488:1979 - Shipbuilding -- Accommodation ladders

25B CLEAN SEAS – CONVENTION VESSELS

25.1 Vessels should comply with all the requirements of MARPOL according to the regulations of the Administration. For vessels under 400 GT it is the owner's responsibility to comply with local administration/port state requirements and for dealing with oily bilge water retention etc.

25.2 Special local requirements may exist in national sea areas, ports and harbours. The attention of owners/operators is drawn to the need to comply with local requirements as appropriate.

25A. REQUIREMENTS SPECIFIC TO THE USE OF THE VESSEL – NON CONVENTION VESSELS

25A.1 Sailing Vessel Features

25.1.1 Efficient storm sails should be carried which are capable of taking the vessel to windward in heavy weather. Where one of the required storm sails is a foresail, and roller furling gear and associated sails are fitted, a means of setting a separate taut luff storm jib should be provided. Each storm weather jib shall have a means to attach the luff to a stay independent of any luff groove device, which shall be permanently attached to the sail. Such sails may use the taught luff of a furled sail.

25.1.2 Storm sails need not be provided for a vessel restricted to Area Categories 4, 5 and 6, which restrict operations to favourable weather and daylight.

25.1.3 The condition of spars and rigging should be periodically examined by a competent person. The frequency of examination will depend on the nature of the rig and its use. As a minimum, a detailed spars and standing rigging visual inspection should be carried out at least once during the term of the certificate and a report presented to the Certifying Authority. More frequent examinations may be considered necessary, at the discretion of the Certifying Authority. Chain plates and their attachments to hull structure should be visually examined at least every five years and more frequently if justified by usage.

25A.2 Vessels Engaged in Commercial Towing

25.2.1 General

The requirements of this Section do not apply to vessels towing in an emergency situation.

25.2.1.1 Reference should be made to Section 11.7 for stability of vessels engaged in towing and to Section 17 – Navigation Lights, Shapes and Sound Signals, for requirements for towing and towed vessels.

25.2.1.2 In addition to the qualifications required by Annex 3, vessels of 80 GT and over, engaged in towing, or assisting the handling, berthing or un-berthing of ships or other floating objects over twice their displacement, shall be manned by suitably experienced personnel, competent for the area and type of operation and size and type of the vessel.

25.2.1.3 For seagoing tows the owner/managing agent should consider the duration of the tow with regard to safe manning requirements in accordance with Annex 3, paragraph 8.

25.2.1.4 The owner/managing agent should ensure that the skipper is aware and has copies onboard the vessel of relevant Merchant Shipping Notices (MSN) which give guidance on safety of vessels engaged in towing.
Particular attention is drawn to the guidance provided currently in MGN 199 (M+F) Dangers of Interaction.
Due regard should be given to other relevant Merchant Shipping Marine Guidance Notes (MGNs) which may be issued from time to time, which give guidance on the safety of vessels which tow.

25.2.2 Towing arrangements
25.2.2.1 The design of towing gear should minimise the overturning moment due to the lead of the towline.

25.2.2.2 The towing hook or towline should have a positive means of release which can be relied upon to function correctly under all operating conditions.

25.2.2.3 The towing hook (or equivalent fitting) and the supporting structure should be strong enough to withstand loads imposed during towing operations.

25.2.2.4 The release mechanism should be controlled from all conning positions and at the hook itself. The local control at the hook should be of the direct mechanical type capable of independent operation.

25.2.2.5 Towing arrangements should be appropriate to the task in hand and maintained to ensure that they are in an efficient working condition.

25.2.3 Weathertight integrity

25.2.3.1 Doorways in superstructures, deckhouses and exposed machinery casings situated on the weather deck and which enclose accesses to spaces below deck should be provided with efficient weathertight doors. Weathertight doors should be secured in the closed position when the vessel is towing and the doors should be marked clearly to this effect.

25.2.3.2 Machinery air intakes and machinery space ventilators which must be kept open during towing operations should be served by means of high coaming ventilators as protection from downflooding.

25.2.3.3 Generally, airpipes and ventilators should be kept as far inboard as possible and be fitted with automatic means of closure when downflooding to the compartments served would endanger the safety of the vessel.

25.2.4 The towed vessel or floating object

A vessel, pontoon, barge or floating object which is towed to sea from Jersey should be surveyed and issued with an appropriate load line certificate for the towed voyage. Certification for non-self-propelled vessels which make voyages under tow is permitted in accordance with Section 25.5.

25A.3 Cargo Carrying

25.3.1 When a vessel is engaged in carrying cargo all such cargo should be stowed and secured in a manner which will not adversely affect the safe operation of the vessel.

25.3.2 Particular attention should be paid to the means for securing the cargo and the strength of securing points, the free drainage of water from cargo stowed on open deck, safe access in way of cargo stows and unobstructed visibility from the wheelhouse.

25.3.3 Cargo hatchways to dry cargo holds or spaces should be of an efficient weathertight construction.

25.3.3.1 In general, a cargo hatch coaming should be not less than 760mm in height. Hatch covers and coamings should be designed to withstand (without permanent deformation) a hydrostatic load of not less than 1.5 tonnes/metre^2 overall and associated buckling stress, and be fitted with efficient means to be closed and secured weathertight to the coaming. In any case, the coaming and hatch cover should be sufficiently strong to withstand the hydrostatic loading and/or the loading due to cargo stowed on the hatch cover, whichever loading is limiting.

25.3.3.2 Proposals for a cargo hatchway with a reduced coaming height or a flush hatch should be subject to special consideration by the Certifying Authority and may be approved when the safety of the vessel is judged to be at least equivalent to Section 25.3.3.1.

25A.4 Vessels fitted with a Deck Crane or Other Lifting Device

25.4.1 Reference should be made to Section 11.6 for requirements for safety standards for vessel stability during lifting operations.

25.4.2 Generally, a vessel fitted with a deck crane or other lifting device which will be used when the vessel is at sea should be a decked vessel with a watertight weather deck in accordance with Section 4.1.1 and 4.3.1.1 or be considered under Section 4.1.3.2.

Agreement should be obtained from the Administration for any proposal to fit a deck crane or other lifting device on a vessel which is not a decked vessel.

25.4.3 The vessel's structure, the crane or other lifting device and the supporting structure should be of sufficient strength to withstand the loads that will be imposed when operating at its maximum overturning moment and maximum vertical reaction.

25.4.4 Load tests and inspections to verify the safe operation of the crane or other lifting device, its foundation and supporting structures should be carried out to the satisfaction of the Certifying Authority. Tests should be conducted in accordance with a

recognised standard for the installation. Such tests should be repeated after modifications, including any structural modifications, take place. A visual inspection of the crane or lifting device should be carried out annually.

Typically, the crane or other lifting device should be subjected to a 25% overload test. (In special circumstances a reduced overload may have to be accepted but in no case should this be less than 10 %.) During the overload test, the hoist, slew and luff performance should be tested at low speed, as appropriate. Tests for a variable load-radius type of crane or other lifting device should correspond to its rated performance (e.g. load radius chart).

Attention is drawn to the requirements of BS 7121: Part 2:2003 - Code of Practice for Safe Use of Cranes. Inspection, Testing and Examination. Paragraph 17 - Cranes on Water Borne Craft, has particular relevance to vessels certificated in accordance with this Code.

25.4.5 An inclinometer (pendulum) should be provided onboard for guidance to the crane or lifting device operator when controlling the lifting items of unknown weight.

25.4.6 A prominent clear notice should be posted on or near the crane or lifting device and contain the following information and instructions:-

.1 the maximum permitted load and outreach which satisfy the requirements of Section 11.6.3, or the safe working load (SWL), whichever is the lesser (operating performance data, i.e. load radius performance chart for a crane or other lifting device of variable load-radius type should be included as appropriate);

.2 Any crane whose safe working load varies with its operating radius is provided with a means of accurately determining the radius at any time, clearly visible or accessible to the driver of the crane, showing the radius of the load lifting attachments at anytime. Provision should be made to enable the driver to ascertain the safe working load corresponding to that radius;

.3 details of all openings leading below deck which should be secured weathertight; and

.4 instructions for all personnel to be above deck before lifting operations commence.

25.4.7 A lifting system which incorporates counterbalance weight(s) should be specially considered by the Administration.

25.4.8 The Certifying Authority should be satisfied that the safety of the vessel is not endangered by lifting operations. Means should be provided for the efficient securing of cargo and loose equipment onboard during lifting operations. Instructions on safety procedures to be followed by the skipper should be provided to the satisfaction of the Certifying Authority.

25.4.9 It should be noted that the Merchant Shipping (Hatches and Lifting Plant) Regulations 1988 (SI 1639) are currently in the process of being revised in order to implement the European Council Directives 89/655/EEC and 95/63/EC on the use of work equipment. The Merchant Shipping and Fishing Vessel (Provision and Use of Work Equipment) Regulations (PUWER) and Merchant Shipping and Fishing Vessel (Lifting Operations and Lifting Equipment) Regulations (LOLER) are due for implementation during 2004/5 and operators of equipment covered by these regulations should be aware of their requirements.

25A.5 Non-Self-Propelled Vessel

25.5.1 General

25.5.1.1 It is permissible for a Small Commercial Vessel Certificate to be issued to cover the transit voyages under tow of an unmanned non-self-propelled vessel or floating object of defined rigid form. The valid life of the certificate should be decided by the Certifying Authority but in no case should it exceed 5 years.

25.5.1.2 It is permissible for a Small Commercial Vessel Certificate to be issued to cover the safety of a non-self-propelled vessel of defined rigid form which is a working platform for equipment and/or power producing plant. The vessel should be assessed for compliance with the parts of the Code which are appropriate to its commercial operation.

25.5.1.3 A vessel of defined rigid form includes a vessel which comprises an assembly of separate units held together by an efficient engineered joining system appropriate to the mode of operation of the vessel.

25.5.1.4 A vessel which has the capability of a jack-up to operate clear of the surface of the water should be equipped and certificated to meet the requirements of the Health and Safety Inspectorate, when it is jacked up.

25.5.1.5 A small non-self-propelled vessel which is not covered by Section 25.5.1.1, 25.5.1.2 or 25.5.1.3 should be referred to the MCA for consideration of safety standards and certification to be applied.

25.5.2 Stability

When the stability standards of Section 11 are not appropriate for assessment of a particular small non-self-propelled vessel, the case should be referred to the Administration for consideration of stability standards to be applied.

25.5.3 Freeboard

25.5.3.1 Generally, freeboard should be assigned in accordance with the Shipping (Load Line) (Jersey) Regulations 2004.

An existing non-self-propelled vessel with a valid Load Line Exemption Certificate issued by a recognised Administration but having an assigned freeboard less than that required by the Shipping (Load Line) (Jersey) Regulations 2004 should be accepted for a Small Commercial Vessel Certificate under the same conditions given on the Exemption Certificate subject to an appropriate technical review.

Load line marking should be applied in accordance with Section 12.2.2.2 and 12.2.3 (but see Section 25.5.3.3).

25.5.3.2 An unmanned pontoon barge on which the freeboard deck is penetrated only by small access openings which are closed by gasketed watertight covers should have freeboard determined in accordance with the Shipping (Load Line) (Jersey) Regulations 2004 as if it was a Type "A" ship and omitting any correction for minimum bow height. At the discretion of the Certifying Authority, having due regard for safe voyages of the unmanned barge under conditions which should be explicitly recorded on the Small Commercial Vessel Certificate, the freeboard thus determined may be reduced by up to 25%.

25.5.3.3 No requirement is made for the provision of draught marks. In order that the towing master can readily recognise change in the condition of the tow, the towed vessel should be marked at the forward end with one or more white bars 2000mm in length and 150mm high (or alternative marking which is clearly visible from the towing vessel) to the satisfaction of the Certifying Authority.

25A.6 Vessel Engaged as a Pilot Boat

25.6.1 General

A vessel engaged as pilot boat may be recognised as either a dedicated pilot boat which is certificated as a pilot boat or a certificated Small Commercial Vessel which is engaged as a pilot boat from time to time.

A pilot boat should be certificated, even if it does not operate at sea.

The requirements of the Code apply generally to all vessels. Requirements for a pilot boat are, in certain matters of safety, either additional or alternative to the requirements of the Code.

Under the Shipping (Safety Codes) (Jersey) Regulations 200- the Administration may exempt any pilot boat from any or all of the provisions of the part of the regulations dealing with pilot boats. In granting an exemption, the Administration may do so on such terms (if any) as he may specify if he is satisfied that compliance with such provision is either impracticable or unreasonable in the case of a pilot boat and may, subject to giving reasonable notice, alter or cancel any such exemption. Applications for exemption should be submitted through the Certifying Authority to the Administration for consideration. Only the Harbours and Airport Committee is empowered to grant exemptions on behalf of the States of Jersey.

25.6.2 A small commercial vessel engaged as a pilot boat

25.6.2.1 A Small Commercial Vessel engaged as a pilot boat from time to time should comply with the Code as it applies to its duties as a small commercial vessel and, in addition, comply with the requirements for a dedicated pilot boat which are marked with * in Section 25.6.3.

Such a vessel should be in possession of a Small Commercial Vessel Certificate which carries a PILOT BOAT ENDORSEMENT.

25.6.2.2 In the event that the safety rail system required by * 22.4 of Section 25.6.3 is considered to be inappropriate because of other measures provided to prevent persons on deck from falling overboard (e.g. extent and height of bulwarks or rails), the Certifying Authority should be satisfied that the provisions for the safe movement of pilots and others persons on deck during transfers are adequate.

25.6.3 Dedicated pilot boat
A dedicated pilot boat should comply with the following requirements. The requirements refer to the appropriate Sections of the Code.

*5.2.1.3 The normal means of access from the open deck to accommodation space provided for the use of pilots should not be a forward facing weathertight door;

*5.4 Pilot boarding activities should be visible from the pilot boat helmsman's position. Visibility should be adequate in both the vertical and horizontal planes;

5.4.8.3 Where a vessel is required to have efficient storm shutters for all front and side facing wheelhouse windows, this can be moderated on the basis of recorded safe operating experience of pilot boats in their particular area of operation;

*7.3 A pilot boat should not be fitted with a petrol engine;

*11 A seagoing pilot boat should carry an approved stability information booklet which meets the requirements of Section 11.3.

A non-seagoing pilot boat should undergo a heeling test in the fully loaded condition and be demonstrated to meet the requirements of Section 11.4.

12 A dedicated pilot boat need not be marked with a freeboard mark;

*13 Pilots boats are to be provided with immersion suits for all persons on board, meeting the requirements of 13.5.2.1, 13.5.2.2.

4 parachute white illuminating flares should be provided for emergency use in rescues at night (the use of pyrotechnics must be considered having regard to the environment in which the pilot boat is being operated e.g. where a flammable atmosphere could be present);

6 red rocket parachute flares should be provided;

2 line throwing appliances (half a set) should be provided. This requirement may be waived for pilot boats operating in categorised waters only, subject to a satisfactory risk assessment by the operator.

*19.5 A searchlight should be provided which is permanently mounted so as to be capable of illuminating the ships side in way of the pilot ladder or the sea area around the boat;

20 When the Code requirements for anchors and cables are considered excessive, the competent harbour authority should seek the approval of the Certifying Authority for alternative provisions appropriate to the size of vessel and its area of operation;

*21 For seagoing pilot boats, individual shock absorbent seating with headrests, footrests and movable armrests should be provided for all members of the crew and the pilots to be carried. Seat belts should be provided for the safety of seated passengers and crew. For non-seagoing pilot boats, seating, commensurate with the vessels expected operating conditions, should be provided for all passengers and crew;

*22 For the safe access of personnel, the minimum width of side deck inboard of the bulwark or rails or toe-rail on new vessels should be 400mm but regard should be given to the height and shape of adjacent superstructure or deckhouse. Side decks should be adequately illuminated;

*22.4 An efficient, uninterrupted /continuous safety rail system for clip-on safety harnesses should be provided. The system should allow the harness traveller to move freely and without adjustment over the full length of the safety rail. The rail system, its attachment to the vessel structure and the clip-on safety harnesses should be designed, constructed, installed, tested and maintained to appropriate personal protective equipment standards, to the satisfaction of the Certifying Authority;

*22.8 Rescue retrieval equipment should be provided as follows:-

.1 transom steps and/or ladder or equivalent side ladder or scrambling net;

.2 at least 2 buoyant lifelines of not less than 18 metres in length. Each of the lifelines should have a quoit, or similar efficient throwing device, of appropriate weight secured to one end;

.3 efficient mechanical means for the retrieval of any person who falls overboard and means to bring the person in the water to the retrieval point. Where practicable, the arrangement should enable the person to be retrieved in the horizontal position, in order to reduce the risk of heart failure associated with hypothermia;

The quality of materials, design and workmanship of construction of the mechanical means of retrieval should ensure that it can be rapidly deployed and will operate efficiently in an emergency. The efficiency of the equipment should be ensured by regular maintenance and testing. (Functional tests are detailed in .6 below.);

.4 all ladders and outside fittings such as overside steps or booms etc. should be of suitable materials, design and workmanship. Such equipment should be rigged onboard and inspected at regular intervals;

.5 arrangements should be provided to protect a person in the water from injury by the propeller(s). When it is impractical to fit a guard to the propeller(s), consideration should be given to alternative measures such as the fitting of a drop down gate/ladder to screen the propeller(s) or operational procedures which include the means to stop the propeller immediately. (The arrangements should be approved by the Certifying Authority for the pilot boat);

.6 rescue retrieval equipment should be demonstrated by functional tests carried out under controlled safe conditions, to the satisfaction of the Certifying Authority. The functional tests should include a simulation of the pilot boat in the minimum manned condition with the coxswain and deckhand onboard and the event when the deckhand falls overboard and is recovered. (In this particular simulation, the deckhand can be assumed to be conscious);

It is recommended that competent harbour authorities (or pilotage provider, in the absence of a competent harbour authority) require manoverboard retrieval exercises to be conducted by each pilot boat crew every 6 months;

23 In addition to the medical stores required by Section 23, a compact stretcher should be carried on a pilot vessel.

*26 Subject to Marine Guidance Note MGN50 (M) - Manning of Pilot Boats:-

A pilot boat should be manned by a minimum of 2 adult persons, namely a coxswain, and a deck hand who can assist the pilot when boarding or landing. The competent harbour authority or owner(s)/managing agent(s) of the pilot boat should be satisfied as to the competence and fitness for duty of these persons; and

All pilot boat crew members should:

.1 hold a Proficiency in Medical First Aid Certificate issued by an MCA approved training provider equivalent predecessor (i.e. Department for Transport First Aid Certificate); or

.2 hold a First Aid Certificate issued in accordance with regulation 3(2) of the Health and Safety (First Aid) Regulations 1981 (SI 1981 No.917); or

.3 have received training in emergency first aid in accordance with regulation 3(2) of the Health and Safety (First Aid) Regulations 1981 (SI 1981 No.917) as described in paragraphs 28 and 29 under Regulation 3(2) of the Health and Safety Commission publication "First Aid at Work - Approved Code of Practice" (ISBN 0 11 885536 0);

A dedicated pilot boat should be issued with a pilot boat certificate.

26A. MANNING – NON CONVENTION VESSELS

26A.1 General

26.1.1 A vessel should be safely manned.

26.1.2 The skipper of a vessel should ensure that each person onboard is briefed on safety in accordance with the requirements given in Annex 7.

26A.2 Vessels Other Than Those on Bare-Boat Charter/Hire/Lease

26.2.1 The qualification of the skipper (and of the other members(s) of the crew, where applicable) for operations in various areas is the subject of a General Exemption from relevant Regulations.

26.2.2 The conditions applicable to the General Exemption and the responsibility of the owner/managing agent for the safe manning of a vessel are given in Annex 3.

26.2.3 The possession of a Certificate of Competency or Service should not, on its own, be regarded as evidence of the ability to serve in a particular rank on a specific vessel. The owner(s)/managing agent(s) must ensure that there are sufficient trained personnel on board to work the vessel having due regard for the nature and duration of the voyage.

26A.3 Vessels on Bare-Boat Charter/Hire/Lease

26.3.1 A vessel operating on bare-boat charter/hire as a pleasure vessel is not subject to the safe manning conditions given in Annex 3.

26.3.2 The owner(s)/managing agent(s) of a vessel offered for bare-boat charter should ensure that the skipper and crew of the vessel are provided with sufficient information about the vessel and its equipment to enable it to be navigated safely. The owner(s)/managing agent(s) should be satisfied that the bare-boat charter skipper and crew are competent for the intended voyage or excursion. Details of handover procedures are given in Annex 8.

26.3.3 Where the person chartering the vessel intends to use the vessel for further commercial work, the manning requirements fall within the manning requirements of Annex 3.

26A.4 Vessels on Skippered Charter

The skipper of a vessel on skippered charter should ensure that each person on board is briefed on safety in accordance with the requirements given in Annex 7.

26A.5 Vessels with Lifting Gear and Winches Associated with Lifting

Owner(s)/managing agent(s) of vessel(s) should ensure that skippers, crew and operators of winches and lifting gear are familiar with the stability issues detailed in Section 11.6 as applied to the type of vessel being operated and the nature of the duties being undertaken.

26A.6 Pilot Boats

Pilot Boats should be manned as specified in Section 25.6.3.26.

26A.7 Single Handed Operations

Vessels undertaking single handed operations should be manned as specified in Section 7 of Annex 3.

26A.8 Manning of Training Vessels – Status of Trainees

A trainee is a person who is undergoing documented and structured training, who has no safety critical responsibilities with regard to the operation of the vessel. In this instance a formal safety induction, and familiarisation with the vessel, including

use of lifesaving and fire fighting equipment, would form part of the structured training. The trainee is to be carried on the vessel to undergo training only, and he/she should not be an employee of any other person or body, directly or indirectly concerned with any aspect of the operation of the vessel. The carriage of trainees is also to be subject to agreement with the Administration.
Unless otherwise authorised by the Administration, no person under the upper limit of compulsory school age can be regarded as a trainee. Any persons under such age should be treated as passengers.
Trainees must be provided with accommodation, equipment, and provisions as detailed in the Code with respect to passengers. The presence of any trainees onboard a vessel should be documented in the vessels' log or other appropriate documentation.

26B MANNING AND PERSONNEL CERTIFICATION – CONVENTION VESSELS

26B. 1. HOURS OF WORK

26.1.1 Principles of Safe Manning

IMO Resolution A.890(21) adopted on the 25th November 1999 defines the principles of Safe Manning to ensure the safe operation of and prevention of pollution from ships to which the Convention applies. Convention 180 of the International Labour Organisation (ILO) (Seafarer's hours of work and the manning of ships) came into force on the 10th January 2003 and applies to all commercially operated vessels.

The underlying principles of safe manning are considered to extend to Large Yachts within the context of the Code. In this respect an Administration may choose to adopt these arrangements in full, modify these arrangements to meet particular operational circumstances.

All sea going commercially operated yachts and sail training vessels of more than 150 Gross Tons should carry an appropriate number of qualified Deck and Engineer Officers together with a sufficient number of qualified Yacht Ratings to ensure a degree of safety at least equivalent to that established by the IMO guidelines.

26.1.2 Application and Definitions

These guidelines apply to all *"seafarers employed or engaged in any capacity on board every commercially operated large yacht"*.

The term "seafarer", is defined as a person employed or engaged in any capacity on the vessel and should be taken to mean any person employed either directly by a owner/operator or through a manning agency, whose usual place of work is on the vessel and includes the master, officers, crew members, and catering, salon and hotel staff.

26.1.3 Responsibility

Fatigue at sea is a serious safety issue and owners and operators should ensure that all vessels are sufficiently manned to avoid the need to work excessive hours. The owner/operator and the Master are responsible for ensuring, so far as is reasonably practicable, that the Master and all the crew members are properly rested when they begin work and can obtain adequate rest when not on duty.

The owner/operator should ensure that the necessary resources are available to man the vessel so that the limits on hours can be observed. The master is responsible for ensuring compliance with the requirements.

It is also the responsibility of all seafarers to ensure that they are properly rested when they begin duty on the vessel and that they obtain adequate rest when not on duty.

26.1.4 Definition of Hours of Work

For the purposes of guidance 'work' is when seafarers are carrying out their activities or duties.

26.1.5 On-Call Time

Where a seafarer's normal period of rest on board a vessel is disturbed by a callout he/she should have adequate compensatory rest.

26.1.6 Minimum Hours of Rest

The owner/operator or Master should ensure that the crew are provided with at least the minimum hours of rest. These should not be less than:

a) ten hours in any 24-hour period; and
b) 77 hours in any seven-day period.

Hours of rest may be divided into no more than 2 periods; one of which should be at least 6 hours long, and the interval in between should not exceed 14 hours.

It is expected that as far as practicable the Master will arrange for conducting emergency drills such as musters, fire-fighting and abandon vessel drills in a way which minimises the disturbance to rest periods and provide compensatory rest for seafarers whose normal rest is disturbed by call-outs for drills.

26.1.7 Exceptions to the Limits on Hours of Rest

The limits defined should as far as practicable be observed. However, an Administration may consider exceptions so long as they are agreed between the Master and crew members, and provided that their health and safety, and the safety of the vessel, is not compromised.

When considering whether an exception is appropriate the Master should give due regard to the associated duties being considered and in this respect exceptions to persons undertaking watch keeping duties and/or with safety critical duties would not be considered appropriate.

In allowing any such agreed exception and to ensure that a crew member does not become fatigued such exceptions shall be documented and accompanied by commensurate rest arrangements.

26.1.8 Schedule of Duties

The Master should ensure that a schedule of duties is drawn up setting out the hours of work and rest periods for each of the crew. It is recommended that the table or schedule should be in a similar format to that detailed in Annex A, and show:

the schedule of duties at sea and duties in port; and
the minimum hours of rest as defined by the guidelines.

In devising the schedule, operators should take account of factors such as:

a) nature of the operation;
b) type and size of vessel;
c) construction and technical equipment of the vessel;
d) manning levels and changes in crew numbers due to crew changes and sickness;
e) the maximum period of continuous watchkeeping;
f) minimum rest periods;
g) total workload;
h) compliance with the ISPS Code as applicable;
i) the seriousness of irregular working hours and their contribution to causing fatigue and the importance of scheduling reasonably stable working hours.

Changes should not be made to the schedule of duties unless they can be justified by substantially altered work patterns or other significant factor.

Where it is known that a vessel engages in an irregular pattern or that working hours are unlikely to be uniform, this can be taken into account when considering the schedule.

It is not necessary to draw up a new schedule of duties for each voyage, so long as it is applicable to the voyage in question and the composition of the crew for whom it was originally intended has not changed.

A copy of the schedule should be made available to all members of the crew.

26.1.9 Exceptions for Emergencies

Situations may arise in which a seafarer may be required to work during scheduled hours of rest. These include emergencies which threaten the safety of the vessel or put life at risk. In these circumstances, the limits may be exceeded provided compensatory arrangements are subsequently made to avoid fatigue.

26.1.10 Records

The master or authorised person is responsible for ensuring that records of hours of rest are maintained for each of the crew serving on the vessel. The records should be completed monthly in arrears. These may be in the format detailed in Annex B or an equivalent format. Each record should be endorsed by the master or authorised person and the seafarer. A copy should be retained by the seafarer.

In an emergency, or when unforeseen events occur, changes may be unavoidable. In these cases records should reflect all deviations from the schedule.

All records should be kept for a minimum of 12 months and should be available for inspection by the flag administration surveyors at any time. Checking the vessels records may be carried out by the flag administration as part of the normal routine of vessel inspection and will include a check that the appropriate schedules are available and records maintained.

26B.2. SAFE MANNING

26.2.1 Introduction

An Administration should ensure that all vessels are safely and sufficiently manned in relation to the nature of their operation with the responsibilities placed on companies owning or operating seagoing vessels, to ensure that their vessels are manned with personnel of appropriate grades who have been properly trained and certificated. The numbers of certificated officers and certificated and non-certificated ratings must be sufficient to ensure safe and efficient operation of the vessel at all times.

The Guidelines place a duty on the owner or operator to provide the master of a vessel with the necessary resources to comply with the manning requirements.

26.2.2 Responsibilities of Owners and Operators: General Principles

In fulfilling their responsibility to ensure that vessels are safely and sufficiently manned owners and operators should:

.1 make an assessment of the tasks, duties and responsibilities of the vessel's complement required for its safe operation, for the protection of the marine environment and dealing with emergency situations;

.2 assess the numbers and grades/capacities in the vessel's complement required for the safe operation and for the protection of the environment, and for dealing with emergency situations, including the evacuation of passengers where applicable;

.4 ensure that the manning level is adequate at all times and in all respects, including meeting peak workloads;

.5 in case of changes in the nature of the operation, operational area, construction, machinery, equipment or maintenance of the vessel, which may affect the manning level, review the manning level.

In conjunction with these factors the owner or operator should: -

.6 identify all the functions to be undertaken on board during a representative voyage or operational period, including determination of the number of crew required to undertake the relevant tasks and duties under both peak and routine work load conditions;

.7 identify those functions that constitute a normal operation and determine the numbers of crew required to undertake the concurrent tasks and duties safely;

.8 identify the skills and experience required to perform those functions;

.9 establish working arrangements to ensure that the master and crew are capable of undertaking concurrent and continuing operations at the appropriate level(s) of responsibility, as specified, with respect to their skills and training; and

.10 ensure that the working arrangements allow for sufficient rest periods to avoid fatigue;

26.2.3 Establishing Safe Manning Requirements

Specific factors to be taken into account in determining the safe manning level may include:

.1 frequency of port calls, length and nature of the voyage;
.2 operating area(s), waters and type of operations in which the vessel or vessel is involved and any special requirements of the operation;
.3 number, size (kW) and type of main propulsion units and auxiliaries;
.4 size, type of vessel, equipment and layout;
.5 construction and technical equipment of vessel;
.6 method of maintenance;
.7 how the proposed complement will deal with various emergency situations that may arise;
.8 navigational duties and responsibilities as required by STCW 95 including the following to:
.9 plan and conduct of safe navigation;
.10 maintain a safe navigational watch;
.11 manoeuvre and handle the vessel in all conditions and during all operations;
.12 safely moor and unmoor the vessel; and
.13 maintain safety whilst in port.

.10 Vessel specific operations:

.1 the nature and duration of the operation(s) the vessel undertakes and local environmental conditions.

.11 Vessel operations and care for persons onboard, and maintaining life-saving, fire-fighting and other safety systems in operational condition:

.1 maintain the safety and security of all persons on board and keep life saving, fire fighting and other safety systems in operational condition, including the ability to muster and disembark passengers and non-essential personnel;
.2 operate and maintain watertight closing arrangements;
.3 perform operations necessary to protect the marine environment;
.4 provide medical care on board;
.5 undertake administrative tasks required for the safe operation of the vessel; and
.6 participation in mandatory safety drills and exercises.

.12 Marine engineering tasks and duties:

.1 operate and monitor the vessel's main propulsion and auxiliary machinery;
.2 maintain a safe engineering watch;
.3 manage and perform fuel and ballast operations; and
.4 maintain vessel's engine equipment, system and services.

.13 Electrical, electronic and control engineering duties:

.1 operate vessel's electrical and electronic equipment; and
.2 maintain vessel's electric and electronic systems.

.14 Radio communications:

.1 transmit and receive information using vessel communication equipment;
.2 maintain safe radio watch;
.3 provide communications in emergencies.

.15 Maintenance and repair:

.1 carry out maintenance and repair work to the vessel and its machinery, equipment and systems, as appropriate to the method of maintenance and the repair system used.

.16 .1 Fulfil obligations and requirements of the ISPS Code as applicable:

26.2.4 Guidance on Appropriate Manning Levels

In determining what constitutes a minimum safe manning level, useful guidance may also be obtained by use of risk and hazard management tools such as formal safety assessment. The minimum safe manning levels should be those required for all reasonably foreseeable circumstances and working conditions to permit the safe operation of the vessel under normal operational conditions.

The tables in Sections 26.2.8 and 26.2.9. provide guidance on the numbers of certificated deck and engineer officers, and ratings that may be considered appropriate to different sizes of vessels and tonnages.

26.2.5 Safe Manning Document

SOLAS requires that vessels over 500gt, excluding pleasure yachts not engaged in trade, to carry a Safe Manning Document. Owners and operators of vessels below 500gt or those above 500gt solely engaged for pleasure may also choose to hold a Safe Manning Document in accordance with the Tables at Section 26.2.8 and 26.2.9. This will allow the owner to consider a 'range and risk' approach when determining manning levels.

26.2.6 Application for a Safe Manning Document

Any application for a Safe Manning Document should be made by the owner, or a person authorised to act on their behalf, to the flag Administration of the vessel and include a clear and concise explanation of how: -

.1 the proposed manning level has been determined;
.2 it takes account of the guidance; and
.3 it takes account of the hours of work provisions.

A proposal should only be approved and Safe Manning Document issued provided the manning level fully satisfies these principles, recommendations and guidelines.

When the manning level has been agreed a Safe Manning Document should be issued for that vessel in a format which complies with the requirements of SOLAS, as amended. It should be retained on board and be available for inspection by an authorised person, whenever required.

In the event of any change in equipment, construction or use of the vessel, which may affect the safe manning level, the owner or operator should make an application for the issue of a new Safe Manning Document.

A Safe Manning Document of a vessel may be withdrawn if an owner or operator fails to submit a new proposal where a vessel changes trading area(s), construction, machinery or equipment, or operation and/or method of maintenance have changed, or a vessel persistently fails to comply with the rest hours requirements.

26.2.7 Indicative Manning Levels

The owner/operators or managing agent of all seagoing yachts of more than 24 metres Load Line Length must ensure that personnel required for the safe operation of the vessel have recent and relevant experience of the type and size of vessel, and the type of operation in which it is engaged.

This Section includes indicative manning levels for vessels of 24 metres of more in load line length. The owner/operators of vessels of vessels below 500gt or those above 500gt solely engaged for pleasure may find it advantageous to hold a Safe Manning Document.

In addition to the Tables specific submissions may be considered from owners and operators of vessels, including those less than 500gt, seeking a varied safe manning document based on a range and risk approach to safe manning with the flexibility to reduce the manning level taking into account, for example a limiting operating area(s) or parameters, and levels of automation.

26.2.8 MANNING SCALE FOR MOTOR YACHTS 24m OR MORE IN LENGTH AND UNDER 3000GT

Miles from Safe Haven	Personnel	>24m <200GT
Up to 60	Master	1
	Chief Officer	-
	OOW (Navigation)	-
	Chief Engineer	1[1]
	Second Engineer	-
	Assistant Engineer	-
	Yacht Rating	1
Up to 150	Master	1
	Chief Officer	1
	OOW (Navigation)	-
	Chief Engineer	1
	Second Engineer	-
	Assistant Engineer	-
	Yacht Rating	1
Unlimited	Master	1
	Chief Officer	1
	OOW (Nav)	-
	Chief Engineer	1
	Second Engineer	1[2]
	Assistant Engineer	1[6]
	Yacht Rating	2

26.2.9 MANNING SCALE FOR SAILING YACHTS 24m OR MORE IN LENGTH AND UNDER 500GT

Miles from Safe Haven	Personnel	>24m <200GT
Up to 60	Master	1
	Chief Officer	1
	OOW (Nav)	-

	Chief Engineer	1[3]
	Second Engineer	-
	Assistant Engineer	-
	Yacht Rating	2[4]
Up to 150	Master	1
	Chief Officer	1
	OOW (Nav)	-
	Chief Engineer	1
	Second Engineer	-
	Assistant Engineer	-
	Yacht Rating	2[4]
Unlimited	Master	1
	Chief Officer	1
	OOW (Nav)	-
	Chief Engineer	1
	Second Engineer	
	Assistant Engineer	[1[5]]
	Yacht Rating	2[4]

[1] may be dual role engineer position other than the master but in which case a second rating should be carried.
[2] maybe dual role engineer position other than the master.
[3] maybe dual role engineer position other than the master in which case a third rating should be carried.
[4] additional ratings maybe required for operation of the rigging.

26B.3 DECK OFFICER QUALIFICATIONS

26.3.1 Introduction

Masters and deck officers serving in all commercial yachts and sail training vessels of 24 metres or more in Load Line length must be appropriately qualified to the satisfaction of the administration. A certificate structure has been developed for commercial yachts and sail training vessels of less than 3000gt and is detailed below. Specific details relating to application

The administration may also choose to consider relevant STCW 95 certificates of competency (CoC) or endorsements as equivalency arrangement.

26.3.2 Certificate Structure for Commercial yachts of less than 3000gt

Certificates of competency should detail any area limitations and be issued at either management (Master and Chief Mate), or operational (Watchkeeping Officer) level.

The certificates of competency (CoC) limited to yachts are:

Capacity	Limitations
Master (Yachts less than 200gt, limited area) STCW Reg. II/2.	Master yachts and sail training vessels less than 200gt not more than 150 miles from a safe haven. Officer of the Watch yachts and sail training vessels less than 500gt not more than 150 miles from a safe haven.
Master (Yachts less than 200gt, unlimited area). STCW Reg. II/2.	Master, yachts and sail training vessels less than 200gt, unlimited area. Officer of the Watch yachts and sail training vessels less than 500gt, unlimited area.
Officer of the Watch (Yachts less than 3000gt,	Officer of the Watch yachts and sail training vessels

unlimited area). STCW Reg. II/1	less than 3000gt, unlimited area.
Chief Mate (Yachts less than 3000gt, unlimited area). STCW Reg. II/2	Chief Mate yachts and sail training vessels less than 3000gt, unlimited area.
Master (Yachts less than 500gt, unlimited area). STCW Reg. II/2	Master yachts and sail training vessels less than 500gt, unlimited area.
Master (Yachts less than 3000gt, unlimited area). STCW Reg. II/2	Master yachts and sail training vessels less than 3000gt, unlimited area.

26.3.3 Eligibility Requirements

A candidate's eligibility for a certificate of competency depends on fulfilling yacht service requirements and meeting the relevant competency level for issue of that certificate.

Qualifying yacht service for any Deck Officer (Yacht) certificate of competency must be performed in the deck department and is reckoned from the date of engagement to the date of discharge. Candidates who have served in a dual engine and deck capacity may have their service counted at the rate of 50%

Qualifying service may be evidenced by:

Merchant navy discharge book; or
Certificates of discharge; or
Yachtsmen service record Book; or
Similar document approved by the administration.

Additionally, signed testimonials from masters, owners, or superintendents covering character, standards of behaviour including sobriety, experience, ability and good conduct at sea should be submitted.

26.3.4 Medical Standards

All candidates for any certificate of competency must meet the medical fitness and eyesight standards as required by the STCW 95 and hold a valid medical fitness certificate issued by a medical practitioner approved by the administration. The medical fitness certificates must specify the date of examination and the period of validity.

26.3.5 Entry and Examination Requirements

26.3.5.1 Master, (Yachts, less than 200gt, not more than 150 miles from safe haven), Officer of the Watch (Yachts, less than 500gt not more than 150 miles from safe haven):

To qualify for this certificate the candidate should hold an administration approved qualification such as a Yachtmaster (Offshore) and complete:

the four element STCW 95 basic training:

Personal Survival Techniques – (STCW A-VI/1-1);
Fire Fighting and Fire Prevention – (STCW A-VI/1-2);
Elementary First Aid – (STCW A-VI/1-3);
Personal Safety and Social Responsibilities – (STCW AVI/1-4); and

Pass an Administration approved examination which may be oral or written.

The 150 miles from safe haven limitation on the certificate detailed above may be raised to the unlimited area on completion of an administration recognised qualification such as a Yachtmaster (Ocean) without further examination.

26.3.5.2 Master, (Yachts, less than 200gt, unlimited area), Officer of the Watch (Yachts, less than 500gt unlimited):

To qualify for this certificate the candidate should hold an administration approved qualification such as a Yachtmaster (Ocean) or equivalent) and complete:

Have successfully completed the four element STCW 95 basic training:

Personal Survival Techniques – (STCW A-VI/1-1);
Fire Fighting and Fire Prevention – (STCW A-VI/1-2);
Elementary First Aid – (STCW A-VI/1-3);
Personal Safety and Social Responsibilities – (STCW AVI/1-4); and

Pass an Administration approved examination which may be oral or written.

26.3.5.3 Master (Yachts, less than 200gt, not more than 150 miles from safe haven), Officer of the Watch (Yachts, less than 3000gt unlimited):

To qualify for issue of this certificate a candidate must:

Have attained the age of19 years;

Have a minimum of 36 months service (over the age of 16) in vessels of 15 metres or over in Load Line length;

Provide proof of attendance and successful completion of an approved shore-based Yachtmaster (Offshore) course or equivalent ;

Hold a Yachtmaster (Offshore) Certificate of Competency;

Have completed an approved Training Record Book;

Have successfully completed the four element STCW 95 basic training:
Personal Survival Techniques – (STCW A-VI/1-1);
Fire Fighting and Fire Prevention – (STCW A-VI/1-2);
Elementary First Aid – (STCW A-VI/1-3);
Personal Safety and Social Responsibilities – (STCW AVI/1-4);

Hold an approved Certificate of Proficiency in Survival Craft and Rescue Boats (CPSB&RB), (STCW A-VI/2-1);

Hold an accepted GMDSS, General Operator Certificate;

Have undergone appropriate Navigation and Radar training and examination for (OOW, Yachts);

Have undergone appropriate General Ship Knowledge training and examination for (OOW, Yachts); and

Pass an Administration examination which may be oral or written.

26.3.5.4 Master (Yachts, less than 200gt unlimited), Chief Mate (Yachts, less than 3000gt):

To qualify for issue of this certificate a candidate must hold of an OOW (Yachts, less than 3000gt) certificate of competency and hold:

An approved Certificate of Training in Advanced Fire Fighting – (STCW A-VI/3);

An approved Certificate of Proficiency in Medical First Aid (STCW A-VI/4-1);

Provide proof of attendance and successful completion of an approved shore-based Yachtmaster (Ocean); and

Hold a Yachtmaster (Ocean) Certificate of Competency.

26.3.5.5 Master (Yachts, less than 500gt):

To qualify for issue of this certificate a candidate must:

Have attained the age of 21 years;

Have a minimum of 12 months service as a bridge watchkeeper on vessels 15 metres or more in Load Line length whilst holding an Officer of the Watch (Yachts, less than 3000gt) or other acceptable equivalent qualification;

Meet the minimum requirements to serve as Chief Mate (Yacht);

Hold a certificate of Proficiency for Person in Charge of Medical Care on Board Ship (STCW A-VI/4-2);

Have undergone appropriate Seamanship and Meteorology training and examination for (Master, Yachts);

Have undergone appropriate Navigation and Radar training and examination for (Master, Yachts);

Have undergone appropriate Business and Law training and examination for (Master, Yachts);

Have undergone appropriate Stability training and examination for (Master, Yachts) and

Pass an Administration examination which may be oral or written.

26.3.5.6 Master (Yachts, less than 3000gt):

To qualify for issue of this certificate a candidate must:

Have attained the age of 23 years;

Have a minimum of 24 months yacht service as Bridge Watchkeeper, on vessels 15 metres or more in load line length, including 12 months on vessels 24 metres or more in length, or 6 months on vessels 500gt or more, whilst holding a Officer of the Watch (Yachts, less than 3000gt) and hold a Master (Yachts, less than 500gt) certificate of competency; or have successfully completed the above sea service and all the education and training required for issue of Master less than 500gt (Yachts);

Hold a valid certificate of Proficiency for Person in Charge of Medical Care on Board Ship (STCW A-VI/4-2); and

Pass an Administration approved examination which may be oral or written.

26B.4 ENGINEER OFFICER QUALIFICATIONS

26.4.1 Introduction

Engineer officers serving in all commercial yachts and sail training vessels of 24 metres or more in load line length must be appropriately qualified to the satisfaction of the administration. A certificate structure has been developed for vessels of less than 3000GT and less than 9000kW Registered Power and is detailed below.

26.4.2 Certificate Structure

Title	Propulsive Power Limitation	STCW 95 Regulation
Approved Engine Course (AEC)	Less than 1500 kW Less than 200 gt	Not applicable

	Not more than 60 miles from a safe haven	
Marine Engine Operator License (yacht) MEOL(Y)	Less than 1500 kW Less than 200 gt Not more than 150 miles from a safe haven	Not applicable
Chief Engineer Yacht 4	Less than 1500 kW Less than 200 gt Over 150 miles from a safe haven	III/3
Chief Engineer Yacht 3	Less than 3000 kW Less than 500 gt Over 150 miles from a safe haven	III/3
Chief Engineer Yacht 2	Less than 6000 kW Less than 3000 gt Over 150 miles from a safe haven	III/2
Chief Engineer Yacht 1	Less than 9000 kW Less than 3000 gt Over 150 miles from a safe haven	III/2

26.4.3 Eligibility Requirements

A candidates eligibility for a CoC should depend on completion specified period of yacht service and meeting the relevant level of competency for issue of that certificate.

Qualifying yacht service for any Engineering Officer (Yachts) CoC should be performed in the engineering department and in reckoned from the date of engagement to the date of discharge. Candidates who have served in a dual engine and deck capacity may have their service counted at a rate of 50%.

Qualifying service may be evidenced by:

Merchant navy discharge book; or
Certificates of discharge; or
Yachtsmen service record book; or
Similar document approved by the administration.

Additionally, signed testimonials from masters, owners, or superintendents covering character, standards of behaviour including sobriety, experience, ability and good conduct at sea should be submitted.

26.4.4 Medical Standards

All candidates for any certificate of competency must meet the medical fitness and eyesight standards as required by STCW 95 and hold a valid medical fitness certificate issued by a medical practitioner approved by the administration. The medical fitness certificate must specify the date of examination and the period of validity.

26.4.5 Service and Training Requirements

26.4.5.1 Approved Engine Course Certificate (AEC):

To qualify for issue of this certificate a candidate must:

Have attained the age of 18 years;

For candidates with no formal engineering craft training, have at least 1 month service as a yacht engineer on yachts of 100 kW or more. (There need be no service requirement for candidates with basic engineering craft skills training or Administration approved formal engineering craft training);

Have successfully completed the four elements of STCW 95 basic training:

Personal Survival Techniques – (STCW A-VI/1-1);
Fire Fighting and Fire Prevention – (STCW A-VI/1-2);
Elementary First Aid – (STCW A-VI/1-3);
Personal safety and Social Responsibilities – (STCW AVI/1-4); and

Hold a certificate of successful completion of an Approved Engine Course (see Section 26.4.6.1);

26.4.5.2 Marine Engine Operators Licence (Yachts) – MEOL(Y)

To qualify for issue of this certificate a candidate must:

Have attained the age of 18 years;

Hold a valid medical fitness certificate;

Have successfully completed at least:

36 months as a dual purpose deck/engineer officer responsible for the maintenance and servicing of the vessel, whilst holding an AEC certificate; or
24 months service as a yacht engineer responsible for system maintenance whilst holding an AEC certificate; or
Basic engineering craft skills training or Administration approved formal engineering craft training plus 18 months service as a yacht engineer responsible for system maintenance and repair;

Have successfully completed the four elements of STCW 95 basic training:

Personal Survival Techniques – (STCW A-VI/1-1);
Fire Fighting and Fire Prevention – (STCW A-VI/1-2);
Elementary First Aid – (STCW A-VI/1-3);
Personal safety and Social Responsibilities – (STCW AVI/1-4);

Hold an Administration approved Certificate of Training in Advanced Fire Fighting – (STCW A-VI/3);

Hold an Administration approved Certificate of Proficiency in Medical First Aid (STCW A-VI/4-1);

Hold an Administration approved Certificate of Proficiency in Survival Craft and Rescue Boats (CPSB&RB), (STCW A-VI/2-1); and

Pass an Administration approved examination which may be oral or written.

26.4.5.3 Chief Engineer (Yachts 4) Reg III/3 Certificate of Competency

To qualify for issue of this certificate a candidate must:

Have attained the age of 19 years; and

Hold a valid medical fitness certificate;

Have successfully completed at least:

42 months as a yacht engineer which must include at least 6 months accumulated actual sea service; or

An Administration approved formal education craft training plus 36 months service as a yacht engineer which must include at least 6 months accumulated actual sea service; or

An Administration approved engineering craft apprenticeship plus 12 months service as a yacht engineer which must include at least 6 months accumulated actual sea service; or

12 months service as a yacht engineer which must include at least 6 months accumulated actual sea service whilst holding an MEOL (Yachts).

Have successfully completed the four elements of STCW 95 basic training:

Personal Survival Techniques – (STCW A-VI/1-1);
Fire Fighting and Fire Prevention – (STCW A-VI/1-2);
Elementary First Aid – (STCW A-VI/1-3);
Personal safety and Social Responsibilities – (STCW AVI/1-4);

Hold an Administration approved Certificate of Training in Advanced Fire Fighting – (STCW A-VI/3);

Hold an Administration approved Certificate of Proficiency in Medical First Aid (STCW A-VI/4-1);

Hold an Administration approved Certificate of Proficiency in Survival Craft and Rescue Boats (CPSB&RB), (STCW A-VI/2-1); and

Hold a certificate of successful completion of Approved Yachts 4 education and training (see Section26.4.6.2), namely;

Skills test (where applicable);
Marine diesel engineering;
Operational procedures and basic hotel services; and
Auxiliary equipment and basic ship construction.

Pass an Administration approved examination

26.4.5.4 Chief Engineer (Yachts 3) Reg III/3 Certificate of Competency

To qualify for issue of this certificate a candidate must:

Hold a valid medical fitness certificate;

Have completed at least 9 months service as a yacht engineer which must include at least 3 months accumulated actual sea service whilst holding a Chief Engineer (Yachts 4) CoC.; and

Hold a certificate of successful achievement of the Chief Engineer (Yachts) Statutory and Operational Responsibilities course (see Section 26.4.6.3.4); and

Pass an Administration approved examination.

26.4.5.5 Chief Engineer (Yachts 2) Reg III/3 Certificate of Competency

To qualify for issue of this certificate of competency a candidate must:

Hold a valid medical fitness certificate;

Have successfully completed at least:

24 months service as a yacht engineer which must include at least 12 months accumulated actual sea service whilst holding a Chief Engineer (Yachts 4); or
15 months service as a yacht engineer which must include at least 9 months accumulated actual sea service whilst holding a Chief Engineer (Yachts, 3) certificate of [service]; or

9 months service as a yacht engineer which must include at least 3 months accumulated sea service whilst holding an STCW 95 Engineer Officer of the watch, Reg III/1 CoC; or
6 months service as a yacht engineer whilst holding an STCW 95 2nd Engineer, Reg III/3 (less than 3000kW) CoC.

Have successfully completed the four elements of STCW 95 basic training:

Personal Survival Techniques – (STCW A-VI/1-1);
Fire Fighting and Fire Prevention – (STCW A-VI/1-2);
Elementary First Aid – (STCW A-VI/1-3);
Personal safety and Social Responsibilities – (STCW AVI/1-4);

Hold an Administration approved Certificate of Training in Advanced Fire Fighting – (STCW A-VI/3);

Hold an Administration approved Certificate of Proficiency in Medical First Aid (STCW A-VI/4-1);

Hold an Administration approved Certificate of Proficiency in Survival Craft and Rescue Boats (CPSB&RB), (STCW A-VI/2-1);

Hold a certificate of successful completion of Approved Yachts 4 education and training (see Section26.4.6.2), namely;

General engineering science 1;
General engineering science 2;
Applied marine engineering;
Advanced hotel services;
Statutory and Operational Requirements

Pass an Administration approved examination which may be written or oral.

26.4.5.6 Chief Engineer (Yachts 1), Reg III/2, Certificate of Competency

To qualify for issue of this certificate of competency a candidate must:

Hold a valid medical fitness certificate;

Have successfully completed at least:

12 months service as a yacht engineer on a yacht of between 500 and 3,000gt and not less than 1500kW propulsion power, whilst holding the Chief Engineer (Yachts 2) CoC; or
6 months service as yacht engineer on a yacht of between 500 and 3,000gt and not less than 1500kW propulsion power, whilst holding an STCW 95 2nd Engineers, Reg III/2 (unlimited) CoC.
Pass an Administration approved examination which may be written or oral.

26.4.6 EDUCATION and TRAINING

26.4.6.1 Approved Engine Course (AEC) – Education and Training

This course which should be approved by the Administration should not be less than 30 hours duration and covering:

1. The general principles of the marine compression ignition engine including;
   - Cycle of operation;
   - Construction detail;
   - Fuel systems;
   - Role of the air combustion process;
   - Cooling system;
   - Lubrication system;

Engine electrical systems;
2. Power transmission;
3. Hull fittings;
4. Pollution legislation;
5. Safe Working practices; and
6. Bottled LPG installations.

26.4.6.2 Chief Engineer (Yachts 4) - Education and Training

A candidate should complete the following approved courses or skills test as appropriate to their experience and qualifications:

26.4.6.2.1 Skills Test:

This course which should be approved by the Administration should not be less than 10 days duration (except for candidates who have completed a recognised apprenticeship) covering:

Interpretation of drawings;
Use and care of hand tools;
Use of measuring equipment;
Safe use of:
.1 power tools;
.2 drilling machines;
.3 off-hand grinders;
Metal joining:
.1 welding;
.2 brazing;
.3 soldering;
.4 gas cutting.
Mechanical joints:
.1 gaskets;
.2 flanges;
.3 couplings;
Assembly skills; and
Electrical testing and wiring.

Evidence of competency may be by in course continuous assessment.

26.4.6.2.2 Marine Diesel Engineering course:

This course which should be approved by the Administration should not be less than 5 days and cover:

Working principles of diesel engines and petrol engines;
Constructional details;
operation and maintenance;
Heat exchangers and coolers;
Fuel oils and preparations;
Lubrication systems;
Turbochargers;
Starting systems.

Evidence of competency should be tested by written examination on completion of the course.

26.4.6.2.3 Operational Procedures and Basic Hotel Services:

This course which should be approved by the Administration should not be less than 5 day duration covering:

Keeping the log;
Taking over and accepting the watch;
Routine watchkeeping duties;
Bunkering and anti-pollution procedures;
Oily water separator – construction and use;
Principles of hydraulics and pneumatics;
Application for hydraulics;
Principles of refrigeration and air conditioning;
Water generators – the principle and maintenance; and
Sewage treatment plants

Evidence of competency should be tested by written examination on completion of the course.

26.4.6.2.4 Auxiliary Equipment and Basic Ship Construction:

This course which should be approved by the Administration should not be less than 5 days duration covering:

Steering and stabiliser systems;
Pumps – the working principles and construction;
Valves – various types and use;
Generators – the construction and use;
Gearboxes and clutches;
Shafting – including seals and bearings;
batteries – including their care and maintenance;
Basic ship construction technology; and
basic knowledge of hull stresses in motor and sailing yachts.

Evidence of competency should be tested by written examination on completion of the course.

26.4.6.3 Chief Engineer (Yachts 3) Certificate of Competency – Education and Training

A candidate should complete the following approved courses as appropriate to their experience and qualifications:

26.4.6.3.1 Marine Engineering Theory:

This course which should be approved by the Administration should not be less than 10 days duration (which may be supplemented by a distance learning package) covering:

Marine Engineering Theory;
General Engineering Science 1 including;
.1 Mathematics (arithmetic and algebra);
.2 Graphs;
.3 Trigonometry;
.4 Geometry; and
.5 Mensuration.
Applied Mechanics including;
Kinematics;
Dynamics;
Statics;
Friction;
Machines;
.6 Strength of materials;
.7 Fluids at rest; and
.8 Transverse stability.
4. General Engineering science II including;
.1 Applied heat;

.2 Gas laws;
.3 Combustion;
.4 Refrigeration;
.5 Electricity – nature of electricity;
.6 Electric currents;
.7 Electric circuits;
.8 Resistance
.9 Secondary cells;
.10 Magnetic fields;
.11 Electromagnetic induction; and
.12 Measuring instruments and measurements.

Evidence of competency should be tested by written examination on completion of the course.

26.4.6.3.2 Applied Marine Engineering:

This course which should be approved by the Administration should not be less than 5 days duration covering:

Materials technology and corrosion control;
Marine electrical practices;
Properties of fuels and lubricants;
Automation, instrumentation and control; and
Engine starting systems.

Evidence of competency should be tested by written examination on completion of the course.

26.4.6.3.3 Advanced Hotel Services:

This course which should be approved by the Administration should not be less than 5 days duration covering:

Air conditioning – forced air and chilled water;
Refrigeration;
Sewage treatment systems;
Hydraulics; and
Fresh water systems.

Evidence of competency should be tested by written examination on completion of the course.

26.4.6.3.4 Statutory and Operational Responsibilities:

This course which should be approved by the Administration should not be less than 5 days duration covering:

health and safety at work;
Pollution control regulations;
Administration Marine Notices;
International conventions;
Dry-docking procedures;
Planned maintenance;
Hull and machinery surveys;
Voyage planning;
Fire prevention, explosive mixtures and sources of ignition;
Ship construction (terminology and stresses);
damage control, flooding and subdivision;
Fuel consumption.

Evidence of competency should be tested by written examination on completion of the course.

26B.5 REVALIDATION OF A CERTIFICATE OF COMPETENCY

Medical Fitness
All candidates for revalidation must meet the medical fitness as required by the STCW 95 and hold a valid medical fitness certificate issued by a medical practitioner approved by the administration.

Deck Officers

Candidates for revalidation must:

.1 have served as master or deck officer on a yacht's or other sea going vessel's official crew list, of any flag, of more than 15 metres or more in load line length for at least 12 months during the preceding 5 years; and

.2 hold an acceptable GMDSS Certificate (minimum ROC).

Engineer Officers

Candidates for revalidation must have served as an engineer officer on vessels of at least 350kW registered power, of any flag for at least 12 months (which need not be continuous) during the preceding 5 years.

26.5.4 Officers who do not meet the revalidation criteria above may, alternatively:

.1 satisfactorily complete a shore-based updating course approved by the Administration; or

.2 serve in a lower rank than that for which they are certificated, for 3 months before applying for revalidation of their certificate; or

.3 serve in a supernumerary capacity for 3 months before applying for revalidation of the certificate. During this period officers are expected to update their professional knowledge; or

.4 have performed duties, in an occupation acceptable to the Administration, appropriate to the class of certificate held, which are considered at least equivalent to the service required for revalidation for at least two and a half years of the preceding five years.

26B.6. YACHT RATING QUALIFICATIONS

26.6.1 Introduction

Yacht rating training should be structured to include STCW 95 basic training, relevant competencies required by STCW 95 for the issue of an STCW 95 navigation or engineering watch rating certificate, and relevant elements of seamanship. A single Yacht Rating Certificate covering both navigation and engineering watch keeping duties may be issued.

All ratings designated on a safe manning document, or where a safe manning document is not required then those ratings necessary for the safe manning of all yachts or sail training vessels 200gt or over must be appropriately trained.

An Administration may choose to accept alternative equivalent qualifications in lieu of the Yacht Rating Certificate.

The Master, owners and/or operators are reminded of their obligation to ensure that the vessel is safely manned and ensure that members of the crew required for the safe manning of the vessel have recent and relevant experience of the type and size of vessel, and type of operation on which she is engaged.

26.6.2 Training and Service Requirements

To qualify as a Yacht Rating a candidate should:

.1 be not less than 16 years of age;
.2 demonstrate at least 6 months yacht service including 2 months sea service on vessels over 15 metres in load line length;
.3 complete the four elements of approved STCW 95 basic training, namely:
.1 personal survival techniques (STCW Code Ref A-VI/1-1), or RYA Basic Sea Survival;
.2 fire prevention and fire fighting (STCW Code Ref A-VI/1-2);
.3 elementary first aid (STCW Code Ref A-VI/1-3);
.4 personal safety & social responsibility (STCW Code Ref A-VI/1-4); and
.4 complete a structure training programme that may be either an approved course of training or based on completion of an approved training portfolio in a format as detailed in Section 26.6.4. or equivalent.

The administration should have procedures in place for issue and control of Yacht Rating certificates.

26.6.3 Medical Fitness

All candidates for a certificate must meet the medical fitness and eyesight standards required by STCW 95 and ILO Merchant Ships, Convention 1976 (ILO 147) or an equivalent acceptable to the administration. The medical fitness certificates must specify the date of examination and the period of validity.

26.6.4 Yacht Rating Competencies

SECTION 1 - Navigational Watch Duties

Task
Steering & Helm Orders:
Demonstrate knowledge of the compass card in 360^{o} notation
Demonstrate ability to steer using magnetic and gyro-compass in open waters (minimum 5 hours)
Demonstrate ability to steer using magnetic and gyro-compass in pilotage waters (min' 5 hours)
Understand and respond to helm orders (for both pilotage and open water situations)
Demonstrate change over procedures from helm to auto steering and vice-versa
Keeping a Proper Lookout & Lookout Duties:
Demonstrate ability to report bearings in degrees and points
Demonstrate ability to report ships, lights, navigation markers and other floating and fixed objects
Demonstrate ability to report sound signals
Contribute to Monitoring and Controlling a Safe Watch:
Demonstrate a knowledge of shipboard terms and definitions
Demonstrate use of appropriate internal communications equipment and alarms
Demonstrate the ability to understand common orders and commands from the OOW in matters relevant to watch keeping duties
Demonstrate the ability to respond to orders and commands, and communicate with the OOW in a clear and concise fashion
Demonstrate knowledge of the procedures for the relief and handover of the navigational watch in accordance with accepted principles and procedures
Demonstrate knowledge of the information required to maintain a safe navigation watch

SECTION 2 - Life Saving and Fire Fighting Equipment

Task

Understand the importance of musters and drills and know what action to take on hearing an alarm signal
Demonstrate a knowledge of assigned shipboard emergency duties
Understand alarm systems and demonstrate the ability to distinguish between the various alarms
Demonstrate a familiarity with type, use and location of fire fighting appliances including fixed fire fighting equipment such as in engine room, galley and paint locker
Understand the importance and operation of fire doors and fire dampers/closure
Demonstrate a familiarity with type, use and location of life saving appliances and life saving equipment.
Understand the correct operation, precautions and the dangers of launching and recovery of rescue and survival craft

SECTION 3 - Seamanship

Task
Demonstrate Common knots , bends and hitches Reef knot Clove hitch Bowline Bowline on the bight Sheet bend Double sheet bend Rolling hitch Round turn and two half hitches
Demonstrate: Handling of mooring ropes and wires Use of rope stoppers Care, use and storage of ropes and wires Safe operation of mooring winches, windlass and capstan Correct fitting of wire grips Slinging a stage and bosun's chair Rigging pilot ladder, gangways and accommodation ladders Rigging of hydrostatic releases Securing the deck for heavy weather Opening and closing of hatches and watertight doors including, bow, stern, side and other shell openings Securing of anchors for sea
Understand the importance and safe operation of watertight doors, hatches and hull openings.

SECTION 4 – Code of safe Working Practices

Task
Code of Safe Working Practices (COSWP)
Have working knowledge of the following COSWP relevant to a seaman's duties: Protective clothing and equipment Safety signs (including standard signs and colours for fire fighting equipment) Safety induction Fire precautions Emergency procedures Safe movement onboard ship Working aloft and outboard Work in machinery space Entry into enclosed spaces Boarding arrangements Manual lifting and carrying

Use of equipment Lifting plant Hydraulic and pneumatic equipment Batteries Anchoring and mooring

SECTION 5 - Engine Watch Keeping Duties

Task
Watch Keeping:
Demonstrate knowledge of the information required to maintain a safe engineering watch
Understand terms used in machinery space and the names of machinery and equipment.
Understand engineer room watchkeeping procedures.
Understand safe working practices as related to engine room operations.
Understand the requirement for record and log keeping
Demonstrate how to hand over and relieve an engine room watch in accordance with accepted principles and procedures
Demonstrate clear and concise communications and acknowledgement of machinery space orders
Demonstrate a knowledge of machinery space emergency escape routes
Demonstrate opening and closing of engine room opening and accesses incl. water tight doors (if fitted)

SECTION 6 – Pollution Prevention

Task
Prevention of Pollution
Understand bunkering and refuelling procedures with regards to protection of the marine environment
Demonstrate knowledge of basic environmental protection procedures
Understand requirements and prohibitions for discharge of oils, sewage and residues overboard
Understand requirements and prohibitions for disposal and/or discharge of garbage
Knowledge of location and use of anti pollution equipment

SECTION 7 –Completion of STCW 95 Basic Training

Title
Personnel Survival Techniques (STCW A-VI/1-1
Fire Prevention & Fire Fighting (STCW A-VI/1-2)
Elementary First Aid (STCW A-VI/1-3)
Personal Safety & Social Responsibility (STCW A-VI/1-4)

27A. PROCEDURES, CERTIFICATION, EXAMINATION AND MAINTENANCE – NON CONVENTION VESSELS

27A.1 Definitions

For the purpose of an examination:-

"Authorised person" means a person who by reason of relevant professional qualifications, practical experience or expertise is authorised by the Certifying Authority to carry out examinations required under Section 27 of the Code.

"Compliance examination" means an examination of the vessel, its machinery, fittings and equipment, by an authorised person, to ascertain that the vessel's structure, machinery, equipment and fittings comply with the requirements of the Code. Part of the examination should be conducted when the vessel is out of the water. The out of the water examination is to include assessment of the condition of hull, hull fittings, rudder, propeller shaft, bearings and associated stern gear.

For vessels of similar type the Certifying Authority may exercise discretion in carrying out the compliance examination entirely out of the water.

"Renewal examination" means a similar examination to the Compliance examination except that it may be conducted while the vessel is out of the water.

The Certifying Authority should decide the extent of the examination based on the type, age and history of the vessel and may give credit for any recent and detailed competent examination of a vessel for which a report is available.

"Annual examination" means a general or partial examination of the vessel, its machinery, fittings and equipment, as far as can readily be seen, to ascertain that it had been satisfactorily maintained as required by the Code and that the arrangements, fittings and equipment provided are as documented in the Compliance Examination and Declaration report form SCV2. The hull, shell fittings, external steering and propulsion components of the vessel should be examined out of the water at intervals not exceeding 5 years. The Certifying Authority may stipulate a lesser interval in consideration of hull construction material or the age or the type and service of the vessel.

SCV1 - means the form for an Application for Examination of a vessel.

SCV2 - means the report form for a Compliance Examination and Declaration.

27A.2 Requirements and Procedures for Vessels to be Examined and Certificated

27.2.1 Prior to entering into service, a vessel should be in receipt of a Small Commercial Vessel Certificate for the vessel.

27.2.2 The owner/managing agent of a vessel, to be operated under the Code, should:-

.1 contact the Certifying Authority to obtain a copy of their Application for Examination form SCV1;

.2 complete form SCV1 and return it to the Certifying Authority; and

.3 arrange with the Certifying Authority for the vessel to be examined by an authorised person and documented on the report form for a Compliance Examination and Declaration, SCV2, as being in compliance with the Code.

27A.3 Issue of a Certificate of Compliance under the Code

27.3.1 The arrangements, fittings and equipment provided on the vessel are to be documented on the Compliance Examination and Declaration report form SCV2. Upon satisfactory completion and documentation of the compliance examination, and the required declarations, a copy of the signed report form SCV2 should be forwarded to the Certifying Authority. A signed and authenticated copy of the SCV2 form is to be retained onboard the vessel. Where it is not reasonable to keep form SCV2 aboard, it may be retained on shore, but must be made available if requested by any person in authority.

Where a vessel is required to have approved stability information, the owner/managing agent must be in possession of an approved Stability Information Booklet before the certificate is issued.

For all other vessels, the owner/managing agent should provide the Certifying Authority with information necessary to confirm that the stability of the vessel meets the standard required by the Code for the permitted area of operation.

27.3.2 Upon satisfactory review of the documented arrangements, fittings and equipment provided in compliance with the Code, also the required declarations in the completed report form SCV2 and approval as appropriate of either the Stability Information Booklet or required stability information [and fee payments], the Certifying Authority will issue the certificate. (The form of the certificate is given in Annex 14.)

27.3.3 A certificate should be valid for not more than five years. For a newly constructed vessel, built under full construction survey for the purposes of this Code, the certificate may begin from the final in water compliance examination. For other vessels not built under full construction survey, the certificate may begin from the date of the final in water compliance examination provided that the out of water examination was carried out within the preceding six months. This does not override the requirement for out of water examinations to be carried out at not more than 5 year intervals (27A.1).
The certificate may be valid for a lesser period of time as determined by the Certifying Authority. The certificate or a copy must be available for inspection by users of the vessel.

27.3.4 In addition to the certificate, the Certifying Authority will issue annually an identification disc to be prominently displayed and visible from outside the vessel. This will act as a ready indication to vessel users and any inspectors that the named vessel has been examined and issued with a certificate valid for the period of time stated on the disc.

27A.4 Renewal and Annual Examinations

27.4.1 Renewal examination

27.4.1.1 The owner/managing agent should arrange for a compliance examination to be carried out by a person authorised by the Certifying Authority. At this examination the vessel should be examined out of the water to include assessment of the condition of hull, hull fittings, rudder, propeller shaft, bearings and associated stern gear.
Upon satisfactory completion and verification that the arrangements, fittings and equipment documented in the Compliance Examination and Declaration report form SCV2, remain in compliance with the Code and that the vessel and its machinery are in a sound and well maintained condition, the certificate in force should be endorsed to indicate a 3 month extension. A copy of the report recommending the renewal of the certificate should be sent to the Certifying Authority.

27.4.1.2 Upon satisfactory review of the arrangements, fittings and equipment documented in the report form SCV2 as being in compliance with the Code, the Certifying Authority should renew the vessel's certificate.

27.4.1.3 The term of the new certificate may commence at the date of completion of examinations in water provided that an out of water examination has been carried out within the previous 6 months. This does not override the requirement for out of water examinations to be carried out at not more than 5 year intervals (27A.1).

Examination requirements other than compliance or renewal

27.4.2.1 The following table illustrates the survey regime applicable to all vessels.

Type of Service / Area Category	Carrying cargo Greater than 1000kg	Towing	Fitted with a lifting device	Carrying 15 or less persons and carrying cargo less than 1000kg	Carrying 16 or more persons	Pilot Boat Endorsement	Dedicated Pilot Boat
Category0	AP	AP	AP	AP	AP	AP +3yr (OW)	Self (OW)+3yr (OW)
Category 1	AP	AP	AP	AP	AP	AP +3yr (OW)	Self (OW)+3yr (OW)
Category 2	AP	AP	AP	Self +3yr (IW)	AP	Self (OW)+3yr (OW)	Self (OW)+3yr (OW)
Category 3	AP	AP	AP	Self +3yr (IW)	AP	Self (OW)+3yr (OW)	Self (OW)+3yr (OW)
Category4	AP	AP	AP	Self +3yr (IW)	AP	Self (OW) +3yr (OW)	Self (OW)+3yr (OW)
Category5	AP	AP	AP	Self +3yr (IW)	AP	Self (OW)+3yr (OW)	Self (OW)+3yr (OW)
Category6	AP	AP	AP	Self +3yr (IW)	AP	Self (OW) +3yr (OW)	Self (OW)+3yr (OW)

Where: AP = Authorised Person (see Section 27.4.2.2)
Self = Owner or managing agent (see Section 27.4.2.3)
OW = Out of water examination (see Section 27.4.2.5, except in the case of dedicated pilot boats where this is an annual requirement, see Section 27.4.2.3)
I W = In water examination (see Section 27.4.2.4)
3yr = Intermediate Examination

For vessels satisfying more than one of the service types, the most onerous survey regime will apply.

27.4.2.2 Annual examination by an authorised person

The owner/managing agent should arrange for an annual examination of a vessel as defined in Section 27.1 to be carried out by an authorised person, on behalf of the Certifying Authority, within 3 months either side of the anniversary date of the initial/renewal examination, at intervals not exceeding 15 months. On satisfactory completion of the annual examination, the authorised person should enter a record of the examination on the Compliance Examination and Declaration report form SCV2 and report the results of the examination to the Certifying Authority.

Annual examination by owner/managing agent

The owner/managing agent must carry out, or arrange for, an annual examination of a vessel within 3 months either side of the anniversary date of the initial/renewal examination, at intervals not exceeding 15 months, to confirm that the arrangements, fittings and equipment provided on board are in a satisfactory condition and remain as documented in the report form SCV2. Also that the vessel, its machinery, fittings and equipment are in a sound and well maintained condition. In the case of a dedicated pilot boat and, under certain circumstances a Small Commercial Vessel with Pilot Boat endorsement, the vessel is, additionally, to be examined out of the water to include assessment of the condition of hull, hull fittings, rudder, propeller shaft, bearings and associated stern gear.

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The owner/managing agent is to enter a record of a successful examination on the form SCV2 and report the results of the examination to the Certifying Authority.

The owner/managing agent should not complete details on the report form SCV2 if the examination reveals that either the vessel, its machinery, fitting or equipment are not sound or they do not comply with those documented in the Compliance Examination and Declaration report form SCV2. The reasons for the owner/managing agent not being allowed to enter details of the examination on the report form SCV2 should be reported immediately to the Certifying Authority for action as necessary. Also, see Section 27.7.2.

27.4.2.4 In-water intermediate examination

An examination equivalent to the annual examination, detailed in Section 27.4.2.2, must be carried out on behalf of the Certifying Authority by an authorised person at least once during the life of the certificate, in order that the interval between successive examinations by an authorised person does not exceed three years. The owner/managing agent must arrange with the Certifying Authority for this examination to be carried out.

On satisfactory completion of the examination, the authorised person must enter a record of the examination on the report form SCV2 and report the results of the examination to the Certifying Authority.

27.4.2.5 Out of water intermediate examination

Where an intermediate examination is required to be out of the water, the examination is to be as an in-water intermediate examination, with the vessel to be additionally examined out of the water to include assessment of the condition of hull, hull fittings, rudder, propeller shaft, bearings and associated stern gear.

Additional requirements

Where it is deemed necessary by the authorised person or Certifying Authority, the vessel may need to be examined out of the water at intervals of less than five years, paying special attention to the exterior hull condition, through-hull valves, and exterior steering and propulsion equipment.

27.4.3 Additional requirements for inflatable and rigid inflatable boats

For additional testing requirements specific to inflatable and rigid inflatable boats refer to section 4.5.3.

27A.5 Examination and Certification of Pilot Boats

27.5.1 Issue of a Pilot Boat Certificate, or Small Commercial Vessel Certificate with Pilot Boat Endorsement

27.5.1.1 The competent harbour authority or the owner/managing agent should arrange for a dedicated pilot boat to be examined by an authorised person at intervals not exceeding 3 years.

27.5.1.2 An application for the examination of a pilot boat should be made by the competent harbour authority or the owner/managing agent of the boat to the Certifying Authority.

27.5.1.3 On receipt of the application, the Certifying Authority should arrange for an authorised person to examine the vessel in the manner prescribed in the Code and satisfy himself that:-

.1 the form of construction, machinery installation and safety equipment is consistent with the standards specified in the Code; and

.2 the vessel is in all respects satisfactory for the service for which it is intended, having regard to the period for which the Pilot Boat Certificate or Small Commercial Vessel Certificate with Pilot Boat Endorsement is to be issued.

27.5.1.4 Propeller shaft(s) (other than shaft(s) running in oil) should be drawn for examination at the initial survey and, thereafter, at intervals not exceeding 3 years.

Propeller shafts running in oil should be withdrawn for examination at intervals not exceeding 10 years, provided that an intermediate examination shows that wear has been insignificant.

The authorised person should record all examinations on the form of record of particulars of a pilot boat or form of compliance examination and declaration of a small commercial vessel, as appropriate.

27.5.1.5 When survey repairs, replacements or modifications are undertaken, the authorised person should make records of them on the form of record of particulars of a pilot boat or form of compliance examination and declaration of a small commercial vessel, as appropriate.

27.5.1.6 The authorised person, if satisfied from the examination that it is proper to do so, should forward to the Certifying Authority the completed forms containing such particulars of the vessel and its equipment as are required to enable the Certifying Authority to issue a pilot boat certificate or make a pilot boat endorsement on a small commercial vessel certificate, together with a certified copy or copies of certificates issued in respect of the vessel.

27.5.2 Pilot boat certificate and pilot boat endorsement of a small commercial vessel certificate

27.5.2.1 A Pilot Boat Certificate for a dedicated pilot boat, unless the vessel, its machinery or safety equipment is found to be deficient, should have a period of validity not exceeding 5 years from the date of examination of the vessel out of the water by the authorised person.

27.5.2.2 The Pilot Boat Endorsement of a Small Commercial Vessel Certificate should have a period of validity not exceeding 5 years (see 27.3.3), unless the vessel, its machinery or safety equipment found to be deficient.

27.5.2.3 The Pilot Boat Certificate or Small Commercial Vessel Certificate with Pilot Boat Endorsement should be displayed in a prominent position within the vessel, and a certified copy of the certificate should be retained by the competent harbour authority, and, where appropriate, by the owner/managing agent of the boat.

27.5.3 Intermediate examination of a dedicated pilot boat

27.5.3.1 The competent harbour authority or the owner/managing agent of a dedicated pilot boat should arrange for the boat to undergo an intermediate examination, which should take place not more than 3 months before nor more than 3 months after the halfway date of the period of validity of the Pilot Boat Certificate.

27.5.3.2 The authorised person should examine the boat in the manner prescribed for an annual examination and be satisfied that:-

.1 such parts of the vessel, its machinery and equipment as are specified in the Code and are subject to the survey, remain in good working condition; and

.2 no major alterations have been made to the vessel, its machinery or equipment, to which the Pilot Boat Certificate relates, without the approval of the Administration.

27.5.3.3 On completion of a satisfactory intermediate examination, the authorised person should endorse the Pilot Boat Certificate accordingly.

27.5.4 Annual examination by owner/managing agent

For details of the annual examinations for dedicated pilot boats, see section 27.4.2.3

27.5.5 Procedure if a pilot boat, its machinery or safety equipment is deficient

27.5.5.1 When an authorised person determines that the condition of a pilot boat, its machinery or equipment does not correspond substantially with the requirements in the Code or is such that the vessel is not fit for service, he should advise the competent harbour authority and, where appropriate, the owner/managing agent of the boat of the corrective action which is required.

27.5.5.2 If a pilot boat is not fit for service, the authorised person should notify the Certifying Authority and if any corrective action deemed to be required is not taken within a specified period, the Certifying Authority will suspend the validity of the certificate for the pilot boat, and notify the competent harbour authority in writing. The authorised person should notify the skipper of the vessel and, where appropriate, the owner/managing agent of the vessel.

27.5.5.3 The skipper of the vessel and, where appropriate, the owner/managing agent of the vessel should deliver up to the authorised person, respectively, the certificate and certified copy of the certificate. The competent harbour authority should deliver up the certified copy of the certificate to the Certifying Authority.

27.5.5.4 When satisfied that corrective action has been taken, the authorised person should notify the Certifying Authority who should restore the validity of the certificate, notify the competent harbour authority and return the certified copy of the certificate to that authority. The authorised person should return the certificate and certified copy of the certificate, respectively, to the skipper of the vessel and, where appropriate, the owner/managing agent of the vessel.

27.5.6 Exemptions for pilot boats (see 25.6.1)

The Administration may exempt a pilot boat from all or any of the requirements of the Code as may be specified in the exemption on such terms (if any) as may be specified if the Administration is satisfied that compliance with such requirements is either impracticable or unreasonable in the case of that pilot boat and may, subject to giving reasonable notice, alter or cancel any such exemption.

27A.6 Appeal Against the Findings of an Examination

If an owner/managing agent or competent harbour authority is dissatisfied with the findings of an examination and agreement can not be reached with the authorised person who carried out the examination, the owner/managing agent or competent harbour authority may appeal to the Certifying Authority to review the findings. At this review, the owner/managing agent or competent harbour authority may call a representative or professional adviser to give opinions in support of the argument against the findings of the examination.

Should the above procedures fail to resolve the disagreement, the owner/managing agent or competent harbour authority may refer the disagreement to the Administration.

27A.7 Maintaining and Operating the Vessel

27.7.1 The Certifying Authority or a person authorised by the Administration may examine a certificated vessel at any time.

27.7.2 It is the responsibility of the owner/managing agent to ensure that at all times a vessel is maintained and operated in accordance with the requirements of the Code, the arrangements as documented in the Compliance Examination and Declaration report form SCV2 and any conditions stated on the vessel's certificate. Additionally, it is the responsibility of the owner/managing agent to ensure that the vessel is maintained in accordance with manufacture's recommendations or best engineering practice. If for any reason the vessel does not continue to comply with any of these requirements, the owner/managing agent should notify the Certifying Authority immediately. Also see Section 27.8.3.

27.7.3 In cases where the vessel suffers major damage, for example as a result of a collision, grounding, fire or other event, the owner/managing agent must notify the Certifying Authority immediately, explaining the circumstances by which the vessel became damaged. The nature and extent of major repairs are subject to the approval of the Certifying Authority. Minor damage, detrimental to the safety of the vessel, must also be reported to the Certifying Authority, together with the measures proposed to effect repairs, who may take action as it may deem appropriate which may include a full or part examination of the vessel.

In addition, the owner/managing agent has a statutory requirement to report accidents. The statutory requirements are given in the Merchant Shipping (Accident Reporting and Investigation) Regulations 1999 SI 1999/2567. Marine Guidance Note MGN115 (M+F) explains the Regulations and the requirement to report accidents to the Department for Transport.

27.7.4 The owner/managing agent should seek approval from the Certifying Authority prior to implementing any change or modification which is covered by the requirements of the Code.

27A.8 Other Conditions Applying to Certificates - Validity and Cancellation of Certificates

27.8.1 The validity of a certificate is dependent upon the vessel being maintained, equipped and operated in accordance with the documented arrangements contained in the Compliance Examination and Declaration report form SCV2. Proposals to change any of the arrangements should therefore be agreed in writing with the Certifying Authority before a change is implemented. Copies of the written agreement detailing changes(s) should be appended to the report form SCV2, which is to be retained on board the vessel.

27.8.2 When the vessel is found not to have been maintained or equipped or operated in accordance with the arrangements documented in Compliance Examination and Declaration report form SCV2, the certificate may be cancelled by the Certifying Authority.

27.8.3 When a vessel is sold, the certificate issued by the Certifying Authority on the basis of the compliance examination and owner's declarations documented in the Compliance Examinations and Declaration report form SCV2 is cancelled automatically and the selling owner/managing agent should return the certificate to the Certifying Authority for formal cancellation and records, A new certificate may be issued to the new owner on receipt by the Certifying Authority of the appropriate application form completed by the new owner. The Certifying Authority should decide the extent of any examination, if any, of the vessel which may be required before a new certificate is issued.

The Administration should be informed, by the Certifying Authority, when a certificate is issued, renewed, cancelled or modified. When a certificate is cancelled, the circumstances should also be reported, for action to be taken as deemed necessary.

27B SURVEY, CERTIFICATION, INSPECTION AND MAINTENANCE - CONVENTIONVESSELS

27B.1 General

27.1.1 All vessels covered by this code are required to be surveyed and certificated in accordance with the International Load Line Convention.

27.1.2 Statutory work may be undertaken by surveyors specifically appointed by the Administration.

27B.2 Initial Survey (including new-building commercial vessels)

Vessels are required to be issued with the following certificates, as appropriate.

.1 International Load Line Certificate (all vessels)

.2 Certificate of Compliance (all vessels) – this certificate is to cover all aspects of the Code for which a separate certificate is not required

.3 International Tonnage Certificate (all vessels)

27B.3 Exemption from certain safety regulations

If an owner/managing agent seeks any exemption from the application of specific regulations or requirements, formal application must be made to the Administration, demonstrating an equivalent level of safety. The Administration will issue an exemption if and when appropriate.

27B.4 Periodical Surveys

27.4.1 Load Line Certificates, Cargo Ship Safety Construction Certificates and Certificates of Compliance (Valid for 5 years in general)

Annual, intermediate and renewal surveys with respect to the Load Line Certificates, the Cargo Ship Safety Construction Certificates and the Certificate of Compliance should be carried out to the satisfaction of the Administration.

Any certificate is to be valid for not more the 5 years from the date of survey.

27.4.2 Cargo Ship Safety Equipment and Safety Radio Certificates

27.4.2.1 Safety Equipment Certificates and Safety Radio Certificate surveys should be carried out either by the Administration or Parties to the SOLAS Convention at the request of a the Administration; or by a Classification Society surveyor appointed by the Administration to act on its behalf; or by an appropriate Certifying Authority in relation to radio installations for cargo ships.

27.4.2.2 An application to the Administration for an extension to the certificate will be agreed only in cases when it appears proper and reasonable to do so.

27.4.2.3 At least once during a five year period, a surveyor appointed by the Administration will visit the ship to survey its safety equipment and to conduct a general inspection to ensure that standards are being met.

27B.5 Use of an Authorised Certifying Authority

An authorised Certifying Authority is aware of the extent to which responsibility has been delegated to issue Load Line Certificates. International Conventions give specific discretion to an Administration to either make exemptions or accept equivalent equipment or arrangements. The formal agreement between the Administration and an authorised Certifying Authority governs the relationship between the two parties.

27B.6 Use of an Authorised Person to act on the behalf of the Administration

An authorised person may be appointed from time to time to act on behalf of the Administration.
When a surveyor is so appointed, actions taken will be under direct instruction of the Administration. The Administration will provide the appointed surveyor with detailed guidance on the scope of survey and report required.

27B.7 Accident Investigations

The Administration with which the vessel is registered is obliged to investigate accidents or incidents in accordance with the requirements of International Conventions. Apart from this legal requirement, an Administration investigates such occurrences to demonstrate the effective control and importance they attach to safety at sea.

It is an offence for the vessel's master, skipper or owner not to inform the appropriate authority of a reportable accident shortly after it occurs and to provide details so that an assessment of its seriousness can be made quickly. The Marine Administration will appoint a suitable Surveyor or Inspector whenever an investigation is required. The Marine Administration will then receive the Surveyor's or the Inspector's report and will deal with the follow up action.

All serious casualties in accordance with the International Maritime Organisation's (IMO) definition should be reported to IMO through the Administration.

28A. VESSELS OPERATING UNDER RACE RULES – NON CONVENTION VESSELS

28A.1 A coded vessel chartered or operated commercially, for the purpose of racing need not comply with the provisions of the Code whilst racing, or whilst in passage directly to or from a race, provided that the vessel complies with the following: -

.1 It complies with the racing rule provisions of either the International Sailing Federation (ISAF) or the Union Internationale Motonautique (UIM).

.2 It complies with the racing rule provisions of the affiliated Member National Authority, of either the ISAF or UIM, in the country where the race takes place.

.3 It complies with the safety rule provisions of the race Organising Authority affiliated to the Member National Authority and thereby recognised by the ISAF or UIM to organise races in the country where the race takes place.

.4 If it is a yacht racing offshore, it complies with the appropriate parts of the ISAF Offshore Racing Committee's special regulations or the similar requirements of the affiliated race Organising Authority.

.5 When on charter and in passage in any Area Category to and from the race, the race or equivalent safety cover shall be in force, or the vessel is to be in its coded condition for the passage.

28A.2 A non-Coded vessel may be chartered or operated commercially for the purpose of racing, or whilst in passage directly to or from a race, provided that it is registered and licensed by an ISAF or UIM affiliated Member National Authority as a vessel chartered or operated commercially for the exclusive purpose of racing and provided the vessel also complies with the provisions of 28.1.1 to 28.1.5.

The ISAF or UIM affiliated Member National Authority shall only register and licence such a vessel for World, Continental, National, Open or other similar status race events and shall advise the Administration accordingly. Non-coded vessels shall not be chartered nor used commercially for any other purpose than racing, as defined in 28.1.

28A.3 The relief from compliance with the provisions of the Code which is permitted by Section 28.1 and 28.2, does not apply to a vessel taking part in an event created and organised with the intent to avoid the provisions of the Code.

Notes:

1. Only clubs recognised by an ISAF Member National Authority (MNA) may use the ISAF racing rules. In the UK this means a club affiliated as a club to the RYA. (This does not include RYA recognised teaching establishments).

2. The UIM racing rules require all racing drivers to have been licensed by a UIM MNA. In the UK, the RYA issues such licences, which require pre medical examinations and minimum levels of past experience.

3. All legitimate races are required, by the ISAF or UIM rules, to have been "pre-advertised" by means of a Notice of Race and be controlled by Sailing or Race Instructions. The minimum provisions for these are set out in the ISAF and UIM racing rules.

4. The exemption related in Section 28.2 above is intended to facilitate situations where, for example, an overseas team, unable to transport their own boat to an event because of distance, may charter a local, non coded, boat to enable them to compete.

29A. CLEAN SEAS – NON CONVENTION VESSELS

29A.1 General

29.1.1 A vessel complying with the Code should meet international, national, regional and local requirements for the prevention of marine pollution which are applicable to the area in which the vessel is operating.

29.1.2 Responsibility for the vessel to be properly equipped and maintained to meet the requirements prevailing rests with the owner/managing agent.

29.1.3 It is also the responsibility of the owner/managing agent to ensure that a charterer of a vessel receives up-to-date and adequate information on prevention of pollution in the area in which the charterer intends to operate. The information may include the need to seek advice from local or harbour authorities, for which contact "points" should be given.

29.1.4 The disposal of ship generated waste to port reception facilities is regulated in the UK through the Merchant Shipping and Fishing Vessels (Port Waste Reception Facilities) Regulations 2003/1809. Further guidance on the applicability of these regulations can be found in MGN 253 and the "Port Waste Management Planning – A Guide to Good Practice" booklet available from Marine Offices. Vessels should ensure they manage their wastes in a sustainable manner and fulfil the applicable requirements (if any) of these regulations

29A.2 Requirements for Preventing Pollution of the Sea

Sewage

29.2.1.1 When the direct overboard discharge from a water closet is prohibited by administrations/authorities in an area of operation, the provision of "holding tanks" of sufficient capacity to store waste for discharge to shore facilities may be needed for a vessel to comply.

29.2.1.2 There are two standard pump out connections, ISO 8099 which is a one and a half inch pipe thread (in accordance with ISO 228-1) and MARPOL which is a 16mm thick flange having four 18mm diameter holes on a 170mm pitch circle diameter.

29.2.1.3 If sewage holding tanks are fitted they should be constructed with a sloping bottom arranged such that the outlet is at the lowest point. Ventilation arrangements should be routed well clear of accommodation and sleeping quarters. Outlets from ventilation should not be near ventilation or machinery inlets and should not pose a danger to other vessels alongside. Tanks should be manufactured from material not susceptible to corrosion in anaerobic decomposition conditions.

Oil

29.2.3.1 The Merchant Shipping (Prevention of Oil Pollution) Regulations 1996, SI 1996 No. 2154, as amended by The Merchant Shipping (Prevention of Oil Pollution) (Amendment) Regulations 2000, SI 2000 No. 483) explains the extent to which a vessel operating in accordance with the Code should comply with the Regulations.

29.2.3.2 "MARPOL 73/78 – Annex 1, Guidelines for Systems for Handling Oily Wastes in Machinery Spaces of Ships". The guidelines apply to ships of which the keels were laid on or after 1 January 1992.

29.2.3.3 Means to prevent pollution by oil should be acceptable to administrations/authorities in the area in which a vessel operates.

29.2.3.4 Merchant Shipping Notice No. 1197 provides information on additional recording and documentation.

29.2.4 Use of Antifouling Paints

29.2.4.1 On the 5th October 2001 the International Maritime Organization adopted the International Convention on the Control of Harmful Anti-Fouling Systems on Ships. This Convention prohibits the use of environmentally harmful organotins (for example Tributyl Tin) in antifouling paints applied on ships and prevents the possible use in the future of other harmful substances in anti-fouling systems.

29B CLEAN SEAS – CONVENTION VESSELS

29.1 Vessels should comply with all the requirements of MARPOL according to the regulations of the Administration. For vessels under 400 GT it is the owner's responsibility to comply with local administration/port state requirements and for dealing with oily bilge water retention etc.

29.2 Special local requirements may exist in national sea areas, ports and harbours. The attention of owners/operators is drawn to the need to comply with local requirements as appropriate.

30A. PACKAGED DANGEROUS GOODS – NON CONVENTION VESSELS

30A.1 Governing Statute

The carriage of dangerous goods is only permitted in accordance with the Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997 (Statutory Instrument 1997 No 2367), excluding goods covered by PART III - Carriage of Dangerous Goods or Marine Pollutants in Bulk.

30A.2 Ship Stores

Ship stores, which are dangerous goods but carried for use during the voyage are exempt from the requirements of this Section, but should be appropriately used and stowed.

30A.3 General Requirements

.1 Dangerous goods are only to be carried on deck.

.2 Reference should be made to the Administration for vessels wishing to carry both dangerous goods and passengers.

.3 The stowage and segregation requirements of the IMDG Code should apply.

.4 When required, packaged dangerous goods shall be in United Nation's approved packaging.

30A.4 Scuppers and Drains

The scupper and drainage arrangements are to be directed overboard with no connections to internal spaces.

30A.5 Electrical Equipment

Electrical equipment installed in the cargo space should be of the certified safe type for the cargo being carried or be capable of being securely isolated and be isolated during the carriage of packaged dangerous goods.

30A.6 Structural Fire Protection

Bulkheads forming boundaries containing fuel tank and engine spaces are to be insulated to A-60 standard unless the dangerous goods are stowed three metres from such bulkheads and boundaries.

30A.7 Fire Fighting Equipment

30.7.1 There should be an immediate availability of water from the fire main such as an engine driven fire pump and, in addition, from a manual fire pump. The two pumps will be required when carrying Class 1 dangerous goods only. Each pump shall be capable of supplying the hoses and nozzles, required in accordance with the Code.

30.7.2 At least two portable dry powder extinguishers each rated at least at 34B are to be provided and be readily available to the cargo area.

30A.8 Crew Training

The crew should undergo training in the carriage of the dangerous goods and the IMDG Code and records kept of the training undertaken.

30A.9 Vessel Certification

30.9.1 Prior to dangerous packaged goods being carried, the vessel should be surveyed and shown to be suitable for the carriage of packaged dangerous goods.

30.9.2 Upon successful completion of a survey, a Document of Compliance will be issued to the vessel indicating the Class of goods that can be carried with a list of equipment fitted.

30A.10 Cargo Documentation

30.10.1 When packaged dangerous goods are carried, details of the emergency fire fighting equipment and First Aid medical procedures should be provided onboard, with additional equipment if required under the IMDG Code, to ensure that if an emergency occurs, it can be dealt with effectively.

30.10.2 When carrying packaged dangerous goods, a full manifest of the cargo shall be retained ashore by the Code vessels owner, or designated person, in case of an incident. This person ashore should have a list of contact numbers for the emergency services and relevant manufacturers/suppliers of the dangerous goods. The designated person should be employed by the Code vessel's owner and be aware of the details of the voyage.

30A.11 Permitted Packaged Dangerous Goods

30.11.1 A restricted list of dangerous goods, as contained in the IMDG Code, will be permitted:-

.1 Class 1 Explosives – when carrying military explosives a qualified military or explosive expert should be present when explosives are being loaded, carried and unloaded;
.2 Class 2.1 – permitted
.3 Class 2.2 – permitted
.4 Class 2.3 – prohibited;
.5 Class 3 Substances – the size of the container carrying Class 3 products will be limited to 30 litres;
.6 Class 4 Substances – prohibited;
.7 Class 5 Substances – prohibited;
.8 Class 6.1 Substances – packing group III substances only with a limit of 30 litres and 30 Kg;
.9 Class 6.2 Substances – prohibited;
.10 Class 7 Substances – prohibited;
.11 Class 8 Substances – packing group I and II substances prohibited, packing group III substances restricted to 30 litres max; and
.12 Class 9 Substances – permitted subject to container capacity, 30 litres liquid, and 30 kg weight.

30.11.2 Although the above table restricts the carriage of certain classes of dangerous goods, when these goods are carried in Limited Quantities as laid down in the IMDG Code, the restrictions do not apply, and the goods may be carried.

30.11.3 Should an operator want to carry prohibited packaged dangerous goods on a regular basis, then a submission, with a safety assessment, should be submitted to the Administration via the Certifying Authority for consideration. If agreed, the Document of Compliance will be amended accordingly. This may involve the carriage of additional safety equipment. The assessment procedure should be discussed with the Administration before proceeding.

Informative Note

The title of the dangerous good classes is given below – for in depth descriptions the IMDG Code should be consulted.

Class 1 Explosives

Class 2 Gases

Class 2.1	Flammable gases
Class 2.2	Non-flammable, non-toxic gases
Class 2.3	Toxic gases
Class 3	Flammable Liquids
Class 4	Flammable solids; substances liable to spontaneous combustion; substances which, in contact with water emit flammable gasses
Class 4.1	Flammable solids
Class 4.2	Substances liable to spontaneous combustion
Class 4.3	Substances which, in contact with water, emit flammable gases
Class 5	Oxidising substances and organic peroxides
Class 5.1	Oxidizing substances
Class 5.2	Organic peroxides
Class 6	Toxic and infectious substances
Class 6.1	Toxic substances
Class 6.2	Infectious substances
Class 7	Radioactive material
Class 8	Corrosive Substances
Class 9	Miscellaneous dangerous substances and articles

27B. PASSENGERS -

No vessel to which the Code applies should carry more than 12 passengers on a voyage or excursion. The following meanings apply:

"*Passenger*" means any person carried in a ship except:

(a) a person employed or engaged in any capacity on board the ship on the business of the ship;

(b) a person on board the ship either in pursuance of the obligation laid upon the master to carry shipwrecked, distressed or other persons, or by reason of any circumstances that neither the master nor the owner nor the charterer (if any) could have prevented; and

(c) a child under one year of age; and

"*a person employed or engaged in any capacity on board the vessel on the business of the vessel*" may reasonably include:

.1 bona-fide members of the crew over the minimum school leaving age (about 16 years) who are properly employed on the operation of the vessel;

.2 person(s) employed either by the owner or the charterer in connection with business interests and providing a service available to all passengers; and

.3 person(s) employed either by the owner or the charterer in relation to social activities on board and providing a service available to all passengers.

With reference to .2 and .3 above, such persons should be included in the crew list required for the vessel, should have received familiarisation training as required by STCW, and should not be assigned duties on the muster list.

ANNEX 1

EXTRACT FROM MGN 105 (M)

GUIDELINES ON THE USE AND FITTING OF RETRO-REFLECTIVE MATERIALS ON LIFE-SAVING APPLIANCES

1. Lifeboats and Rescue Boats

Retro-reflective materials should be fitted on top of the gunwale as well as on the outside of the boat as near the gunwale as possible. The materials should be sufficiently wide and long to give a minimum area of 150cm^2 and should be spaced at suitable intervals (approximately 80cm from centre to centre). If a canopy is fitted, it should be allowed to obscure the materials fitted on the outside of the boat, and the top of the canopy should be fitted with retro-reflective materials similar to those mentioned above and spaced at suitable intervals (approximately 80cm from centre to centre). In the case of partly enclosed or totally enclosed lifeboats, such materials should be placed as follows:

.1 for detection by horizontal light beams - at suitable intervals at half the height between the gunwale and the top of the fixed cover; and

.2 for detection by vertical light beams (e.g. from helicopters) - at suitable intervals around the outer portion of the horizontal (or comparable) part of the top of the fixed cover;

.3 retro-reflective materials should also be fitted on the bottom of lifeboats and rescue boats which are not self-righting.

2. Liferafts

Retro-reflective materials should be fitted around the canopy of the liferaft. The material should be sufficiently wide and long to give a minimum area of 150cm^2 and should be spaced at suitable intervals (approximately 80cm from centre to centre) at a suitable height above the waterline, doorways included, if suitable. On inflatable liferafts, retro-reflective materials should also be fitted to the underside of the floor, cross-shaped in the centre. The dimension of the cross to be half the diameter of the liferaft, and a similar cross should be applied to the top of the canopy.

On liferafts which are not equipped with canopies, materials which should be sufficiently wide and long to give a minimum area of 150 cm^2 should be attached to each buoyancy chamber at suitable intervals (approximately 80cm centre to centre) in such a manner that they are visible both from the air and from a ship.

3. Lifebuoys

Retro-reflective material of a sufficient width (approximately 5cm) should be applied around or on both sides of the body of the lifebuoy at four evenly-spaced points.

4. Buoyant Apparatus

Buoyant apparatus should be fitted with retro-reflective materials in the same manner as liferafts without canopies, always depending on the size and shape of the object. Such materials should be visible both from the air and from a ship.

5. Lifejackets

Lifejackets should be fitted with patches of retro-reflective materials with a total area of at least 400cm^2 distributed so as to be useful for search from air and surface craft from all directions. In the case of a reversible lifejacket, the arrangement should be complied with no matter which way the lifejacket is put on. Such material should be placed as high up on the lifejacket as possible.

6. Immersion Suits

Immersion suits should be fitted with patches of retro-reflective material with a total area of at least 400cm^2 distributed so as to be useful for search from air and surface craft from all directions.

For an immersion suit that does not automatically turn the wearer face up, the back of the suit should be fitted with retro-reflective material with a total area of at least 100cm^2.

7. General Remarks

The reflective tape used should be wheelmarked (although the wheelmark need not appear on the tape itself).

ANNEX 02

MEDICAL STORES FOR CODE VESSELS IN AREA CATEGORIES 2, 3, 4, 5 AND 6

CATEGORY C STORES, AS REQUIRED BY MSN 1768 (M+F)

Code Vessels in Area Category 1 require Category B Stores
Code Vessels in Area Category O require Category A Stores
See MSN 1768 (M+F) for details

Ref.* No.	Statutory Treatment Requirements	Recommended Medicine and Dosage Strength Representing best practice.	Recommended Quantity for 10 workers or for a lifeboat/liferaft
1.	**Cardio Vascular**		
(b)	Anti-angina preparations	Glyceryl Trinitrate Spray 400 micrograms / metered 200 dose aerosol	1 unit
2.	**Gastro intestinal system**		
(b)	Anti-emetics	Hyoscine hydrobromide 0.3 mg tablets or Cinnarizine 15mg	60 60
(d)	Anti-diarrhoeals	Loperamide 2mg tablets	30
3.	**Analgesics and Anti–spasmodics**		
(a)	Analgesics,anti-pyretics and anti-inflammatory agents	Paracetamol 500 mg tablets and Ibuprofen 400 mg tablets	50 50
4.	**Nervous system**		
(c)	Seasickness remedies	Hyoscine hydrobromide or (See 2b) Cinnarizine	Use 2(b)
5.	**Medicines for external use**		
(a)	Skin Medicines		
	- Antiseptic solutions	100 ml solution or pre-impregnated wipes containing 0.015% w/v chlorhexidine and 0.15% w/v cetrimide	1 bottle or 1 pack wipes
	- Burn preparations	Proprietary antiseptic cream	1

**The numbering refers to the number allocated to the medicine or equipment in EC Directive 92/29*

MEDICAL EQUIPMENT

	Statutory Treatment Requirements	Recommended Specification	Quantity
1.	**Resuscitation Equipment**		
	Mask for mouth to mouth resuscitation	Pocket Face Mask	1
2.	**Dressing and suturing equipment**		
	Adhesive Elastic bandage	Adhesive Elastic Bandage 7.5cm x 4m	1
	Disposable polyethylene gloves	Latex free, vinyl	5 prs
	Adhesive dressings	Assorted, sterile	20
	Sterile bandages with unmedicated dressings (Ambulance dressings)	medium, No.1 (12x10)cm large, No.2 (20x15)cm extra large No.3(28x20)cm	6 2 2
	Adhesive sutures or zinc oxide bandages	75mm adhesive suture strips	6
	Sterile gauze swabs	Packet containing 5 sterile gauze pads size 7.5cms x 7.5cms	1
		Recommended Additional Items	
		Scissors stainless steel / or sterile disposable	1pr
		Triangular bandages about 90cm x 127cm	4
		Medium safety pins, rustless	6
		Sterile paraffin gauze dressings	10
		Plastic burn bags	1

First Aid Instructions or a First Aid Manual (St John's, Red Cross or St Andrew's) should also be included with the Medical Stores.

ANNEX 3

THE MANNING OF SMALL (NON CONVENTION)VESSELS

This Annex gives information relating to the manning and operation of small vessels in commercial use as follows:

Section 1 - Areas of Application
Section 2 - Minimum Qualifications of the Person in Charge of the Vessel and the Additional Person When Required To Be Carried
Section 3 - Revalidation of Certificates & Licences
Section 4 - Approved Engine Course
Section 5 - Stability and Approved Stability Course
Section 6 - Pilot Boats
Section 7 - Single Handed Operations
Section 8 - Responsibility of the Owner/Managing Agent for the Safe Manning of the Vessel
Section 9 - Keeping a Safe Navigational Watch
Section 10 - Withdrawal of Certificate

General

Vessels to which this Code applies and which comply with its requirements, will be exempt from the need to comply fully with the Merchant Shipping (Training and Certification) Regulations 1997, SI 1997 No. 348, as amended and the Merchant Shipping (Safe Manning, Hours of Work and Watchkeeping) Regulations 1997, SI 1997 No.1320 provided the manning of the vessel is in accordance with the standards given in paragraph 2 below when operating in the areas described in paragraph 1 below.

1. Areas of Application

Commercially operated vessels operating within the following areas should carry at least the qualified personnel shown in Section 2 below:-

Area Category 6	To sea, within 3 miles from a nominated departure point(s) and never more than 3 miles from land, in favourable weather and daylight
Area Category 5	To sea, Within 20 miles from a nominated departure point in favourable weather and daylight.
Area Category 4	Up to 20 miles from a safe haven, in favourable weather and in daylight
Area Category 3	Up to 20 miles from a safe haven
Area Category 2	Up to 60 miles from a safe haven
Area Category 1	Up to 150 miles from a safe haven
Area Category 0	Unrestricted service

2. Minimum Qualifications of the Person in Charge of the Vessel (Skipper) and of the Additional Persons Required to be Carried on Board

2.1 General
All Certificates and Licences of Competency or Service are to be appropriate to the type of vessel in which they are used.
Any person appointed as a skipper must be a minimum age of 18 years.

2.2 Endorsement of Certificates
RYA certificates of competency and/or service and other MCA recognised Yachtmaster certificates should carry the endorsement – "valid for vessels of up to 24 metres in length used for commercial purposes".

2.3 Qualifications Required
A vessel should be manned in accordance with Tables 1, 2 and 3 of this Annex. Qualification differing from those tabled, but of equal standing or specialist application (e.g. Sailing Barge Masters Certificate), will be considered.

2.4 Controllers of Organised Activities

The controllers of organised activities such as Sailing Schools may submit alternative Qualifications to those listed above. Any such submissions to the MCA will be considered upon their merits.

2.5 Radio Qualifications

Every vessel should carry at least one person holding a Radio Operator's Certificate suitable for the radio equipment on board.

2.6 Medical Fitness Certificates

2.6.1 The skipper and anyone else who is employed on board and who has safety responsibilities should hold an authorised medical fitness certificate. The standard medical fitness certificate for anyone employed at sea is the seafarer's medical certificate (ENG1), available subject to a satisfactory medical examination, from an approved doctor appointed by the Secretary of State, listed in a Merchant Shipping Notice (currently MSN 1777(M)), or on the MCA's website (www.mcga.gov.uk). This medical certificate is acceptable for any area of operation (unless it includes a specific restriction) and is valid for a maximum of two years, in line with international requirements.

2.6.2 For those employed on small commercial vessels that operate no further than 60 miles from a safe haven (Area Categories 2, 3, 4, 5, and 6) the alternative ML5 certificate is acceptable. The ML5 certificate is attached to the ML5 report and may be issued by any registered medical practitioner on the basis of a satisfactory ML5 report. An ML5 certificate is valid for no more than 5 years. The ML5 report form is available from any MCA Marine Office, or may be downloaded from MCA's website (www.mcga.gov.uk)

(Note - Additional guidance on both ENG1 and ML5 certificates can be found in Marine Guidance Note 264)

2.6.3 As an alternative to Section 2.6.2, for vessels operating no further than 60 miles from a safehaven, the following will be accepted as evidence of medical fitness:-

CAA commercial pilot's licence,
HSE diving medical certificate,
DVLA Group 2 Drivers Licence.

The following conditions will also apply:

.1 the validity of the evidence of medical fitness would be that of the validity of the parent licence, e.g. one year in the case of a CAA commercial pilot's licence.

.2 in the case of the HSE diving medical and the DVLA Group 2 licence, evidence of satisfactory colour vision will be required.

.3 in the case of the above-named equivalent medicals, a declaration will be required, signed by the applicant confirming the following:-

i) the contact details of the examining doctor, their consent for the MCA to obtain further medical information if required, and the date of the examination; and

ii) that they have not had any medical conditions requiring hospital admission, regular prescribed medication, or continuing medical surveillance, since the alternative medical was carried out; and

iii) that they have no conditions limiting strength, stamina, or flexibility, such that they could not cope with emergencies on board, such as recovering someone who has fallen overboard or fighting a fire; and

iv) that they will seek revised medical fitness certification and submit this to the Administration if the licence accepted as evidence of medical fitness is revoked for any reason, or if they suffer any illness or accident affecting their fitness to operate the vessel, during the period of the licence/certificate.

2.7 Basic Sea Survival Course

Skippers of vessels to which the Code applies should hold an approved Basic Sea Survival Course Certificate.

2.8 First Aid Training

The skipper or a member of the crew of vessels which operate in Area Category 2, 3, 4, 5 or 6 should hold an MCA approved Elementary First Aid Certificate (or the First Aid at Sea certificate or Medical First Aid certificate), an RYA First Aid Certificate, or a SeaFish Basic First Aid Certificate, provided use of the medical stores is covered in the course. Skippers of vessels operating in Area Category 0 or 1 should hold a Proficiency in Medical Care Certificate (or its predecessor, the Ship Captain's Medical Certificate) unless another member of the crew holds a medical or nursing qualification of an equivalent or a higher standard. The skipper or nominated first-aider should undertake refresher training at least every five years.

2.9 Hours of Work Provisions

2.9.1 Fatigue at sea is a serious safety issue and operators should ensure that all vessels certificated under the Code are sufficiently manned to avoid the need to work excessive hours. The skipper is responsible for ensuring, so far as is reasonably practicable, that he/she and all crew members are properly rested when they begin work and obtain adequate rest when not on duty. The Maritime Working Time Directive provides that the minimum hours of rest for anyone employed on board should be not less than:-

.1 ten hours in any 24-hour period; and

.2 77 hours in any seven day period.

2.9.2 These limits should be observed, although exceptions are allowed so long as they are agreed between the skipper and crew members, and provided that their health and safety, and the safety of the vessel, are not compromised. Such exceptions may take account of more frequent or longer leave periods or the granting of compensatory leave for watchkeeping seafarers or seafarers working on board ships on short voyages.

2.9.3 For boats operating on the basis of watchkeeping arrangements, a schedule of duties should be drawn up setting out the hours of work and rest periods. In drawing up a schedule, factors to be taken into account may include:

.1 type of operation;

.2 details of the watchkeeping arrangements;

.3 the total workload;

.4 the seriousness of irregular working hours and their contribution to causing fatigue and the importance of scheduling reasonably stable working hours.

The Maritime Working Time Directive also provides anyone employed at sea with an entitlement to a period of leave of at least four weeks' paid leave in each year.

2.10 Health and Safety at Work Provisions

2.10.1 The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 (SI 1997/2962) apply wherever "workers" are employed at sea. Under these regulations all employers have a duty to ensure the health and safety of workers and others, so far as is reasonably practicable. To fulfil this duty, employers are required to carry out "a suitable and sufficient assessment of the risks of the health and safety of workers arising in the normal course of their activities or duties". The concept of risk assessments is relatively simple, and follows these basic steps:-

.1 identify the hazards and personnel at risk;

.2 assess the chances of a hazardous event occurring;

.3 assess the severity or consequences; and

.4 if the combined risk and severity is too great, some action must be taken to reduce the risk to as low a level as reasonably practical.

Further guidance on the application of the regulations and the assessment of risk can be found in MGN 20.

2.10.2 Applying the principles of the health and safety requirements to Code Vessels means that the operator or skipper should take a proactive approach to safety and consider what particular hazards are likely to arise in the context of work activities on board. They should then take appropriate measures to remove the risks in so far as possible. The goal is to provide, as far as reasonably practical, for a safe working environment, with crew following safe working practices. The risk assessment does not need to be written down, but ensuring that crew have appropriate health and safety instruction and information is part of the exercise. Section 17 of MGN 20 outlines the duties of the duties of the workers.

2.11 Radar Training
In any vessel that carries radar, the Skipper and any member of the crew who is liable to use the radar are strongly recommended to undertake appropriate training in its use.

3. Revalidation of Certificates and Licences
3.1 All Certificates (whether of competency or service), Boatmaster's Licences and Local Authority Licences must be revalidated every five years. To revalidate, the applicant must prove at least 150 days of actual sea service on appropriate vessels during the previous five years and be in possession of a valid Medical Fitness Certificate.

3.2 Applicants for revalidation who are not able to prove the requisite sea service but are able to demonstrate that during at least half of the five year period they have been employed on duties closely associated with the management and operation of one or more of the appropriate types of vessels, may have their Certificates or Licences considered for revalidation.

4. Approved Engine Course
4.1 An Approved Engine Course is a course of at least thirty hours duration which is approved or recognised by the MCA. A "Certificate of Attendance" will be given by the course organisers to persons satisfactorily completing the course.

4.2 Persons who are able to demonstrate to the satisfaction of the MCA that they have the appropriate engineering experience and competency may be granted exemption from the requirement to attend an Approved Engine Course. Such a Course will cover the following topics:-

Introduction to compression ignition and spark ignition engines; engine cycles; construction and operational details; fuel, air, cooling, lubrication and electrical systems; power transmission; hull fittings; oil and garbage pollution prevention; safe working practices; basic fire prevention and fire fighting techniques; dangers of asphyxiation in the use of gaseous and vaporising fluid extinguishing mediums; safety requirements of bottled gas installations; fault finding and rectification within all topics.

4.3 In addition to the above, it is strongly recommended that for vessels where there is installed propulsion power greater than 1500 kW or the vessel is fitted with equipment, essential to its operation, that is not included in the syllabus of the engineering qualification held, an applicable manufacturers, or equivalent, course should be attended.

5. Stability
The skipper of every vessel should be familiar with the vessels Stability Guidance Booklet, should insert the information required of the Master, and should ensure that it is drawn to the attention of all watch keepers on board. In the case of vessels also required to be provided with a Stability Information Booklet, skippers should have a knowledge and understanding of its contents.

6. Pilot Boats

Pilot Boats shall be manned in accordance with Section 25.6.3.26.

7. Single Handed Operations

7.1 The Administration does not recommend single handed operations. Vessels operating under this Code, other than those engaged as Pilot Boats or in any other business which involves the transfer of personnel at sea, may be operated single handed

providing that the person operating the vessel complies fully with the minimum requirements for a skipper (appropriately qualified for the operating area) and the following conditions:-

.1 the area of operation is restricted to Area Category 3, 4, 5 or 6 in conditions of favourable weather and subject to favourable official weather forecasts for the area throughout the period of operation; and

.2 the duration of the voyage should not exceed 8 hours; and

.3 the vessel is not operated single handed in conditions of restricted visibility; and

.4 an acceptable lifejacket is worn at all times by the skipper; and

.5 no overside working takes place whilst the vessel is being operated single handed; and

.6 details of the time and point of departure, voyage plan and the Expected Time of Arrival (ETA) of every single handed voyage are left with a suitable person ashore and that person is notified of the safe arrival on completion of each voyage; and

.7 communication should be made with a person ashore or with a vessel in company at regular agreed intervals; and

.8 on all open sportsboats, inflatable craft and RIBS, engine kill-cords should be fitted and used at all times.

7.2 In some cases, because of the size and arrangement of the vessel, the Certifying Authority may deem the vessel not to be suitable for single handed operations. In all cases where single handed operations are carried out, the owner/managing agent and the skipper should be satisfied that it is safe to do so. The vessels certificate should show that it is suitable for "single handed" operations.

8. Responsibility of the Owner/Managing Agent for Safe Manning of the Vessel

It is the responsibility of the owner/managing agent to ensure that the skipper, and where necessary, the crew of the vessel have, in addition to any qualifications required in 2 above, recent and relevant experience of the type and size of vessel, the machinery on the vessel, and the type of operation in which the vessel is engaged. The owner/managing agent should also ensure that there are sufficient additional crew on board having regard to the type and duration of voyage/excursion being undertaken.

9. Keeping a Safe Navigational Watch

It is the responsibility of the skipper to ensure that there is, at all times, a person with adequate experience in charge of the navigational watch. In taking this decision the skipper should take into account all the factors affecting the safety of the vessel, including:-

.1 the present and forecast state of the weather, visibility and sea;

.2 the proximity of navigational hazards;

.3 the density of traffic in the area.

TABLE 1 – Deck Manning Requirements Small Vessels in Commercial Use

	CATEGORY		6	5	4	3	2	1	0
SKIPPERS QUALIFICATION ACCEPTABLE FOR GIVEN CATEGORY	Certificate of Competency -Yachtmaster Ocean (MCA Accepted)	Note A	√	√	√	√	√	√	√
	Certificate of Competency or Service - Yachtmaster Offshore (MCA Accepted)	Note A	√	√	√	√	√	√	
	MCA Boatmasters Licence Grade 1,2 & Modified Grade 3	Note A Note B	√	√	√	√	√		
	RYA/DfT Certificate of Competency or Service - Coastal Skipper	Note A	√	√	√	√			
	RYA/DfT Advanced Powerboat Certificate	2 years relevant experience	√	√	√	√			
		12 months relevant experience	√						
	Certificate of competence for appropriate area issued by Competent Authority	Note A Note C	√	√	√	√			
	RYA/DfT Day Skipper Theory & Practical Certificate	Note A 12 months relevant experience	√	√					
	Local Authority Licence for appropriate area	Note A Note D	√						
	RYA/DfT Day Skipper Practical Certificate	Note A	√						
	RYA/DfT Powerboat Level 2 Certificate	12 months relevant experience	√						
ADDITIONAL REQUIREMENTS	Unless operating in the single-handed mode in accordance with Paragraph 7 of this Annex, a second person capable of assisting the Skipper in an emergency should also be on board		√	√	√	√			
	There should also be on board a second person deemed by the skipper to be experienced.						√		
	There should also be on board a second person holding at least an RYA/DfT Certificate of Competency or Service as Coastal Skipper.							√	
	There should also be on board another person holding at least an RYA/DfT Certificate of Competency as either Yachtmaster Ocean or Yachtmaster Offshore.								√

Note 1 Qualifications differing from those tabled, but of equal standing or specialist application will be considered.

Note 2 Vessels regularly engaged on near coastal voyages from ports outside the UK, have to abide by the manning requirements of the Administration regulating that coastal area.

Note 3 Refer section 2.2.1 – RYA/DfT certificates of competency and/or service, and other MCA recognised Yachtmaster certificates, should carry the endorsement – "valid for vessels of up to 24 metres in length used for commercial purposes".

Note A Certificate should be designated motor or sail as appropriate.

Note B Existing MCA Boatmasters License Grade 3 is only acceptable if it has been validated for the specific area in the license prior to this Code coming into force. All Boatmasters licence holders (1, 2, and modified 3) are subject to the area limitations as defined on the certificate.

Note C Competent Authority in respect of manning requirements means either the Maritime and Coastguard Agency or an organisation that issues Certificates of Competence which has been applied for and granted recognition by the Maritime and Coastguard Agency as having the appropriate technical and administrative expertise.

Note D Local Authority Licence - only those Local Authorities that have the approval of the MCA may issue Licences under this Code.

TABLE 2 – Engineering Manning Requirements Small Vessels in Commercial Use

	CATEGORY	6	5	4	3	2	1	0
ENGINEERING REQUIREMENTS	RYA Diesel Engine Course or satisfied the Maritime and Coastguard Agency as to their appropriate engineering experience and competency						Sail Vessel	Sail Vessel
	Approved Engine Course or satisfied the Maritime and Coastguard Agency as to their appropriate engineering experience and competency					Power Vessel W	Power Vessel SL	Power Vessel SL
	Marine Engine Operators Licence (MN) (Y)						Power Vessel W	Power Vessel W <1500 kW
	Senior Marine Engine Operators Licence, STCW C/Eng (Y4)							Power Vessel W >=1500 kW < 3000 kW

Note 1 Qualifications differing from those tabled, but of equal standing or specialist application will be considered.

Note 2 The person holding the engineering requirement may be a crew member listed in Table 1.

Note 3 In all cases, one of the crew should be sufficiently familiar with the operation and maintenance of the vessel's machinery to ensure safe passage.

Note 4 Power Vessel W is a Power Vessel employed in towing operations, lifting operations or carriage of cargo greater than 1000 kg.

Note 5 Power Vessel SL is a Power Vessel other than Power Vessel designated by Power Vessel W.

ANNEX 4

EQUIVALENCE FOR VARIATIONS AND BEACHCRAFT

1. Guidance on the assessment of variations to the standards applied by the Code

1.1 Section 3.9 recognises that variations to the standards applied by the Code can be considered on the basis that the variations provide equivalent standards of safety by taking into account specific local conditions which are certain to exist. This section is intended for assessing equivalence for Category 6 operations, further limited to a maximum of 1 nautical mile from the shore for vessels operated by a qualified skipper or 1000m from the shore for self drive vessels, and is for use by the Certifying Authority. It also provides Local Authorities performing licensing for beach/harbour operations, with a checklist of operational safety management practices for their consideration.

1.2 Applications for the acceptance of alternatives must be supported by justifications and be formally made via the Certifying Authority to the Administration. Application for acceptance of variations for operation beyond these limits may be specially considered.

1.3 Variations are expected to be either a direct alternative to a requirement or a reduced requirement based upon factors that compensate for the reduction.

1.4 Justifications made formally in support of an application for acceptance of a reduced requirement are to be arranged in priority order, according to the judgement of the applicant.

1.5 Although not an exhaustive list, factors which will be considered individually and combined by the Divisional Director of Standards will include:

.1 area of operations significantly reduced from the maximum 3 miles from land and 3 miles radius to sea;

.2 a guaranteed control of the vessel which restricts operations to sea and weather conditions such that there is a very low risk of an accident;

.3 the certainty of readily available means of emergency rescue;

.4 operations wholly within sight of the supervising body and means of emergency rescue;

.5 seasonal operations only, such as between 1 April and 31 October or some lesser period, or favourable weather restrictions;

.6 vessels operating in close proximity to one another and equipped to provide efficient safety back-up to each other in an emergency;

.7 provision/wearing of additional (special) individual personal survival equipment/clothing which will protect lives in an emergency;

.8 enhanced communications between the vessel(s) and constantly attended shore base with readily available emergency rescue craft at the base;

.9 the nature of the sport or pleasure activity involves very low risk of participants accidentally entering the water or causing the vessel to capsize;

.10 inherent safety of the vessel by design, test and experience, (not applicable as an equivalent for stability standards or a specified level of life saving equipment);

.11 a high ratio of professional skipper and crew numbers to the number of other persons onboard;

.12 the number of safety craft provided to protect the vessels operating commercially for sport or pleasure;

.13 enhanced provisions for distress alert and rescue;

.14 means provided for "dry" rescue from a vessel in emergency situations.

2. Guidelines for the Safe Operation of Commercially Operated Pleasure Craft Used from a Beach or Harbour

2.1 This section is intended as guidelines for all parties involved in the administration of beach hired craft, including those issued with a Certificate of Compliance for Category 6 operations limited to a maximum of 1 nautical mile from the beach/harbour for vessels operated by a qualified skipper, or 1000m from the beach/harbour for self drive vessels, as defined in section 1, and Local Authorities' own licensing schemes.

2.2 This is not considered an exhaustive list, nor are they relevant to all situations.

.1 All boats operating at sea should adopt appropriate safety standards or equivalencies set out in the Code of Practice for Small Commercial Vessels for Category 6 requirements, and the above section. The carriage of liferafts need not be a requirement for the vessel, but suitable equivalencies from the section above must be employed.

.2 All tows to be considered part of the towing vessel, and are to be fit for purpose.

.3 Personal watercraft (jet-skis and wet bikes) or PWC, may be subject to these guidelines, as appropriate, and additional advice is given in section 3. It should be noted that at present PWC are not considered as vessels, and as such may not be issued with a Small Commercial Craft certificate. Their use may be addressed however, by Local Authority licensing schemes, hence their inclusion in this annex.

.4 Boats are to be capable of accommodating all persons for which they are licensed, including those contained on board the tow, if applicable. Methods of assessing the number of persons suitable to be carried are contained in the text of this Code of Practice. In general, hired self-drive craft should not carry more than 4 persons.

.5 Towing craft should have a minimum crew of two at all times – one to drive, and navigate, the other to watch the tow.

.6 Craft should be fitted with an engine stop cord, to be used at all times.

.7 Operating procedures, and equipment where applicable, are to be in place for recovery of persons from the water, including measures to avoid injury from the boat and machinery. For vessels fitted with conventional propellers, consideration should be given to the fitting of a propeller guard, especially where recovery of persons is commonplace.

.8 Children under the age of 8 should be accompanied by an adult at all times, including when on a tow.

.9 Inflatable tows should be capable of supporting 110% of the maximum manufacturer's weight limit, with any one separate inflatable compartment punctured or deflated.

.10 Lifejackets are to be worn at all times. For operations where buoyancy aids may be considered more practical, their use may be accepted based on equivalencies stated in section 1 above.

.11 Towlines should be approximately 25 to 30 metres long. A method of quick release in the event of an emergency is to be available.

.12 Parascending lines, harnesses and parachutes are to be inspected daily by the operator, and maintained in accordance with the manufacturer's recommendations.

.13 Operating areas and any associated channels for slow speed transit to and from the shore, should be clearly marked.

.14 Operating areas, trading dates and daily hours for operation are to be defined.

2.3 Additionally the hire operator will:

.1 hold a nationally recognised qualification for the hiring activity concerned, i.e. water sports instructors certificate.

.2 hold a Local Authority licence/concession to operate, where applicable.

.3 maintain visual contact with the hired vessels at all times, and provide a means of immediate rescue in the event of an accident.

.4 ensure that vessels and associated equipment are maintained in proper state for the beginning of each hire.

.5 report and record to the Local or Certifying Authority, all incidents which have, or could have led to injury.

.6 ensure that hirers are provided with sufficient information about the vessel and its equipment to enable it to be used safely, and that hirers are competent for the intended operation.

.7 ensure a procedure is in place for immediate contact with the Coastguard, or other relevant emergency service, in the event of an accident or incident.

3. Additional Advice for the Hiring of Personal Watercraft

3.1 This section is intended solely as advice for local authorities licensing craft under local byelaws, and is included as guidance and advice as additional advice for personal watercraft.

.1 PWC should not be hired for towing activities.

.2 PWC should be clearly identifiable from each other by colour or number.

.3 The operator should consider registering all PWC with an appropriate security identity scheme, i.e. Datatag. Details of any registration should be held with licensing authority.

.4 The operator should consider the installation of a remote engine cut out device

.5 The operator must have an authorised arrangement with the Local Authority to provide safe refuelling facilities.

.6 The operator should not allow children under the age 8 to accompany the hirer.

.7 The operator should maintain a list of names and addresses of all hirers, including reference to proof of age.

3.2 In addition to the above, the hirer should,

.1 be aged 16 years or older, and be in possession of a valid Driving Licence, or marine qualification, e.g. RYA Dayskipper Motor, Powerboat Level 1 etc.

.2 ensure that at anytime they do not impose on water occupied by another craft or person in the water, attempt to dislodge a passenger, or act in an irresponsible manner, i.e. crossing the wake of another craft at close quarters.

.3 ensure that they do not endanger or impede the navigation of other vessels, merchant or otherwise, including ferries and high speed craft, including manoeuvring at close quarters in order to feel the effect of the wash.

.4 remain in any designated PWC operating area.

.5 obey any speed limits.

4 Additional Guidance for Vessels Involved in Group Working

This section gives guidance to circumstances where the Administration may allow equivalent safety provisions if they are considered appropriate. In all circumstances it is for the owner to make application and present the case for the acceptance of the equivalent safety standard.

Where two or more boats are operating in close proximity under the supervision of a single control and satisfactory communications are provided between all boats and the shore then single man operations may be accepted and the requirement for all boats to carry inflatable liferafts and the other safety equipment required by this code may be waived.

The following safety equipment should be provided:-

lifejackets/buoyancy aids for all on board (*);

rescue/retrieval equipment (**);

a minimum of 2 lifebuoys;

6 red hand flares; and

a fixed or portable VHF radio.

Other equipment as considered necessary, for the particular operation, by the Administration.

* It will be a requirement of any agreement to a group working scheme with dispensations from the full standards of the code that an acceptable lifejacket is worn at all times by everyone onboard. The carriage of any additional lifejackets will not be required. All lifejackets/buoyancy aids and lifebuoys should be fitted with lights and retro-reflective tape.

** Arrangements will need to be suitable for the overall operation.
Charts and nautical publications need not be provided where the area of operation is limited and the person in charge has demonstrated adequate local knowledge.

An anchor of sufficient mass for the size of the vessel and sufficient cable for the area of operation should be provided.

At least one bilge pump should be provided and on fully decked vessels a bilge alarm should be fitted. On small open or partially decked vessels an efficient bailing system may be acceptable as equivalent to a bilge pump, at the discretion of the Maritime and Coastguard Agency.

Fire appliances as detailed in Section 15 of the Code should be provided.

The requirements for other aspects of the Code such as construction, weathertight integrity, machinery, electrical arrangements, steering gear, intact stability and freeboard may be waived by the Certifying Authority if alternative arrangements suitable for the area and type of operation are provided.

ANNEX 5

LIQUID PETROLEUM GAS INSTALLATION FOR DOMESTIC USE

1. General Information

1.1 This guidance is based on ISO 10239 and a system constructed to the requirements this standard or it equivalent will be acceptable as long as additionally there is suitable gas detection equipment fitted.

1.2 Possible dangers arising from the use of liquid petroleum gas (LPG) open flame appliances in the marine environment include fire, explosion and asphyxiation due to leakage of gas from the installation.

1.3 Consequently, the siting of gas consuming appliances and storage containers and the provision of adequate ventilation to space containing them is most important.

1.4 It is dangerous to sleep in spaces where gas-consuming open-flame appliances are left burning, because of the risk of carbon monoxide poisoning.

1.5 LPG is heavier than air and if released, may travel some distance whilst seeking the lowest part of a space. Therefore, it is possible for gas to accumulate in relatively inaccessible areas, such as bilges, and diffuse to form an explosive mixture with air, this is also the case with petrol vapours.

1.6 A frequent cause of accidents involving LPG installations is the use of unsuitable fittings and improvised “temporary” repairs.

2. Stowage of Gas Cylinders

2.1 LPG cylinders, regulators and safety devices should be stowed on the open deck (where leakage will not accumulate) or in a compartment that is vapour-tight to the vessels interior and fitted with a vent and drain, so that gas which may leak can disperse overboard.

2.2 The vent and drain should not be less than 19 mm in diameter, run to the outside of the craft and terminate 75 mm or more above the 'at rest' waterline. The drain and locker ventilation should be 500 mm or more from any opening to the vessels interior.

2.3 The cylinders and associated fittings should be positively secured against movement and protected from damage in any foreseeable event.

2.4 Any electrical equipment located in cylinder lockers should be certified safe for use in the potential explosive atmosphere.

3. Cylinders and Attachments

3.1 Each system shall be fitted with a readily accessible, manually operated isolating valve in the supply pressure part of the system.

3.2 In multiple cylinder installations, in addition to each cylinder shutoff valve there should be non-return valves near the stop valves. Where there is a change over device (automatic or manual) it should be provided with non-return valves to isolate any depleted container.

3.3 When more than one container can supply a system, the system should not be used with a container removed unless the unattached pipe is fitted with a suitable gas tight plug arrangement.

3.4 Containers not in use or not being fitted into an installation should have the protecting cap in place over the container valve.

4. Fittings and Pipework

4.1 For rigid pipework systems, the pipes should be made from solid drawn copper alloy or stainless steel tube. Steel tubing or aluminium or any materials having a low melting point should not be used.

4.2 Connection between rigid pipe sections should be made with hard solder (minimum melting point 450ºC), appropriate compression or screwed fittings are recommended for general use for pipework in LPG installations.

4.3 Where a flexible hose i in use, its length should be kept to a minimum, it should be protected from inadvertent damage where appropriate, it should meet the requirement of EN 1763 or equivalent and be installed in a manner that gives access for inspection along it whole length.

4.4 There should be no joints in the pipework in the engine spaces.

5. Appliances

5.1 All unattended appliances should be of the room sealed type.

5.2 Cookers and hobs are not considered to be unattended appliances.

5.3 All gas burners and pilot flames should be fitted with a flame supervision device which will shut off the gas supply to the burner or pilot flame in the event of flame failure.

6. Ventilation

6.1 The ventilation of requirements of a space containing a LPG appliance should be assessed against an appropriate standard (e.g. Annex B of ISO 10239) and should take into account gas burning equipment and persons occupying that space.

6.2 Where ventilators required for the LPG appliances in intermittent use can be closed, there should be appropriate signs at the appliance warning of the need to have those ventilators open before the appliance is used.

7. Gas Detection

7.1 Suitable means for detecting the leakage of gas should be provided in a compartment containing a gas-consuming appliance or in any adjoining space or compartment into which the gas, of greater density than air, may seep.

7.2 Gas detectors heads should be securely fixed in the lower part of the compartment in the vicinity of the gas-consuming appliance and other space(s) into which gas may seep. In areas where the detector head is susceptible to damage in the lowest part of the compartment (e.g. engine space bilge) the detector head should at least be fitted below the lowest point of ignition.

7.3 A gas detector system of a suitable type should, preferably, be actuated promptly and automatically by the presence of a gas concentration in air of not greater than 0.5 per cent (representing approximately 25 per cent of the lower explosive limit). The detection system should incorporate a visible alarm and an audible which can be heard in the space concerned and the control position with the vessel in operation.

7.4 Gas detection system components (i.e. gas detector head) likely to be in an explosive air/gas atmosphere should not be capable of igniting that atmosphere.

7.5 In all cases, the arrangements should be such that the detection system can be tested frequently whilst the vessel is in service and should include a test of the detector head operation as well as the alarm circuit, in accordance with the manufacturer's instructions.

7.6 The detection equipment should be maintained in accordance with the manufacturer's requirements.

8. Emergency Action

8.1 A suitable notice, detailing the action to be taken when an alarm is given by the gas detection system, should be displayed prominently in the vessel.

The information given should include the following:-

.1 The need to be ever alert for gas leakage; and

.2 When leakage is detected or suspected, all gas-consuming appliances should be shut off at the main supply from the container(s). NO SMOKING should be permitted until it is safe to do so (i.e. the gas leakage has been eliminated and the spaces fully ventilated)

.3 NAKED LIGHTS SHOULD NEVER BE USED AS A MEANS OF LOCATING GAS LEAKS.

9. Owner/Operator Testing

It is strongly recommended that LPG systems are tested for leakage regularly. All connections should be checked by;

.1 routine observation of the bubble leak detector (if fitted),

.2 observation of the pressure gauge for pressure drop with the appliance valves closed and cylinder valve opened then closed (if fitted with gauge on supply pressure side),

.3 visual inspection,

.4 manual leak testing, (without breaking into the system)

.5 testing with soapy water or detergent solution (with appliance-burner valves closed, and cylinder and system valves open). CAUTION – Do not use solutions containing ammonia
If leakage is present, close the cylinder valve and have the system repaired before further use. WARNING – NEVER USE A NAKED FLAME TO CHECK FOR LEAKS.

ANNEX 6

MARPOL OIL POLLUTION PREVENTION INFORMATION

1. MARPOL Requirements - Oil Pollution

1.1 Discharge Limits and Equipment

1.1.1 A vessel shall not discharge unfiltered effluent if the oil content of the effluent, without dilution, exceeds 15 ppm.

(Reference MARPOL 9 (2), 10(2)(b))

1.1.2 A vessel may discharge effluent through filtering equipment providing that oil content of the discharged effluent, without dilution, does not exceed 15 ppm;

(Reference MARPOL 9(2), 16(3)(b))

1.1.2.1 Vessels discharging effluent in special areas (see paragraph 1.6) but excluding the Antarctica area shall be fitted with:-

1.1.2.1.1 a monitoring device that will provide an alarm should the discharge effluent exceed 15 ppm; and

1.1.2.2.2 a stopping device which will ensure the discharge is automatically stopped should the discharge effluent oil content exceed 15 ppm.

(Reference MARPOL 9(2), 16(3)(b), 10(3)(b) & Interpretation 3.4)

1.2 Antarctic Area.

1.2.1 Effluent shall not be discharged in this area.

1.3 Effluent Retention on board

1.3.1 Where effluent cannot be discharged into the sea in compliance with paragraph 1.1, it shall be retained on board or discharged ashore to reception facilities.

(Reference MARPOL 9(6)

1.4 Chemicals

1.4.1 No discharge into the sea shall contain chemicals or other substances in quantities or concentrations which are hazardous to the marine environment or chemicals or other substances introduced for the purpose of circumventing the conditions of the allowed discharge.

(Reference MARPOL 9(5))

1.5 Exceptions

1.5.1 The above shall not apply to:-

1.5.1.1 the discharge into the sea of oil or oily mixture necessary for the purpose of securing the safety of a ship or saving life at sea; or

1.5.1.2 the discharge into the sea of oil or oily mixture resulting from damage to a ship or its equipment:

1.5.1.2.1 provided that all reasonable precautions have been taken after the occurrence of the damage or discovery of the discharge for the purpose of preventing or minimizing the discharge; and

1.5.1.2.2 except if the owner or the master acted either with intent to cause damage, or recklessly and with knowledge that damage would probably result; or

1.5.1.3 the discharge into the sea of substances containing oil, approved by the Administration, when being used for the purpose of combating specific pollution incidents in order to minimize the damage from pollution. Any such discharge shall be subject to the approval of any Government in whose jurisdiction it is contemplated the discharge will occur.

(Reference MARPOL 11)

1.6 Special Areas (Taken from MARPOL Regulation 10)

1.6.1 For the purpose of this Annex, the special areas are the Mediterranean Sea area, the Baltic Sea area, the Black Sea area, the Red Sea area, the `Gulfs area", the Gulf of Aden area, the Antarctic area and the North-West European waters, which are defined as follows:

1.6.2 The Mediterranean Sea area means the Mediterranean Sea proper including the gulfs and seas therein with the boundary between the Mediterranean and the Black Sea constituted by the 41°N parallel and bounded to the west by the Straits of Gibraltar at the meridian of 5°36' W.

1.6.3 The Baltic Sea area means the Baltic Sea proper with the Gulf of Bothnia, the Gulf of Finland and the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at 57°44.8' N.

1.6.4 The Black Sea area means the Black Sea proper with the boundary between the Mediterranean and the Black Sea constituted by the parallel 41°N

1.6.5 The Red Sea area means the Red Sea proper including the Gulfs of Suez and Aqaba bounded at the south by the rhumb line between Ras si Ane (12°28.5' N, 43°19.6' E) and Husn Murad (12°40.4' N, 43°30.2' E).

1.6.6 The Gulfs area means the sea area located north-west of the rhumb line between Ras al Hadd (22°30' N, 59°48' E) and Ras al Fasteh (25°04' N, 61°25' E).

1.6.7 The Gulf of Aden area means that part of the Gulf of Aden between the Red Sea and the Arabian Sea bounded to the west by the rhumb line between Ras si Ane (12°28.5' N, 43°19.6' E) and Husn Murad (12°40.4' N, 43°30.2' E) and to the east by the rhumb line between Ras Asir (11°50' N, 51°16.9' E) and Ras Fartak (15°35' N, 52°13.8' E).

1.6.8 The Antarctic area means the sea area south of latitude 60° S.

1.6.9 The North-West European waters include the North Sea and its approaches, the Irish Sea and its approaches, the Celtic Sea, the English Channel and its approaches and part of the North-East Atlantic immediately to the west of Ireland. The area is bounded by lines joining the following points:

1.6.9.1 48°27' N on the French coast;

1.6.9.2 48°27' N, 6°25' W;

1.6.9.3 49°52' N, 7°44' W;

1.6.9.4 50°30' N, 12° W;

1.6.9.5 56°30' N, 12° W;

1.6.9.6 62° N, 3° W;

1.6.9.7 62° N on the Norwegian coast;

57°44.8' N on the Danish and Swedish coasts.

ANNEX 7

SKIPPERED CHARTER – SAFETY BRIEFING

Before the commencement of any voyage the skipper should ensure that all persons on board are briefed, as a minimum, on the stowage and use of personal safety equipment such as lifejackets, thermal protective aids and lifebuoys, and the procedures to be followed in cases of emergency.

In addition to the requirements of 1, the skipper should brief at least one other person who will be sailing on the voyage regarding the following:-

.1 Location of liferafts and the method of launching;

.2 Procedures for the recovery of a person from the sea;

.3 Location and use of pyrotechnics;

.4 Procedures and operation of radios carried on board;

.5 Location of navigation and other light switches;

.6 Location and use of firefighting equipment;

.7 Method of starting, stopping, and controlling the main engine; and

.8 Method of navigating to a suitable port of refuge.

.9 Location of Stability Guidance Booklet, and Stability Information Booklet if applicable

Safety cards will be considered to be an acceptable way of providing the above information.

ANNEX 8

HANDOVER PROCEDURES FOR OWNERS/MANAGING AGENTS WHO BARE-BOAT CHARTER A VESSEL

Familiarisation at Handover

The owner/managing agent or appointed representative with intimate knowledge of the vessel should be present at the handover of the vessel to the chartering skipper and crew in order to complete, as a minimum, the following familiarisation process:-

.1 A demonstration of the stowage of all gear and the method of use of all lifesaving and firefighting appliances on board the vessel should be given;

.2 The location and method of operation of all sea cocks and bilge pumps should be explained;

.3 A demonstration to ensure familiarisation with all mechanical, electrical and electronic equipment should be carried out;

.4 Details of routine maintenance required for any equipment should be declared;

.5 Checks to be carried out on the engine prior to starting, whilst running and after stopping to be demonstrated;

.6 The method of setting, sheeting and reefing each sail should be shown.

Documentation

The owner/managing agent or appointed representative, as detailed in 1. above, should ensure that the Vessel's File is shown to the chartering skipper. The Vessel's File should contain at least the following:-

.1 Registration papers

.2 Copies of the insurance policy

.3 Other necessary certificates

.4 Details of permitted operating area

.5 Instruction manuals

.6 Electrical wiring and piping/plumbing diagrams

.7 Inventory of the vessel's equipment

.8 Plan(s) showing the stowage position of all the movable equipment necessary for the safe operation of the vessel.

.9 A list of names and telephone numbers (both in and out of office hours) of persons who may be contacted if the chartering skipper or the vessel is in need of assistance.

2.2 The owner/managing agent or appointed representative, as detailed in 1. above, should ensure that the Stability Guidance Booklet, and Stability Information Booklet if applicable, are shown to the chartering skipper.

2.3 The skipper chartering the vessel should sign an acceptance note after the handover procedure with regard to the inventory, condition of items demonstrated, and the amounts of fuel and other consumable items on board which may be chargeable.

Procedure on Return of the Vessel to the Owner/Managing Agent

3.1 At the end of the charter the owner/managing agent or appointed representative together with the chartering skipper should observe the following procedure:-

.1 the chartering skipper should advise the owner/managing agent of any lost or damaged equipment;

.2 the chartering skipper should advise the owner/managing agent of any defects or damage to the vessel;

.3 the owner/managing agent should be present to review any matter deemed important

3.2 The above details should be noted on an appropriate form which is to be signed by the owner/managing agent or appointed representative and the chartering skipper.

ANNEX 9

FIRE TEST FOR GRP

Drafting Note: This section is currently under revision to provide a fire test more representative of expected engine room fire conditions.

Heat Source

The heat source for the fire tests should be provided by a propane gas torch with a Sievert burner type No. 2944 giving a maximum flame temperature of 1600ºC and burning propane at the rate of 4110 grams per hour with a pressure of 2kgf/cm. The rate of burning should be carefully controlled. The length of blue flame should be approximately 200mm.

Specimen

The specimen should be 450mm x 450mm cut from one metre square panel of the laminate to be tested. The specimen should not incorporate any of the edges of the one metre square panel. The edges of the specimen should be housed in a steel frame sufficiently to prevent them igniting during the tests. The specimen should be cured for at least 28 days before testing.

Test Procedure

The specimen should be oriented vertically in a draft free location, such that the tip of the blue flame (i.e. the point of greatest heat) impinges on the centre of the specimen with the flame normal to its surface. The surface of the specimen affected by the fire risk should be exposed to the flame. The flame should not burn through the specimen within 15 minutes.

ANNEX 10

IGNITABILITY TEST FOR COMBUSTIBLE MATERIAL

Test Specimens

One specimen is to be prepared

The specimen is to be a minimum of 150mm x 150mm and of the thickness which is used on the vessels, together with any facing with which it is normally covered.

Conditioning of Test Specimens

The conditioning atmosphere should have a temperature of 20 ± 20°C and relative humidity of 65 ± 2%.

The specimen should be laid flat, in the conditioning atmosphere for a period of 24 hours, or for a sufficiently longer period in order to ensure that the mass of the specimen shows no progressive change greater than 0.25% when it is determined at intervals of 2 hours.

Atmosphere for Testing

The test is to be conducted in an atmosphere the same as for conditioning the specimen, or within 2 minutes of removal from the conditioning atmosphere.

Appropriate measures should be taken to prevent draughts in the vicinity of the testing equipment when testing is in progress.

Testing Procedure

Source of Ignition

The source should be obtained by using a burner consisting of a copper tube having a length of 150mm and inside and outside diameters of 5mm and 6mm respectively connected by a plastic or rubber tubing to a gas tap supplying natural gas. The copper tube is to have no opening for the supply of air.

Height of Flame

Before the test takes place the burner flame is to be adjusted to a height of 32mm.

4.3 Test Procedure

4.3.1 Place the specimen horizontally on a metal tripod stand with the upper surface of the specimen facing downwards (i.e. with normally exposed face on underside) such that the height of this surface of the specimen is approximately 8mm below the top of the burner flame. Apply the burner flame at right angles to the plane of the specimen in the centre of specimen. After one minute the burner flame is to be removed clear of the specimen and the time in seconds to extinction of any flaming is to be recorded.

4.3.2 The test in paragraph 4.3.1 is to be repeated after any flaming or smouldering has ceased and the temperature of the specimen has returned to normal except that the centre of the burner flame is to be positioned at the midpoint of any edge of the specimen. Again the time in seconds to extinction of any flaming after the removal of the burner is to be recorded.

5 Pass Criteria

An insulation is deemed to be "not readily ignitable" when any flaming of the test specimen ceases within 20 seconds of the removal of the burner.

ANNEX 11

EXPOSURE OF PERSONNEL TO POTENTIALLY HARMFUL NOISE
(see Section 22.10.6)

(Edited extracts from Section 8 of the 'Code of Practice for Noise Levels in Ships', second edition, 1992, published by HMSO)

The following figures illustrate the acceptable maximum daily noise doses for unprotected ears, based on dB(A) sound energy received:-

Less than	80dB(A)	for	no limit (24 hours)
	82dB(A)	for	16 hours
	85dB(A)	for	8 hours
	90dB(A)	for	2 hours
	95dB(A)	for	50 minutes
	100dB(A)	for	15 minutes
	105dB(A)	for	5 minutes
	110dB(A)	for	1 minute

The following examples of noise levels in different locations to allow personnel to gauge the existence of conditions giving potentially harmful noise exposure:-

120dB(A)	between 2 running 1800rpm diesel generators
110dB(A)	in a small ship engine room with 900 rpm diesel main engines and 1550 rpm generator
105dB(A)	1 metre from cylinder tops of a slow speed (120 rpm) diesel main engine
100dB(A)	between 2 running 600 rpm diesel generators
95dB(A)	in a slow speed (120 rpm) diesel main engine at the aft end on the floor plate level
90dB(a)	machine shop or quieter parts of ship's engine room
80dB(A)	15 metres from a pneumatic drill
70dB(A)	vacuum cleaner at 3 metres
60dB(A)	inside a supermarket
50dB(A)	inside a house in a suburban area during daytime

(These levels are only approximate as engine noise varies considerably with type of installation).

ANNEX 12

USE OF ISO "FIRST OF TYPE" RIGHTING MOMENT CURVE FOR STABILITY ASSESSMENT

Introduction

Where the stability of a Coded vessel is assessed using the righting moment curve prepared to show compliance of the design with ISO 12217, this curve shall be subject to verification and, if necessary, correction, as set out below.

ISO 12217 normally requires the stability to be assessed in the Minimum Operating Condition. However, where the Loaded Displacement Mass is more than 15% greater than the former, the stability also has to be assessed in this heavier condition.

Where data is available for both conditions, the heavier should be used for the purposes of this Code.

Stability Verification Test

The vessel to be Coded shall be subjected to the stability verification test when as close as practicable to the loading condition used for the righting moment curve to be checked, as defined in ISO 12217. The purpose of the test is to verify that the stability of the vessel is adequately described by the righting moment curve of the "First of Type" used for ISO 12217 assessment. Where this is not adequately demonstrated, this curve shall be corrected as described below before reassessment of the stability compliance.

The test shall be conducted in calm conditions. The vessel shall be heeled to both port and starboard as much as practicable by the application of a heeling moment sufficient to produce a heel angle of firstly at least three degrees in either direction, and secondly at least five degrees, i.e.: two heeling moments and four heel angles in all. The heeling moments and angles of heel shall be recorded as precisely as practicable.

The heeling moments shall be applied using weights that are part of the loaded condition of the vessel, and moved through a known amount. The righting lever deduced for that angle of heel is given by:

$$GZ = \frac{w.h.\cos\phi}{\Delta}$$

where: w = mass moved to produce the heel angle (kg)

h = **distance parallel to design waterline mass was moved through to produce heeling moment (m)**

ϕ = angle of heel produced (degrees)

Δ = Displacement of vessel as used to derive the GZ curve in question (kg)

Where the weights used to create the heeling moment have to be moved vertically from their normal location in order to generate the necessary heeling moment, the resulting measured righting moment should be corrected for the change in the vertical centre-of-gravity of the craft. The correction = $GG_1\sin\phi$, added to the measured GZ when the weights were raised during the heeling test, where GG_1 is the shift in vessel VCG due to the weights moved.

The First of Type righting moment curve shall be considered acceptable for stability assessment if the average deviation of the four values obtained at 2.3 and corrected according to 2.4 below the righting moment curve is equal to or less than 5%. Where the deviation is above the curve, no limit shall apply.

Where the average deviation of the four values obtained at 2.3 above from the righting moment curve is more than 5%, the First of Type righting moment curve shall be corrected throughout the range of heel angles by an amount equal to $GG_1\sin\phi$, where ϕ is any heel angle. The value of GG_1 used for this correction shall be obtained as follows:

$$GG_1 = \{ (\delta_1/\sin\phi_1) + (\delta_2/\sin\phi_2) + (\delta_3/\sin\phi_3) + (\delta_4/\sin\phi_4) \} / 4$$

where: δ_n = difference in measured GZ from First of Type GZ curve at angle ϕ_n, for the four values obtained according to 2.2 and calculated according to 2.3 and 2.4 above.

Where the righting moment curve is modified in this way, the stability shall then be reassessed using the requirements of chapter 11 of the Code.

Maximum Steady Heel Angle for Sailing Vessels

The Maximum Steady Heel Angle to prevent downflooding in gusts is normally calculated for the Loaded Departure Condition, and may be increased if calculated for a lesser loading condition, such as the Minimum Operating Condition used for many ISO 12217 stability calculations.

Where the stability of a sailing vessel is assessed using ISO 12217 in the Minimum Operating Condition, the Maximum Steady Heel Angle calculated using this lesser loading condition must therefore be reduced by 10% to allow for this effect, before insertion in the Stability Information and Stability Guidance Booklets.

ANNEX 13

STANDARDS ANNEX

Numbering refers to appropriate section reference. Standards are for reference information. When referencing the standards for use during construction, or supply of equipment, the latest edition should be used. Equivalent standards may be considered subject to the acceptance of the Certifying Authority.

4.1.3.2.2 ISO 11812 Small Craft. Watertight cockpits and quick-draining cockpits

4.2.2.5.1 ISO 12215 Small Craft – Hull Construction/Scantlings

4.3.2.3 As above

4.5.1.2 ISO 6185-2 Inflatable Boats. Boats with a maximum motor rating of 4.5kW to 15kW inclusive

ISO 6185-3 Inflatable Boats. Boats with a maximum motor rating of 15kW and greater

4.5.2.1 As above

5. ISO 12216 Small craft. Windows, portlights, hatches, deadlights and doors. Strength and watertightness requirements.

7.3.1.2.1 ISO 10088 Small Craft. Permanently installed fuel systems and fixed fuel tanks

7.3.1.2.2 ISO 13591 Small craft. Portable fuel systems for outboard motors

7.3.1.3 ISO 13591 Small craft. Portable fuel systems for outboard motors

7.4.5 ISO 7840 Small Craft. Fire resistant fuel hoses

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

British Marine Federation Code of Practice for Electrical and Electronic Installations in Boats, 4th Edition.

BS 6883 Specification for elastomer insulated cables for fixed wiring in ships. (Suitable for lighting, power, control, instrumentation and propulsion circuits.)

IEC 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.)

ISO 10133 Small Craft. Electrical systems. Extra-low voltage d.c. installations

ISO 13297 Small Craft. Electrical systems. Alternating current installations

ISO 8846 Specification for protection of electrical devices used on small craft to prevent ignition of surrounding flammable gases

BS EN 50057 Electrical apparatus for the detection and measurement of combustible gases.

9.1.5 ISO 13929 Small craft. Steering gear. Geared link systems
ISO 10592 Small craft. Hydraulic steering systems

11. & 12.ISO 12217-1 Small craft. Stability and buoyancy assessment and categorisation. Non-sailing boats of hull length greater than or equal to 6 metres

ISO 12217-2 Small craft. Stability and buoyancy assessment and categorisation. Sailing boats of hull length greater than or equal to 6 metres

14.1.4 International Code for Application of Fire Test Procedures (FTP Code) – International Maritime Organisation Document

14.2.1 International Code for Application of Fire Test Procedures (FTP Code) – International Maritime Organisation Document

14.5.2 ISO 10239: Small Craft. Liquefied Petroleum Gas (LPG) system

14.5.3 International Code for Application of Fire Test Procedures (FTP Code) – International Maritime Organisation Document

14.5.6 ISO 9094-1 Small Craft. Fire protection Craft with a hull length of up to and including 15m

ISO 9094-2 Small Craft. Fire Protection Craft with a hull length of over 15m and up to 24m

14.6.2 International Code for Application of Fire Test Procedures (FTP Code) – International Maritime Organisation Document

BS 5852-1 Assessment of the ignitability of upholstered furniture

15.4.1 BS EN 3 Portable Fire Extinguishers

15.4.2 as above

15.4.4 BS EN 1869 Fire blankets

15.5.2 BS EN 3 Portable Fire Extinguishers

15.5.4 BS EN 1869 Fire blankets

22.2.1 ISO 15085 Small craft - Guardrails, lifelines and handrails

22.10.5 BS 5378 Safety signs and colours