



THE INTERNATIONAL MERCHANT MARINE REGISTRY OF BELIZE IMMARBE

IMMARBE's Code of Standards for Yachts of 24m or above and less than 500GT in commercial or private use (The Large Yacht Code)

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**IMMARBE'S CODE OF STANDARDS FOR YACHTS
OF 24 M OR ABOVE AND LESS THAN 500 GT
IN COMMERCIAL OR PRIVATE USE
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PART A - INTRODUCTION

1. General

- 1.1 IMMARBE has produced this Code in order to address perceived gaps in the international regulatory regime which prescribes safety standards for yachts. At present, the standards are not adequately defined for yachts, as pleasure vessels, and the various categories distinguished by use, size and operational range. Consequently, with the assistance of the contributors listed in Annex 4, IMMARBE has developed the following Codes:
- The Code of Standards for Yachts of 24 m or above and 500 GT or more (The Super Yacht Code)
 - The Code of Standards for Yachts of 24 m or above and less than 500 GT (The Large Yacht Code)
 - The Code of Standards for Yachts of less than 24 m (The Small Yacht Code)
- 1.2 By IMMARBE's definitions a yacht may fall in one of two categories: a commercial yacht or a private yacht.
- 1.3 This document introduces the Code of Standards for Yachts of 24 m or above and less than 500 GT. It was developed as an enhancement of other similar Codes, providing clarifications and expansion in areas where it is deemed necessary. The standards adopted are considered to be at least equivalent in their effect to those required by all applicable international Conventions. For the abovementioned reasons, we consider that this Code prescribes enhanced standards for this industry.

1.3.1 Scope

This Code addresses enhanced standards for the construction and operation of commercial Yachts of 24 metres and above in load line length which do not carry cargo or more than 12 passengers, are less than 500 GT and are registered with the International Merchant Marine Registry of Belize (IMMARBE), hereinafter referred to as the "Administration". This Code is mandatory for this category of commercial yacht. However, the Administration strongly encourages its application to private yachts of this size and may require compliance therewith where it deems it to be appropriate.

1.3.2 Technical Standards

These are derived from:

- the relevant international Conventions referred to in Annex 3 or equivalent standards where it is not reasonable or practicable to comply therewith.
- the Code of Practice for the Safety of Large Commercial Sailing and Motor Vessels, the large Commercial Yacht Code, hereinafter referred to as LY2, which was developed by the U.K.'s Maritime and Coastguard Agency and referenced in Part B Section 4-26 hereof.

Consequently, owner(s), operator(s) or manager(s) of yachts seeking compliance with this Code have the following options:

- They may request our Administration to authorize the U.K.'s MCA to conduct all or certain surveys on our behalf;
and/ or,
- They may appoint an authorized Classification Society approved by us to conduct all or certain surveys on our behalf;
or,
- They may appoint an individual authorized Surveyor to conduct the surveys on our behalf.

Although this Code has adopted the technical standards of the LY2 Code, it does not follow that a yacht registered by another Administration which has also applied the LY2 Code will be automatically accepted in our Registry. Such a yacht will only be accepted after satisfactory survey by our Administration in order to ensure that it meets all our requirements, interpretations and national regulations. The same will be the case for yachts leaving our Registry and transferring to another Registry which applies the LY2 Code.

We have incorporated the LY2 Code as a basis for our technical requirements for the commercial yachts to which this Code applies because we are of the view that, in the absence of applicable international Conventions, it is in the best interests of the industry that there be consistency and uniformity in minimum technical standards, particularly for the construction of such yachts worldwide.

Although the technical content of those LY2 standards which we have incorporated remains unaltered, we have inserted some clarifications and additions thereto. Furthermore, where the requirements of the LY2 Code are not referenced within this Code, the technical quality standards promulgated by IMMARBE apply. These may be found in our Codes of Standards for Yachts, our maritime legislation and regulations issued by Statutory Instruments and by Merchant Shipping Notices issued by IMMARBE from time to time. If any doubt arises as to the applicable standard(s), a written application for clarification may be submitted to IMMARBE.

1.3.3 IMMARBE's Additional Technical Standards

- These are contained in Part C Sections 1-6.

1.3.4 Administrative Standards

- These are contained in Part D Sections 1-5.
- Upon satisfactory completion of the surveys and inspections in compliance with the standards required by this code, a yacht will be issued with the corresponding certification required by the international Conventions and IMMARBE's regulations/ Administrative procedures.
- The requirements for Yacht Registration under Part D Section 1 include important provisions for insurance, both in respect of hull and machinery of the yacht itself and other equipment carried thereon e.g. jet skis etc. as well as third party liability including all persons who are part of the yacht's complement onboard and in respect of any sporting activities in which any

persons onboard may engage. These are mandatory for yachts in commercial use and highly recommended for those in private use.

- In the interests of safety and compliance with any applicable national, regional and international regulations, as well as the protection of the environment, we have developed basic Guidelines for Sporting and Leisure activities, thus highlighting the importance of conducting such activities in a safe and compliant manner. These Guidelines referred to in Part C Section 7 are not intended to be comprehensive but give basic guidance for some of these activities e.g. sport fishing, scuba diving and snorkeling, para-sailing, jet skis, water skiing, alcoholic drinks, barbecues.

N.B. In determining the appropriate standards, this Code encourages the use of risk assessment by appropriately qualified and experienced experts in the relevant field. Also, the Administration may approve equivalent standards and/ or vary the Standards and/or grant exemptions wherever it considers appropriate to do so in accordance with the provisions of Part A Sections 3.3 and 3.4.

1.3.5 Annexes

Reference documents are contained in the Annex Sections 1-3.

- 1.4 It is recognized that this Code may need to be revised from time to time in the light of the experience gained in its application and new developments in the industry. IMMARBE will publish such revisions on its website and will also notify the owners, operators and the managers of its registered yachts accordingly.
- 1.5 The attention of owners, operators, managers and masters is drawn to the fact that in addition to the obligation to comply with this Code and IMMARBE's/ Belize's maritime laws/regulations, they also need to adhere at all times to any local authority licensing and any other regulatory requirements which are applicable in the area of operation as well as to good seamanship practice.
- 1.6 Wherever this Code requires equipment to be manufactured to a recognized standard, the Administration may accept existing equipment which can be shown to be of an equivalent standard which does not increase the risk to the yacht, its crew and passengers. However, when such equipment is replaced, the replacement should conform to the standard required by the Code.
- 1.7 IMMARBE has notified the International Maritime Organisation of this Code and its application to pleasure vessels engaged in trade as an equivalent arrangement under the provisions of Article 8 of the International Convention on Load Lines 1966, Regulation I-5 of the International Convention on Safety of Life at Sea, and Article 9 of the International Convention on Standards of Training Certification and Watchkeeping for Seafarers 1978 as amended.
- 1.8 IMMARBE's Quality Management System has been certified by an accredited body of the United States' ANSI - ASQ National Accreditation Board (ANAB) in accordance with the Quality System Standard ISO 9001-2000. The scope of IMMARBE's certification encompasses ship registration, endorsement certification of seafarers, statutory certification and fishing vessel administration. The provisions of IMMARBE's Codes of Standards for Yachts have been incorporated into its Quality Management System.

2. Definitions

Note – where a definition is not given within this Code, guidance should be taken from meanings given within the International Conventions.

"Administration" with regard to this Code means the International Merchant Marine Registry of Belize hereinafter referred to as "IMMARBE" or any organization or person formally authorized or appointed by IMMARBE to represent or act on its behalf.

"Aiming Circle" (touchdown / positioning marking). The aiming point for a normal landing, so designed that the pilot's seat can be placed directly above it in any direction with assured main and tail rotor clearances.

"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.

"Assigning Authority" means the Administration (IMMARBE) or Authorized Classification Society or Recognized Organization or authorized surveyor acting on behalf of the Administration in relation to the enforcement of the provisions of the Load Line Convention ((ILLC).

"Authorised Classification Society" means a non-governmental organization or group of professionals, ship surveyors and representatives of offices that promote the safety & protection of the environment of ships and offshore structures that is authorized by the Administration to ensure that the yacht is built to the Code and Convention requirements. These may be members of the International Association of Classification Societies (IACS) and may also be "Recognised Organisations" as defined in this Code. A list of such Classification Societies is shown on www.immarbe.com/yachts/recognizedorganizations.html.

"Authorised surveyor" means a surveyor who by reason of professional qualifications, practical experience and expertise is authorised by the Administration to carry out the survey required for the yacht. A list of such surveyors is to be found www.immarbe.com/yachts/authorizedsurveyors.html.

"Aviation Inspection Body" means a body to which the Administration has delegated the responsibility of inspecting helicopter landing areas. A list of such approved Bodies is to be found on www.immarbe.com/yachts/aviationinspectionbodies.html. The verification process will include inspection, certification and, where necessary, the application of appropriate operational limitations.

"Buoyant lifeline" means a line 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.

"Commercial yacht" means a yacht which is engaged in trade, commerce, on charter or carrying passengers for hire and is described in the register and on the Certificate of Registry as a "commercial yacht". With respect to the Conventions, a commercial yacht is a pleasure

vessel engaged in trade. A pleasure vessel engaged in trade may carry up to 12 persons as guests.

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

"D-Value". The largest overall dimension of the helicopter when rotors are turning. This dimension will normally be measured from the most forward position of the main rotor tip path plane to the most rearward position of the tail rotor tip path plane (or the most rearward extension of the fuselage in the case of Fenestron or Notar tails).

"D-Circle". A circle, usually imaginary unless the helicopter landing area itself is circular, the diameter of which is the D-Value of the largest helicopter the landing area is intended to serve. This will not be the case for landing areas of less than 1D width. For landing areas of less than 1D width, the edges of the imaginary D circle, may extend beyond the edge of the load bearing area by up to 0.085D on either side at the mid point.

"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 source of electrical power" is a source of electrical power, intended to supply the emergency switchboard in the event of failure of the supply from the main source of electrical power.

"Emergency switchboard" is a switchboard which in the event of failure of the main electrical power supply system is directly supplied by the emergency source of electrical power or the transitional source of emergency power and is intended to distribute electrical energy to the emergency services.

"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 the applicable Resolutions, 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 any vessel, the keel of which was laid or the construction or lay up was started before the 1st June 2008.

"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.

"FOD". Foreign Object debris.

"Freeboard" has the meaning given in annex I of ICLL. 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 ICLL. 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 yacht are fitted with permanent means of watertight closing.

In a yacht 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 athwart ships.

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 yacht and liable to be disposed of continuously or periodically, except sewage originating from yachts.

"Hazardous space" means a space or compartment in which combustible or explosive gases or vapours are liable to accumulate in dangerous concentrations.

"Hours of work" are defined as those when a seafarer is at his employer's disposal and carrying out their duties or activities.

"ICAO". International Civil Aviation Organization.

"ICLL" means the International Convention on Load Lines, 1966, as amended.

"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.

"Jet A1 Fuel". Also known as kerosene. It is used as a fuel for modern jet and turboprop engines. It consists primarily of hydrocarbon compounds, but other additives are present to increase safety. International regulations stipulate uniform standards for the quality and composition of kerosene.

"Landing Area". A generic term referring to any area primarily intended for the landing or take-off of aircraft.

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

"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 96% of the total length on a waterline of a ship at 85% of the least moulded depth measured from the top of the keel, or the length from the fore-side of the stem to the axis of the rudder stock on that waterline, if that be greater. In ships designed with a rake of keel the waterline on which this is measured shall be parallel to the designed waterline.

"Lifeboat" means a lifeboat complying with the requirements of the IMO International Life-Saving Appliances Code.

"Lifebuoy" means a lifebuoy complying with the requirements of the IMO International Life-Saving Appliances Code.

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

"Liferaft" means a liferaft complying with the requirements of the IMO International Life-Saving Appliances Code.

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

"LOS" Limited Obstacle Sector. The 150° sector within which obstacles may be permitted, provided the height of the obstacles is limited.

"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.

"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 375Kw; or
- (c) any oil-fired boiler or oil fuel unit;

"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 operation and habitable condition.

"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.

"Merchant Shipping Notices" are directives issued by IMMARBE to all parties concerned in order to give full effect to the implementation of the provisions of international instruments ratified, acceded or adhered to by Belize and other applicable national laws and regulations.

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

"Mile" means a nautical mile of 1852 metres.

"Motor vessel" means a vessel, whether a commercial Yacht or a private Yacht, which is described in the register and on the certificate of registry as such, and which has a sole means of propulsion either one or more power units.

"Multihull yacht" means any yacht, whether a commercial Yacht or a private Yacht", 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 yacht" means a yacht, whether a commercial Yacht or a private Yacht, to which this Code applies, the keel of which was laid or the construction or lay up was started on or after the 1st June 2008.

"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.

"OFS". Obstacle-Free Sector. The 210° sector, extending outwards to a distance that will allow for an unobstructed departure path appropriate to the helicopter that the landing area is intended to serve, within which no obstacles above helideck level are permitted.

"Operator" means a person(s) or a company, other than the owner or the immediate family of the owner, that is a bareboat/ demise charterer or is otherwise paying the expenses for the operation of a yacht either wholly or in part.

"Owner(s), operator(s) or manager(s)" means the registered owner(s), operator(s) or the manager(s), as the case may be, authorized to act on behalf of the registered owner(s). In the case of a yacht meeting the requirements of the ISM Code, this also includes the "Company" as defined within that Code.

"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;

"Person employed or engaged in any capacity on board the yacht on the business of the yacht" may reasonably include:

Part A, Section 2

- (a) bona-fide members of the crew over the minimum school leaving age (about 16years) who are properly employed on the operation of the yacht;
- (b) person(s) employed either by the owner or the charterer in connection with business interests and providing a service available to all passengers; and
- (c) 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 (a) and (b) above, such persons should be included in the crew list required for the yacht, should have received on board familiarisation training as required by STCW, and should not be assigned duties on the muster list.

"Passenger ship" means a ship carrying more than 12 passengers.

"Person" means a person over the age of one year.

"Private Yacht" means

- (a) any yacht which at the time it is being used is:
 - (i) (aa) in the case of a yacht wholly owned by an individual or individuals, used only for the sport or pleasure of the owner or the immediate family or friends of the owner; or
 - (bb) in the case of a yacht owned by a body corporate, used only for sport or pleasure and on which the persons on board are employees or officers of the body corporate, or their immediate family or friends; and
 - (ii) on a voyage or excursion which is one for which the owner does not receive money for or in connection with operating the yacht or carrying any person, other than as a contribution to the direct expenses of the operation of the yacht incurred during the voyage or excursion; or
- (b) any yacht wholly owned by or on behalf of a members' club formed for the purpose of sport or pleasure which, at the time it is being used, is used only for the sport or pleasure of members of that club or their immediate family, and for the use of which any charges levied are paid into club funds and applied for the general use of the club; and
- (c) in the case of any yacht referred to in paragraphs (a) or (b) above no other payments are made by or on behalf of users of the yacht, other than by the owner.
In this definition "immediate family" means-in relation to an individual, the husband or wife of the individual, and a relative of the individual or the individual's husband or wife; and "relative" means brother, sister, ancestor or lineal descendant;

"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 yacht's length from the forward perpendicular.

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

"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 yacht.

"Recognized Organization" means an organization recognized by the Administration to perform statutory work on its behalf in accordance with IMO Resolution A.739(18) and

A.789(19). A list of such Recognized Organizations is shown on www.immarbe.com/yachts/recognizedorganizations.html.

"Recognised standard" means a standard which has been accepted by IMMARBÉ as meeting the requirements of a specific section within the Code. A list of such standards can be found on the IMMARBÉ web site.

"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.

"Sailing vessel" means a vessel, whether a commercial yacht or a private yacht, which is designed to carry sail, whether as a sole means of propulsion or as a supplementary means.

"Side scuttle" means an ISO standardized type of opening hinged or non-opening round the yacht's window with or without deadlight (ISO 6345:1990).

"Seafarer", is defined as a person employed or engaged in any capacity on the yacht and should be taken to mean any person employed either directly by a owner/ operator/ manager or through a manning agency, whose usual place of work is on the yacht and includes the master, officers, crew members, and catering, salon and hotel staff.

"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 Yacht" means an existing vessel under 500GT or a new vessel under 300GT,

- restricted to operating in forecast or actual wind of a maximum Beaufort Force 4, and
- within 60 nautical miles of a safe haven. (The Administration may permit operation on specified routes up to 90 nautical miles from a safe haven as appropriate).

"SLA". Safe Landing Area. The area bounded by the perimeter line and perimeter lighting. The construction of the OFS and LOS segments (see below) should ensure that the main rotor will not risk conflict with obstacles when the nose of the helicopter is butted-up to, but not projecting over, the perimeter line. Thus the pilot, when landing in unusual circumstances, has confidence that he can touch down provided that all wheels are within the SLA and the nose of the helicopter is not projecting over the nearest perimeter line ahead. However, only correct positioning over the aiming circle (see 'Aiming Circle' above) will ensure proper clearance with respect to physical obstacles, provision of ground effect, and provision of adequate passenger access/egress.

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

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

"SOLAS B 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.

"Submersible" means a self-propelled craft capable of carrying personnel and/ or passengers while operating underwater, submerging, surfacing and remaining afloat. Internal pressure is normally maintained at or near one atmosphere. A submersible will normally have limited mobility and is transported to its area of operation by a surface vessel. In addition, a submersible is not totally autonomous. It may rely on a support facility or yacht for charging of batteries, high pressure air, high pressure oxygen replenishment, or all of these.

"Superstructure" has the meaning given in annex I to ICLL.

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

"Trainee"

A trainee shall:

- (a) Be engaged for the sole purpose of:
 - 1. Obtaining instruction in the principles of responsibility, resourcefulness, loyalty and team endeavour; and/or
 - 2. Instruction in navigation and seamanship, marine engineering or other shipboard related skills.
 - (b) Be considered to form part of a 'trainee voyage crew'; and
 - (c) Participate in the operation of the yacht to the best of his or her ability.
- A trainee shall not:
- 1. Be part of the crew for the purpose of safe manning or have any safety critical duties;
 - 2. Have any employment contract or any employment relationship with the owner or operator of the yacht;
 - 3. Receive any remuneration for his/her activities on board;
 - 4. Be considered to be a seaman or seafarer; and
 - 5. Be considered as a passenger*.

*Note – the fact that a trainee(s) may contribute towards the cost of their welfare whilst on board should not imply that they are passengers.

The minimum age of trainees is 16.

"Training manual" with regard to life-saving appliances means a manual complying with the requirements of [SOLAS III/Part B – Life Saving Appliances and Arrangements, Regulation 35](#).

"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 applicable Resolution or any Resolution amending or replacing it which is considered by the Administration to be relevant from time to time.

"Vessel" for the purposes of this Code means a commercial yacht or a private yacht.

"Voyage" includes an excursion.

"Watertight" means capable of preventing the passage of water in any direction.

"Weather deck" means the uppermost complete weather tight deck fitted as an integral part of the yacht's structure and which is exposed to the sea and weather.

"Weathertight" has the meaning given in annex I of ICLL. Weathertight means that in any sea conditions water will not penetrate into the ship.

"Wheelhouse" means the control position occupied by the officer of the watch who is responsible for the safe navigation of the yacht.

"Window" means a ship's window, being any window, regardless of shape, suitable for installation aboard ships.

"Yacht" means a vessel primarily used for cruising and leisure activities. It may be one of two categories - a "commercial yacht" or a "private yacht".

3 Application

3.1 General

This Code applies to a motor or sailing yacht of 24 metres in load line length and over or, if built before 21 July 1968, which is of 150 tons gross tonnage and over and which, at the time, is a commercial yacht which is used for pleasure and carries no cargo and no more than 12 passengers on a voyage or excursion.

This Code applies to commercial yachts, monohull as well as multihull, which are used for pleasure, being pleasure vessels "engaged in trade" for the purpose of Article 5 - Exceptions - of the International Convention on Load Lines, 1966 (ICLL), which are 24 metres in load line length and over or, if built before 21 July 1968, 150 gross tons and over according to the tonnage measurement regulations applying at that date and which do not carry cargo and do not carry more than 12 passengers.

This Code only applies to commercial yachts of less than 500 GT. However, it may be applied to private yachts. The owners of private yachts are hereby encouraged to conform to the standards of this Code as far as practicable and reasonable so as to ensure their safe operation.

This Code applies to commercial yachts as defined herein which are registered at IMMARBE.

Any provision of this Code expressed in the conditional (i.e. "should") shall be a requirement.

3.2 Area of Operation

In general, requirements given within this Code are based on unrestricted geographical operation unless specifically stated otherwise.

3.3 Equivalent Standards, Exemptions and Existing Vessels

Proposals for the application of alternative standards considered to be at least equivalent to the requirements of this Code should be submitted to the Administration for approval. Equivalence may be achieved by incorporating increased requirements to balance deficiencies and thereby achieve the overall safety standard. Equivalence may take into account other Codes already approved by the Administration.

3.4 Exemptions

Exemptions are granted only by the Administration

Applications for exemption should be made to the Administration and be supported by justification for the exemption. For example, owners may apply for exemption(s) based on material factors such as restricted geographical operation e.g. to enclosed seas or lakes.

The granting of exemptions will be limited by the extent to which international conventions allow and should be regarded as exceptional.

3.5 Existing yachts

In the case of an existing yacht which does not comply fully with the Code safety standards but for which the Code standards are reasonable and practicable, the Administration will give consideration to a proposal from the owner(s)/ operator/ manager(s) to phase in requirements within an agreed time scale not exceeding 24 months.

When an existing yacht does not meet the Code standard for a particular feature and it can be demonstrated that compliance is neither reasonable nor practicable, proposals for alternative arrangements should be submitted to the Administration for approval. In considering individual cases, the Administration should take into account the yacht's service history and any other factors which are deemed to be relevant to the standard which can be achieved.

Generally, repairs, alterations and refurbishments should comply with the standards applicable to a new yacht.

3.6 Effective Date

This Code is effective as of 1st June 2008.

3.7 Responsibility

It is the responsibility of the owner, operator or manager to ensure that a yacht to which this Code applies, is maintained, surveyed and operated in compliance therewith.

3.8 Interpretation

Where a question of interpretation of any part of this Code arises which cannot be resolved by a delegated authority and the owner(s)/ operator(s)/ manager(s) for a yacht, a decision on the interpretation may be obtained on written application to Administration.

3.9 Updating the Code

The requirements of this Code will be reviewed and, if necessary revised, by the Administration as it is deemed appropriate. All interested parties will be informed of any changes by IMMARB. Questions, comments and observations should be addressed to IMMARB.

PART B - IMMARBE'S TECHNICAL STANDARDS

The majority of the technical requirements in this Part B reflect those of the U.K.'s Large Commercial Yacht Code (LY2).

4. Construction and Strength

The purpose of this section is to ensure that all yachts to which this Code applies are constructed to a consistent standard in respect of strength and watertight integrity. New yachts are to be built to the requirements of one of the Recognised Organisations and issued with a Class Certificate or equivalent, acceptable to the Administration. Existing yachts which do not already hold a Class Certificate or equivalent should be surveyed by one of the Recognised Organisations so that an appropriate certificate can be issued. The extent of the watertight bulkheads defined in Section 4.3 is to ensure that sufficient buoyancy is maintained by the yacht to meet the damaged stability requirements of Section 11.

4.1 General Requirements

- 4.1.1 All yachts should have a freeboard deck.
- 4.1.2 All yachts should be fitted with a weather deck throughout the length of the yacht 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 yacht at sea should be recorded on the load line certificate issued to the yacht.
- 4.1.4 The choice of hull construction material affects fire protection requirements, for which reference should be made to section 14.

4.2 Structural Strength

- 4.2.1 For unlimited operation, all yachts hold a Class Certificate or equivalent.
- 4.2.2 Yachts which do not hold such a certificate may be considered for operation within the Short Range Yachts category and to other yachts to which this Code applies operating with restrictions.
- 4.2.3 Attention should be paid to local or global hull strength requirements for the provision of ballast.

4.3 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 in accordance with the requirements of one of the Recognized Organizations.
- .2 Generally, openings in watertight bulkheads should comply with the standards required for passenger vessels, as defined in [SOLAS regulations II-1, Regulation 15](#).
- .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 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. All watertight doors should be operationally tested before a ship sails and once a week.

4.4 Enclosed Compartments within the Hull and below the Freeboard Deck provided with Access through Openings in the Hull

- 4.4.1 Compartment(s) below the freeboard deck, provided for recreational purposes, oil fuelling/ fresh water reception or other purposes to do with the business of the yacht and having access openings in the hull, should be bounded by watertight divisions without any opening (i.e. doors, manholes, ventilation ducts or any other opening) separating the compartment(s) from any other compartment below the freeboard deck, unless provided with sliding watertight doors complying with 4.3.1 or hinged doors complying with 4.4.2.
- 4.4.2 Openings from any other compartment below the freeboard deck may be fitted with hinged watertight doors provided;
 - .1 after flooding through the shell opening of the space containing the shell opening, the resultant waterline is below the sills of the internal openings in that space, or
 - .2
 - (a) bilge alarms are fitted in the compartment containing the shell opening, with a visual and audible warning on the bridge, and
 - (b) any hinged door opens into the compartment containing the shell opening, and
 - (d) "open" door alarms, both visual and audible fitted on the bridge, and
 - (e) the door is to be fitted with a single closing mechanism, and
 - (f) ill height of the internal door should be higher above the design waterline than the sill height of the shell opening.
- 4.4.3 Openings in the hull should comply with [SOLAS regulation II-1/25-10 – external openings in cargo ships](#). Provision should be made to ensure that doors may be manually closed and locked in the event of power or hydraulic failure.

4.5 Rigging on Sailing Yachts

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 23.3).

4.5.2 Masts and spars

4.5.2.1 Dimensions and construction materials of masts and spars should be in accordance with the requirements or recommendations of one of the Recognised Organisations or a recognised national or international standard.

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

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 yachts should either be provided with separate storm sails or have specific sails designated and constructed to act as storm canvas.

4.6 Lifting Equipment

4.6.1 All fixed lifting equipment, including strong points, cranes, beams, personal and non-personal elevators and all portable lifting equipment should be tested and inspected in accordance with the requirements of the Recognised Organisation or an organization approved by the Administration to a national or international standard and at intervals approved by the Administration.

4.6.2 Where the rules of the Recognized Organization or approved organization do not clearly address the type of lifting equipment, the methods and intervals of test should be agreed by the Administration.

5. Weathertight Integrity

This section is intended to outline standards to be achieved for weathertight integrity. As far as is practicable, the standards of the 1966 ICLL are to be adhered to. However, due consideration may be given to arrangements that provide an equivalent level of safety in respect of the risks of down flooding and green sea loading.

Virtual Freeboard Deck

For the purposes of this section only, where actual freeboard to the weather deck exceeds that required by ICLL 66 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 yachts up to 75m load line length, a standard superstructure height is to be taken as 1.8m. Superstructure heights for yachts of intermediate lengths should be obtained by interpolation.

5.1 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 from position 1 and position 2 are to be of substantial weathertight construction and provided with efficient means of closure. Weathertight hatch covers should be permanently attached to the yacht 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 as small as practicable (a maximum of one square metre in clear area), and fitted with coamings of at least 300mm in height in positions 1 and 2. Hatchways should be as near to the centreline as practicable, especially on sailing yachts. 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.

5.2 Doorways and Companionways

5.2.1 Doorways located above the weather deck

5.2.1.1 External 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	Unrestricted Yachts	Short Range Yachts
A	600mm	300mm
B	300mm	150mm
C	150mm	75mm

- Location A The door is in the forward quarter length of the yacht and is used when the yacht is at sea.
- Location B The door is in an exposed forward facing location aft of the forward quarter length.
- Location C The door is in a protected location aft of the forward quarter length, or an unprotected door on the first tier deck above the weather deck.

5.2.1.2 Weathertight doors should be arranged to open outwards and when located in a houseside, 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 yacht.

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 at least:

Location	Unrestricted Yachts	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 yacht is in port or at anchor in calm sheltered waters and are locked closed when the yacht 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 decks, 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 one metre.

5.3 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 yacht 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 Organisation rules for "ships" are considered to meet these requirements. Where a Recognised Organisation 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.

5.4 Portlights

- 5.4.1 Portlights should be of strength appropriate to location in the yacht and meet an appropriate national or international standard. Recognised Organisation rules for "ships" are considered to meet these requirements. Where a Recognised Organisation produces alternative rules for "pleasure vessels" or "yachts", these are 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 15.
- 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 yacht should be provided with a permanently 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 yacht below the level of the freeboard deck should be either non-opening or of a non-readily openable type and be in accordance with

a standard recognised by the Administration. The lower edge of the portlights should be at least 500mm or 2.5% of the breadth of the yacht, whichever is the greater, above the all-seasons load line assigned to the yacht. Portlights of the non-readily opening type must be secured closed when the yacht is in navigation and indication provided on the bridge that they are closed.

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

5.5 Windows

5.5.1 Windows should be of strength appropriate to their location in the yacht and meet the requirements of a suitable national standard, such as BSMA 25, or an equivalent international standard. Recognised Organisation rules for "ships" are considered to meet these requirements.

With regard to structural fire protection, the requirements for the construction of certain windows should meet the requirements of 15.

5.5.2 For all yachts 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 four times the required design pressure derived from an appropriate national or international standard. Additionally, as a minimum, calculated thicknesses should meet Recognised Organisation requirements for pleasure vessels or yachts. For windows fitted with storm shutters, see 5.5.6.

5.5.3 When using a national or international standard, the following minimum design heads may be assumed when determining design head pressure.

- First tier unprotected fronts 4.5 + L/100metres
- Second tier unprotected fronts 3.5 metres
- Elsewhere 1.5 metres

5.5.4 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.

5.5.5 Where chemically toughened safety glass is used, windows are to be of the laminated type, the minimum depth of chemical toughening to be 30 microns on exposed faces. Regular inspections of the windows, with particular reference to the surface condition, should form part of the operational procedures and annual survey by a Recognised Organisation.

5.5.6 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 special consideration should be operational instructions to the master as to when the strong protective covers must be applied to windows.

5.5.7 For all yachts, 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(s) is to be provided so that any window opening may be sealed in the event of glass failure. When storm shutters are interchangeable port and starboard, a minimum of 50% of each size should be provided.

- 5.5.8 Side and front windows to the navigating position should not be constructed of polarised tinted glass. (See Section 19.2.3)

5.6 Ventilators and Exhausts

- 5.6.1 Adequate ventilation is to be provided throughout the yacht. 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 of:

Location	Unrestricted Yachts	Short Range Yachts
Forward quarter length	900mm	450mm
Elsewhere	760mm	380mm

- 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 yacht 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 down flooding 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 back flooding into the hull through a damaged exhaust system. 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.

5.7 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:

Location	Unrestricted Yachts	Short Range Yachts
On weather deck	760mm	380mm
Elsewhere	450mm	225mm

- 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.

5.8 Scuppers, Sea Inlets and Discharges

The standards of ICLL should be applied to every discharge led through the shell of the yacht 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.

5.9 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, fire and corrosion. Non metallic valves will not normally be considered equivalent.
- 5.9.2 The associated piping should, in areas as indicated above, be of steel, bronze, copper or other equivalent material. Non metallic valves will not normally be considered equivalent.
- 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; with regard to watertight integrity, any plastic piping should be above the waterline. Due regard should be paid to the IMO Fire Test Procedures Code.
- 5.9.4 The use of flexible piping in any location 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.

5.10 General Equivalence

Where yachts 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

6. Water Freeing Arrangements

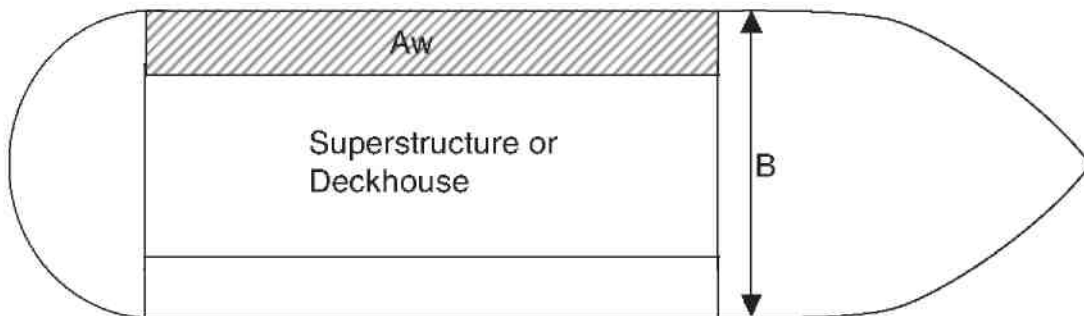
This section provides for consideration of the risks of green water being shipped aboard and the resulting consequences with respect to the yacht's stability and safety of personnel on deck.

6.1 General

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.

Additionally, where a well is created on each side of the yacht between a superstructure or deckhouse, and the bulwark in way of that superstructure or deck house, the following formula may be used to determine the required freeing port areas on each side of the yacht for the well concerned:



$$FP_{REQ} = 0.28 \times A_w / B$$

Where:

FP_{REQ} = Freeing port area required

A_w = Area of well in way of superstructure or deckhouse

B = Full beam at deck

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

- 6.2 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.

For Short Range Yachts it is considered that the requirement for freeing port area for a forward or after well may be reduced by a form factor equal to the ratio of (actual area well) divided by (length of well x breadth of well). Dimensions should be taken at half height of the bulwark. This may be reduced by 50% providing it can be shown that the intact stability of the yacht remains acceptable if the well is flooded to any level up to the bulwark height and that area provided will allow the well to drain in less than three minutes

In considering an individual case, the Administration will take into account the yacht's past performance in service and the declared area(s) of operation and any other conditions which restrict the use of the yacht at sea which will be recorded on the load line certificate issued to the yacht. (See section 4.1.3.)

6.3 Recesses

- 6.3.1 Any recess in the weather deck should be of weathertight construction and should be self draining under all normal conditions of heel and trim of the yacht.
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 yacht is heeled to an angle of 10° in the case of a motor yacht (see 10.2), and 30° in the case of a sailing yacht.
The drainage arrangements should have the capability of draining the recess (when fully charged with water) within three minutes when the yacht 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.

7. Machinery

This section outlines the minimum requirements for machinery, which are to be in accordance with the requirements of one of the Recognised Organisations and should cover the minimum aspects defined below, even if the machinery is not considered the primary means of propulsion. Existing yachts which do not hold a Class Certificate or equivalent approved by the Administration should be surveyed by one of the Recognised Organisations so that an appropriate certificate can be issued. However alternative arrangements for Short Range Yachts may be agreed by the Administration.

7.1 General Requirements

- 7.1.1 The machinery and its installation should, in general, meet with the requirements of one of the Recognised Organisations. The Class Survey, Notation or equivalent should include, as a minimum, propulsion and electrical generation machinery and shafting. For existing and new vessels which operate with periodically unattended machinery spaces, the machinery and its installation should meet the standards of [SOLAS '74 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 7.1.1, 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.

7.2 Installation

- 7.2.1 Notwithstanding the requirements referred to in 7.1, 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 yacht, with 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. 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.

8. Electrical Installations

This section outlines the minimum requirements for electrical installations, which are to be in accordance with the requirements of one of the Recognised Organisations, and should cover the minimum aspects defined below. For sailing vessels, this should also cover the elements necessary to ensure safety of the yacht including control of the sails, where appropriate. Existing yachts which do not already hold a Class Certificate or approved equivalent should be surveyed by one of the Recognised Organisations so that an appropriate certificate can be issued. However alternative arrangements for Short Range operation may be agreed by the Administration.

8.1 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.

8.2 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 three 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, and 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.

8.3 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.

9. Steering Gear

This section outlines the minimum requirements for steering gear, which are to be in accordance with the requirements of a Recognised Organisation. The Class Notation, Survey or equivalent should cover the minimum aspects defined within this chapter. Due regard is to be paid to the requirements for emergency steering.

9.1 General Requirements

The steering gear and its installation should, in general, meet with the requirements of one of the Recognised Organisations.

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

- 9.2 Yachts 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 yacht, the steering gear should be power operated in accordance with the requirements of the Administration.

- 9.3 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.

10. Bilge Pumping

This section outlines the minimum requirements for bilge pumping, which are to be in accordance with the requirements of a Recognised Organisation. The Class Notation or equivalent should cover the minimum aspects defined within this chapter. The principle objective of this section is that in the event of one compartment being flooded, which may or not be the engine room, there is an ability to control any leakage to adjacent compartments.

10.1 General Requirements

The bilge pumping equipment and its installation should, in general, meet with the requirements of a Recognised Organisation. The yacht should hold a Certificate of Class or equivalent or should be surveyed by one of the Recognised Organisations so that an appropriate certificate can be issued.

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

- 10.2 All yachts 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 yacht is heeled to an angle of 10°. For Short Range Yachts, the second pump and suction pipes may be portable.
- 10.3 The location of pumps, their individual power supplies and controls, including those for bilge valves, should be such that in the event of any one compartment being flooded another pump is available to control any leakage to adjacent compartments.
- 10.4 Each bilge pump suction line should be fitted with an efficient strum box.
- 10.5 In the case of a yacht 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.
- 10.6 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 10.5 should be fitted to all such bilges.

11. Stability

This section outlines the minimum requirements for intact and damage stability. For yachts less than 85m Load Line length, a minor damage methodology is adopted in which damage is assumed not to occur on any bulkhead, deck, or other watertight boundary.

11.1 General

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

11.1.2 An intact stability standard proposed for assessment of a yacht 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 yacht or relocated within the yacht 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 point of view of the fitting of additional ballast.

11.2 Intact Stability Standards

11.2.1 Motor yachts

11.2.1.1 Monohull Yachts

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° angle of heel and not less than 0.09 metre-radians up to 40° 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° or between 30° and the angle of downflooding if this is less than 40°, 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°;
- .4 the maximum GZ should occur at an angle of heel of preferably exceeding 30° but not less than 25°;
- .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 yachts 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 Yachts 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° angle of heel, when maximum GZ occurs at 15°, and 0.055 metre-radians up to 30° 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:-

$$A_{req} = 0.055 + 0.001(30^\circ - \theta_{max}) \text{ metre.radians}$$

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° and 40° or between 30° and the angle of downflooding if this is less than 40°, 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°;
- .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° when the maximum righting lever (GZ) occurs at 20° and, not less than 0.055 metre-radians up to an angle of 30° when the maximum righting lever (GZ) occurs at 30° or above. When the maximum GZ occurs at angles between 20° and 30° the corresponding area under the GZ curve, A_{req} should be taken as follows:-

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

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° and 40°, or between 30° and the angle of downflooding if this is less than 40°, 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°;
- .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° 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 yacht.

11.2.1.5 Superstructures

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

11.2.1.5.2 Superstructures, 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 Yachts

In addition to the criteria above designers and builders should address the following hazards which are known to affect yachts 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 yachts 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 yachts

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°. For yachts of more than 45m, a range of less than 90° may be considered but may be subject to agreed operational criteria.

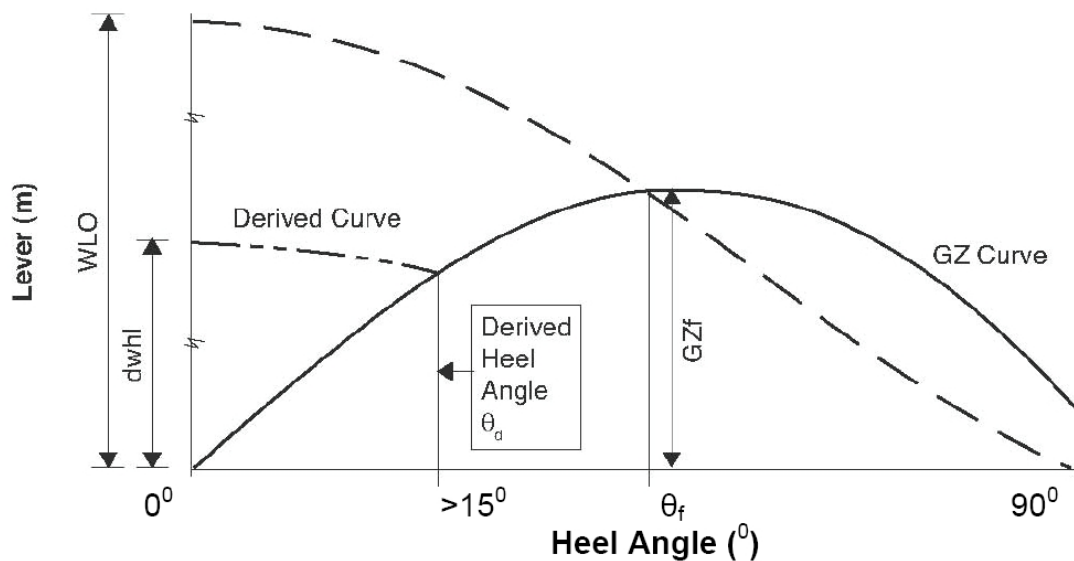
- .3 In addition to the requirements of .2, the angle of steady heel should be greater than 15 degrees (see figure). The angle of steady heel is obtained from the intersection of a "derived wind heeling lever" curve with the GZ curve required by .1.

In the figure:-

'dwhl' — the "derived wind heeling lever" at any angle θ^0

$$=0,5 \times WLO \times \cos^{13}\theta$$

$$\text{where } WLO = \frac{GZ_f}{\cos^{13}\theta_f}$$



Noting that:

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

GZ_f = is the lever of the yacht's GZ at the down flooding angle (θ_f) or 60^0 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 15^0 the yacht 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:-

$$\frac{\Delta}{1500} = \text{where } \Delta = \text{yachts displacement in tonnes}$$

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 40^0 . Air pipes to tanks can, however, be disregarded.

If, as a result of immersion of openings in a superstructure, a yacht 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 yacht 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°.

11.2.2.2 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 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 yacht, 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' x cos (trim angle)

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

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 yacht 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 yacht 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 a following to a beam wind.
- .8 In yachts 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.

11.3 Damage Stability

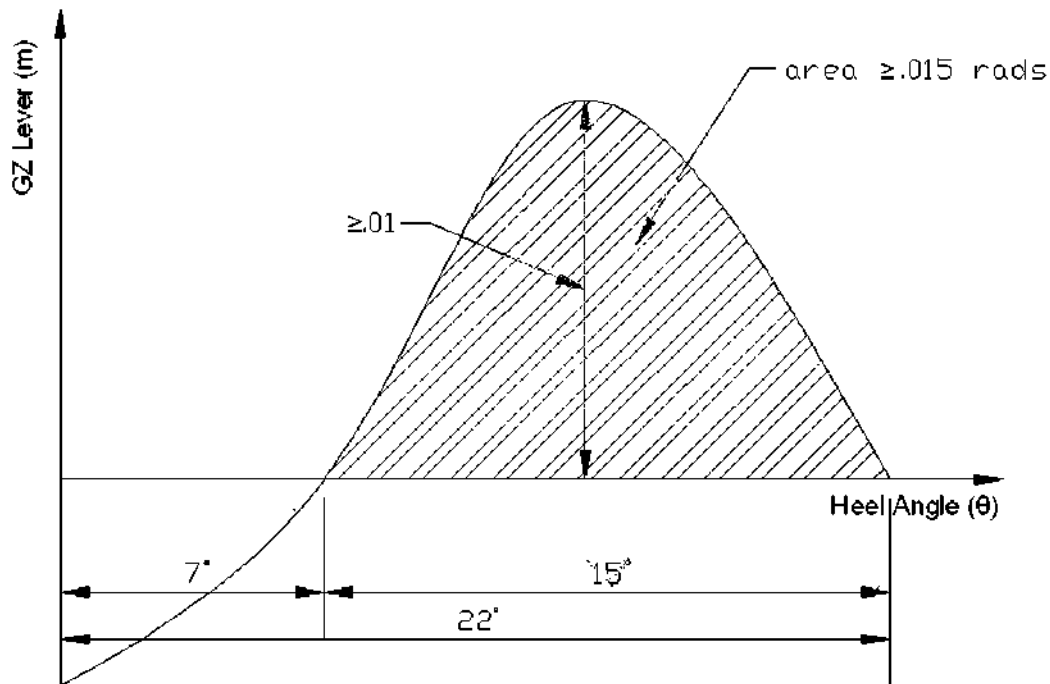
The following requirements are applicable to all yachts.

It should be noted that compliance with the damage stability criteria is not required for yachts that obtain full compliance with the ICLL conditions of assignment.

- 11.3.1 Watertight bulkheads of the yacht should be so arranged that minor hull damage that results in the free flooding of any one compartment will cause the yacht to float at a waterline which, at any point, is not less than 75mm below the weather deck, freeboard deck, or bulkhead deck if not concurrent.
- 11.3.2 Minor damage should be assumed to occur anywhere in the length of the yacht, 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 of 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 yacht of 85 metres and above should meet a SOLAS one-compartment standard of subdivision, calculated using the deterministic damage stability methodology.

11.4 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 yacht 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)/ operator(s)/ manager(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 yacht for which the effects on lightship weight and vertical centres of gravity are offset against the margin.
- 11.4.4 When sister yachts are built at the same shipyard, the Administration may accept a lightweight check on subsequent yachts to corroborate the results of the inclining experiment conducted on the lead yacht of the class.

11.5 Stability Documents

- 11.5.1 A yacht should be provided with a stability information booklet for the master. The booklet 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 yacht type (motor or sailing) published by/ for the Administration.
- 11.5.3 A yacht 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).
Additionally, unless it can be clearly demonstrated that no major change has occurred, a lightweight check should be carried out at the renewal survey required in Part D, Section 3.
- 11.5.4 Sailing yachts 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 wind speed, 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 yacht'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.
- 11.5.6 For Short Range Yachts, where the damage stability has not been assessed, the following note should be added to the approved stability booklet:
- "This yacht has not been assessed for damage stability, and therefore might not remain afloat in the event of damage or flooding."

12. Freeboard

The purpose of this section is to ensure that all yachts are assigned a freeboard in accordance with ICLL 1966. This section also outlines the requirements for draught marks to enable trim to be readily calculated.

12.1 General

- 12.1.1 The freeboard for the yacht 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 Yachts 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 yacht.
- 12.1.3 The freeboard assigned should be compatible with the strength of hull structure, intact and damage stability requirements for the yacht, and should ensure that minimum bow height requirements are met.
- 12.1.4 The Assigning Authority should provide the owner(s)/ operator(s)/ manager(s) of the yacht with a copy of the particulars of the freeboard assigned and a copy of the record of particulars relating to the conditions of assignment.

12.2 Freeboard Mark and Loading

- 12.2.1 The freeboard mark applied should be positioned port and starboard at amidships on 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 yacht 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 = displacement in salt water in tonnes at the all-seasons draught

T = 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 yacht 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.

12.3 Datum Draught Marks

- 12.3.1 Datum draught marks should be provided at the bow and stern, port and starboard, and be adequate for assessing the condition and trim of the yacht. 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 indicate more than one draught at each position and should be above, but 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 yacht. The position of the marks should be verified at initial placement by the Administration or the yacht's Assigning Authority.

13. Life-saving Appliances

The purpose of this section is to ensure that all yachts are equipped with the minimum essential LSA equipment appropriate to yacht operations. The basic provision is for the principles of SOLAS to be met. However, some sections have been identified where alternative standards can be accepted, where appropriate.

13.1 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 the applicable IMO Resolution.
- 13.1.3 Additional life-saving equipment which is provided should meet the requirements of 13.1.2.
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 lifesaving 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 the applicable IMO Resolution.
- 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 one metre with the yacht 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 yacht in its lightest condition, davit launched liferafts and at least one launching appliance for launching are to be provided on each side of the yacht.
- 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, inflatable liferaft and hydrostatic release unit should be serviced, at intervals not exceeding 12 months, at an approved service station. Hydrostatic release units which have been approved for a service life of two years and which should be replaced at the end of their life, need not be serviced after one 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 yacht 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 yacht in an emergency.
- 13.1.12 Means should be provided to prevent overboard discharge of water into survival craft.

Table 1 - Life-saving Appliances

Yacht size	Short Range Yacht	≥ 24m	≥ 85m
Lifeboats (see 13.2.1)	-	-	Yes
Liferafts (see 13.2.2)	YES	Yes	Yes
Manoverboard recovery system (see 13.2.3.3)	YES	-	-
Rescue boat (see 13.2.3)	-	Yes	Yes
Lifejackets (see 13.2.4)	YES	Yes	Yes
Immersion suits (see 13.2.5)	YES	Yes	Yes/2/0
Lifebuoys (total)	4	4	8
Lifebuoys with light and smoke (see 13.2.6.1)	2	2	2
Lifebuoys with light	-	-	2
Lifebuoys with buoyant lifeline (see 13.2.6.2)	2	2	2
Set of line throwing appliances (4 lines plus 4 charges)	1	1	1
Rocket parachute flares	6	6	12
Two-way radiotelephone sets	2	2	3
EPIRB (see 13.2.7)	1	1	1
SART (see 13.2.8)	1	1	2
General alarm (see 13.2.9)	Yes	Yes	Yes
Lighting (see 13.2.10)	Yes	Yes	Yes
Posters and signs showing survival craft and equipment operating instructions	Yes	Yes	Yes
Training manual	Yes	Yes	Yes
Instructions for onboard maintenance	Yes	Yes	Yes
Lifesaving signals and rescue poster – SOLAS No 1 in wheelhouse (see 13.2.11)	Yes	Yes	Yes

13.2 Equipment Carriage Requirements

13.2.1 Lifeboats (Required for yachts over 85m in length)

13.2.1.1 When lifeboats are required to be carried their acceptance is conditional upon the provision of suitable stowage and launching arrangements.

13.2.1.2 When lifeboats are provided on each side of the yacht, the lifeboat(s) on each side should be of capacity to accommodate the total number of persons onboard.

13.2.1.3 Alternative arrangements to the carriage of lifeboats may be considered as indicated below:

- .1 substitution of lifeboats by liferafts where the yacht complies with a SOLAS 2 compartment subdivision standard; or
- .2 substitution of lifeboats by a sufficient number of davit launched liferafts such that in the event of any one liferaft being lost or rendered unserviceable, sufficient aggregate capacity remains on either side of the yacht for all persons on board. Additionally one approved rescue boat should be provided on either side of the yacht.

13.2.1.4 A lifeboat will also be acceptable as a rescue boat provided it also meets the requirements of IMO Lifesaving Appliances Code as a rescue boat.

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 yachts operating within 60 miles from a safe haven, liferafts provided may be equipped with a "SOLAS B PACK". For all other yachts, 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 yachts of less than 85m in length, or those complying with 13.2.1.3, 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 yacht 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 6-5 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 When lifeboats are provided in accordance with 13.2.1.2, sufficient liferafts are to be provided such that in the event of any one lifeboat being lost or rendered unserviceable, sufficient aggregate liferaft capacity remains on either side of the yacht for all persons onboard. Where liferafts are transferable, this requirement

may be met by the ability of the rafts to be transferred within five minutes, as detailed in 13.2.2.3.

13.2.2.5 GRP containers containing liferafts should be stowed on the weather deck or in an open space and fitted with hydrostatic release units so that the liferafts will float free of the yacht and automatically inflate.

13.2.2.6 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 yacht for all persons on board.

13.2.2.7 For yachts operating with reduced personnel aboard, 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 yacht 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 yacht. 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 All yachts to which this Code applies should be provided with a rescue boat either meeting the requirements of the following:

13.2.3.1.1 The yacht should be provided with a rescue boat meeting SOLAS requirements in all respects, except for the colour where white will also be considered acceptable.

The launching appliances should comply and be approved in accordance with the IMO Lifesaving Appliance Code except that when a power operated crane 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; or

13.2.3.1.2 A boat which is not SOLAS approved but which is suitable for rescue purposes. The boat may be rigid, rigid inflatable, or inflatable, and should have a capacity for not less than four persons, one of which should be assumed to be lying down. Tubes of rigid inflatable or inflatable boats should have a minimum of three 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 five 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 six 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 yachts, the above requirements should also be met.

13.2.3.2 Short Range Yachts

Yachts operating as Short Range Yachts should either comply with requirements of 13.2.3.1.1, 13.2.3.1.2, or the following:

- 13.2.3.2.1 The yacht 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 yacht 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 yacht 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 onboard.
- 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 yacht.

13.2.5 Immersion Suits

- 13.2.5.1 One approved immersion suit should be provided for each person onboard. Due consideration should be given to the provision of appropriate immersion/ thermal protection for children carried on board; these should be of the insulated type. However, these need not be provided if the yacht is operating in water of surface temperatures of 20°C or more and within Latitudes 30°N and 30°S.

13.2.6 Lifebuoys

- 13.2.6.1 Lifebuoys port and starboard provided with combined self-igniting light and self-activating smoke signals should be capable of quick deployment from the navigating bridge.

- 13.2.6.2 The attached buoyant lifeline required on each of two of the lifebuoys is to have a minimum length of 30 metres.

- 13.2.6.3 Each lifebuoy should be marked with the yacht's name and Port of Registry.

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 yacht sinks. All EPIRBs should be registered with the Administration. EPIRBs are to be tested annually and serviced at not more than five yearly intervals by an approved shore based maintainer.

13.2.8 Radar Transponders (SART)

The SART is to be stowed in an easily accessible position so that it can rapidly be placed in any survival craft. Means should be provided in order that it can be mounted in the survival craft at a height of at least one metre above sea level.

13.2.9 General Alarm

- 13.2.9.1 The alarm may consist of the ship's whistle or siren providing it can be heard in all parts of the yacht.

- 13.2.9.2 For a yacht of 85m in length and above, it is to be supplemented by an electrically operated bell or Klaxon system, which is to be powered from the yacht's main supply and also the emergency source of power (see section 8). In addition, a public address system or other suitable means of communication should be provided.

13.2.10 Lighting

- 13.2.10.1 Alleyways, internal and external stairways, and exits giving access to, and including, the muster and embarkation stations should be adequately lit. (See also section 8).
- 13.2.10.2 Adequate 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.

14. Fire Safety

14.1 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, generally up to 150 litres maximum. Greater quantities may be specially considered by the Administration on receipt of a reasoned case made by the master.
- 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 areas, 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/m²/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](#) / IMO Fire Safety Systems Code Chapter IX. The system within the space should also comply with 14.1.5.5.
 - .3 Ducted mechanical exhaust 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 extract from 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 vapour/ 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 suitable 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 450mm above the deck should be certified safe for petrol vapours.
 - .6 Electrical equipment located higher than 450mm above the deck should either,
 - (a) be to [IP55] standard of construction (IEC Publication 529 - Classification of Degree of protection Provided by Enclosures). 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.
 - .7 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) at least one light fitting (on a dedicated circuit, possibly emergency)
- It should be noted that electrical equipment includes starters, distribution boxes, etc

14.2 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-60, and B15 for Short Range Yachts, 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 30mm. The distance from the hot surfaces to combustible materials should be at least 500mm or the combustible materials should be protected (e.g. non-combustible plate with an air gap of at least 30mm).
- 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 the 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, or B-0 for Short Range Yachts. 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, or B-0 for Short Range Yachts.

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 Frying Equipment

Attention is drawn to the requirements [SOLAS II-2/10.6.4](#) for fire extinguishing systems for deep fat cooking equipment.

For fryers of up to 15 litres cooking oil capacity, the provision of a suitably sized Class F extinguisher (to a national/ international standard such as BS7937:2000) together with manual isolation of the electrical power supply is acceptable.

14.3 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 yacht. 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 yacht 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 weathertight enclosure readily accessible to assist non-yacht fire-fighting personnel who may board the yacht 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.

15. Structural Fire Protection

The purpose of this section is to ensure a consistent level of structural fire protection. The section is primarily concerned with protecting high risk spaces such as the engine room and galley. It also makes provision for restricting the quantity of combustible materials and sets out the principles for detection of fire and effective escape

15.1 General

15.1.1 Terms used in this section should have the same meaning as defined in SOLAS. Table 1 is a guide to the major requirements of this Section. The Table is intended as a quick reference to the requirements and is not to be used in isolation when designing the fire safety arrangements.

Table 1

Passive fire protection (see 15.2)	Category 'A' machinery spaces: 'A-30'/'A-0'.
Means of escape (see 15.3) • Category 'A' machinery spaces. • Accommodation and other spaces.	Two (2). Two (2).
Fixed fire detection system (see 15.7)	• Fitted in machinery spaces. • Fitted in service spaces, control stations and accommodation spaces.
Automatic sprinkler system or equivalent	Fitted in yachts that do not meet restrictions on combustible materials (15.2.3.6 & 15.2.3.8).

15.2 Structure

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 ship 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.

15.2.1 Forms of construction - Fire divisions

15.2.1.1 Fire divisions required by 15.2.2 are to be constructed in accordance with the remaining paragraphs of this sub-section.

15.2.1.2 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 15.2.2.1.

15.2.1.3 Insulation required by 15.2.1.2 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 anytime during the applicable exposure to the standard fire test as referenced in the IMO FTP Code. For 'A' Class divisions, the applicable exposure is 60 minutes, and for 'B' Class divisions, the applicable exposure is 30 minutes.

15.2.1.3.1 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.

15.2.1.3.2 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.

15.2.1.3.3 Insulation need only be applied on the side that is exposed to the greatest fire risk, i.e. inside the engine room, a division between two such spaces should however be insulated on both sides unless it is a steel division.

15.2.1.3.4 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 loses strength.

15.2.2 Structural fire protection

15.2.2.1 (a) Machinery spaces of category 'A' , are to be enclosed by 'A-30' Class divisions .
(b) For Short Range Yachts, machinery spaces of category 'A', are to be enclosed by 'B-15' Class divisions.

15.2.2.2 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. Generally, windows should not be fitted in machinery space boundaries.

15.2.2.3 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.

15.2.2.4 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.

15.2.2.5 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).

15.2.3 Materials

- 15.2.3.1 Except in refrigerated compartments of service spaces, all insulation (e.g. fire and comfort) is to be of not readily-ignitable materials .
- 15.2.3.2 Pipes penetrating 'A' or 'B' Class divisions are to be of approved materials having regard to the temperature such divisions are required to withstand.
- 15.2.3.3 Pipes conveying oil or other combustible liquids through accommodation and service spaces are to be of approved materials having regard to the fire risk.
- 15.2.3.4 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. Due regard should be paid to the IMO Fire Test Procedures Code.
- 15.2.3.5 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.
- 15.2.3.6 Upholstery composites (fabric in association with any backing or padding material) used throughout the yacht 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.
- 15.2.3.7 It is recommended that organic foams used in upholstered furniture and mattresses are of the combustion modified type.
- 15.2.3.8 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.

15.2.4 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.

15.2.5 Fuel arrangements

15.2.5.1 Arrangements for the storage, distribution and utilisation of oil fuel are to be such as to minimise the risk of fire or explosion.

15.2.5.2 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.

15.2.5.3 Oil fuel, lubricating oil and other flammable oils are not to be carried in fore-peak tanks.

15.2.5.4 Every oil fuel pipe, which, if damaged, would allow oil to escape from a storage, settling or daily service tank situated above the double bottom, shall be fitted with a cock or valve directly on the tank capable of being closed from a safe position outside the space concerned in the event of a fire occurring in the space in which such tanks are situated.

15.2.5.5 Means are to be provided to stop fuel transfer pumps, oil fired boilers and separators from outside the machinery space.

15.2.5.6 Fuel filter bowls should be of metal, construction.

15.3 Means of escape

15.3.1 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.

15.3.2 Requirements

15.3.2.1 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.

15.3.2.2 The arrangement of the yacht 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 on motor yachts should also be provided with a minimum of two means of escape. Other machinery spaces should also have at least two means of escape as widely separated as possible, except where the small size of the machinery space makes it impracticable.

- (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 practicable.
- (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 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.

15.3.2.3 Lifts are not considered as forming a means of escape.

15.4 Ventilation systems

- 15.4.1 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.
- 15.4.2 Ventilation ducts for Category 'A' machinery spaces, galleys, 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-15 on Short Range Yachts) 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.
- 15.4.3 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.
- 15.4.4 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.

- 15.4.5 Ventilation systems serving Category 'A' machinery spaces are to be independent of systems serving other spaces.
- 15.4.6 All enclosed spaces containing free standing fuel tanks are to be ventilated independently of systems serving other spaces.
- 15.4.7 Ventilation is to be provided to prevent the accumulation of dangerous concentrations of flammable gas which may be emitted from batteries.

15.5 Arrangements for gaseous fuel for domestic purposes

- 15.5.1 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.
- 15.5.2 Gas 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 yacht's interior, and fitted with a vent and drain, so that any gas which may leak can disperse overboard.
- 15.5.3 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 Part C Section 3.

15.6 Space heaters

Space 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.

15.7 Fixed fire detection and fire-alarm systems

The purpose of this section is to detect a fire in the space of origin and to provide for an alarm for safe escape and fire-fighting activity.

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). Manually operated call points shall be placed effectively to ensure a readily accessible means of notification. The fixed fire detection and fire-alarm system is to be installed in accordance with the requirements of [SOLAS 74, Chapter II-2, Part C regulation II-2/7](#) and the IMO Fire Safety Systems Code, Chapter 9.

15.8 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.

16. Fire Appliances

16.1 General Requirements

- 16.1.1 Fire appliances are to be of an approved type and should be provided to meet the minimum requirements listed in Table 1 and the specific requirements of 16.2.
- 16.1.2 Fire appliances provided in addition to those required by 16.1.1 should be of a type acceptable to the Administration.
- 16.1.3 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 yacht.	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	Fire main & 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).	For each deck, one within 10m of any position within an accommodation or service space.
7	<p>Fire extinguishers - for a machinery space containing internal combustion type machinery the options are:</p> <p>(a) a fixed fire extinguishing system approved in accordance with the IMO Fire Safety Systems Code; and</p> <p>(b)</p> <p>(i) 1 portable extinguisher for oil fires for each 74.6kw power; or</p> <p>(ii) 2 portable extinguishers for oil fires together with either</p> <p>1 foam extinguisher of 45l capacity; or</p> <p>1 co2 extinguisher of 16kg capacity</p>	<p>7 (max)</p> <p>2 + 1</p>
8	Firemans outfit - to include an approved breathing apparatus	2 ¹
9	Fire blanket - in galley	1

Notes:-

1. A minimum of two breathing apparatus are to be provided. In yachts where stowage considerations do not allow the carriage of two apparatus, proposals to carry a single unit should be agreed with the Administration.

16.2 Specific Requirements

16.2.1 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 yacht normally accessible to passengers or crew while the yacht is being navigated and, any store room or any part of a storage compartment when empty.

16.2.2 Fire pumps

16.2.2.1 The power driven fire pump should have a capacity of:

$$2.5 \times \{1 + 0.066 \times (L(B+D))^{0.5}\}^2 \text{ m}^3/\text{hour}$$

where:

L = the length

B = the greatest moulded breadth

D = the moulded depth measured to the bulkhead deck at amidships.

When discharging at full capacity through two adjacent fire hydrants, the pump should be capable of maintaining a water pressure of 0.2 N/mm^2 at any hydrant, provided the fire hose can be effectively controlled at this pressure.

16.2.2.2 The second fire pump, which may be portable, should have a capacity of at least 80% of that required by 16.2.2.1 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.

16.2.2.3 Each centrifugal fire pump should be provided with a non-return valve in the connection to the fire main.

16.2.3 Fire main and hydrants

16.2.3.1 A fire main, water service pipes and fire hydrants should be fitted.

16.2.3.2 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.

16.2.3.3 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.

16.2.3.4 When a fire main is supplied by two pumps, one in the machinery space and one 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.

16.2.3.5 The fire main should have no connections other than those necessary for fire fighting or washing down.

16.2.3.6 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 yacht.

16.2.3.7 Fire hydrants should be fitted with valves that allow a fire hose to be isolated and removed when a fire pump is operating.

16.2.4 Fire hoses

16.2.4.1 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.

16.2.4.2 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 16.2.2.1, from the smallest pump.

16.2.4.3 Hydrants or connections in interior locations on the yacht should have hoses connected at all times. For use within accommodation and service spaces, proposals to provide a smaller diameter of hoses and jet/spray nozzles will be considered.

16.2.4.4 The number of fire hoses and nozzles provided should correspond to the functional fire safety requirements, but be at least three.

16.2.5 Portable fire extinguishers for use in accommodation and service spaces

16.2.5.1 The number, location, fire extinguishing medium type and capacity should be selected according to the perceived fire risk, but for each deck, one portable extinguisher should be available for use within a distance of 10m from any location. A minimum of at least three 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.

16.2.5.2 Portable fire extinguishers of the carbon dioxide type should not be located or provided for use in accommodation spaces.

16.2.5.3 Except 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.

16.2.5.4 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 yacht is at sea, an additional portable fire extinguisher of the same type (or its equivalent) should be provided.

16.2.6 Fire extinguishing in machinery spaces

16.2.6.1 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.

16.2.6.2 In a machinery space containing an oil fired boiler, oil fuel settling tank or oil fuel unit, a fixed fire extinguishing system complying with the IMO Fire Safety Systems Code should be installed.

16.2.6.3 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 16.2.5.4.)

In any case, portable fire extinguishers for extinguishing oil fires should be fitted:

- .1 in a boiler room - at least two;
- .2 in a space containing any part of an oil fuel installation - at least two; and
- .3 in a firing space - at least one.

17. Radio

17.1 Radio communications: The Global Maritime Distress and Safety System (GMDSS)

All yachts of 300GT and above should comply with the requirements of SOLAS Chapter IV as amended.

17.1.1 Each yacht should carry sufficient radio equipment to perform the following distress and safety communications functions throughout its intended voyage:

- .1 transmitting ship to shore distress alerts by at least two separate and independent means, each using a different radio communication service;
- .2 receiving shore-to-ship distress alerts;
- .3 transmitting and receiving ship-to-ship distress alerts;
- .4 transmitting and receiving search and rescue co-ordinating communications;
- .5 transmitting and receiving on-scene communications;
- .6 transmitting and receiving signals for locating by radar;
- .7 transmitting and receiving maritime safety information;
- .8 transmitting and receiving bridge-to-bridge communications.

17.1.2 Radio installations

Table 1 illustrates the radio installations to be carried to fulfil the functional requirements for sailing at different distances from a safe haven.

Table 1

Radio Equipment	Distance from nearest shore station - nautical miles			
	Up to 30	Up to 100	Up to 200	Unlimited
VHF Radiotelephone with Digital Selective Calling (DSC)	One	One	One	One
MF/HF Radiotelephone with Digital Selective Calling (DSC)	None	One ¹	One ¹	One ¹
INMARSAT Ship Earth Station	None	None	One ¹	One ¹
NAVTEX2 receiver	One ²	One ²	One ²	One ²

Notes:

1. An INMARSAT ship earth station or an MF/HF radiotelephone with DSC may be fitted for operations over 60 miles from the nearest shore station. When a yacht operates north of 70° North, or south of 70° South, i.e. polar regions, an INMARSAT Ship Earth and MF/HF is required due to lack of coverage also, IRIDIUM is recommended.
2. If the yacht is sailing in an area where an international NAVTEX service is not provided then the NAVTEX receiver should be supplemented by an INMARSAT enhanced group calling system.

17.2.2.2 Example:

As an illustration, the minimum equipment to be installed on a yacht engaged on worldwide operations south of 70 degrees North and north of 70 degrees South would be:

one VHF radiotelephone with DSC; one INMARSAT-C ship earth station; one NAVTEX receiver.

Note also the requirement for the carriage of two way radiotelephone sets, EPIRBs and SARTs given in section 13 Table 1.

17.2.3 Operational Performance

17.2.3.1 All required radio communications equipment should be of a type which is approved by the relevant authority.

17.2.4 Installation

17.2.4.1 The radio installation should:

- .1 be so located to ensure the greatest possible degree of safety and operational availability;
- .2 be protected against the harmful effect of water, extremes of temperature and other adverse environmental conditions;
- .3 be clearly marked with the call sign, the yacht station identity and any other codes applicable to the use of the radio installation.

17.2.5 Sources of energy

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

17.2.5.2 A reserve source of energy, independent of the propelling power of the yacht and its electrical system, should be provided for the purpose of conducting distress and safety radio communications for a minimum of one hour in the event of failure of the yacht's main and emergency sources of electrical power, (three hours minimum).

An independent reserve source of energy should be provided for the purpose of conducting distress and safety radio communications for a minimum of 1 hour in addition to that provided by the emergency source of electrical power.

17.2.5.3 When a reserve source of energy consists of a rechargeable accumulator battery, a means of automatically charging such batteries should be provided, which is capable of recharging them to minimum capacity requirements within 10 hours which should include a visual and audible charger failure device.

17.2.5.4 The siting and installation of accumulator batteries should ensure the highest degree of service and safety.

17.2.6 Watches

17.2.6.1 A yacht, while at sea, should maintain a continuous watch:

- .1 where practicable, on VHF Channel 16;
- .2 where practicable, on VHF Channel 13;
- .3 on VHF Digital Selective Calling (DSC), on channel 70;
- .4 if fitted with an MF / HF radiotelephone, on the distress and safety DSC frequency 2187.5kHz;
- .5 for satellite shore-to-ship distress alerts, if fitted, with a radio facility for reception of maritime safety information by the INMARSAT enhanced group calling system;
- .6 for broadcasts of maritime safety information on the appropriate frequency or frequencies, on which such information is broadcast for the area in which the yacht is navigating; normally using the International NAVTEX service or INMARSAT's enhanced group calling facility. (Further information may be obtained from the Admiralty List of Radio Signals volume 5.)

18. Navigation Lights, Shapes and Sound Signals

- 18.1 Every yacht should comply with the requirements of the International Regulations for Preventing Collisions At Sea, 1972, as amended.
- 18.2 All navigation lights should be provided with main and emergency power supply.
- 18.3 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.
- 18.4 For yachts where compliance is impracticable, alternatives may be considered by application to the Administration.

19. Navigational Equipment and Visibility from Wheelhouse

19.1 Navigational Equipment

19.1.1 A yacht 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 yacht, it should be possible to correct the compass for co-efficients B, C and D, and heeling error.
- .3 The magnetic compass or 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 of which should be of the twin wire type.

19.1.2 A yacht 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.

19.1.3 For yachts of less than 300GT the equipment specified in 18.1.1 and 18.1.2 need not be of an approved type.

19.1.4 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 yacht other than a steel yacht, with a hand bearing compass.

19.1.5 For yachts under 300GT the requirements of 19.1.2.4 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.

19.1.6 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).

19.1.7 All yachts of 300GT and over shall be fitted with an approved automatic identification system (AIS) in accordance with SOLAS Chapter V. The AIS shall:

- .1 provide automatically to appropriately equipped shore stations, other ships and aircraft, information including the ships identity, type, position, course, speed, navigational status and other safety related information;

- .2 receive automatically such information from similarly fitted ships
- .3 monitor and track ships; and
- .4 exchange data with shore- based facilities.

19.2 Bridge Visibility

- 19.2.1 Navigation bridge visibility should comply with [SOLAS Chapter V, Regulation 22](#). Yachts under 45m in length should comply as far as reasonable and practicable.
- 19.2.2 Windows may be inclined from the vertical plane provided that, where necessary, appropriate measures are taken to avoid adverse reflections from within.
- 19.2.3 Windows to the navigating position should not be of either polarised or tinted glass (see 5.5.8) Portable tinted screens may be provided for selected windows.

20. Miscellaneous Equipment

20.1 Nautical Publications

Every yacht 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 approved electronic chart display and information system (ECDIS) may be accepted as meeting these chart carriage requirements.

Back-up arrangements to meet these functional requirements should be provided where this function is partly or fully filled by electronic means. This means single ECDIS and paper charts or duplicate ECDIS.

20.2 Measuring Instruments

Every yacht should carry a barometer. Every sailing yacht should carry an anemometer and an inclinometer.

20.3 Signalling Lamp

Every yacht 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 20.4.

20.4 Searchlight

Every yacht should carry an efficient fixed or portable searchlight suitable for man-overboard search and rescue operations.

20.5 Yachts of less than 150 GT require a radar reflector.

20.6 Yachts of more than 300GT must be marked externally with the yacht's IMO number which may be horizontal provided that it is visible from the air. The IMO number should also be marked on part of the internal structure in accordance with SOLAS.

21. Anchors and Cables

The purpose of this section is to set out the minimum standard for anchoring and mooring arrangements. It should be noted that this element is to be an integral part of the Classification process and this should be reflected in the Class Notation or equivalent.

21.1 Equipment

- 21.1.1 Yachts will be considered to have adequate equipment if fitted out in accordance with standards for such equipment, set by a Recognised Organisation.
- 21.1.2 Yachts not equipped in accordance with 21.1.1 may be specially considered by the Administration, provided full information is submitted for approval.
- 21.1.3 All yachts are to have at least two 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.

21.2 Sailing Yachts

- 21.2.1 The sizing of anchors and cables for sailing yachts should take into account the additional windage effect of the masts and rigging.
- 21.2.2 Typically, for square rigged sailing yachts, experience based guidance on approximate increase in anchor mass and cable strength required is:
 - for yachts up to 50 metres in length, typically 50% above the requirements for a typical motor yacht having the same total longitudinal profile area of hull and superstructure as the square rigged sailing yacht under consideration; and
 - for yachts 100 metres in length and over, typically 30% above the requirements for a typical motor yacht having the same total longitudinal profile area of hull and superstructure as the square rigged sailing yacht under consideration.

For a square rigged sailing yacht of between 50 and 100 metres in length the increase should be obtained by linear interpolation.

22 Accommodation

22.1 General

- 22.1.1 An adequate standard of accommodation should be provided to ensure the comfort, recreation, health and safety of all persons on board.
- 22.1.2 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 yacht, ventilation and water services.
- 22.1.3 Generally, accommodation standards for the crew should be applied, wherever practicable, to the standards set by the International Labour Organisation (ILO) conventions for crew accommodation in merchant ships. 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 deckhead 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.
- 22.1.4 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 yachts. Reference should also be made to IMMARBE's latest Merchant Shipping Notice on Crew Accommodation Certificates.

22.2 Access/ Escape Arrangements

See 14.3 and 15.2.12.

22.3 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.

22.4 Heating

As considered appropriate, an adequate heating installation should be provided.

22.5 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 arranged to ensure that there is an adequate supply of fresh air and for the efficient discharge of fumes into the open air (see also 22.7).

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 yacht 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.

22.6 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

22.7 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 yachts which are intended to make long international voyages or operate in tropical waters. As a minimum, mechanical ventilation should be capable of providing six 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 25m³ 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.

22.8 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 two litres per person. The installation of fresh water making machines and disinfection arrangements are to be to the acceptance of the Administration. (For this purpose silver ionisation or chlorination would be considered acceptable.)

22.9 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 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

22.10 Toilet Facilities

Adequate sanitary toilet facilities should be provided on board. The facilities should be at least one water closet, one shower for every eight persons or part thereof, and one washbasin for every six persons or part thereof.

In yachts where a sanitary system, including a holding tank, is 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.

22.11 Stowage Facilities for Personal Effects

Adequate stowage facilities for clothing and personal effects should be provided for every person on board.

22.12 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.

22.13 Garbage Arrangements

There should be suitable arrangements for the storage, segregation and disposal of garbage in accordance with the requirements of MARPOL Annex V.

23. Protection of Personnel

23.1 Deckhouses and Superstructures

The structural strength of any deckhouse or superstructure should comply with the requirements of one of the Recognized Organizations, as appropriate to the yacht and its areas of operation.

23.2 Bulwarks and Guardrails

23.2.1 Bulwarks and/or guardrails on all accessible decks should be 1000mm high except that on yachts built to 1959 Load Line Rules these may be 915mm high. Any opening should not exceed 380mm. 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.

23.2.2 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 areas used in the necessary work of the craft.

23.2.3 Where the function of the yacht would be impeded by the provision of bulwarks and/or guard rails complying with 23.2.1, alternative proposals detailed to provide equivalent safety for persons on deck should be submitted to the Administration for approval.

23.3 Safe Work Aloft, Overside, and on the Bowsprit of Sailing Yachts

23.3.1 When access to the rig, bowsprit, or overside working is required, provision should be made to enable people to work safely, in accordance with the UK's Code of Safe Working Practices for Merchant Seamen, or a suitable equivalent.

23.3.2 The arrangements provided should be based on established safe working practices for the type of yacht. The arrangements may include but not be limited to:

- .1 safety nets below the bowsprit;
- .2 safety grab rails or jackstays (metal or wire) fixed along the bowsprit to act as handholds and strong 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 (metal or wire) 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:
 - (a) fixed metal steps or ladders attached to the mast; or
 - (b) traditional ratlines (rope) or, rattling bars (wood/steel), fixed across the shrouds to form a permanent ladder.

23.4 Personal Clothing

It should be the responsibility of an owner/ managing agent/ master to advise that the following requirements for items of personal clothing should be met:

- .1 Each person on board a yacht should have protective clothing appropriate to the prevailing air and sea temperatures.
- .2 Each person on board a yacht should have footwear having non-slip soles, to be worn on board.

23.5 Noise

Attention is drawn to the IMO Code on Noise Levels on Board Ships.

- 23.5.1 Yachts covered by this Code should meet the recommendations so far as is reasonable and practicable.
- 23.5.2 The IMO Code on Noise Levels on Board Ships promotes the control of noise within the framework of internationally agreed guidelines, whilst recommending methods of measuring noise at listening posts.
- 23.5.3 For safe navigation, it is important that sound signals and VHF communications can be heard, at the navigating position in normal operating conditions.
- 23.5.4 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.
- 23.5.5 To indicate the need to wear ear protectors, safety signs, signs with symbols and supplementary warning notices should be displayed at all entrances to spaces in which the noise level exceeds 85dB(A).

24. Medical Stores

A yacht to which this Code applies should carry medical stores at least as one of the tables below or to an equivalent standard.

Table 1 – unlimited operation

Medicines

Reference number	Statutory Treatment Requirements	Recommended Medicine and Dosage Strength Representing best practice.	Recommended Quantity for 10 persons
1. Cardio Vascular			
(a)	Cardio vascular analeptics Sympathomimetics	Adrenaline / Epinephrine injection BP 0.5ml adrenaline acid tartrate injection 1.0mg in 1ml (1 in 1000) and / or Epipen (Adrenaline 0.3mg)	10* 5
(b)	Anti-angina preparations	Glyceryl Trinitrate Spray 400 micrograms / metered 200 dose aerosol and transdermal patches 5mg	1 unit 2
(c)	Diuretics	Frusemide / Furosemide i) 40 mg tablets ii) 10 mg in 1 ml inj. (2 ml ampule)	 28* 2
(d)	Anti-haemorrhagics if there are women with potential for child bearing working on board (including uterotonics).	i) Phytomenadione (Vitamin K1) paediatric injection (0.2ml ampoule) ii) Ergometrine 500mcg , Oxytocin 5 units (1ml ampoule) (Syntometrine)	1* 2*
(e)	Anti hypertensive	Atenolol 50 mg tablets	28
2. Gastro Intestinal System			
(a)	Medicines for gastric and duodenal disorders • Histamine H2 receptor anti-ulcer antagonists • Antacid mucous mixture	Cimetidine 400mg tablets Proprietary Antacid of choice	60 As required
(b)	Anti-emetics	i) Prochlorperazine maleate 3mg buccal tablets ii) Promethazine hydrochloride 25mg per ml (1ml ampoules) Hyoscine hydrobromide 0.3 mg tablets or Cinnarizine 15 mg	50* 10* 60 60
(c)	Lubricant laxatives	Glycerol suppository mould 4 mg	12
(d)	Anti-diarrhoeals	Loperamide 2 mg capsules	30
(e)	Intestinal antiseptics	i) Trimethoprim 200mg tablets ii) Ciprofloxacin 500mg tablets iii) Metronidazole 400mg tablets	Use 7(b) Use 7(a)ii Use 7(e)
(f)	Haemorrhoid preparation	Proprietary preparation of choice	As required

Reference number	Statutory Treatment Requirements	Recommended Medicine and Dosage Strength Representing best practice.	Recommended Quantity for 10 persons
3. Analgesics Anti-Spasmodics			
(a)	Analgesics, anti-pyretics and anti-inflammatory agents	i) Paracetamol 500 mg tablets and ii) Ibuprofen 400 mg tablets iii) Diclofenac sodium 50 mg suppository	100 100 10
(b)	Powerful analgesics	i) Codeine Phosphate 30mg tablets ii) Morphine Sulphate 10mg in 1ml injection (1ml ampoule) or Nalbuphine 10mg in 1ml injection	28 10 10
(c)	Spasmolytics	Hyoscine butylbromide 10mg tablets	56
4. Nervous System			
(a)	Anxiolytics	i) Diazepam injection 5mg per ml, (2ml ampoules) ii) Diazepam 5mg tablets	5* 28*
(b)	Neuroleptics	i) Chlorpromazine hydrochloride 25mg injection ii) Chlorpromazine hydrochloride 25mg tablets	5* 28*
(c)	Seasickness remedies	Hyoscine Hydrobromide 0.3 mg tablets Or Cinnarizine 15 mg	Use 2(b)iii)
(d)	Anti-epileptics	Diazepam rectal dispenser 10mg in 2.5ml	5
5. Anti-allergics and Anti-anaphylactics			
(a)	H ₁ Anti-histamines	Cetirizine 10mg tablets	30*
(b)	Injectable / oral glucocorticoids	i) Hydrocortisone injection powder for reconstitution 100mg vial with 2ml water for injection / ready diluted 100mg in 1ml injection ii) Prednisolone 5mg tablets	3 28
6. Respiratory System			
(a)	Bronchospasm preparations	i) Salbutamol inhaler 100 micrograms per metered dose. 200 dose inhaler with volumatic ii) Beclomethasone 100 micrograms per metered dose inhaler	1 1
(b)	Anti-tussives	Proprietary cough mixture	As required
(c)	Medicines used for colds and sinusitis	Paracetamol 500mg tablets or Proprietary cold remedy	Use 3(a)i) As required
7. Anti-infection			
(a)	Antibiotics	i) Benzylpenicillin – benzylpenicillin sodium 600mg injection (powder for reconstitution in a rubber capped and metal topped vial) and water for injection 2ml ii) Ciprofloxacin (as hydrochloride) 500mg tablets iii) Cefuroxime injection 750mg vial and water for injection iv) Erythromycin 250mg tablets v) Doxycycline 100mg capsules	10 20 20 28 8
(b)	Anti-bacterial /	Trimethoprim 200mg tablets	14
(c)	Urinary antiseptics		
(d)	Anti-parasitics	Mebendazole 100mg tablets	6*

Reference number	Statutory Treatment Requirements	Recommended Medicine and Dosage Strength Representing best practice.	Recommended Quantity for 10 persons
(e)	Intestinal anti-infectives	Metronidazole suppositories 1g Metronidazole 500mg or 400mg tablets	10 21
(f)	Anti-tetanus vaccines and immunoglobulin	i) Tetanus Vaccine (0.5ml ampoule) or Tetanus & Diphtheria Vaccine ii) Tetanus Immunoglobulin ampoule for injection	5* 1*
8. Compounds promoting rehydration, caloric intake and plasma expansion			
(a)	WHO Generic Formula	Sodium chloride & dextrose rehydration salts sachets of Oral Rehydration Salts, Formula A: <i>BP Oral powder in sachet to provide Na=35mmol, K=20mmol, Cl=37mmol, CO3= 18mmol and glucose 200mmol when reconstituted in a litre of water</i> or Proprietary equivalent e.g. Dioralyte	1 box (16 – 20)
9. Medicines for external use			
(a)	Skin medicines		
	Antiseptic solutions	100 ml solution or pre-impregnated wipe containing 0.015% w/v chlorhexidine and 0.15% w/v cetrimide	1* bottle or 1 pack wipes
	Antibiotic ointments	Neomycin / Bacitracin cream 15g tube	1
	Anti-inflammatory and analgesic ointments	i) Hydrocortisone 1% cream 15g tube ii) Proprietary NSAID gel / ointment	2 As Required
	Anti-mycotic skin creams	i) Benzoic ointment BP 50mg(benzoic acid 6%; salicylic acid 3%, in emulsifying ointment 15g ii) Miconazole nitrate 2% topical cream 30g iii) Clotrimazole 500mg pessary (if women onboard)	3 2 2
	Burn preparations	Silver Sulphadiazine 1% cream 50g tube	2
		Miscellaneous skin preparations i) Permethrin 1% in a base containing isopropylalcohol 20% Cream Rinse ii) Zinc ointment, BP (containing zinc oxide 15%) 25g iii) Potassium permanganate crystals 10g container / Permitabs pack	2* 1* 1*
(b)	Eye medicines		
	- Antibiotic ointment	Chloramphenicol 1% 4g tube <i>All eye drops are recommended in Minimum (single dose) form:</i>	4
	- Antibiotic drops	Neomycin sulphate 0.5% 0.5ml	20
	- Anti-inflammatory drops	Dexamethasone sodium phosphate 0.1% 0.5ml	20
	- Anaesthetic drops	Amethocaine hydrochloride 0.5% 0.5ml	20
	- Hypotonic drops	Pilocarpine nitrate 2% 0.5ml	20
	- Diagnostic drops	Fluorescein sodium 1% 0.5ml	20

Reference number	Statutory Treatment Requirements	Recommended Medicine and Dosage Strength Representing best practice.	Recommended Quantity for 10 persons
(c)	Ear / Nasal medicines		
	Antibiotic / anti-inflammatory solution	Antibiotic eardrops containing in each ml; neomycin 3,400 units, polymixin B sulphate 10,000 units, hydrocortisone 50mg (5ml dropper bottle)	1*
		Decongestant solution : Ephedrine nasal drops BP 0.5% ephedrine hydrochloride (10ml bottle)	1*
(d)	Medicines for oral and throat infections		
	Antibiotic or antiseptic mouthwashes	Chlorhexidine gluconate 0.2% mouthwash 300 ml	1
(e)	Local anaesthetics		
	Local anaesthetics given by subcutaneous injection hydrochloride 1% 50 mg for injection	Lignocaine / Lidocaine	5
	Local anaesthetic gel	Lignocaine / Lidsaine gel 2%, chlorhexidine 0.25% in lubricant (syringe)	1
	Dental anaesthetics and antiseptic mixtures	i) Proprietary gel e.g. Bonjela	1
		ii) Oil of Cloves 10ml	1*

Note: Items marked with a *, the specified quantity is regarded as sufficient regardless of crew size.

Medical Equipment

Statutory Requirements	Recommended Specification	Quantity
1. Resuscitation equipment		
Appliance for the administration of oxygen	Oxygen giving set comprising of the following:- 1) Oxygen reservoir (e.g. D Size 300ltr cylinder) 2) 1 flow meter unit giving a minimum setting of not less than 4ltrs per minute 3) 1 pressure regulating unit 4) 1 set of tubing 5) 5 x 24% oxygen disposable face masks 6) 5 x high concentration oxygen disposable face masks with a reservoir. Each part constructed so that it can only be assembled in the correct manner	1
Mechanical aspirator to clear upper respiratory passages	Aspirator to clear airways (manual, hand operated) + 2 catheters	1
Equipment for mouth to mouth resuscitation	Pocket face mask with valve and O2 inlet Guedal Airway Sizes 3 & 4	1
2. Dressing and suturing equipment		

Statutory Requirements	Recommended Specification	Quantity
Disposable skin stapler /or suture kit	1) Sterile non-absorbable sutures swaged to a 6 (including staple remover) half circle needle with a cutting edge 2 sizes e.g. 16mm & 26mm 2) Sterile absorbable sutures swaged to a 3 half circle needle 1 size e.g. 26mm	6 3
Adhesive elastic bandage	Adhesive elastic bandage 7.5cm x 4m	4
	Crepe bandage 7.5cm x 4m	4
Tubular gauze bandage, for finger dressings	20m length with applicator	1
Disposable gloves	Latex free, vinyl	25 pairs
Adhesive dressings	Assorted sterile	40
Sterile bandages with unmedicated dressings (Ambulance dressings)	(1) medium, No.1 (12x10) cm (2) large, No.2 (20x15) cm (3) extra large, No.3 (28x20) cm	5 5 4
Adhesive sutures	75mm adhesive suture strips	6
Sterile gauze swabs	Packet containing 5 sterile gauze pads size 7.5cm x 7.5cm	10
Sterile sheet for burns victims		1
Triangular sling / bandage		4
Paraffin gauze dressings, size 10cm x 10cm		40
3. Instruments		
Disposable scalpels	e.g. 10 blades	2
Stainless steel instrument box		1
Scissors	Stainless steel dressing scissors Sharp pointed scissors	1
Dissecting forceps	Toothed	1
Haemostatic clamps		1
Needle forceps		1
Disposable razors		5
4. Examining and monitoring equipment		
Disposable tongue depressors		10
Reactive strips for urine analysis	e.g. Multistix	1 pack
Temperature charts		1 pad
Medical evaluation reports		1 pad
Pregnancy test kit	When women on board	1
Stethoscope		1
Aneroid sphygmomanometer		1
Standard clinical thermometer		3
Hypothermic thermometer low reading rectal thermometer		1
Sputum cup with cover	Disposable	2
Specimen jars	Strong glass or plastic with airtight lid 50 ml with blank labels	2
5. Equipment for injection, perfusion, puncture and catheterization		
Bladder drainage	Bladder drainage set (including bag, spigots and tube)	1
Rectal drip set		1
Urine drainage bag		Use bladder drainage set
Disposable syringes	2ml, 5ml, 10ml	10
Disposable hypodermic needles	(21G) 0.8mm and (25G) 0.5mm	30
"Sharps" disposal box	1 litre size	1

Statutory Requirements	Recommended Specification	Quantity
Catheter	1) Foley type 16 Charriere guage, 5 ml balloon (short / medium term use in adults) 2) Nelaton size 16 Charriere guage (with no balloon) 3) Penile sheath set	1 1 1
6. General Medical Equipment		
Bedpan	(stainless steel or sterilisable plastic)	1
Hot water bottle	With fabric cover	1
Urine bottle (urinal)		1
Icebag		1
7. Immobilisation and setting equipment		
Malleable finger splint		1
Malleable forearm and hand splint		1
Splints – simple, vacuum (inflatable only if others unavailable)	Set of four (half leg, full leg, half arm and full arm)	1
Thigh splint - (Traction)	e.g. Thomas splint, Donway etc	1
Collar for neck immobilisation – (semi-rigid)	Adult size pack of 3, small, medium and large or adjustable collar	1
8. Disinfection, Disinsectization and Prophylaxis		
Water – disinfection compound -	In liquid form	5
Liquid insecticide	In liquid form	5
Powder insecticide		

Recommended Additional Medical Equipment

Recommended Additional Equipment	Quantity
Face masks disposable	5
Plastic measuring jug 1/2 litre size	1
Disposable paper towels	100
Latex free sterile surgical disposable gloves (large)	5 pairs
Waterproof plastic sheeting, size 1m x 2m	2
Lotion bowl (size at least 200mm x 90mm, stainless steel or sterilisable plastic, to be marked "medical")	1
Kidney dish (size 250mm stainless steel or sterilisable plastic)	1
Safety pins, rustless medium	6
Magnifying glass 7.5cm diameter with handle	1
Nail brush	1
Body bag – large size	1
Vessels in malarial areas only – microscope slides in individual transit containers	5
1) Excavator double ended Guys' pattern G2 2) Filling paste inserter (for inserting filling paste into the tooth) 3) Dental mirror size 4 on handle 4) Cavit (temporary dental filling) tube	1 set of all items
Kit for protection against blood transmitted diseases (to be carried in all vessels trading in malarial areas where medical facilities are limited and emergency shore based treatment is necessary) (To be kept in heavy gauge polythene bag, and labelled "to be used only for the treatment of...." Insert the name of the seafarer going ashore for emergency treatment). Each kit to contain the following : (1) 10 x 2 ml syringes (2) 10 x 10 ml syringes (3) 20 x 21G 0.8mm needles (4) 1 blood giving set (5) 1 blood taking set (6) pack of pre injection site swabs (7) Disposable latex free gloves 2 pairs (large size)	1 kit

Table 2 – up to 150 miles from a safe haven

Medicines

Reference number	Statutory Treatment Requirements	Recommended Medicine and Dosage Strength Representing best practice.	Recommended Quantity for 10 persons
1. Cardio Vascular			
(a)	Cardio vascular analeptics Sympathomimetics	Adrenaline / Epinephrine injection BP 0.5ml adrenaline acid tartrate injection 1.0mg in 1ml (1 in 1000) and / or Epipen (Adrenaline 0.3mg)	10 5
(b)	Anti-angina preparations	Glyceryl Trinitrate Spray 400 micrograms / metered 200 dose aerosol and transdermal patches 5mg	1 unit 2
(c)	Diuretics	Frusemide / Furosemide 40 mg tablets	 28
(d)	Anti-haemorrhagics if there are women with potential for child bearing working on board (including uterotonics)	i) Phytomenadione (Vitamin K1) paediatric injection (0.2ml ampoule) ii) Ergometrine 500mcg , Oxytocin 5 units (1ml ampoule) (Syntometrine)	1* 1*
2. Gastro Intestinal System			
(a)	Medicines for gastric and duodenal disorders • Antacid mucous mixture	Proprietary Antacid of choice	As required
(b)	Anti-emetics	i) Prochlorperazine maleate 3mg buccal tablets Hyoscine hydrobromide 0.3 mg tablets or Cinnarizine 15 mg	50* 60 60
(d)	Anti-diarrhoeals	Loperamide 2 mg capsules	30
(e)	Intestinal antiseptics	i) Trimethoprim 200mg tablets ii) Ciprofloxacin 500mg tablets iii) Metronidazole 400mg tablets	Use 7(b) Use 7(a)ii Use 7(e)
(f)	Haemorrhoid preparation	Proprietary preparation of choice	As required
3. Analgesics Anti-Spasmodics			
(a)	Analgesics, anti-pyretics and anti-inflammatory agents	i) Paracetamol 500 mg tablets and ii) Ibuprofen 400 mg tablets	50 50
(b)	Powerful analgesics	i) Codeine Phosphate 30mg tablets ii) Morphine Sulphate 10mg in 1ml injection (1ml ampoule) or Nalbuphine 10mg in 1ml injection	28 10 10
(c)	Spasmolytics	Hyoscine butylbromide 10mg tablets	56
4. Nervous System			
(b)	Neuroleptics	Chlorpromazine hydrochloride 25mg tablets	28*
(c)	Seasickness remedies	Hyoscine Hydrobromide 0.3 mg tablets Or Cinnarizine 15 mg	Use 2(b)iii)
(d)	Anti-epileptics	Diazepam rectal dispenser 10mg in 2.5ml	5
5. Anti-allergics and Anti-anaphylatics			
(a)	H ₁ Anti-histamines	Cetirizine 10mg tablets	30*

Reference number	Statutory Treatment Requirements	Recommended Medicine and Dosage Strength Representing best practice.	Recommended Quantity for 10 persons
(b)	Injectable / oral glucocorticoids	i) Hydrocortisone injection powder for reconstitution 100mg vial with 2ml water for injection / ready diluted 100mg in 1ml injection ii) Prednisolone 5mg tablets	1 28
6. Respiratory System			
(a)	Bronchospasm preparations	i) Salbutamol inhaler 100 micrograms per metered dose. 200 dose inhaler with volumatic ii) Beclomethasone 100 micrograms per metered dose inhaler	1 1
(b)	Anti-tussives	Proprietary cough mixture	As required
(c)	Medicines used for colds and sinusitis	Paracetamol 500mg tablets or Proprietary cold remedy	Use 3(a)i As required
7. Anti-infection			
(a)	Antibiotics	i) Benzylpenicillin – benzylpenicillin sodium 600mg injection (powder for reconstitution in a rubber capped and metal topped vial) and water for injection 2ml ii) Ciprofloxacin (as hydrochloride) 500mg tablets iii) Erythromycin 250mg tablets	2 10 28
(b)	Anti-bacterial /	Trimethoprim 200mg tablets	14
(c)	Urinary antiseptics		
(d)	Anti-parasitics	Mebendazole 100mg tablets	6*
(e)	Intestinal anti-infectives	Metronidazole 500mg or 400mg tablets	21
(f)	Anti-tetanus vaccines and immunoglobulin	i) Tetanus Vaccine (0.5ml ampoule) or Tetanus & Diphtheria Vaccine	1*
8. Compounds promoting rehydration, caloric intake and plasma expansion			
(a)	WHO Generic Formula	Sodium chloride & dextrose rehydration salts sachets of Oral Rehydration Salts, Formula A: <i>BP Oral powder in sachet to provide Na=35mmol, K=20mmol, Cl=37mmol, CO3= 18mmol and glucose 200mmol when reconstituted in a litre of water</i> or Proprietary equivalent e.g. Dioralyte	1 box (16 – 20)
9. Medicines for external use			
(a)	Skin medicines		
	Antiseptic solutions	100 ml solution or pre-impregnated wipe containing 0.015% w/v chlorhexidine and 0.15% w/v cetrimide	1 bottle or 1 pack wipes
	Antibiotic ointments	Neomycin / Bacitracin cream 15g tube	1
	Anti-inflammatory and analgesic ointments	Proprietary NSAID gel / ointment	As Required
	Anti-mycotic skin creams	i) Benzoic ointment BP 50mg(benzoic acid 6%; salicylic acid 3%, in emulsifying ointment 15g ii) Miconazole nitrate 2% topical cream 30g iii) Clotrimazole 500mg pessary (if women onboard).	1 1 1
	Burn preparations	Silver Sulphadiazine 1% cream 50g tube	1

Reference number	Statutory Treatment Requirements	Recommended Medicine and Dosage Strength Representing best practice.	Recommended Quantity for 10 persons
(b)	Eye medicines		
	- Antibiotic ointment	Chloramphenicol 1% 4g tube <i>All eye drops are recommended in Minimum (single dose) form:</i>	1
	- Antibiotic drops	Neomycin sulphate 0.5% 0.5ml	20
	- Anti-inflammatory drops	Dexamethasone sodium phosphate 0.1% 0.5ml	20
	- Anaesthetic drops	Amethocaine hydrochloride 0.5% 0.5ml	20
	- Hypotonic drops	Pilocarpine nitrate 2% 0.5ml	20
	- Diagnostic drops	Fluorescein sodium 1% 0.5ml	20
(c)	Ear / Nasal medicines		
	Antibiotic / anti-inflammatory solution	Antibiotic eardrops containing in each ml; neomycin 3,400 units, polymixin B sulphate 10,000 units, hydrocortisone 50mg (5ml dropper bottle)	1*
		Decongestant solution : Ephedrine nasal drops BP 0.5% ephedrine hydrochloride (10ml bottle)	1*
(d)	Medicines for oral and throat infections		
	Antibiotic or antiseptic mouthwashes	Chlorhexidine gluconate 0.2% mouthwash 300 ml	1
(e)	Local anaesthetics		
	Local anaesthetics given by subcutaneous injection hydrochloride 1% 50 mg for injection	Lignocaine / Lidocaine	5
	Dental anaesthetics and antiseptic mixtures	i) Proprietary gel e.g. Bonjela ii) Oil of Cloves 10ml	1 1*

Note: Items marked with a * the specified quantity is regarded as sufficient regardless of crew size.

Medical Equipment

Statutory Requirements	Recommended Specification	Quantity
1. Resuscitation equipment		
Appliance for the administration of oxygen	<i>Oxygen giving set comprising of the following:-</i> 1) Oxygen reservoir (e.g. D Size 300ltr cylinder) 2) 1 flow meter unit giving a minimum setting of not less than 4ltrs per minute 3) 1 pressure regulating unit 4) 1 set of tubing 5) 5 x 24% oxygen disposable face masks 6) 5 x high concentration oxygen disposable face masks with a reservoir. Each part constructed so that it can only be assembled in the correct manner	1
Mechanical aspirator to clear upper respiratory passages	Aspirator to clear airways (manual, hand operated) + 2 catheters	1 1

Statutory Requirements	Recommended Specification	Quantity
Equipment for mouth to mouth resuscitation	Pocket face mask with valve and O2 inlet Guedal Airway Sizes 3 & 4	
2. Dressing and suturing equipment		
Adhesive elastic bandage	Adhesive elastic bandage 7.5cm x 4m	1
	Crepe bandage 7.5cm x 4m	4
Tubular gauze bandage, for finger dressings	20m length with applicator	1
Disposable gloves	Latex free, vinyl	25 pairs
Adhesive dressings	Assorted sterile	40
Sterile bandages with unmedicated dressings (Ambulance dressings)	(1) medium, No.1 (12x10) cm	3
	(2) large, No.2 (20x15) cm	3
	(3) extra large, No.3 (28x20) cm	2
Adhesive sutures	75mm adhesive suture strips	6
Sterile gauze swabs	Packet containing 5 sterile gauze pads size 7.5cm x 7.5cm	5
Sterile sheet for burns victims		1
Triangular sling / bandage		4
Paraffin gauze dressings, size 10cm x 10cm		10
3. Instruments		
Stainless steel instrument box		1
Scissors	Stainless steel dressing scissors	1
	Sharp pointed scissors	1
Dissecting forceps	toothed	1
Haemostatic clamps		1
4. Examining and monitoring equipment		
Disposable tongue depressors		10
Temperature charts		1 pad
Stethoscope		1
Aneroid sphygmomanometer		1
Standard clinical thermometer		1
Hypothermic thermometer low reading rectal thermometer		1
5. Equipment for injection, perfusion, puncture and catheterization		
Disposable syringes	2ml, 5ml, 10ml	5 of each
Disposable hypodermic needles	(21G) 0.8mm and (25G) 0.5mm	15
"Sharps" disposal box	1 litre size	1
6. Immobilisation and setting equipment		
Malleable finger splint		1
Malleable forearm and hand splint		1
Splints – simple, vacuum (inflatable only if others unavailable)	Set of four (half leg, full leg, half arm and full arm)	1
Thigh splint - (Traction)	e.g. Thomas splint, Donway etc	1
Collar for neck immobilisation – (semi-rigid)	Adult size pack of 3, small, medium and large or adjustable collar	1

Recommended Additional Medical Equipment

Recommended Additional Equipment	Quantity
Face masks disposable	6
Plastic measuring jug 1/2 litre size	1
Disposable paper towels	100
Latex free sterile surgical disposable gloves (large)	5 pairs
Waterproof plastic sheeting, size 1m x 2m	1
Safety pins, rustless medium	6
Magnifying glass 7.5cm diameter with handle	1
Nail brush	1
Stretcher equipment (A system for trauma management, i.e. immobilisation and stretcher equipment most suited for treatment on the vessel concerned)	1
Body bag – large size	1
Vessels in malarial areas only – microscope slides in individual transit containers	5

Table 3 – up to 60 miles from a safe haven

Medicines

Statutory Treatment Requirements	Recommended Medicine and Dosage Strength Representing best practice.	Recommended Quantity for 10 persons
Cardio Vascular		
Anti-angina preparations	Glyceryl Trinitrate Spray 400 micrograms / metered 200 dose aerosol	1 unit
Gastro intestinal system		
Anti-emetics	Hyoscine hydrobromide 0.3 mg tablets or Cinnarizine 15 mg	60
		60
Anti-diarrhoeals	Loperamide 2 mg tablets	30
Analgesics and Anti-spasmodics		
Analgesics, anti-pyretics and anti-inflammatory agents	i) Paracetamol 500 mg tablets and ii) Ibuprofen 400 mg tablets	50
		50
Nervous system		
Seasickness remedies	Hyoscine Hydrobromide Or Cinnarizine	Use medicines intended for gastro intestinal system
Medicines for external use		
Skin Medicines		
- Antiseptic solutions	100 ml solution or pre-impregnated wipe containing 0.015% w/v chlorhexidine and 0.15% w/v cetrimide	1 bottle or 1 pack wipes
- Burn preparations	Proprietary antiseptic cream	1

Medical Equipment

Statutory Requirements	Recommended Specification	Quantity
Resuscitation Equipment		
Mask for mouth to mouth resuscitation	Pocket face mask	1
Dressing and suturing equipment		
Adhesive elastic bandage	Adhesive elastic bandage 7.5 cm x 4 m	1
Disposable polyethylene gloves	Latex free, vinyl	5 prs
Adhesive dressings	Assorted, sterile	20
Sterile bandages with unmedicated dressings (Ambulance dressings)	(1) medium, No.1 (12 x 10) cm	6
	(2) large, No.2 (20 x 15) cm	2
	(3) extra large No.3 (28 x 20) cm	2
Sterile gauze swabs	Packet containing 5 sterile gauze pads size 7.5 cms x 7.5 cms	1
Recommended Additional Items		
	Scissors stainless steel / or sterile disposable	1 pr
	Triangular bandages about 90 cm x 127 cm	4
	Medium safety pins, rustless	6
	Sterile paraffin gauze dressings	10
	Plastic burns bags	1

First Aid Instructions or a First Aid Manual (e.g. St John's, Red Cross, Red Crescent, St Andrew's) should also be included with the Medical Stores.

Medical training requirements for members of the complement of the yacht are given in Part D Section 2 on Manning and Personnel Certification.

25. Shore-ship Transfer of Personnel

25.1 Tenders (Dinghies)

- 25.1.1 When a yacht 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.
- 25.1.2 Safety equipment should be provided in the tender as appropriate to its intended range and area of operation.
- 25.1.3 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 yacht.
- 25.1.4 In the case of petrol-engined tenders, see section 14 for the safety requirements for the carriage of petrol.

25.2 Helicopters

See Part C Section 1 to this Code for the safe operation of helicopters including the construction of landing areas.

25.3 Pilot for Yacht

Boarding arrangements provided for pilots should have due regard for [SOLAS Chapter V, Regulation 23](#), the applicable IMO Resolution, International Maritime Pilots' Association (IMPA) recommendations, or any documents replacing them.

25.4 Gangways, Passerelles, and Accommodation Ladders

- 25.4.1 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.
- 25.4.2 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, 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 on both sides, suitable to prevent individuals falling from the gangway, passerelle or accommodation ladder.
- 25.4.3 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 are to be used in accordance with the manufacturer's instructions.

- 25.4.4 Accommodation ladders should be provided on a yacht of 120 metres in length and over.
- 24.4.5 Access equipment and immediate approaches to it should be adequately illuminated.
- 24.4.6 Reference should be made to appropriate national and international standards such as:
ISO 7061:1993 -Shipbuilding - Aluminium shore gangways for seagoing yachts
ISO 5488:1979 - Shipbuilding - Accommodation ladders
BSMA 78:1978 - Gangways (excluding the maximum overall widths specified in table 2);
BSMA 89:1980 - Accommodation Ladders.

26. Clean Seas

- 26.1 Yachts should comply with all the requirements of MARPOL, as prescribed by the regulations of the Administration. For yachts under 400GT it is the owner's responsibility to comply with local administration/ port state requirements and for dealing with oily bilge water retention etc.
- 26.2 Every yacht of 400GT and above and every yacht certified to carry 15 persons or more should carry a garbage management plan which should include the written procedures agreed for collection, storage, processing and disposal of garbage; and a garbage record book recording disposal and incineration, as outlined in [regulation 9 of Annex V of MARPOL](#).
- 26.3 Special local requirements may exist in national sea areas, ports, harbours and marinas. The attention of owners/operators is drawn to the need to comply with all applicable local requirements.

PART C - ADDITIONAL TECHNICAL REQUIREMENTS

Part C, Section 1. Technical standards for helicopter landing areas and helicopter operating standards

Part C, Section 1. Technical standards for helicopter landing areas and helicopter operating standards.

1 Applicability

- 1.1 This Annex outlines the minimum standards for helicopter landing areas, and associated facilities on board vessels within the scope of this Code where helicopter operations to / from the vessel are required. It also addresses operational considerations as related to the yacht crew.
- 1.2 This Annex does not address helicopter flight operations in any detail. It is intended as a technical standard for the landing area and associated on-board helicopter facilities. The helicopter pilot / operator is responsible for ensuring that the requirements of the Administration with which the helicopter is registered and the requirements of the Administration responsible for the airspace in which the helicopter is operating are complied with in full. The Aviation Inspection Body may provide further guidance.
- 1.3 Enquiries regarding operational (flight) limitations based on non-compliances of the landing area should be directed to the Aviation Inspection Body.

2 General Considerations

- 2.1 Requirements for helicopter landing areas on vessels results from the need to ensure that helicopters are afforded sufficient space to be able to operate safely at all times in the varying conditions experienced.
- 2.2 In order to ensure safe operation it is envisaged that limitations regarding the availability of the landing area will be applied by the Aviation Inspection Body on behalf of the Administration.
- 2.3 The helicopter's performance requirements and handling techniques are contained in, and governed by, the Rotorcraft Flight Manual and/ or the operator's Operations Manual.
- 2.4 In all cases, a formal and documented risk assessment should be carried out by a suitably experienced and qualified individual authorized by the Administration. The risk assessment should establish the hazards and resultant risks associated with the operation of each helicopter type that it is planned to utilize with the yacht. This should include the physical requirements for the characteristics of the landing area.

3 Helicopter Landing Areas – Physical Characteristics

3.1 General

This section provides information on physical requirements for the characteristics of helicopter landing areas on a yacht within the scope of the Code.

- 3.1.1 The risk assessment carried out as above in order to establish the adequacy of the landing area should include, for each helicopter landing area, the proposed maximum size of helicopter in terms of D-value and the proposed maximum take-off weight of the heaviest helicopter in terms of "t" value for which it is proposed each landing area is certificated with regard to size and strength.

In addition to the risk assessment, the following plans and particulars should be submitted to the Aviation Inspection Body, Certifying Authority and Administration (as appropriate) for approval:

- .1 Hangar general arrangement (showing dimensions and structural considerations).
- .2 Helicopter lift and movement arrangements (if appropriate).
- .3 Structural fire protection.
- .4 Fire detection and extinguishing arrangements

- 3.1.2 The criteria which follow are based on helicopter size and weight and are for guidance only.

Table 1- D-Value and Helicopter Type Criteria (Not exhaustive)

Type	D value (m)	Perimeter 'D' marking	Rotor diameter (m)	Max weight (kg)	't' value	Landing net size
Eurocopter EC120	11.52	12	10.00	1715	1.7	Not required
Bell 206 B3	11.96	12	10.16	1451/1519	1.5	Not required
Bell 206 L4	12.91	13	11.28	2018	2.0	Not required
Bell 407	12.61	13	10.66	2268	2.3	Not required
Eurocopter EC130	12.64	13	10.69	2400	2.4	Not required
Eurocopter AS350B3	12.94	13	10.69	2250	2.3	Not required
Eurocopter AS355	12.94	13	10.69	2600	2.6	Not required
Eurocopter EC135	12.10	12	10.20	2720	2.7	Not required
Agusta A119	13.02	13	10.83	2720	2.7	Not required
Bell 427	13.00	13	11.28	2971	3.0	Not required
Eurocopter EC145	13.03	13	11.00	3585	3.6	Not required
Agusta A109	13.04	13	11.00	2850	2.9	Small
Agusta Grand	12.96	13	10.83	3175	3.2	Small
Eurocopter AS365 N3	13.73	14	11.94	4300	4.3	Small
Eurocopter EC155 B1	14.30	14	12.60	4920	4.9	Medium
Bell 430	15.29	15	12.80	4218	4.2	Medium
Sikorsky S76	16.00	16	13.40	5318	5.3	Medium

Agusta Westland 139	16.66	17	13.80	6400	6.4	Medium
Bell 412	17.10	17	14.02	5398	5.4	Not required

- 3.1.3 Where skid fitted helicopters are used routinely, landing nets are not recommended.

3.2 Helicopter Landing Area Design Considerations – Environmental Effects

3.2.1 Introduction

The safety of helicopter flight operations can be seriously degraded by environmental effects that may be present around vessels. The term “environmental effects” describes the effects of the vessel, its systems, and forces in the surrounding environment, which result in a degraded local environment in which the helicopter is expected to operate. These environmental effects are typified by structure-induced turbulence, and turbulence / thermal effects caused by exhaust emissions. Controls in the form of landing area availability restrictions may be necessary and should be imposed via the Aviation Inspection Body. Such restrictions can be minimised by careful attention to the design and layout of the vessel topsides and, in particular, the location of the helicopter landing area.

3.2.2 Guidance for Landing Area Design Considerations

- 3.2.2.1 Guidance for landing area design considerations are given in UK Civil Aviation Authority Paper 2004/02 which should be consulted by designers of helicopter landing areas at the earliest possible stage of the design process and is available through the CAA website (www.caa.co.uk).
- 3.2.2.2 All new helicopter landing areas, or modifications to existing topside arrangements which could potentially have an effect on the environmental conditions due to turbulence around an existing helicopter landing area, or helicopter landing areas where operational experience has highlighted potential airflow problems should be subject to appropriate wind tunnel testing or CFD studies to establish the wind environment in which helicopters will be expected to operate. As a general rule the standard deviation of the vertical airflow velocity should be limited to 1.75m/s. The helicopter pilot/operator and Aviation Inspection Body should be informed at the earliest opportunity of any wind conditions for which this criterion is not met in order to allow the appropriate platform availability restrictions/limitations to be defined if necessary.
- 3.2.2.3 Designers of helicopter landing areas should commission a survey of ambient temperature rise based on a Gaussian dispersion model and supported by wind tunnel tests or CFD studies for new build helicopter landing areas, modifications to existing topside arrangements, or for helicopter landing areas where operational experience has highlighted potential thermal problems. When the results of such modelling and/or testing indicate that there may be a rise of air temperature of more than 2°C (averaged over a 3 second time interval), the helicopter pilot/operator and Aviation Inspection Body should be consulted at the earliest opportunity so that appropriate platform availability restrictions/ limitations may be

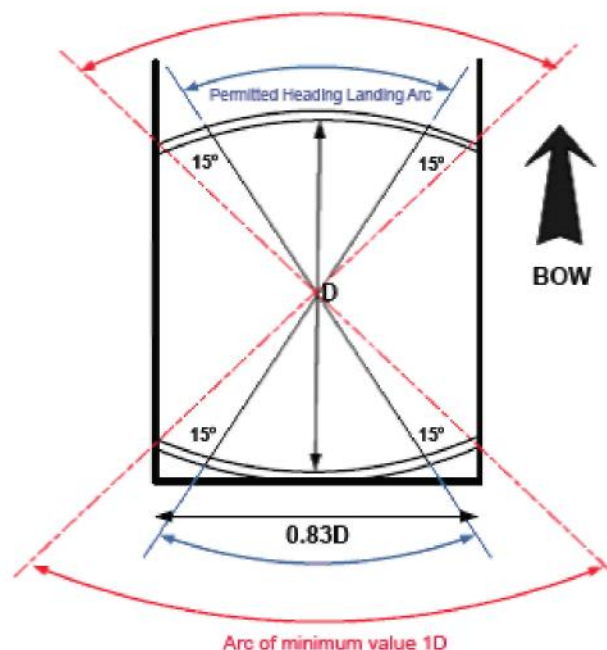
applied if necessary.

3.2.3 Size of Landing Area and Obstacle Protected Surfaces

For any particular type of single main rotor helicopter, the helicopter landing area should, wherever possible, be sufficiently large to contain a circle of diameter D equal to the largest dimension of the helicopter when the rotors are turning. This D circle should be totally unobstructed (see Table 1 for D values). Due to the actual shape of most helicopter landing areas the D circle will be 'imaginary' but the helicopter landing area shape should be capable of accommodating such a circle within its physical boundaries. It is possible to reduce the width to a value equivalent of $0.83D$ but the longitudinal length must be at least equivalent to $1.0D$.

- 3.2.3.1 For operations with limited touchdown directions, contain an area within which can be accommodated two opposing arcs of a circle with a diameter of not less than $1D$ in the helicopter's longitudinal direction. The minimum width of the landing area shall be not less than $0.83D$. In such arrangements of landing areas, the yacht will need to be manoeuvred to ensure that the relative wind is appropriate to the direction of the helicopter touchdown heading. The touchdown heading of the helicopter is limited to the angular distance subtended by the $1D$ arcs headings, minus 15 degrees at each end of the arc. See diagram below.

Permitted Landing Headings for Limited Heading Operations



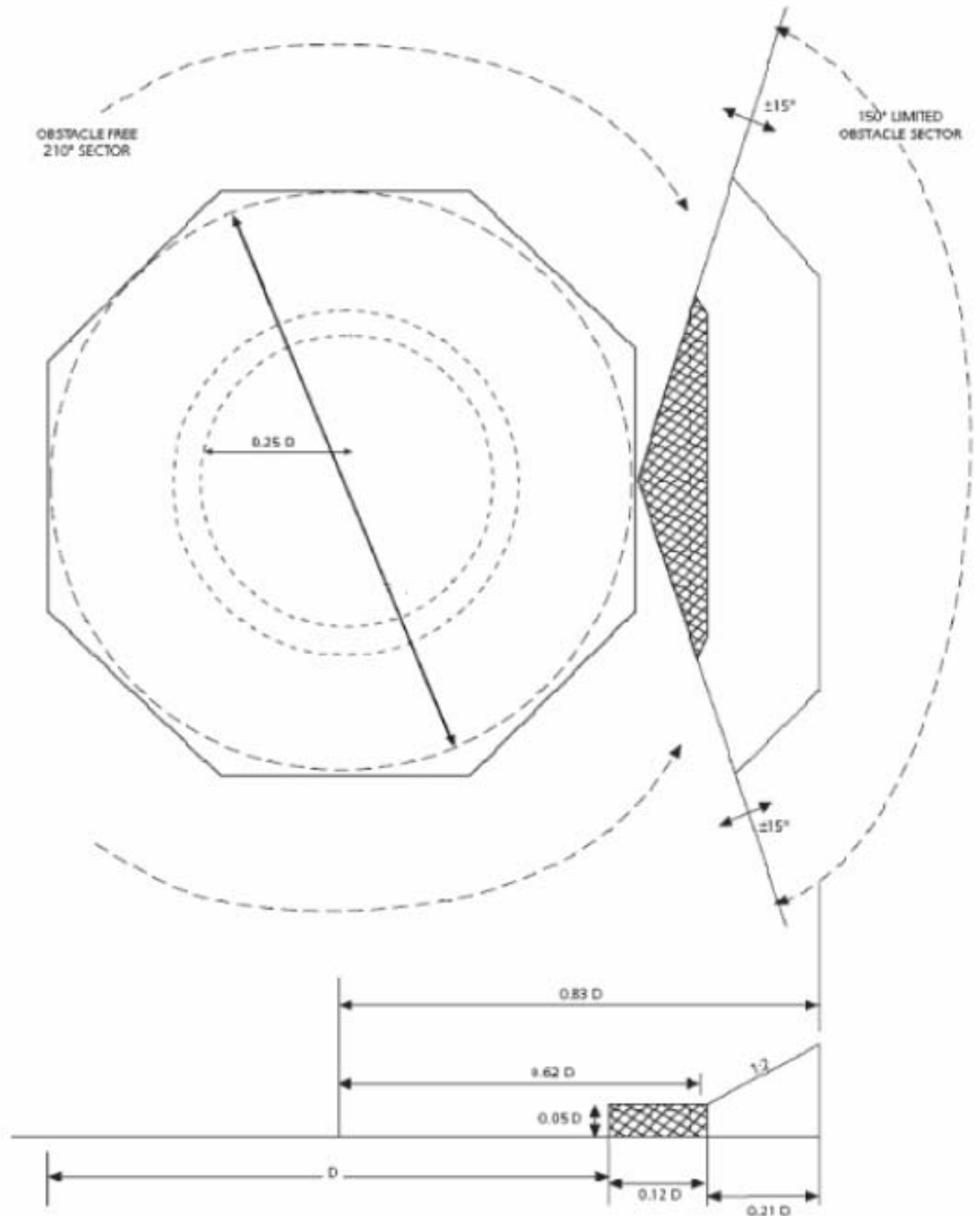
- 3.2.3.2 From any point on the periphery of the above mentioned D circle an obstacle-free approach and take-off sector should be provided which totally encompasses the safe landing area (and D circle) and which extends over a sector of at least 210° . Within this sector, from the periphery of the landing area and out to a distance that will allow for an unobstructed departure path appropriate to the helicopter that the landing area is intended to serve, only the following items may exceed the height of the landing area, but should not do so by more than 250 millimetres (no infringements within the D Circle):

- the guttering (associated with the requirements in paragraph 3.2.4.2);
- the lighting required by paragraph 3.7;
- the foam monitors;
- those handrails and other items associated with the landing area which are incapable of complete retraction or lowering for helicopter operations.

3.2.3.3 The bisector of the 210° obstacle free sector (OFS) should normally pass through the centre of the D circle. The sector may be 'swung' by up to 15° as shown in Figure 1 below. Acceptance of the 'swung' criteria will normally only be applicable to existing vessels.

3.2.3.4 The diagram at Figure 1 shows the extent of the two segments of the 150° Limited Obstacle Sector (LOS) and how these are measured from the centre of the (imaginary) 'D' Circle and from the perimeter of the safe landing area (SLA). This diagram assumes, since helicopter landing areas are designed to the minimum requirement of accommodating a 1 'D' Circle, that the 'D' Circle perimeter and SLA perimeter are coincidental. No objects above 0.05D are permitted in the first (hatched area in Figure 1) segment of the LOS. The first segment extends out to 0.62D from the centre of the 'D' Circle, or 0.12D from the SLA perimeter marking. The second segment of the LOS, in which no obstacles are permitted within a rising 1:2 slope from the upper surface of the first segment, extends out to 0.83D from the centre of the 'D' Circle, or a further 0.21D from the edge of the first segment of the LOS. The exact point of origin of the LOS is assumed to be at the periphery of the 'D' Circle.

Figure 1 - Obstacle Limitation showing position of Aiming Circle



Drawing not to scale.

- 3.2.3.5 Some helicopter landing areas are able to accommodate a SLA which covers a larger area than the declared 'D' value; a simple example being a rectangular deck with the minor dimension able to contain the 'D' Circle. In such cases it is important to ensure that the origin of the LOS (and OFS) is at the SLA perimeter as marked by

the perimeter line. Any SLA perimeter should guarantee the obstacle protection afforded by both segments of the LOS. The respective measurements of $0.12D$ from the SLA perimeter line, plus a further $0.21D$ are to be applied. On these larger decks there is thus some flexibility in deciding the position of the perimeter line and SLA in order to meet the LOS requirements and when considering the position and height of fixed obstacles. Separating the origin of the LOS from the perimeter of the 'D' Circle in Figure 1 and moving it to the right of the page will demonstrate how this might apply on a rectangular SLA.

- 3.2.3.6 The extent of the LOS segments will, in all cases, be lines parallel to the SLA perimeter line and follow the boundaries of the SLA perimeter (see Figure 1 above). Only in cases where the SLA perimeter is circular will the extent be in the form of arcs to the 'D' circle. However, taking the example of an octagonal SLA as drawn at Figure 1, it would be possible to replace the angled corners of the two LOS segments with arcs of $0.12D$ and $0.33D$ centred on the two adjacent corners of the SLA; thus cutting off the angled corners of the LOS segments. If these arcs are applied they should not extend beyond the two corners of each LOS segment so that minimum clearances of $0.12D$ and $0.33D$ from the corners of the SLA are maintained. Similar geometric construction may be made to a square or rectangular SLA but care should be taken to ensure that the LOS protected surfaces minima can be satisfied from all points on the SLA perimeter.

3.2.4 Landing Area Surface

- 3.2.4.1 The landing area should have an overall coating of non-slip material and all markings on the surface of the landing area should be made with the same non-slip materials. Whilst extruded section or grid construction aluminium (or other) decks may incorporate adequate non-slip profiles in their design, it is preferable that they are also coated with a non-slip material unless adequate friction properties have been designed into the construction. It is important that the friction properties exist in all directions. Over-painting friction surfaces on such designs may compromise the friction properties. Recognised surface friction material is available commercially.
- 3.2.4.2 Helicopter landing areas should be cambered to a maximum gradient of 1:100. Any distortion of the helicopter landing area surface due to, for example, loads from a helicopter at rest should not modify the landing area drainage system to the extent of allowing spilled fuel to remain on the deck. A system of guttering should be provided around the perimeter to prevent spilled fuel from falling on to other parts of the vessel and to conduct the spillage to an appropriate drainage system. The capacity of the drainage system should be sufficient to contain the maximum likely spillage of fuel on the deck. The calculation of the amount of spillage to be contained should be based on an analysis of helicopter type, fuel capacity, typical fuel loads and uplifts. The design of the drainage system should preclude blockage by debris. The helicopter landing area should be properly sealed so that spillage will only route into the drainage system.
- 3.2.4.3 For operations in adverse weather conditions a tautly-stretched rope netting should be provided to aid the landing of helicopters with wheeled undercarriages. The intersections should be knotted or otherwise secured to prevent distortion of the mesh. It is preferable that the rope be 20 mm diameter sisal, with a maximum

mesh size of 200 mm. The rope should be secured every 1.5 metres round the landing area perimeter and tensioned to at least 2225 N. Netting made of material other than sisal may be considered but netting should not be constructed of polypropylene type material which is known to rapidly deteriorate and flake when exposed to weather. As a general rule, it should not be possible to raise any part of the net by more than approximately 250 mm above the helicopter landing area surface when applying a vigorous vertical pull by hand. The location of the net should ensure coverage of the area of the aiming circle but should not cover the helicopter landing area identification marking or 't' value markings. Some nets may require modification to outboard corners so as to keep the identification marking uncovered. In such circumstances the dimensions given in Table 2 below may be modified.

- 3.2.4.4 There are three sizes of netting as listed below in Table 2. The minimum size depends upon the type of helicopter for which the landing area is to be used as indicated in Table 1. Sizes are presented here for guidance only and nets of other sizes may be acceptable providing arrangements cover the whole of the aiming circle without obscuring the landing area identification markings.

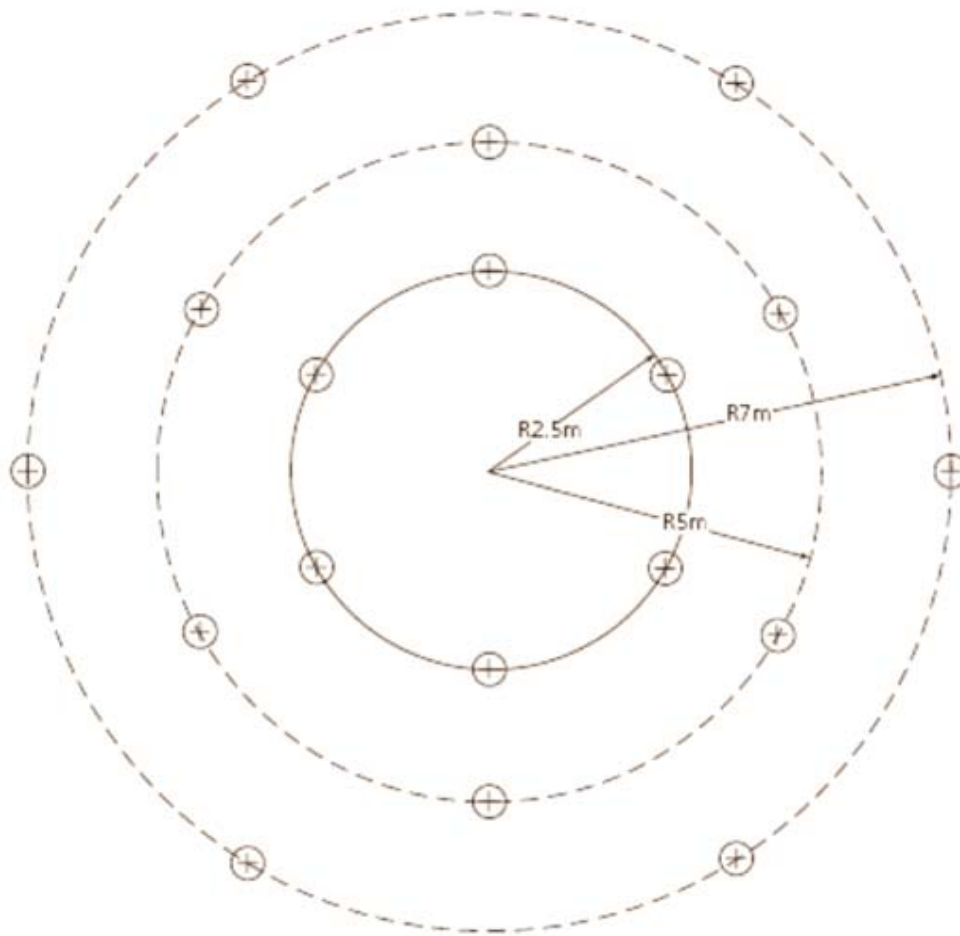
Table 2 - Helicopter Deck Netting

Small	9 metres by 9 metres
Medium	12 metres by 12 metres
Large	15 metres by 15 metres

3.3 Helicopter Tie-Down Points

- 3.3.1 Sufficient flush-fitting (when not in use) or removable semi-recessed tie-down points should be provided for securing the maximum sized helicopter for which the helicopter landing area is designed. They should be so located and be of such strength and construction to secure the helicopter when subjected to expected weather conditions. They should also take into account the inertial forces resulting from the movement of the vessel.
- 3.3.2 Tie-down rings should be compatible with the dimensions of tie-down strop attachments. Tie-down rings and strops should be of such strength and construction so as to secure the helicopter when subjected to expected weather conditions. The maximum bar diameter of the tie-down ring should be compatible with the strop hook dimension of the tie down strops carried by the helicopter operator.
- An example of a suitable tie-down configuration is shown at Figure 3. The Aviation Inspection Body or helicopter operator will provide guidance on the configuration of the tie-down points for specific helicopter types.

Figure 3 Example of Suitable Tie-down Configuration



Notes:

1. The tie-down configuration should be based on the centre of the Aiming Circle marking.
2. Additional tie-downs will be required in a parking area.
3. The outer circle is not required for 'D' values of less than 22.2m.

3.4 Safety Net

- 3.4.1 Safety nets for personnel protection should be installed around the landing area where there is a danger of personnel falling overboard. This should be looked at on an individual basis and a suitable risk assessment conducted. Where adequate structural protection against falls exists or adequate helideck procedures are in place with an appropriate risk assessment conducted and approved by the Administration, then safety nets may be omitted. If fitted, the netting used should be of a flexible nature, with the inboard edge fastened level, just below the edge of the helicopter landing area. The net itself should extend 1.5 metres in the horizontal plane and be arranged so that the outboard edge is not above the level of the landing area so that it has an upward and outward slope of at least 10°. It may be possible to incorporate dropped rails in place of a safety net but the dimensions and guidance above pertaining to safety net should be adhered to.

3.5 Access Points

- 3.5.1 Many helicopters have passenger access on one side only and helicopter landing orientation in relation to landing area access points becomes important because it is necessary to ensure that embarking and disembarking passengers are not required to pass around the helicopter tail rotor, or under the front of the main rotor of those helicopters with a low profile rotor, should a 'rotors-running turn-round' be conducted.
- 3.5.2 There should be a minimum of two access/ egress routes to the helicopter landing area- these should be 180° apart. The arrangements should be optimised to ensure that, in the event of an accident or incident on the helicopter landing area, personnel will be able to escape upwind of the landing area. Adequacy of the emergency escape arrangements from the helicopter landing area should be included in any evacuation, escape and rescue analysis for the vessel, and may require a third escape route to be provided.
- 3.5.3 Where foam monitors are co-located with access points, care should be taken to ensure that no monitor is so close to an access point as to cause injury to escaping personnel by operation of the monitor in an emergency situation.
- 3.5.4 Where handrails associated with landing area access/ escape points exceed the height limitations given at paragraph 3.2.3.2 and 3.2.3.4 they should be retractable, collapsible or removable. When retracted, collapsed or removed the rails should not impede access/ egress. Handrails which are retractable, collapsible and removable should be painted in a contrasting colour scheme. Procedures should be in place to retract, collapse, or remove them prior to helicopter arrival. Once the helicopter has landed, and the crew has indicated that passenger movement may commence, the handrails may be raised and locked in position. The handrails should be retracted, collapsed, or removed again prior to the helicopter taking-off. Where anti-collision lights are utilised, the helicopter crew will ensure they are switched off before the movement of passengers and/or freight takes place.

3.6 Visual Aids

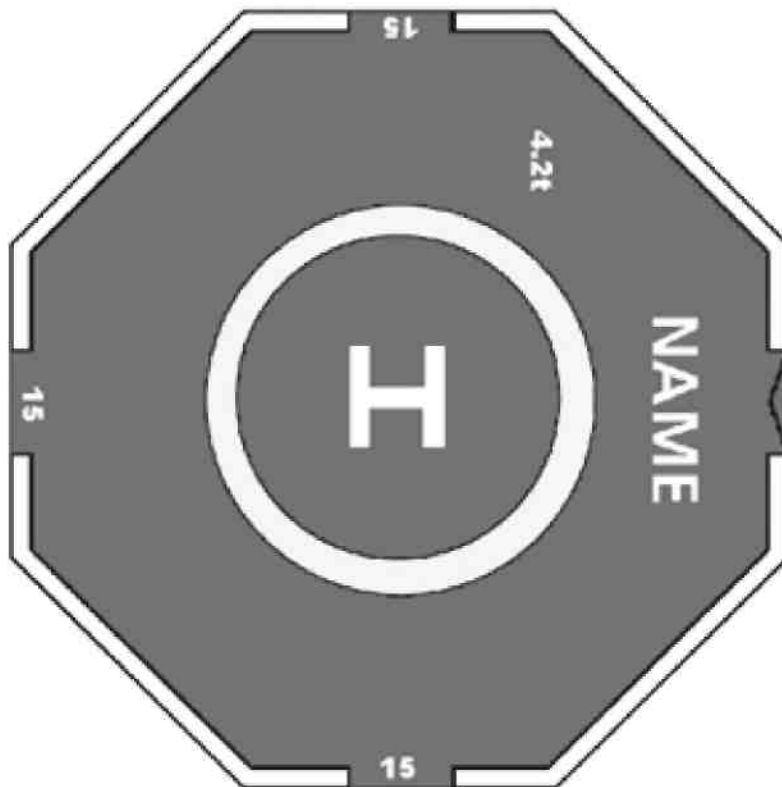
- 3.6.1 The following sections outline the requirements for helicopter landing area markings which should be permanently painted on the deck. Plans of the marking arrangements including dimensions should be submitted to the Aviation Inspection Body for approval.
- 3.6.2 Helicopter landing area perimeter line marking and lighting serves to identify the limits of the Safe Landing Area (SLA) for day and night operations.
- 3.6.3 A wind direction indicator (windsock) should be provided during helicopter operations and located so as to indicate the clear area wind conditions at the vessel location. It is often inappropriate to locate the windsock as close to the helicopter landing area as possible where it may compromise obstacle protected surfaces, create its own dominant obstacle or be subjected to the effects of turbulence from structures resulting in an unclear wind indication. The windsock should be illuminated for night operations.

3.6.4 Helicopter Landing Area Markings (See Figure 4 Below)

For the smallest landing areas (typically <16m) it may be necessary to reduce the size of the helideck markings appropriately. In such circumstances, the Aviation Inspection Body should be consulted as soon as possible.

The colour of the helicopter landing area should where possible be a contrasting colour to the rest of the vessel's deck. The perimeter of the SLA should be clearly marked with a painted line 0.3 metres wide in a contrasting colour to the helideck.

Figure 4 - Markings (Single Main Rotor Helicopters)



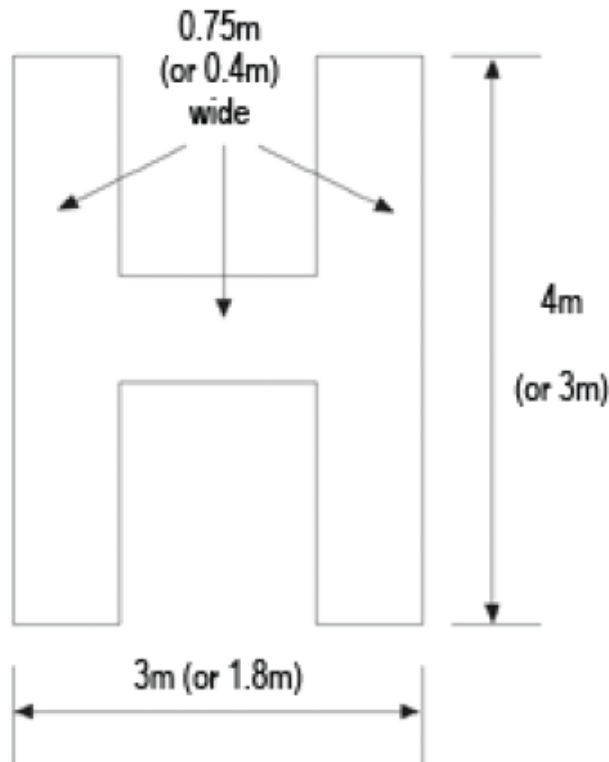
3.6.4.1 The light grey colour of aluminium may be acceptable in specific helicopter landing area applications where these are agreed with the Aviation Inspection Body. This should be discussed in the early design phase. In such cases the conspicuity of the helicopter landing area markings may need to be enhanced by, for example, outlining the deck marking lines and characters with a thin black line. Alternatively, conspicuity may be enhanced by overlaying white markings on a painted black background.

3.6.4.2 A maximum allowable mass marking should be marked on the helicopter landing area in a position which is readable from the preferred final approach direction i.e. towards the obstacle-free sector origin. The marking should consist of a two or three digit number expressed to one decimal place rounded to the nearest 100 kg and followed by the letter 't' to indicate the allowable helicopter weight in tonnes (1000 kg). The height of the figures should be 0.9 metres with a line width of approximately 0.12 metres and be in a colour which contrasts with the helicopter landing area surface (preferably white: avoid black or grey).

3.6.4.3 An aiming circle (touchdown / positioning marking) for each helicopter landing area should be provided as follows: (see Figures 4 and 5).

- 3.6.4.3.1 On smaller helicopter landing areas with a D value up to and including 16.00m and for bow-mounted helicopter landing areas the aiming circle should be concentric with the helicopter landing area centre to ensure maximisation of space all around for safe personnel movement and optimisation of the visual cueing environment. On larger areas with a D-value greater than 16.00m, the centre of the aiming circle should be displaced 0.1 D from the centre of the D circle towards the outboard edge of the helicopter landing area along the bisector of the obstacle-free sector in order to achieve an increased safety margin for tail rotor clearance. The marking should be a circle with an inner diameter of 0.5 times the certificated D-value of the helicopter landing area and a line width of not less than 0.5m for landing areas with a D-Value up to and including 16.00m and not less than 1.0m for landing areas with a D-Value greater than 16.00m. The circle should be in a contrasting colour to the helideck.
- 3.6.4.3.2 On those decks where the aiming circle is concentric with the centre of the D circle or SLA, the need for some mitigation against concerns over tail rotor clearances should be considered; either by achieving more obstacle clearance in the 150° LOS or by adopting appropriate operational procedures (e.g. vessel to provide relative wind from beam or stern).
- 3.6.4.3.3 A "H" painted in a colour contrasting with the deck (preferably white) should be co-located with the aiming circle with the cross bar of the "H" lying along the bisector of the obstacle-free sector. The minimum H dimensions are shown in brackets for landing areas with a D-Value up to and including 16.00m, and without brackets for landing areas with a D-Value greater than 16.00m.

Figure 5 Dimensions of 'H'



3.6.4.3.4 Where the obstacle-free sector has been swung in accordance with Section 3 paragraph 3.2.3.3 the positioning of the aiming circle and "H" should comply with the normal unswung criteria. The "H" should, however, be orientated so that the bar is parallel to the bisector of the swung sector.

3.7 Lighting

- 3.7.1 The safe landing area (SLA) should be delineated by green perimeter lights visible omni directionally from on or above the landing area. These lights should be above the level of the deck but should not exceed the height limitations in Section 3 paragraph 3.2.3.2. The lights should be equally spaced at intervals of not more than three metres around the perimeter of the SLA, coincident with the white delineating the perimeter (see para 3.6.2 and 3.6.4).
- 3.7.2 In the case of square or rectangular decks there should be a minimum of four lights along each side including a light at each corner of the safe landing area. The 'main beam' of the green perimeter lights should be of at least 30 candelas intensity (the full vertical beam spread specification is shown in Table 3). Flush fitting lights may be used at the inboard (150° LOS origin) edge of the SLA.
- 3.7.3 Where the declared D-value of the helicopter landing area is less than the physical helicopter landing area, the perimeter lights should delineate the limit of the safe landing area (SLA) so that the helicopter may land safely by reference to the perimeter lights on the limited obstacle sector (LOS -150°) 'inboard' side of the helicopter landing area without risk of main rotor collision with obstructions in this

sector. By applying the LOS clearances (given in Section 3 paragraph 3.2.3.4) from the perimeter marking, adequate main rotor to obstruction separation should be achieved. Touchdown for normal landing should be made by reference to the aiming circle. On helicopter landing areas where insufficient clearance exists in the LOS, a suitable temporary arrangement to modify the lighting delineation of the SLA, where this is found to be marked too generously, should be agreed with the Aviation Inspection Body by replacing existing green lights with red lights of 30 candelas intensity around the 'unsafe' portion of the SLA (the vertical beam spread characteristics for red lights should also comply with Table 3). The perimeter line, however, should be repainted in the correct position immediately and the area of deck between the old and new perimeter lines should be painted in a colour that contrasts with the main helicopter landing area. Use of flush fitting lights in the 150° sector perimeter will provide adequate illumination while causing minimum obstruction to personnel and equipment movement.

Table 3: ISO-candela diagram for helicopter landing area perimeter lights

Elevation		Intensity
0° - 90°		60cd max*
>20° - 90°		3cd min
>10° - 20°		15cd min
0° - 10°		30cd min
-180°	Azimuth	+180°

- 3.7.4 The whole of the safe landing area (SLA) should be adequately illuminated if intended for night use. In the past, owners and operators have sought to achieve compliance by providing deck level floodlights around the perimeter of the SLA and/or by mounting floodlights at an elevated location 'inboard' from the SLA, e.g. floodlights angled down from the top of a bridge or hangar. Experience has shown that floodlighting systems, even when properly aligned, can adversely effect the visual cueing environment by reducing the conspicuity of helicopter landing area perimeter lights during the approach, and by causing glare and loss of pilots' night vision during hover and landing. Furthermore, floodlighting systems often fail to provide adequate illumination of the centre of the landing area leading to the so-called 'black-hole effect'. It is essential therefore, that any floodlighting arrangements take full account of these problems.
- 3.7.5 The floodlighting should be arranged so as not to dazzle the pilot and, if elevated and located off the landing area clear of the LOS, the system should not present a hazard to helicopters landing and taking off from the helicopter landing area. All floodlights should be capable of being switched on and off at the pilot's request. Setting up of lights should be undertaken with care to ensure that the issues of adequate illumination and glare are properly addressed and regularly checked. Adequate shielding of 'polluting' light sources can easily be achieved early on in the design stage, but can also be implemented on existing installations using simple measures. Temporary working lights which pollute the helicopter landing area lighting environment should be switched off during helicopter operations.
- 3.7.6 It is important to confine the helicopter landing area lighting to the landing area, since any light overspill may cause reflections from the sea. The floodlighting controls should be accessible to, and controlled by, the officer(s) in charge of the landing area operations team(s).

- 3.7.7 In seeking to develop an alternative system to conventional floodlighting, it has been demonstrated that arrays of segmented point source lighting (ASPSL) in the form of encapsulated strips of light emitting diodes (LEDs) can be used to illuminate the aiming circle and landing area identification marking ('H'). This arrangement has been found to provide the visual cues required by the pilot earlier on in the approach and more effectively than by using floodlighting, and without the disadvantages associated with floodlighting such as glare. Large yacht owners are encouraged to consider appropriate systems in lieu of conventional floodlighting..
- 3.7.8 The quoted intensity values for lights apply to the intensity of the light emitted from the unit when fitted with all necessary filters and shades.
- 3.7.9 The emergency power supply of the vessel should include the helicopter landing area lighting. Any failures or outages should be reported immediately to the helicopter pilot/operator. The lighting should be fed from an Uninterrupted Power Supply (UPS) system capable of providing the required load for at least 15 minutes. This can be a stand alone supply or be an additional loading requirement for the vessel's emergency power supplies.

3.8 Obstacles – Marking and Lighting

- 3.9.1 Fixed obstacles identified as a hazard to helicopters by the helicopter pilot/ operator, or by the Aviation Inspection Body, should be clearly defined in any operations manual (ISM procedure or Yacht Aviation File).
- 3.9.2 Omnidirectional red lights of at least 10 candelas intensity should be fitted at suitable locations to provide the helicopter pilot with visual information on the proximity and height of objects which are higher than the landing area and which are close to it or to the LOS boundary. Objects which are more than 15 metres higher than the landing area should be fitted with intermediate red lights of the same intensity spaced at 10 metre intervals down to the level of the landing area (except where such lights would be obscured by other objects).
- 3.9.3 An omnidirectional red light of intensity 25 to 200 candelas should be fitted to the highest point of the vessel. Where this is not practicable, the light should be fitted as near to the extremity as possible.
- 3.9.4 Red lights should be arranged so that the location of the objects which they delineate are visible from all directions above the landing area.
- 3.9.5 The emergency power supply of the yacht should include all forms of obstruction lighting. Any failures or outages should be reported immediately to the helicopter pilot/ operator. The lighting should be fed from an Uninterrupted Power Supply (UPS) system capable of providing the required load for at least 15 minutes. This can be a stand alone supply or be an additional loading requirement for the yacht's emergency power supplies.

4 Helicopter Landing Area Operational Standards

4.1 Helicopter Landing Area Movement

- 4.1.1 Yachts experience dynamic motions due to wave action which represent a potential hazard to helicopter operations. Operational limitations based on limited pitch, roll, heave, may therefore be applied to the landing area by the Aviation Inspection Body. Helicopter landing area downtime due to excessive deck motion can be minimised by careful consideration of the location of the landing area on the vessel at the design stage. Guidance on helicopter landing area location and how to assess the impact of the resulting motion on operability is presented in UK CAA Paper 2004/02 "Helideck Landing Area Design Considerations – Environmental Effects" which is available on the Publications section of the UK CAA website at www.caa.co.uk. Designers of helicopter landing areas should consult UK CAA Paper 2004/02 at the earliest possible stage of the design process.
- 4.1.2 The helicopter landing area will be limited to receiving helicopters in the conditions agreed by the Aviation Inspection Body.
- 4.1.3 It is necessary for details of pitch, roll, and heave motions to be recorded on the vessel prior to, and during, all helicopter movements. Pitch and roll reports to helicopters should include values, in degrees, about both axes of the true vertical datum (i.e. relative to the true horizon) and be expressed in relation to the vessel's head. Roll should be expressed in terms of 'port' and 'starboard'; pitch should be expressed in terms of 'up' and 'down'; heave should be reported in a single figure, being the total heave motion of the helicopter landing area rounded up to the nearest metre. Heave is to be taken as the vertical difference between the highest and lowest points of any single cycle of the helicopter landing area movement. The parameters reported should be the maximum peak levels recorded during the ten minute period prior to commencement of helicopter operations.
- 4.1.4 The helicopter pilot is concerned, in order to make vital safety decisions, with the amount of 'slope' on, and the rate of movement of, the helicopter landing area surface. It is therefore important that the roll values are only related to the true vertical and do not relate to any 'false' datum (i.e. a 'list') created, for example, by anchor patterns or displacement. There are circumstances in which a pilot can be aided by amplification of the heave measurement by reference to the time period (seconds) in terms of 'peak to peak'.
- 4.1.5 Reporting Format:
A standard radio message should be passed to the helicopter which contains the information on helicopter landing area movement in an unambiguous format. This will, in most cases, be sufficient to enable the helicopter crew to make safety decisions. Should the helicopter crew require other motion information or amplification of the standard message, the crew will request it (for example, yaw and heading information).
Standard report example:
Situation: The maximum vessel movement (over the preceding ten minute period) about the roll axis is 1° to port and 3° to starboard (i.e. this vessel may have a permanent list of 1° to starboard and is rolling a further 2° either side of this 'false' datum). The maximum vessel movement (over the preceding ten minute period)

about the pitch axis is 2° up and 2° down. The maximum recorded heave amplitude over a single cycle (over the preceding ten minute period) is 1.5 metres.

Report: *'Roll 1° left and 3° right; Pitch 2° up and 2° down; heave two metres'.*

- 4.1.6 It is important to ensure that the deck motions reported to the helicopter pilot relate to the motion at the helicopter landing area. Very often pitch, roll and heave measurements are taken from a source far removed from the helicopter landing area location. If this source should happen to be midships and the helicopter landing area is located, for example, high up on the bow, the actual heave (and, in future accelerations,) at the helicopter landing area are likely to be far in excess of the source measurement. Software packages are available to provide helicopter landing area location corrected movement data from a source at a different location. Ideally, deck motion measuring equipment should be located at (attached to the underside of) the helicopter landing area.

4.2 Aircraft Operational Data – Reporting and Recording

- 4.2.1 In addition to the data covered by paragraph 4.1.3 above, it is essential that yachts are provided with means of ascertaining and reporting at any time:
- .1 the wind speed and direction using aviation approved equipment to ICAO standard;
 - .2 the air temperature;
 - .3 the barometric pressure using aviation approved equipment to ICAO standard;
 - .4 the visibility, cloud base and cover; and
 - .5 the sea state.
- 4.2.2 Air temperature and barometric pressure should be measured by conventional instruments approved to ICAO standards. An indication of wind speed and direction will be provided visually to the pilot by the provision of a windsock coloured so as to give maximum contrast with the background. However, for recording purposes, an anemometer positioned in an unrestricted airflow is required. A second anemometer, located at a suitable height and position can give useful information on wind velocity at hover height over the helicopter landing area in the event of turbulent or deflected airflows over the deck. Visibility, cloud conditions, and sea state will normally be assessed by visual observations.
- 4.2.3 Measuring instruments used to provide the data listed in paragraph 3.1 above should be periodically calibrated in accordance with the manufacturer's recommendations in order to provide continuing accuracy.

4.3 Helicopter Landing Area Operations Manual and General Requirements

- 4.3.1 The maximum helicopter weight and 'D' value for which the helicopter landing area has been designed and the maximum size and weight of helicopter for which the vessel is certificated should be included in the Helicopter Landing Area Operations Manual and Landing Area Certificate. The extent of the obstacle-free area should also be stated and reference made to any helicopter landing area operating limitation imposed by helicopter operators or the Aviation Inspection Body as a result of non-compliances. Details of non-compliances themselves should also be listed.

4.4 Helicopter Operations Support Equipment

- 4.4.1 Provision should be made for equipment needed for use in connection with helicopter operations including:
- .1 chocks and tie-down strops;
 - .2 heavy-duty, calibrated, accurate scales for passenger baggage and freight weighing;
 - .3 a suitable power source for starting helicopters if helicopter shut-down is seen as an operational requirement; and
 - .4 equipment for clearing the helicopter landing area of snow and ice and other contaminants.
- 4.4.2 Chocks should be compatible with helicopter undercarriage/ wheel configurations. Helicopter operating experience has shown that the most effective chock for use on helicopter landing areas is the 'rubber triangular' or 'single piece fore and aft' type chocks may be used as long as they are suited to all helicopters likely to operate to the helicopter landing area. The 'rubber triangular' chock is generally only effective on decks without nets.
- 4.4.3 For securing helicopters to the helicopter landing area only adjustable tie-down strops should be used.

4.5 Radio Communication Equipment

- 4.5.1 At least one aeronautical frequency radio licensed by the Administration responsible for the airspace in which the helicopter is intended to operate when approaching the vessel should be fitted on board the vessel.
- 4.5.2 Radio operators of offshore aeronautical radio stations are required to hold a Certificate of Competence. Further information can be found in CAA Publication CAP 452 'Aeronautical Radio Station Operator's Guide'.

4.6 Risk assessment

- 4.6.1 A full risk assessment should be carried out addressing all the operations anticipated with helicopter operations on board a yacht. This should include
- Landing and securing
 - Preparing for take off and taking off
 - Unloading passengers, baggage and stores
 - Refuelling
 - Securing
 - Safe movement of personnel
- 4.6.2 The risk assessment should be submitted to the Administration. The risk assessment to address the safe movement of personnel on the helicopter landing area should also be submitted for approval by the Aviation Inspection Body to demonstrate that safe passenger movement may take place without endangering the safety of the helicopter or the life of personnel on-board. The risk assessment of passenger movement described above should be used to demonstrate full

mitigation of associated risks should non-fitment of a safety net as described in 3.4.1 above be requested.

4.7 Crew Training

- 4.7.1 The yacht crew, as appropriate, should be trained to deal with normal helicopter movements as well as abnormal and emergency situations. The training should include dealing with fires and other possible emergency scenarios.
- 4.7.2 Specific training should be provided to the Helicopter Landing Officer (HLO) by an appropriate training provider. Where there are refueling facilities on board, at least one member of crew should be trained in the handling of aviation (JetA1) fuel and associated quality control procedures.
- 4.7.3 Training of crewmembers and the HLO should include both practical and theoretical sessions and, wherever possible, practical training should be carried out on board by suitably trained personnel.
- 4.7.4 The crew should practice dealing with the possible emergency scenarios through regular drills on board with an annual inspection by an external auditor.
- 4.7.5 The emergency scenarios should be addressed in the yacht's contingency plans and similar documents.

5 Example Inspection Checklist

5.1 General

The following checklist indicates in general terms the minimum number of helicopter landing area physical characteristics which the Administration considers should be examined during initial inspection and periodic surveys carried out by the Aviation Inspection Body to confirm that there has been no alteration or deterioration in condition.

5.2 Helicopter Landing Area Dimensions:

- .1 D-value as measured;
- .2 Declared D-value;
- .3 Deck shape;
- .4 Scale drawings of deck arrangement.

5.3 Helicopter Landing Area Conditions:

- .1 Type of surface, condition, friction, contaminant free;
- .2 Fuel retention;
- .3 Deck landing area net;
- .4 Perimeter safety netting;
- .5 Tie-down points.

5.4 Environment:

- .1 Machinery exhausts;
- .2 Hot and cold gas emissions;
- .3 Presence of turbulence;

5.5 Obstacle Protected Surfaces (Minima):

- .1 Obstacle free sector (210°);
- .2 Limited obstacle sector (150°);
- .3 Note if .1 above is swung from normal axis.

5.6 Visual Aids:

- .1 Deck surface;
- .2 General condition of painted markings;
- .3 Location of H;
- .4 Aiming circle;
- .5 Maximum allowable weight marking;
- .6 Conspicuity of painted markings;
- .7 Wind indicator;
- .8 Perimeter lighting;
- .9 Floodlighting;
- .10 Obstruction lighting;
- .11 Marking of dominant obstacles;
- .12 Shielding of working lights (helicopter landing area light pollution).

5.7 Fuel System:

- .1 Jet A-1 installation;
- .2 Hose;
- .3 Earthing equipment;
- .4 Fuel Records.

5.8 Rescue and Fire Fighting Facilities

- .1 Principal agent
- .2 Complementary media
- .3 Rescue equipment
- .4 Personal protective equipment

5.9 Crew Training Certification

- .1 Training records

6 Helicopter Hangar Facilities

6.1 General

- 6.1.1 Helicopter hangar arrangements on board should be in accordance with requirements for helicopter refueling and hangar facilities contained within [SOLAS II-2, Regulation 18.7](#). Helicopter fueling facilities on board should be in accordance with requirements for helicopter refueling and hangar facilities in [SOLAS II-2, Regulation 18.7](#). In addition, the requirements outlined in this section of the Code should be complied with in full unless a safety case is made to, and approved by, the Administration, based on an alternative arrangement according to Classification Society Rules or guidance from the Aviation or Petro-Chemical industries. The requirements in this section are based upon the use of helicopters run on Jet A1 fuel. When developing hangar arrangements, consideration should be given to the type of fuel on which the helicopter to be stowed is run.
- 6.1.2 The following plans and particulars are to be submitted to the Classification Society and Administration for approval:
- .1 Hangar general arrangement and structure;
 - .2 Helicopter lift, hoist, and movement arrangements (if appropriate);
 - .3 Structural fire protection;
 - .4 Fire detection and extinguishing arrangements;
 - .5 Ventilation arrangements.

6.2 Hangar Design Considerations

- 6.2.1 Helicopter hangar(s) on board should be positioned, as far as is practicable, so as to preclude excessive movement and acceleration forces. Guidance on this should be sought from the helicopter manufacturer / operator. Where possible, the positioning of hangar(s) should be determined through the use of computer modelling and/ or wind tunnel testing (refer also to 3.2.2 above).
- 6.2.2 The perimeter of hangar(s) and any associated entrance or hatchway inclusive of helicopter lift arrangements should provide a stowage / maintenance box allowing for a minimum 0.5m clearance at any point around the helicopter and rotors when the helicopter is in its stowed condition.
- 6.2.3 Where appropriate CCTV should be used to ensure visibility of the aircraft at all times.

7 Helicopter Fueling Facilities

7.1 General

This section outlines the requirements for the storage and transfer of Jet A1 fuel. When developing fuelling arrangements, consideration should be given to the type of fuel on which the helicopter to be operated is run. In addition, all facilities for the storage and handling of aviation fuels on board should be grade identified using the appropriate American Petroleum Industry (API) markings for the grade of fuel

used. Aviation fuel facilities should also be fully segregated from any other fuel system.

7.2 Refueling and defueling operational considerations should be agreed with the helicopter pilot/ operator and Aviation Inspection Body.

7.3 The following plans and particulars are to be submitted to the Aviation Inspection Body and Classification Society for approval:

- .1 Description of fuel with statement of minimum flash point (closed cup test);
- .2 Arrangement of fuel storage and piping;
- .3 Arrangements for drainage, ventilation and sounding of spaces adjacent to storage tanks;
- .4 Details and approval certification of pumping units;
- .5 Structural fire protection arrangements of all spaces to contain aviation fuel;
- .6 Fire detection and extinguishing arrangements;
- .7 Ventilation arrangements.

7.3 Attention is also drawn to section 14.1 above which addresses "Protection of spaces containing vehicles or craft with fuel in their tanks or lockers storing such fuels."

7.4 When developing operational procedures for the movement of aviation fuel onboard, the restricted use of radio frequency equipment including portable phones with regard to transmission sparks should be considered.

7.5 Storage of Aviation Fuel

7.5.1 Fuel storage tanks should be of baffle-free, stainless steel, cylindrical construction, located in a designated area as remote as practicable from machinery and accommodation spaces, and be suitably isolated from areas where there are sources of ignition.

7.5.2 Fuel storage tanks should be provided with an intrinsically safe level indicator fitted through the top of the tank, and a $\frac{3}{4}$ inch sampling valve at the bottom of the tank (low end) to allow for samples to be taken as per paragraph 7.8.3 of this section. The minimum slope of the tank to the sampling point should be 1:30.

7.5.3 The storage and handling area should be permanently marked. Instructions for filling fuel and, if appropriate, emptying fuel, should be posted in the vicinity of the filling area.

7.5.4 Tank ventilation (breather) pipes should be fitted with an approved vent head with pressure-vacuum valve, flame arrester, and desiccant. The vent outlet should be located no less than 2.3m above the weather deck in a safe position away from accommodation spaces, ventilation intakes and equipment that may constitute an ignition hazard. Particular attention should also be directed to the height of the tank vent and overflow with respect to the design head of the tank.

7.5.5 High level alarm arrangements should be provided to indicate when fuel storage tanks are close to being filled in excess of maximum operating levels. Alternative arrangements for tank venting may be accepted subject to approval from the Administration.

- 7.5.6 A coaming surrounding the fuel storage tanks, associated piping and the pumping unit should be provided. The height of this coaming should be at least 150 mm, so as to contain fuel spillage as well as fire extinguishing agents. Where the pumping unit is situated at a remote distance from the fuel storage tank, a separate coaming of the same minimum height should be provided around the pumping unit. For tanks forming an integral part of the vessel's structure, cofferdams with permanently fitted gas detectors should be provided as necessary to contain leakage and prevent contamination of the fuel. Also, it should be ensured that there is no common boundary between the fuel storage tank and accommodation or high fire risk spaces.
- 7.5.7 Arrangements for drainage from within the coaming area described in 7.5.6 above should be as follows.
- .1 Permanent piping and a suitable holding (waste) tank (compliant with 7.1 and 7.5) should be fitted so that drainage can be either led to the holding tank (for draining fuel) or discharged overboard (for draining water) through a three-way valve. No other valve should be permitted in the drain piping. The holding tank should be clearly labeled to distinguish between itself and the main storage tank.
 - .2 The cross sectional area of the drain pipe should be twice that of the storage tank outlet pipe.
 - .3 The area within the coaming should be sloped towards the drain pipe.
- 7.5.8 Drainage of cofferdam spaces should be entirely separate from the machinery space drainage arrangements. As far as is practicable, fuel sampling points should be low points on piping and should provide a "closed sampling" visi-jar system fitted with arrangements to prevent the spring-loaded valve from being locked in an open position.
- 7.5.9 Air pipes for the cofferdam space should be led to a point at least 2.3m above the weather deck through a safe space and fitted with an approved air pipe head fit for purpose and having a wire gauze diaphragm of corrosion resistant material.
- 7.5.10 Access to each cofferdam should be provided by at least two manholes from the open deck, each fitted with gas-tight manhole covers. Cofferdams should be cleaned prior to opening manhole covers, using an induced draught certified safe ventilation fan for a minimum of 20 minutes. A notice to this effect should be fitted to each manhole.

7.6 Fuel Pumping and Storage Tank Filling

- 7.6.1 All tank outlet valves and filling valves should be mounted directly onto the tank and be capable of being closed from a remote location outside the compartment in the event of a fire in the compartment. Ball valves are to be of the stainless steel, anti-static, fire tested type.
- 7.6.2 If more than one storage tank is fitted then fuel should be pumped through suitable filtration if it is to be transferred from one tank to another.
- 7.6.3 Filling arrangements for fuel tanks should be through closed piping systems with

outlet ends configured to reduce turbulence and foaming of the fuel. If the storage tank(s) are filled from the top, the filler pipe should pass through the tank to the bottom and terminate with a 90 degree bend so that fuel flows over the bottom of the tank to reduce the possibility of a build-up of static charge.

- 7.6.4 Pumping units should be easily accessible and capable of being controlled from both the fuel station and a position remote from the fuel station. The device to prevent over-pressurisation as required by [SOLAS II-2, Regulation 4.2.2.4](#) should be fitted with a relief valve to discharge either to the suction side of the pump(s) or to a holding tank complying with the arrangements of 7.5 of this section.
- 7.6.5 When not in use, fuel filling equipment should be stowed in a locker that is well ventilated and drained.
- 7.6.6 Suitable filtration arrangements in accordance with appropriate American Petroleum Industry (API) and British Energy Institute (or equivalent) standards should be provided to reduce the level of water and particulate contamination of the fuel to within the limits specified by the helicopter manufacturer. The minimum requirements are; delivery into storage through a filter water separator (FWS), filtration out of storage through filter water separator (FWS), filtration at the point of filling (e.g. on the helicopter landing area), via a filter monitor (FM). Filter vessels should be fitted with a differential pressure gauge and automatic air eliminator.
- 7.6.7 In general, all piping systems should be located clear of accommodation spaces, escape routes, embarkation stations and ventilation openings and should not pass through category A machinery spaces. However, where arrangements are such that piping has to pass through accommodation spaces, service spaces, escape routes, or embarkation stations double skinned piping is to be used or pipes should be enclosed in a cofferdam.
- 7.6.8 Means should be provided for keeping deck spills away from accommodation and service areas.
- 7.6.9 Drip trays for collecting replenishment oil residues in pipelines and hoses should be provided beneath pipe and hose connections in the manifold area. Drainage should be designed and constructed in order to avoid leakage overboard.
- 7.6.10 It is recommended that a "Y" strainer should be fitted on the pump suction to protect the pump itself.

7.7 Refueling and Defueling Helicopters

- 7.7.1 Refueling and defueling hoses should be of one continuous length, smooth bore, synthetic rubber construction, and semi-conducting, conforming to EN1361 type C or API standards. A hose end pressure controller should also be provided for fuelling hoses to prevent the possibility of the helicopter fuel tanks being subject to excessive pressure. Delivery Nozzles should be fitted with minimum 100 mesh strainer element, and in the case of gravity over-wing nozzles, they should be situated in the spout. Trigger mechanisms should not have hold-open ratchets.
- 7.7.2 Provision should be made to electrically bond the helicopter to the vessel prior to

commencement, and throughout the process of, any refueling and defueling procedures. The maximum resistance of such bonding systems should be less than 0.5 ohms.

- 7.7.3 Where appropriate CCTV should be used to ensure full view from the bridge of all helicopter refueling activities that would normally be hidden from view.

7.8 Prevention of Fuel Contamination

- 7.8.1 Materials and/or their surface treatment used for the storage and distribution of fuel should be selected such that they do not introduce contamination or modify the properties of the fuel. The use of copper or zinc compounds in fuel piping systems where they may come into contact with fuel is not permitted. Copper-nickel materials are permissible but should be limited to positions after filtration and water absorption equipment.
- 7.8.2 The location and arrangement of air pipes for fuel tanks are to be such that in the event of a broken vent pipe, this does not directly lead to ingress of seawater or rain water.
- 7.8.3 Fuel samples should be taken on a daily basis throughout the fuel handling, storage, and distribution process from the tank in use, all filter vessels, and at the hose end. Fuel samples should be recorded and kept for 24 hours in a 1 US Gallon glass jar then disposed of in the aviation fuel waste/ holding tank referred to in paragraph 7.5.7. A record should be kept of all fuel movements on board. Guidance on how to take fuel samples and record fuel movements may be obtained from Chapter 4 of UK CAA CAP 748 which is accessible via the UK CAA website www.caa.co.uk. Fuel in the holding tank may be passed to the main tank provided that suitable filtration in accordance with paragraphs contained within 7.6 and to the satisfaction of the aviation inspection body.
- 7.8.4 At least one member of crew on-board the vessel should be trained in the handling of aviation (JetA1) fuel and associated quality control procedures. This person(s) should oversee all operations involving the movement of aviation fuel on-board. Further guidance on such training may be obtained from the fuel supplier, and marine aviation consultants.

7.9 Fuel Pumping Spaces/ Compartments

- 7.9.1 Where it is intended to install fuel transfer pumps for handling aviation fuel in a separate compartment, the pump room(s); should be totally enclosed and have no direct communication through, e.g. bilge piping systems and ventilation systems, with machinery spaces; should be situated adjacent to the fuel storage tanks; and should be provided with ready means of access from the weather deck.
- 7.9.2 Alarms and safety arrangements should be provided as indicated in 7.5.5 and Table 4, below.

Table 4 – Alarms

Item	Alarm	Note
Bulkhead gland temperature	High (See Note 1)	Any machinery item
Pump bearing and casing temperature	High (See Note 1)	Any machinery item
Bilge level	High	—
Hydrocarbon concentration	High (See Note 2)	> 10% LEL

Notes

1. The alarm signal is to trigger continuous visual and audible alarms in the pump room or the pump control station.
2. This alarm signal is to trigger a continuous audible and visual alarm in the pump room, pump control station and machinery control room.

7.9.3 A system for continuously monitoring the concentrations of hydrocarbon gases within the pump room should be fitted. Monitoring points are to be located in positions where potentially dangerous concentrations may be readily detected.

7.10 Ventilation

7.10.1 Fuel pump room(s), fuel storage room(s) and other closed spaces which contain fuel handling equipment, and to which regular access is required during cargo handling operations, are to be provided with permanent ventilation system(s) of the mechanical extraction type.

7.10.2 The ventilation system(s) should be capable of being operated from outside the compartment being ventilated and a notice should be fixed near the entrance stating that no person is to enter the space until the ventilation system has been in operation for at least 15 minutes.

7.10.3 The ventilation system(s) should be capable of 20 air changes per hour, based on the gross volume of the pump room or space.

7.10.4 Protection screens of not more than 13 mm square mesh should be fitted in outside openings of ventilation ducts, and ventilation intakes should be so arranged as to minimise the possibility of re-cycling hazardous vapours from any ventilation discharge opening. Vent exits are to be arranged to discharge upwards.

7.10.5 The ventilation should be interlocked to the lighting system (except emergency lighting) such that the pump room lighting may only come on when the ventilation is in operation. Failure of the ventilation system is not to cause the lighting to go out and failure of the lighting system is not to cause loss of the ventilation system.

7.11 Non-Sparking Fans for Hazardous Areas

7.11.1 The air gap between impeller and housing of ventilation fans should be not less than 0,1 of the impeller shaft bearing diameter or 2 mm whichever is the larger,

subject also to compliance with 7.3. Generally, however, the air gap need be no more than 13 mm.

- 7.11.2 The following combinations of materials are permissible for the impeller and the housing in way of the impeller:
- .1 Impellers and/or housings of non-metallic material, due regard being paid to the elimination of static electricity.
 - .2 Impellers and housings of non-ferrous metals.
 - .3 Impellers and housings of austenitic stainless steel.
 - .4 Impellers of aluminium alloys or magnesium alloys and a ferrous housing provided that a ring of suitable thickness of non-ferrous material is fitted in way of the impeller.
 - .5 Any combination of ferrous impellers and housings with not less than 13 mm tip clearance.
 - .6 Any combination of materials for the impeller and housing which are demonstrated as being spark proof by appropriate rubbing tests.
- 7.11.3 The following combinations of materials for impellers and housing are not considered spark proof and should not be permitted:
- .1 Impellers of an aluminium alloy or magnesium alloy and a ferrous housing, irrespective of tip clearance.
 - .2 Impellers of a ferrous material and housings made of an aluminium alloy, irrespective of tip clearance.
 - .3 Any combination of ferrous impeller and housing with less than 13 mm tip clearance, other than permitted by 7.3.
- 7.11.4 Electrostatic charges both in the rotating body and the casing should be prevented by the use of antistatic materials (i.e. materials having an electrical resistance between 5×10^4 ohms and 10^8 ohms), or special means should be provided to avoid dangerous electrical charges on the surface of the material.
- 7.11.5 Type approval tests on the complete fan should be carried out to the satisfaction of the Classification Society.
- 7.11.6 Protection screens of not more than 13 mm square mesh should be fitted in the inlet and outlet of ventilation ducts to prevent the entry of objects into the fan housing.
- 7.11.7 The installation of the ventilation units on board should be such as to ensure the safe bonding to the hull of the units themselves.

Part C, Section 2 - Submersibles

2.1 Applicability

- 2.1.1 This section outlines the minimum standards for operating submersibles from a yacht, and for the facilities on board yachts within the scope of this Code where operations of submersibles to/ from the yacht are required.
- 2.1.2 This section does not address the construction of the submersible or its operation in any detail. The operator of the submersible is responsible for ensuring that the requirements of the Administration with which the submersible is registered are met and that the laws of the State in whose waters the submersible is operated are complied with in full.
- 2.1.3 The operator should verify that the Administration with which the submersible is registered is acceptable to the Administration of the yacht.

2.2 General Considerations

- 2.2.1 The construction and operational standards of a submersible should meet the requirements of the Administration with which the submersible is registered, including the standards set by the applicable Classification Society, and should address the guidelines provided by the IMO, and industry organisations such as the International Marine Contractors Association.
- 2.2.2 The primary consideration is to ensure the safe launch, operation recovery and stowage of a submersible and the maintenance of the submersible and the associated support facilities while it is on board.
- 2.2.3 A formal and documented risk assessment should be carried out by a suitably experienced and qualified individual authorized by the Administration. The risk assessment should establish the hazards and resultant risks associated with the launch, recovery, operation and stowage of the submersible that it is planned to utilize with the yacht. This should include the requirements for maintenance of the submersible and of the associated support facilities on board the yacht as well as the training of the yacht crew.

2.3 Launch and Recovery

- 2.3.1 The yacht should be fitted with suitable lifting appliances (handling systems) to safely launch and recovery the submersible to the satisfaction of the Administration.
- 2.3.2 The handling systems should be tested prior to initial use and at defined intervals in accordance with the requirements of the Administration. The testing requirements should be in accordance with Part B, Section 4.6 of the Code.
- 2.3.3 The method of launching and recovery should ensure the safety of the crew of the submersible and passengers and should provide for suitable boarding arrangements.

- 2.3.4 Where a “moon pool” or equivalent facility is used to launch or recover the submersible, the construction shall be to the satisfaction of the Administration.

2.4 Stowage

- 2.4.1 The yacht should be fitted with suitable securing arrangements for the submersible to adequately support the structure and to prevent excessive movement in poor weather.
- 2.4.2 The yacht should be constructed to accept the maximum anticipated loadings from a fully equipped submersible. Calculations of deck and other loads should be provided to the Administration.

2.5 Support Facilities

- 2.5.1 Where the yacht has support facilities such as high pressure air, oxygen, power, umbilicals etc, the facilities should be installed and operated to the satisfaction of the Administration taking into accounts the hazards and associated risks.
- 2.5.2 Where fuel is carried, the storage and refueling facilities shall at least meet the requirements stated in Part B, Section 14 of the Code.

2.6 Maintenance

- 2.6.1 A suitable maintenance programme should be provided and implemented which addresses the maintenance of the submersible and its equipment, including all safety equipment, the handling system, and the support facilities on board the yacht.
- 2.6.2 The maintenance programme should be at least equivalent to programmes required by Classification Societies for similar types of equipment.

2.7 Operations

- 2.7.1 Procedures for normal, abnormal and emergency scenarios should be developed and implemented. These may be included in an Operations Manual or a similar document and should be addressed within the yacht’s safety management system (see Part C, Section 4).
- 2.7.2 The procedures for safe operation should ensure:
- The submersible meets all applicable national and international regulations prior to use;
 - Weather and other ambient conditions are suitable;
 - All necessary equipment is available for use;
 - Adequate and effective means of communication and means of recording information between the submersible and the yacht;
 - The appointment of a suitably qualified/ experienced individual to control the operation;

- The appointment of a suitably qualified pilot(s) (this should not normally be the master or senior officers of the yacht)
- The appointment of suitably additional personnel to ensure safe operations;
- The submersible crew and the involved yacht crew are suitably familiar with operations;
- Pre-dive and post-dive checks;
- Maintenance of the submersible structure and equipment and the yachts' support equipment, including lifting appliances.
- Reporting to authorities in which waters the submersible is operating;
- Appropriate records of operations, including information on crew and passengers on each dive.
- Arrangements for contingencies, including reporting incidents.

2.8 Risk assessment

- 2.8.1 A full risk assessment should be carried out addressing all the operations anticipated with the submersible(s) associated with the yacht. This should consider:
- Launching and recovery
 - Securing
 - Loading and unloading crew, passengers and equipment and spares
 - Use of support facilities
 - Refuelling
 - Maintenance of the submersible while on board
 - Maintenance of the support facilities on board the yacht
 - Weather limitations
 - Emergency situations
 - Training of the crew
- 2.8.2 The risk assessment should be submitted to the Administration for approval.

2.9 Crew Training

- 2.9.1 The yacht crew, as appropriate, should be trained to deal with normal submersible operations as well as abnormal and emergency situations. The training should include dealing with loss of communications, damage to the submersible, medical problems and other possible emergency scenarios.
- 2.9.2 The crew should practice dealing with the possible emergency scenarios through regular drills on board.
- 2.9.3 The emergency scenarios should be addressed in the yacht's contingency plans and similar documents.
- 2.9.4 While members of the yacht crew, when suitably trained, may man the submersible, the requirements of the yacht's Safe Manning Document shall always be met.

Part C, Section 3 - Open Flame Installations

General

1.0 GENERAL INFORMATION

- 1.1 Possible dangers arising from the use of open flame appliances in the marine environment include fire and, in addition, with respect to liquid petroleum gas (LPG), explosion and asphyxiation due to leakage of gas from the installation.
- 1.2 Consequently, the siting of open flame appliances, gas-consuming appliances and storage containers and the provision of adequate ventilation to spaces containing them, is most important.
- 1.3 Open flame appliances such as barbeques should not be sited close to flammable parts of the structure or fittings, and should be supervised at all times. They should be structurally suitable for the marine environment and secured to prevent movement in a seaway.
- 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, which is heavier than air, when released, may travel some distance while 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, as in the case of petroleum vapor.
- 1.6 A frequent cause of accidents involving LPG installations is the use of unsuitable fittings and improvised "temporary" repairs.

2.0 STOWAGE OF GAS CONTAINERS

- 2.1 Gas containers should be stowed on the open deck or in an enclosure opening only to the deck or overboard and otherwise gastight, so that any gas, which may leak from the containers, 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 for use in the potential explosive atmosphere.
- 2.5 In multiple container installations a non-return valve should be placed in the supply line near to the stop valve on each container. If a changeover device is used, it should be provided with non-return valves to isolate any depleted container.

- 2.6 Where more than one (1) container can supply a system, the system should not be used with a container removed.
- 2.7 Containers not in use or not being fitted into an installation should have the protecting cap in place over the container valve.

3.0 FITTINGS AND PIPEWORK

- 3.1 Solid drawn copper alloy or stainless steel tube with appropriate compression or screwed fittings is recommended for general use for pipework in LPG installations.
- 3.2 Aluminum or steel tubing, or any material having a low melting point, such as rubber or plastic, should not be used, except as permitted by paragraph 3.3.
- 3.3 Lengths of flexible piping (if required for flexible connections) should be kept as short as possible and be protected from inadvertent damage. Also, the piping should conform to an appropriate standard.
Proposals for a more extensive use of flexible piping (which conforms to an internationally recognized standard for its application) should be submitted to the Administration via its Authorised Surveyor for approval on an individual basis.

4.0 OPEN FLAME HEATERS AND GAS REFRIGERATORS

- 4.1 When such appliances are installed, they should be well secured to avoid movement and, preferably, be of a type where the gas flames are isolated in a totally enclosed shield where the air supply and combustion gas outlets are piped to open air.
- 4.2 In refrigerators, where the burners are fitted with flame arrester gauze, shielding of the flame may be an optional feature.
- 4.3 Refrigerators should be fitted with a flame failure device.
- 4.4 Flue-less heaters should be selected only if fitted with atmosphere-sensitive cut-off devices to shut off the gas supply at a carbon dioxide concentration of not more than 1.5% by volume.
- 4.5 Heaters of a catalytic type should not be used.

5.0 FLAME FAILURE DEVICES

All gas consuming devices should be fitted, where practicable, with an automatic gas shut-off device that operates in the event of flame failure.

6.0 VENTILATION

The ventilation requirements of a space containing an LPG appliance should be assessed against an appropriate standard and should take into account gas burning equipment and persons occupying that space

7.0 GAS DETECTION

- 7.1 Suitable means for detecting the leakage of gas should be provided in any compartment containing a gas-consuming appliance, or in any adjoining space of a compartment into which the gas (more dense than air) may seep.
- 7.2 Gas detectors should be securely fixed in the lower part of the compartment in the vicinity of the gas-consuming appliance and in other space(s) into which gas may seep.
- 7.3 Any gas detector should, preferably, be of a type that will be actuated promptly, and automatically by the presence of a gas concentration in air of not greater than 0.5% (representing approximately 25% of the lower explosive limit) and should incorporate an audible and a visible alarm.
- 7.4 Where electrical detection equipment is fitted, it should be certified as being flameproof or intrinsically safe for the gas being used.
- 7.5 In all cases, the arrangements should be such that the detection system can be tested frequently while the yacht is in service.

8.0 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 yacht.
- 8.2 The information given should include the following:
 - (a) The need to be ever alert for gas leakage; and
 - (b) When leakage is detected or suspected, all gas-consuming appliances should be shut off at the main supply from the containers, and NO SMOKING should be permitted until it is safe to do so.
 - (c) **Naked lights should never be used as a means of locating gas leaks.**

Part C, Section 4 - Safety Management

4.1 The purpose of this section is to provide guidance on how to develop and implement an effective safety management system for yachts under 500GT, where full certification to the International Safety Management Code is not a requirement.

4.2 General

Each operator should create a safe working environment, which should include the following:

4.2.1 A health and safety protection policy.

4.2.1.1 This must address the issues of health, safety and the environment as they affect the company and its staff, both ashore and afloat. Such a policy might read along the following lines:

"The policy of (name of Company/ Owner) is to conduct its activities taking full account of the health and safety of its employees and of all persons using or connected with the Company/ Owner. In implementing this policy, (name of Company/Owner) will ensure that the [yacht] is, at all times, properly maintained and operated by qualified personnel in full compliance with relevant legislation. In particular the [Company/ Owner] will carry out an assessment of the risks to the health and safety of workers and others affected by [the operations], and will take the necessary measures to minimise the risks identified."

4.2.1.2 The owner/ operator is recommended to develop and implement an oil management plan to the same standard as the garbage management plan and to integrate it with the Health and Safety Protection Policy. This is not required for yachts over 400GT, for which an IOPP certificate is required.

4.2.2 Procedures to ensure safe operation of yachts in compliance with the regulations and rules.

4.2.2.1 The regulations and rules, not addressed by this Code, which apply to all yachts include, but are not limited to:

- International Regulations for Preventing Collisions at Sea;
- Local Navigation Rules;
- National health and safety regulations;
- The Code of Safe Working Practices for Merchant Seamen, or equivalent;
- All relevant national shipping or guidance notices.

4.2.2.2 The company should draw up simple procedures to ensure that safe working practices are carried out in the operation of the yacht. These may be in the form of checklists which can be followed by all personnel.

4.2.2.3 For some yachts, it might be appropriate to have permanently exhibited checklists, e.g. in the wheelhouse for navigational items. Alternatively, in a smaller yacht, the record could take any suitable form such as a diary as distinct from a specially printed logbook. Whatever form the record takes, such entries should be accepted as evidence of compliance with the requirements for on board procedures.

4.2.3 Lines of communication between personnel, ashore and afloat.

Responsibility and authority of each employee should be clear. This may be best illustrated in a simple diagram, showing who reports to whom.

4.2.4 Procedures for reporting accidents.

4.2.4.1 The requirement for reporting accidents should be well understood by all personnel and in so doing improve the safety culture practiced on board.

4.2.5 Procedures for responding to emergency situations.

4.2.5.1 There should be clearly stated procedures for responding to emergency situations. These may include but not be limited to:

- fire
- collision
- grounding
- violent act
- main propulsion or steering failure
- man overboard

4.2.5.2 Checklists may be useful in this regard.

4.3 Health and Safety Protection Policy

4.3.1 One or more competent persons should be delegated to take responsibility for health and safety, and that person/ persons should be clearly identified. It is the responsibility of the owner/operator to ensure that the policy is complied with, and that the responsibilities are understood.

4.3.2 The company/owner should develop a policy on prevention of alcohol and drug abuse.

4.3.3 All personnel both ashore and afloat have a duty to take care of themselves and other persons who may be affected by their acts or omissions.

4.3.4 It is essential that, in the event of an emergency, there is the ability to communicate with the emergency services via a shore base. The shore base may be the company office ashore, the local Coastguard, Police or Fire Station, or another office as may be agreed between the yacht and the shore base.

4.4 Responsibilities

4.4.1 The Master must have authority at all times, to make decisions with regard to the safety of the yacht and the persons on board. To ensure that there is no ambiguity regarding the authority of the Master, there should be a simple written statement to this effect.

4.5 Personnel and Training

4.5.1 All personnel should receive training appropriate to the tasks they undertake. It is the responsibility of the company/ owner to ensure that this training is given, and that the personnel have an understanding of the relevant regulations and rules.

4.5.2 As a minimum, this means:

- for the master, the relevant qualifications;
- for the crew, relevant qualifications and any additional training appropriate to their designated duties.

4.5.3 Prior to the first occasion of working on the yacht, each employee must receive appropriate familiarisation training and proper instruction in onboard procedures. This could include, but not necessarily be, limited to:

- mooring and unmooring;
- launching and recovery of survival craft;
- evacuation from all areas of the yacht;
- donning of lifejackets; and
- use and handling of fire fighting equipment.

4.5.4 In addition to the safety issues and the frequent need for training in the operation of equipment, special consideration must be taken of local, national and international regulations associated with these activities.

4.6 On Board Procedures

4.6.1 Simple procedures should be developed for the operation of the yacht. These should include, but not be limited to:

- testing of equipment, including steering gear, prior to commencing a passage;
- navigation and handling of the yacht;
- maintenance routines;
- bunkering operations;
- watertight/ weathertight integrity;
- stability of the yacht;
- conduct of passengers and crew while on board;
- operation of helicopters, submersibles, tenders, RIBS, and other motor boats carrying passengers;
- operation of water craft such as jet skis, sailing boats, windsurfers;
- diving, paragliding, fishing.

4.7 Preparation for Emergencies

4.7.1 The potential emergencies likely to be encountered by the yacht should be considered. Exercises should then be carried out in the handling of these emergencies and evacuation from the yacht.

4.7.2 Where possible, all personnel should be involved in these exercises, both ashore and afloat.

4.7.3 The roles and responsibilities of all personnel in an emergency situation should be defined.

4.7.4 The exercises should be recorded. The names of those who participated should also be recorded.

4.8 Reporting of Accidents

- 4.8.1 Yachts operating under this Code are required to report any accidents to the Administration and the company must therefore have a procedure in place. Additionally, all accidents and near accidents should be recorded and reported to the operator/ owner, who should implement corrective action, with the aim of improving safety.

4.9 Maintenance of the Yacht and Equipment

- 4.9.1 Maintenance of the yacht and equipment is an essential ingredient of safety management. The equipment should be checked and tested daily when in use, in addition to the tests referred to in the on board procedures section of the Code.
- 4.9.2 There should be procedures for a more detailed inspection and maintenance programme of the yacht and equipment.
- 4.9.3 The frequency of the inspections should be determined by the owner/ operator, but every event should be recorded.
- 4.9.4 A checklist could be employed as an aide memoir for the inspection of equipment.

4.10 Review

Every company/owner should undertake a review of the safety management system of all yachts at least once in every three years.

Part C, Section 5 - Security

- 5.1 While it is not a requirement for yachts to which the Code applies to comply with the IMO International Ship and Port Facility Security (ISPS) Code, it is recommended that the owner(s), operator(s), manager(s) develops and implements security procedures. These may be partially integrated into the safety management system referred to in Part C, Section 4 with some security elements being held separately, being confidential documents. The confidential elements may include:
- Details of security equipment in use on board and methods of use and testing;
 - Information on any weapons on board;
 - Specific plans for dealing with security incidents including contact details for specialised support;
 - Reporting procedures;
 - Security records.
- 5.2 In order to ensure effective implementation of the security procedures, crewmembers should be trained in the key elements. The training should be reinforced by regular exercises and drills which may be integrated with those required by SOLAS.
- 5.3 In addition to the information contained in the ISPS Code, guidelines for an effective ship security system for such yachts are shown on www.immarbe.com/yachts/maritimesecurity.html.
- 5.4 It is recommended that the effective implementation of security procedures is considered by builders, owners, operators and managers at the design stage, throughout the build and when considering the manning of the yacht.

Part C, Section 6 - Guidelines for Sporting and Leisure Activities

In view of the increasing number and nature of the sporting and leisure activities being conducted either on yachts or utilizing yachts as their base, particularly in the case of super and large yachts in commercial use, we perceive that there is a need to issue some guidelines on this topic.

1. Responsibility

Owner(s), operator(s), manager(s) and master of each yacht should ensure that all such activities carried out onboard a yacht or utilizing the yacht as a base are conducted in a safe manner bearing in mind any certification requirements and are supervised at all times by suitably qualified personnel. Furthermore, they should be in full compliance with the laws, regulations and guidelines applicable in the area of the yacht's operation as well as any applicable sections of this Code and referenced documents.

2. Safety

2.1 We wish to draw attention to the U.K.'s Code for Safe Working Practices for Merchant Seamen, as amended, and in particular to: Chapter 1 Risk Assessment; Chapter 5 Safety Signs; Chapter 7 Work Equipment; Chapter 9 Fire Precautions; Chapter 19 Manual Handling; Chapter 21 Lifting plant. . These documents may be viewed on www.immarbe.com/yachts/safeworkingpractices.html.

2.2 The conduct of such activities as well as the maintenance, storage, securing etc of related equipment should be incorporated into the yacht's safety management system and certified under the ISM Code.

2.3 Drug and Alcohol abuse

2.3.1 According to the American Red Cross, more than 50% of drownings result from boating incidents involving alcohol. The U.S. Coast Guard believes that alcohol involvement in recreational boating accidents is under-reported and remains a significant factor in recreational boating accidents and deaths. Drug and alcohol abuse directly affect the fitness and ability of a seafarer to perform watchkeeping duties in impairing judgement, balance and coordination. Seafarers found to be under the influence of drugs or alcohol should not be permitted to perform watchkeeping or other duties until they are no longer impaired in their ability to perform those duties.

2.3.2 As guidance, the consumption of alcohol within four hours prior to serving as member of a watch or being on duty should be prohibited. Similarly, the consumption of alcohol by those participating in yacht-based sporting activities, should be discouraged. Typically, the maximum blood alcohol level (BAC) during work or when engaged in sport should be no more than 0.08%.

2.4 Barbecues

These are considered potentially hazardous and their use is discouraged. However, should you decide to use one, refer to Part C Section 3 "Open Flame Installations."

3. Specific Guidelines for particular Activities

Apart from the use of helicopters and submersibles which have been addressed elsewhere within this Code, the following activities have been identified as being quite prevalent on yachts:

- Scuba diving and snorkeling
- Sport fishing
- Jet skiing
- Water skiing
- Para-sailing

Consequently, we have drawn up some specific guidelines for those owners, operators, managers who will provide such activities on or from their yachts. These guidelines are intended as initial guides and do not obviate the need to consult the manufacturers of particular equipment and organizations/ associations specializing in these activities as well as verifying the local regulations which may govern the activity . Our guidelines are shown on www.immarbe.com/sportleisure.html.

4. Insurance

The requirements for yacht registration referred to in Part D Section 1 include important provisions for insurance, both in respect of hull and machinery of the yacht itself and any other equipment carried thereon e.g. jet skis as well as third party liability insurance, including cover for all persons who are part of the yacht's complement onboard, and in respect of any sporting activities in which any persons onboard may engage.

PART D - ADMINISTRATIVE STANDARDS

Part D, Section 1 - Yacht Registration with IMMARBE, Summary of Requirements

1. Introduction

This Section summarizes the requirements for the registration of a yacht at IMMARBE.

2. Application for Registration

Applications may be submitted to IMMARBE's Head office in Belize at:

International Merchant Marine Registry of Belize (IMMARBE)
Marina Towers, Suite 204
Newtown Barracks
P.O. Box 1765,
Belize City, Belize, C.A.
Telephone: 501 223 5026/5031/5047
Fax: 501-223-5048/5070/5087
Email: immarbe@btl.net; immarbe@immarbe.com

or

to any of IMMARBE's designated offices worldwide, the contact details of which are shown on www.immarbe.com/contacts.html

3. Maritime Legislation

These are listed in Annex 2 of this Code

4. Eligibility

Any person or body corporate of any nationality may apply for the registration of a yacht in Belize.

5. Registration

This may be a provisional or permanent registration, however, the owner may wish to proceed with permanent registration from the outset providing all applicable requirements are met.

5.1. Provisional registration

Provisional Registration is valid for up to 6 months. Compliance with the following is required:

- Completed application form for registration
- Completed application form for maritime ship station license
- A copy of an official document proving ownership, in the form of a Bill of Sale, Previous Certificate of Registry, Builder's Certificate, Court Auction Document or Memorandum of Agreement, accompanied by the Protocol of Delivery and Acceptance.
- Copy of yacht's deletion certificate from the previous registry or permission to transfer or delete or consent to transfer registry from the current registry.
- A power of attorney appointing a shipping agent in Belize must be submitted. Shipping Agents in Belize act as an "assured communication link with owners" in accordance with the requirements of the Registration of Merchant Shipping

Act as well as the provisions of Article 10 (2) of the U.N. Convention on the Conditions of Registration of Ships.

- Declaration concerning the yacht's intended use (commercial or private) as well as the area of operation. Such declaration can be issued on a company letterhead paper and signed by the owner, operator or their manager. It is an offence under IMMARBÉ's Disciplinary Regulations to register a yacht as Private yacht when it is in fact in commercial use.
- The name of the authorized Recognized Organization or individual Surveyor who will be responsible for surveying the yacht on behalf of our Administration and the issuance of the relevant certificates required by this Code.
- Appointment of an authorized Radio Accounting Authority as listed on www.immarbe.com/radio.html
- for the settlement of yacht's radio accounts
- ISM & ISPS forms (where applicable)
- Evidence of Hull, Machinery and Third Party Limited Liability Insurance Cover.
- The Manning and Personnel Certification as well as the Survey Certification, Inspection requirements as referred to in Part D Sections 2 and 3 of this Code.
- Payment of the respective registration fees which are shown on www.immarbe.com/yachts/taxesfees.html

5.2 Permanent Registration

5.2.1 The following is a list of documents which must be submitted for the permanent registration of a yacht which is already registered provisionally.

- Original or certified true copy of a duly notarized Bill of Sale.
- Original or certified true copy of a duly notarized Power of Attorney executed by owner thereby appointing a Shipping Agent in Belize.
- Original copy of the Deletion certificate from previous Registry.
- Copies of all certificates issued on behalf of IMMARBÉ and referred to in Part D Section 2 and 3 of this Code.

5.2.2 Yachts which are proceeding directly for permanent registration must submit all the documents listed under 5.1 (Provisional Registration) and where applicable the originals as opposed to copies of the documents listed in 5.2.

All documents must be in the English language or, if not in English, accompanied by an English translation thereof.

N.B: It is a condition of registration that all yachts should comply with the national legislation and regulations of each State in whose territorial waters they operate.

6. Insurance Requirements

Every commercial yacht to which this Code applies should hold hull and machinery insurance for the yacht itself and any other equipment carried thereon e.g. jet skis etc. Also it should have third party liability insurance including cover for all persons who are part of the yacht's complement onboard and in respect of any sporting activities in which any persons onboard will engage. Evidence of cover will be required at the time of provisional/permanent registration. These insurance requirements are strongly recommended for private yachts.

Part D, Section 2 - Manning and Personnel Certification

1.1 Principles of Safe Manning

Yachts in commercial use should carry an appropriate number of qualified deck and engineer officers and ratings to ensure a degree of safety at least equivalent to that established by the IMO with respect to the principles of safe manning and in accordance with the ILO Conventions. Where appropriate, seafarers should be experienced in the type and size of the yacht and of the operations in which it is involved.

All seafarers should be medically fit.

The standards apply to all seafarers employed or engaged in any capacity on board every commercially operated yacht. The Administration may require yachts in private use to also meet these standards and in any case strongly encourages their use by yachts in private use.

In fulfilling their responsibility to ensure that yachts are safely and sufficiently manned, owners and operators should:

- make an assessment of the tasks, duties and responsibilities of the yacht's complement required for its safe operation, for the protection of the marine environment, for ensuring security and for dealing with emergency situations;
- assess the numbers and grades/ capacities in the yacht's complement required for the safe operation and for the protection of the environment, for ensuring security, and for dealing with emergency situations, including the evacuation of passengers where applicable;
- ensure that the manning level is adequate at all times and in all respects, including meeting peak workloads;
- in case of changes in the nature of the operation, operational area, construction, machinery, equipment or maintenance of the yacht, which may affect the manning level, review the manning level.

In conjunction with these factors the owner or operator should

- 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;
- identify those functions that constitute a normal operation and determine the numbers of crew required to undertake the concurrent tasks and duties safely
- identify the skills and experience required to perform those functions
- 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 ensure that the working arrangements allow for sufficient rest periods to avoid fatigue.

1.2 Establishing Safe Manning Requirements

Specific factors to be taken into account in determining the safe manning level may include:

- frequency of port calls, length and nature of the voyage, noting that yachts on short voyages close to land may need higher manning levels than those on longer deep sea voyages;
- operating area(s), waters, distance from a safe haven, type of operations in which the yacht is involved and any special requirements of the operation;
- number, size (kW) and type of main propulsion units and auxiliaries;
- size, type of yacht, equipment and layout;
- construction, technical equipment including the level of automation of the yacht;
- method of maintenance;
- how the proposed complement will deal with various emergency situations that may arise;
- navigational duties and responsibilities as required by STCW 95 including the following
 - to plan and conduct safe navigation;
 - maintain a safe navigational watch;
 - manoeuvre and handle the yacht in all conditions and during all operations;
 - safely moor and unmoor the yacht; and
 - maintain safety whilst in port

Yacht specific operations

- the nature and duration of the operation(s) the yacht undertakes and local environmental conditions;

Yacht operations and care for persons onboard, and maintaining life-saving, fire-fighting and other safety systems in operational condition.

- 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 nonessential personnel
- operate and maintain watertight closing arrangements;
- perform operations necessary to protect the marine environment;
- provide medical care on board;
- undertake administrative tasks required for the safe operation of the yacht; and
- participation in mandatory safety drills and exercises

Marine engineering tasks and duties:

- operate and monitor the yacht's main propulsion and auxiliary machinery;
- maintain a safe engineering watch;
- manage and perform fuel and ballast operations; and
- maintain yacht's engine equipment, system and services.

Electrical, electronic and control engineering duties:

- operate yacht's electrical and electronic equipment; and
- maintain yacht's electric and electronic systems

Radio communications:

- transmit and receive information using yacht communication equipment;
- maintain a safe radio watch;
- provide communications in emergencies

Maintenance and repair:

- carry out maintenance and repair work to the yacht and its machinery, equipment and systems, as appropriate to the method of maintenance and the repair system used

Fulfill obligations and requirements of security procedures and precautions.

Meet the needs of operating the rig of a sailing yacht, taking into consideration the type of rig and level of automation.

Meet the needs of operating helicopters, submersibles and other craft which may operate with or interface with the yacht.

In determining what constitutes a minimum safe manning level, useful guidance may also be obtained by use of risk assessment tools.

The minimum safe manning levels should be those required for all reasonably foreseeable circumstances and working conditions to permit the safe operation of the yacht under normal operational conditions.

Where appropriate, dual deck and engineer roles may be considered, provided that the officer is suitably qualified in both disciplines and that the person holding the dual role is a person other than the master. In considering whether a dual role position is appropriate, regard should be had to the overall safe manning level of the yacht. In such cases additional rating(s) may be required to be carried.

1.3 Minimum Safe Manning Certificate

While SOLAS only requires that vessels over 500GT, excluding pleasure yachts not engaged in trade, carry a Minimum Safe Manning Certificate, the Administration requires all commercial yachts to carry such a document and recommends that yachts in private use do so as well.

Any application for a Minimum Safe Manning Certificate should be made by the owner, operator or manager or a person authorised to act on his behalf, to the Administration of the yacht. An application should include a clear and concise explanation of how:

- the proposed manning level has been determined;
- it takes account of the guidance; and
- it takes account of the hours of work provisions.

Specific submissions may be considered from owners, operators or managers of yachts seeking flexibility to reduce the manning level taking into account, for example, certain voyage types or levels of automation.

A proposal should only be approved and Minimum Safe Manning Certificate issued

provided the manning level fully satisfies these principles, recommendations and guidelines.

When the manning level has been agreed, a Minimum Safe Manning Certificate should be issued for that yacht 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 yacht, which may affect the safe manning level, the owner, operator or manager should make an application for the issue of a new Minimum Safe Manning Certificate.

A Safe Manning Document of a yacht may be withdrawn if an owner, operator or manager fails to submit a new proposal where a yacht changes trading area(s), construction, machinery or equipment, or operation and/or method of maintenance have changed, or a yacht persistently fails to comply with the rest hours requirements.

1.4 Qualification Requirements

- 1.4.1 The qualifications of officers and ratings required are determined by the yacht size and propulsion power and whether it is on either long or short voyages. The owner or operator should propose qualifications as part of the application for a Minimum Safe Manning Certificate as above.

1.4.2 Guidance on qualifications and manning levels.

Table 1 Motor Yachts

CATEGORY MILES FROM SAFE HAVEN	Personnel	Motor Yachts	
		<200 GT	200 - 499 GT
Up to 60	Master	YM Offshore	Master (Y) <500gt (Reg II/2)
	Chief Officer	Coastal Skipper ¹	Coastal Skipper ²
	OOW (Nav)	-	-
	Chief Engineer	AEC ^{3 5}	EOOW (Reg III/1) or C/Eng (Y4) ³ (Reg III/3)
	Second Engineer	-	-
	Engineer	-	MEOL
	Yacht Ratings	1	2
Up to 150	Master	YM Offshore	Master (Y) <500gt (Reg II/2)
	Chief Officer	Coastal Skipper	YM Offshore ²
	OOW (Nav)	-	-
	Chief Engineer	MEOL or MEOL (Y) ^{3 5}	2/Eng (Reg III/3) ⁶ or C/Eng (Y3) ⁴ (Reg III/2)
	Second Engineer	-	-
	Engineer	-	MEOL
	Yacht Rating	1	2
Unlimited	Master	YM Ocean	Master (Y) <500gt (Reg II/2)
	Chief Officer	YM Offshore ²	DOOW (Y) (Reg II/1) ²
	OOW (Nav)	-	YM Offshore
	Chief Engineer	2/Eng (Reg III/3) ⁶ or C/Eng (Y4) ³ (Reg III/3)	C/Eng (Reg III/3) or C/Eng (Y3) ⁴ (Reg III/2)
	Second Engineer	-	EOOW (Reg III/1) or C/Eng (Y4) (Reg III/3)
	Engineer	MEOL ⁵ or MEOL (Y) ⁵	-
	Yacht Rating	2	2

In Table 1 the meanings are as follows:

Master (Y) <500gt (Reg II/2)
DOOW (Y) (Reg II/1)

Coastal Skipper

YM Offshore

YM Ocean

C/Eng (Y3) (Reg III/2)

Master (Reg II/2) (Yacht) less than 500gt, unlimited
Deck Officer of the Watch (Reg II/1) (Yacht) less than
3000gt unlimited
Recognized Coastal Skipper with Commercial
Endorsement
Recognized Yachtmaster Offshore with Commercial
Endorsement
Recognized Yachtmaster Ocean with Commercial
Endorsement
Chief Engineer (Reg III/2) (Yacht) less than 500gt and
less than 3000kW

C/Eng (Y4) (Reg III/3)	Chief Engineer (Reg III/2) (Yacht) less than 200gt and less than 1500kW
2/Eng (Reg III/3) ¹	Second Engineer (Reg III/3) less than 3000kW
2/Eng (Reg III/2) ¹	Second Engineer (Reg III/2), unlimited
EOOW (Reg III/1)	Engineering Officer of the Watch (Reg III/1), unlimited
MEOL	Marine Engine Operator Licence
AEC	Approved Engine Course
Yacht Rating	Navigational watch rating (Reg II/4), Yacht Rating (UK MCA) or equivalent.

Notes:

- ¹ Where appropriate, dual deck and engineer roles may be considered provided that the officer is suitably qualified in both disciplines and that the person holding the dual role is a person other than the Master.
- ² Where appropriate, dual deck and assistant engineer roles may be considered provided that the officer is suitably qualified in both disciplines and that the person holding the dual role is a person other than the Master.
- ³ Over 1,500 kW and less than 3,000 kW propulsion power: certificate holder is required to have attended an approved engine manufacturer's course appropriate to the engine type and power range. Certificate holder is then limited to engines of up to 3,000kW.
- ⁴ Over 3,000 kW and less than 6,000 kW propulsion power: certificate holder is required to have attended an approved engine manufacturer's course appropriate to the engine type and power range. Certificate holder is then limited to engines of up to 6,000kW.
- ⁵ Can be dual purpose (deck/engineer) if the yacht has been assigned a classification society UMS notation for unmanned machinery space operation or fulfils the following criteria:
 - (i) it has full bridge control of main engine manoeuvring;
 - (ii) it is fitted with high level bilge alarms in the machinery space;
 - (iii) the engine room alarm system, including the fire alarm if fitted, is relayed to the accommodation and/or the bridge.
- ⁶ Holders of Second Engineer III/2 certificates of competency are required to have these certificates endorsed with the additional Chief Engineer III/2 (Yacht 1) (<3,000 gt; <9,000 kW) capacity and limitation ("Large Yacht Endorsement").

Any yachts powered by steam or gas turbines will be considered on an individual basis.

The Certificates of Competency held should be submitted to IMMARBE for endorsement in accordance with our national regulations. For details contact IMMARBE's Head Office in Belize at immarbe@btl.net.

Seaman's Books issued by the Administration or another recognized Administration should be held by all seafarers.

Officers who have Certificates of Competency issued by Administrations that are listed in the IMO White List of Parties to the STCW 1978 Convention, as amended will be accepted.

Table 2 Sailing Yachts – Fore and Aft

CATEGORY MILES FROM A SAFE HAVEN	Personnel Deck or Engineer	Sailing Yacht	
		<200 GT <750 kW	200 - 499 GT <1500 kW
Up to 60	Master	YM Offshore	Master (Y) <500gt (Reg II/2)
	Chief Officer	Coastal Skipper	Coastal Skipper
	OOW (Nav)	-	-
	Chief Engineer	AEC ¹	EOOW (Reg III/1) or C/Eng (Y4) (Reg III/3)
	Second Engineer	-	-
	Engineer	-	-
	Yacht Rating	2	2
Up to 150	Master	YM Offshore	Master (Y) <500gt (Reg II/2)
	Chief Officer	Coastal Skipper	YM Offshore
	OOW (Nav)	-	-
	Chief Engineer	MEOL or MEOL (Y) ¹	2/Eng (Reg III/3) or C/Eng (Y3) (Reg III/2)
	Second Engineer	-	-
	Engineer	-	AEC
	Yacht Rating	2	2
Unlimited	Master	YM Ocean	Master (Y) <500gt (Reg II/2)
	Chief Officer	YM Offshore	DOOW (Y) (Reg II/1)
	Deck	-	YM Offshore
	Chief Engineer	MEOL or MEOL (Y)	2/Eng (Reg III/3) or C/Eng (Y3) (Reg III/2)
	Second Engineer	-	-
	Engineer	-	MEOL or MEOL (Y)
	Yacht Rating	2	2

Table 3 Sailing Yacht – Square Rigged

CATEGORY MILES FROM A SAFE HAVEN	Personnel Deck or Engineer	Square Rigged Sailing Yacht	
		<200 GT <750 kW	200 -500 GT <1500 kW
Up to 100	Master	YM Offshore	Master (Y) <500gt (Reg II/2)
	Chief Officer	Coastal Skipper	Chief Mate (Y)
	OOW (Nav)	-	-
	Chief Engineer	AEC ¹	EOOW (Reg III/1) or C/Eng (Y4) (Reg III/3)
	Second Engineer	-	-
	Engineer	-	-
	Yacht Rating	2	2
Up to 200	Master	YM Offshore	Master (Y) <500gt (Reg II/2)
	Chief Officer	Coastal Skipper	Chief Mate (Y)
	OOW (Nav)	-	-
	Chief Engineer	MEOL or MEOL (Y) ¹	2/Eng (Reg III/3) or C/Eng (Y3) (Reg III/2)
	Second Engineer	-	-
	Engineer	-	AEC
	Yacht Rating	2	2
Unlimited	Master	YM Ocean	Master (Y) <500gt (Reg II/2)
	Chief Officer	YM Offshore	Chief Mate (Y) (Reg II/2)
	Deck	-	DOOW (Reg II/1)
		-	DOOW (Reg II/3)
	Chief Engineer	MEOL or MEOL (Y) ¹	2/Eng (Reg III/3) or C/Eng (Y3) (Reg III/2)
	Second Engineer	-	-
	Engineer	-	MEOL or MEOL (Y)
	Yacht Rating	2	2

In Tables 2 & 3 the meanings are as follows:

Master (Y) <500gt (Reg II/2)
Ch. Mate (Y) (Reg II/2)

DOOW (Y) (Reg II/1)

DOOW (Y) (Reg II/3)

Coastal Skipper

YM Offshore

YM Ocean

Master (Reg II/2) (Yacht) less than 500gt unlimited
Chief Mate (Reg II/2) (Yacht) less than 3000gt
unlimited

Deck Officer of the Watch (Reg II/1) (Yacht) less than
3000gt

Deck Officer of the Watch (Reg II/1) (Yacht) less than
500gt

Recognized Coastal Skipper with Commercial
Endorsement

Recognized Yachtmaster Offshore with Commercial
Endorsement

Recognized Yachtmaster Ocean with Commercial
Endorsement

C/Eng (Y3) (Reg III/2)	Chief Engineer (Reg III/2) (Yacht) less than 500gt and less than 3000kW
C/Eng (Y4) (Reg III/3)	Chief Engineer (Reg III/2) (Yacht) less than 200gt and less than 1500kW
2/Eng (Reg III/3)	Second Engineer (Reg III/3) less than 3000kW
EOOW (Reg III/1)	Engineering Officer of the Watch (Reg III/1), 750 to 3000kW, unlimited
MEOL	Marine Engine Operator Licence
AEC	Approved Engine Course
Yacht Rating	Navigational watch rating (Reg II/4), Yacht Rating (UK MCA) or equivalent.

Notes:

- ¹ Can be dual purpose (deck/engineer) if the yacht has been assigned a classification society UMS notation for unmanned machinery space operation or fulfils the following criteria:
- (i) it has full bridge control of main engine manoeuvring;
 - (ii) it is fitted with high level bilge alarms in the machinery space;
 - (iii) the engine room alarm system, including the fire alarm if fitted, is relayed to the accommodation and/or the bridge.

The Master, Chief Officer and Chief Engineer should be able to demonstrate specific training and/ or experience of operating square rigged yachts.

The Certificates of Competency held should be submitted to IMMARBE for endorsement in accordance with our national regulations. For details contact IMMARBE's Head Office in Belize at immarbe@btl.net.

Seaman's Books issued by the Administration or another recognized Administration should be held by all seafarers.

Officers who have Certificates of Competency issued by Administrations that are listed in the IMO White List of Parties to the STCW 1978 Convention, as amended will be accepted.

1.5 Radio Qualifications

A yacht should carry at least one person qualified for distress and safety radiocommunication purposes, who should hold a certificate of competence acceptable to the Administration.

1.6 Medical Fitness Certificates

All seafarers are required to hold current medical fitness reports or certificates issued by an individual or organisation acceptable to the Administration or approved by another Administration acceptable to the Administration. All reports/ certificates shall be in compliance with the requirements of the ILO Conventions.

1.7 Basic Training Certification

All seafarers should hold a certificate(s) demonstrating basic safety training in accordance with STCW Regulation VI/1. The certificate(s) should be issued by an individual or organisation acceptable to the Administration or approved by another Administration acceptable to the Administration.

Basic safety training certificates must show evidence of having received appropriate instruction in:

- (a) personal survival techniques,
- (b) fire prevention and fire fighting,
- (c) elementary first aid, and
- (d) personal safety and social responsibilities.

Evidence of the individual having completed the training as part of an appropriate training course for a certificate of competency will be considered as meeting the standard.

1.8 Medical First Aid and Medical Care Certification

All officers should hold a hold a certificate(s) demonstrating medical first aid training in accordance with STCW Regulation VI/4.

At least one person on board should be designated to take charge of medical care on board. That individual should hold a hold a certificate(s) demonstrating medical care training in accordance with STCW Regulation VI/4.

The certificate(s) should be issued by an individual or organisation acceptable to the Administration or approved by another Administration acceptable to the Administration.

1.9 Advanced Fire Fighting Course

All officers must hold a hold a certificate(s) demonstrating advanced fire fighting training in accordance with STCW Regulation VI/3.

The certificate(s) should be issued by an individual or organisation acceptable to the Administration or approved by another Administration acceptable to the Administration.

1.10 Revalidation of Certificates and Licenses

All master, and other certificates of competency, Yachtmaster, medical first aid, medical care and advanced fire fighting should be revalidated every five years by the Administration which issued the relevant certificate.

To revalidate certificates of competency and Yachtmaster, a submitted applicant should prove at least one year's service on yachts of more than 24 metres Load Line length operating internationally during the previous five years and be in possession of a valid medical fitness certificate.

1.11 Seaman's Identification

All seafarers should hold Seaman's Books issued by the Administration or by another Administration acceptable to the Administration.

1.12 Fatigue

Fatigue at sea is a serious safety issue and owners and operators should ensure that yachts are sufficiently manned to avoid the need to work excessive hours. The owner/ operator/manager 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 /manager should ensure that the necessary resources are available to man the yacht 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 yacht and that they obtain adequate rest when not on duty

Where a seafarer's normal period of rest on board a yacht is disturbed by a callout he/ she should have adequate compensatory rest.

The owner/ operator / manager or master should ensure that the crew is provided with at least the minimum hours of rest. These should not be less than:

- (a) 10 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 two periods; one of which should be at least six 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 yacht 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.

1.13 Exceptions to the Limits on Hours of Rest

The limits defined should as far as practicable be observed. However, an exception may be considered provided it is agreed between the master and crew members, and provided that their health and safety, and the safety of the yacht, 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

Should a crew member be required to work during scheduled hours of rest as a result of an emergency which threaten the safety of the yacht or put life at risk, the limits may be exceeded provided compensatory arrangements are subsequently made to avoid fatigue.

1.14 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. The table or schedule should 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 including the requirements of the commercial operation in which the yacht is involved;
- b) type and size of the yacht;
- c) construction and technical equipment of the yacht;
- 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 security procedures where 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 yacht 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.

1.15 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 yacht. The records should be completed monthly in arrears. 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 Administration surveyors at any time.

1.16 Seamen's Articles of Agreement.

These regulations are contained in IMMARBE's Merchant Shipping Notice MSN-0021 entitled Seamen's Articles of Agreement shown on:

www.immarbe.com/yachts/IMMARBELIB/MSN0021onCrewArticles.pdf.

Part D, Section 3 - Survey, Certification, Inspection and Maintenance

2.1 General

All yachts covered by this code are required to be surveyed and certificated in accordance with:

- International Load Line Convention,
- the MARPOL Convention (for yachts more than 400 GT)
- the construction and safety equipment requirements of the SOLAS Convention.
- the radio requirements of SOLAS.

Statutory surveys may be undertaken by surveyors of the Administration, by surveyors of a Recognized Organization appointed by the Administration, by other authorized surveyors appointed by the Administration or by surveyors of another Administration authorized by the Administration.

A yacht to which the International Conventions apply must be surveyed and, if the necessary standards are met, Convention certificates will be issued. All requests for survey and certification must be made initially to the Administration.

2.2 Initial Survey (including new-building commercial yachts)

Yachts are required to be issued with the following certificates, as appropriate.

- .1 International Load Line Certificate
- .2 Certificate of Compliance – this certificate is to cover all aspects of the Code for which a separate certificate is not required.
- .3 Cargo Ship Safety Radio Certificate (for yachts of 300 GT and above).
- .4 International Oil Pollution Prevention Certificate (for yachts of 400 GT and above)
- .5 International Air Pollution Prevention Certificate (for yachts of 400 GT and above)
- .6 International Sewage Pollution Prevention Certificate (for yachts of 400 GT and above or with more than 15 persons on board)
- .7 Certificate of Compliance with Annex V of MARPOL (for yachts of 400 GT and above or with more than 15 persons on board).
- .8 Statement of Compliance with the International Convention on Control of Harmful Anti-Fouling Systems
- .9 International Tonnage Certificate.
- .10 Minimum Safe Manning Certificate.

2.3 Exemption from certain safety regulations

If an owner, operator or manager 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.

2.4 Periodical Surveys

Load Line Certificates, Cargo Ship Safety Construction Certificates and Certificates of Compliance (valid for five 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.

2.5 Cargo Ship Safety Equipment and Safety Radio Certificates (Safety radio - yachts of 300 GT and above)

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 Recognized Organization surveyor or other authorized surveyor appointed by the Administration to act on its behalf; or by an appropriate Certifying Authority in relation to radio installations for cargo ships.
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.

2.6 Use of a Recognized Organization or other appointed surveyor to act on the behalf of the Administration

A surveyor from an authorised Recognized Organization or another Administration and proposed by it may be appointed to act on behalf of the Administration. An individual surveyor may also be appointed directly by the Administration to act on its behalf.

In some cases, where the individual has been previously approved, specific elements of surveys may be carried out by a suitably qualified chief engineer or master mariner who is a member of the crew.

When a Recognized Organization or other 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.

2.7 List of Certificates issued

Certification	Subject & Convention	Detail & Remarks
International Tonnage Certificate	Tonnage ITC 69	
International Load Line Certificate	Load Line ILLC'66	Intact Stability & Subdivision
Cargo Ship Safety Radio Certificate	Radio SOLAS 74	
Minimum Safe Manning Certificate	Manning STCW/SOLAS	For commercial yachts
International Oil Pollution Prevention Certificate	Oil Pollution MARPOL	Pollution prevention equipment Yachts 400 GT and
International Air Pollution Prevention Certificate	Air Pollution MARPOL	Yachts 400 GT and above
International Sewage Pollution Prevention Certificate	Sewage Pollution MARPOL	Yachts 400 GT and above and with more than 15 persons

Certificate of Compliance with Annex V of MARPOL		Yachts 400 GT and above and with more than 15 persons onboard
Statement of Compliance with the International Convention on Control of Harmful Anti-Fouling		
Certificate of Compliance	Various	Covers aspects surveyed under the code for which other certificates are not required.

Note: Using equivalent standards of the code. The Administration retains the right to survey and issue certificates for all of the above items

Part D, Section 4 - Handover Procedure for Owners, Operators, Managers when Bareboat/ Demise Chartering a Commercial Yacht

1.0 Familiarisation

The owner, operator or manager or appointed representative with intimate knowledge of the yacht should be present at the hand-over of the yacht to the chartering skipper and crew in order to complete the following familiarization procedure:

- .1 Demonstrate the stowage of all gear and the method of use of all lifesaving and firefighting appliances on board the yacht;
- .2 Locate and explain the method of operation of all sea cocks and bilge pumps;
- .3 Demonstrate use of all mechanical, electrical and electronic equipment to ensure familiarization;
- .4 Provide details of routine maintenance required for any equipment;
- .5 Demonstrate checks to be carried out on the engine prior to starting, while running and after stopping;
- .6 Demonstrate the methods of setting, sheeting and reefing each sail.

2.0 Documentaion

2.1 The owner, operator or manager or appointed representative, as detailed in Section 1.0 above, should ensure that the Yacht's File is presented to and reviewed with the chartering skipper. The Yacht's File should contain at least the following:

- (a) Certificate of Registry
- (b) Copies of the insurance policy
- (c) Required certificates and licenses
- (d) Details of permitted operating area (Category)
- (e) Training Manuals and maintenance instructions
- (f) Diagrams for electrical wiring and piping/plumbing
- (g) Equipment inventory
- (h) Plan(s) showing the stowage position of all the movable equipment necessary for the safe operation of the yacht

- (i) A list of names and telephone numbers (both during and after office hours) of persons who may be contacted if the chartering skipper or the yacht is in need of assistance.
- 2.2 The chartering skipper should sign an acceptance note after completion of the hand-over procedure with regard to inventory, condition of items demonstrated, and the amounts of fuel and other consumable items on board which might be chargeable.

3.0 Return Procedures

- 3.1 At the end of the bareboat/demise charter the owner, operator or manager or appointed representative together with the chartering skipper should be present and the following procedure conducted:
 - (a) Inspect the yacht;
 - (b) Check the yacht's inventory;
 - (c) List any damage, defect, losses, or need for repair.
- 3.2 The above details should be noted on a return report form signed by the owner, operator or manager or appointed representative and the chartering skipper.

Part D, Section 5 - Accident Investigations

The Administration is obliged to investigate accidents or incidents in accordance with the requirements of SOLAS Regulation 1/21 and MARPOL 73/78 articles 8 and 12 of International Conventions. Apart from this legal requirement, our Administration investigates such occurrences as part of our policy to ensure effective control and accident prevention in the interests of safety at sea and the protection of the environment.

It is an offence for the yacht's master, skipper, owner, operator or manager not to inform the Administration of a reportable accident shortly after it occurs and to provide details so that an assessment of its severity can be made quickly. The Administration will appoint a suitable surveyor or inspector whenever an investigation is required. The Administration will then receive the surveyor's or the inspector's report and will take such measures or actions as it deems appropriate.

All serious casualties, in accordance with the IMO's definition thereof, should be reported to IMO by the Administration

ANNEXES

EXECUTIVE SUMMARY

Belize - “the friendly flag of quality”

The International Merchant Marine Registry of Belize (IMMARBE)

- Belize is a parliamentary democracy and enjoys political stability. It was granted independence from the U.K. in 1981 and is a member of the Commonwealth of Nations.
- IMMARBE, an Open Registry, commenced operations in 1991. Its Head Office is in Belize City. It has a network of 32 Designated Offices worldwide. These offices are empowered to process applications for registration and to issue the relevant documentation only upon receipt of authorization from Head Office.
- IMMARBE’s senior management and staff are located at its Head Office in Belize City. They have a wide range of expertise, covering all aspects of Flag State responsibilities. They are supplemented by the staff in Designated Offices including some 182 Flag State surveyors worldwide.
- IMMARBE offers competitive tonnage taxes, fees and incentives. All applications for ship registration are carefully screened. Yachts of 7501 GT and above must, inter alia, be classed by a member of IACS and have Third Party Liability Insurance Cover e.g. P&I Club. Other stringent criteria apply to yachts of 7500 GT and below. Yachts are required to comply with the relevant IMMARBE Code of Standards applicable to their size.
- Belize is a member of the UN, IMO, ILO and FAO and is a signatory to all the main UN, IMO, ILO and FAO Maritime Conventions/Agreements. It is included on the IMO White List.
- Belize has the largest number of memberships in Regional Fisheries Management Organizations (RFMOs) of any Open Registry - ICCAT, IOTC, IATTC, WCPFC, NEAFC, CRFM, OSPESCA, COPACO. Its high seas fishing vessels as well as its reefer vessels which are engaged in the carriage of fish enjoy a comprehensive coverage (authorization/licensing) in all the oceans/seas within the aforementioned RFMO Convention areas. Also, its High Seas fishing vessels benefit from valuable quotas and catch limits allocated to them in respect of the species which are the subject of the management and conservation measures of the aforementioned RFMOs.
- Belize has a well established legal system and mortgage recording service. Its laws are derived from English Common Law supplemented by local legislation. The Court system is also similar to that in England and contract and commercial legislation is based on the English law model. Belize’s maritime legislation which deals with all matters relating to the registration of ships at IMMARBE and subsequent thereto is shown on www.belize-law.org. A list showing the relevant maritime legislation and the regulations made thereunder is to be found on IMMARBE’s website www.immarbe.com.

- IMMARBE has attained ISO 9001-2000 Certification by ANSI-ASQ National Accreditation Board which is the U.S. accreditation body for management systems. On 7th August 2007, Belize sent formal notification to the IMO of its decision to volunteer for the Voluntary IMO Member State Audit Scheme. This audit is expected to take place during 2009.
- In 2006, IMMARBE qualified for the U.S. Coast Guard's Quality Shipping for the 21st Century (QUALSHIP 21) Program. In 2007, it requalified for this prestigious designation. The three-year detention percentage for Belize registered vessels calling at U.S. ports is 0.00%. It is one of only 13 Flag States out of 166 Flag States holding this qualification in 2007. Its combined overall detention rates in all MOUs on Port State Control have improved considerably since 2001, down from 26.18% to 11.11% in 2007.
- Since 2001, IMMARBE's statistics for serious and very serious casualties have continued to improve - down from 1.12% of our total fleet to 0.60% in 2007. Furthermore, there have been no oil pollution incidents resulting from any such casualties in the last 6 years.
- IMMARBE is continuing in its mission by "striving for excellence in ship registration so as to attain international acclaim as a leading quality Open Registry."

For further details on all topics relating to IMMARBE, kindly refer to our website www.immarbe.com

BELIZE'S MARITIME LEGISLATION RELATING TO REGISTRATION AT IMMARBE

Briefly, by way of background:

- Belize is a signatory to all the main UN, IMO, ILO Maritime Conventions as well as those relating to fishing - for details refer to www.immarbe.com.
- The laws of Belize are derived from English Common Law supplemented by local legislation. The Court system is also similar to that in England and contract and commercial law is based on the English law model. For details of Belize's laws, refer to www.belize-law.org.
- Belize's national legislation which deals with all matters relating to the registration of ships at IMMARBE and subsequent thereto is shown on www.belize-law.org and consists of the following:
 - Registration of Merchant Ships Act, 1989, as amended by Act No. 5 of 1996 (Chapter 236, Revised Edition 2000)
 - Registration of Merchant Ships (Miscellaneous Provisions of 1991) (Chapter 236, Subsidiary Laws, Revised Edition 2003)
 - Registration of Merchant Ships (Vessels under 500 GT in service outside the territorial waters of Belize, 1991) (Chapter 236, Subsidiary Laws, Revised Edition 2003)
 - Registration of Merchant Ships (Pleasure Vessels, 1991) (Chapter 236, Subsidiary Laws, Revised Edition 2003) as supplemented by the following which appear on www.immarbe.com:
 - IMMARBE's Code of Standards for Yachts of 24 m in Length or above and 500 GT or more (The Super Yacht Code)
 - IMMARBE's Code of Standards for Yachts of 24 m or above and less than 500 GT (The Large yacht Code)
 - IMMARBE's Code of Standards for Yachts of less than 24 m (The Small Yacht Code)
 - Registration of Merchant Ships (Fishing Vessels of 24 meters in length and above) Safety Regulations, 1995 (Chapter 236, Subsidiary Laws, Revised Edition 2003)
 - Registration of Merchant Ships (Cargo Vessels operating in the Caribbean Trading Area) Safety Regulations, 1997 (Chapter 236, Subsidiary Laws, Revised Edition 2003)
 - Registration of Merchant Ships (Disciplinary Regulations, 1999) (Chapter 236, Subsidiary Laws, Revised Edition 2003)
 - Registration of Merchant Ships (Safe Manning, Hours of Work and Watchkeeping) Regulations, 1999 (Chapter 236, Subsidiary Laws, Revised Edition 2003)
 - The High Seas Fishing Act, 2003 (Chapter 210:01)
 - Registration of Merchant Ships (Ship Security) Regulations 2004 (S.I. 90 of 2004)

INTERNATIONAL CONVENTIONS RATIFIED BY BELIZE

As a member of the International Maritime Organization (IMO) and the International Labour Organization, Belize has ratified the following Conventions which are relevant to shipping:

IMO Conventions

- Load Lines, 1966 (LL) and amendments including Protocol of 1988 and its Annexes A & B.
- Tonnage Measurement of Ships 1969
- Safety of Life at Sea, 1974 (SOLAS), as amended including the Protocol of 1988 and its Annex.
- Standards of Training Certification and Watchkeeping for Seafarers, 1978/1995 (STCW) as amended.
- Prevention of Pollution by Ships, 1973 (MARPOL) as modified by the Protocol of 1978; Annex III; Annex IV; Annex V; Protocol of 1997 incorporating Annex VI.
- International Regulations for Preventing Collisions at Sea, 1972 (COLREGS)
- Civil Liability for Oil Pollution Damage, 1969 (CLC); Protocol 1976; Protocol 1992
- Establishment of an International Fund for Compensation for Oil Pollution Damage 1971 (FUND); Protocol of 1976 and Protocol 1992.
- Limitation of Liability for Maritime Claims 1976 (LLMC)
- Maritime Search and Rescue 1979

ILO Conventions

- No.16 Medical Examination of Young Persons 1921
- No.22 Articles of Agreement 1926 (refer to Merchant Shipping Notice MSN-0021)
- No.58 Minimum Age (Revised) 1936
- No.87 Freedom of Association and Protection of Right to Organize, 1948
- No.108 Seafarers' Identity Documents 1958
- No.111 Discrimination (Employment and Occupation), 1958
- No.138 Minimum Age 1973
- No.23 Repatriation of Seamen, Convention, 1926
- No.55 Shipowners' Liability (Sick and Injured Seamen) Convention, 1936
- No.92 Accommodation of Crews Convention (Revised), 1949
- No.133 Accommodation of Crews (Supplementary Provisions) Convention, 1970 (refer to Merchant Shipping Notice MSN - 0017)
- No.134 Prevention of Accidents (Seafarers) Convention, 1970
- No.147 Merchant Shipping (Minimum Standards) Convention, 1976 and Protocol to the Merchant Shipping (Minimum Standards) Convention 1976

List of Contributors who assisted in the development of IMMARBE's Code of Standards for Yachts of 24m or above and 500 GT or more in Commercial or Private use

We wish to express our gratitude for the assistance received from the following:

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Mega Yacht Technical Services (MTS), USA, Peter Baker

SEAmagine Hydrospace Corporation, USA, Will Kohnen

YCO, Monaco, Jim Evans

Relevant Conventions

SOLAS

SOLAS II-1/Regulation 2 - Definitions

2 *Length of the ship* is the length measured between perpendiculars taken at the extremities of the deepest subdivision load line.

3 *Breadth of the ship* is the extreme width from outside of frame to outside of frame at or below the deepest subdivision load line.

SOLAS II-1/ Regulation 7 - Special Requirements concerning Passenger Ship Subdivision

5 A main transverse bulkhead may be stepped provided that it meets one of the following conditions:

- .1 the combined length of the two compartments, separated by the bulkhead in question, does not exceed either 90% of the floodable length or twice the permissible length, except that, in ships having a factor of subdivision greater than 0.9, the combined length of the two compartments in question shall not exceed the permissible length;

SOLAS II-1/Regulation 8 - Stability of Passenger Ships in Damaged Condition

1.1 Sufficient intact stability shall be provided in all service conditions so as to enable the ship to withstand the final stage of flooding of any one main compartment which is required to be within the floodable length.

1.2 Where two adjacent main compartments are separated by a bulkhead which is stepped under the conditions of [regulation 7.5.1](#) the intact stability shall be adequate to withstand the flooding of those two adjacent main compartments.

1.3 Where the required factor of subdivision is 0.5 or less but more than 0.33 intact stability shall be adequate to withstand the flooding of any two adjacent main compartments.

1.4 Where the required factor of subdivision is 0.33 or less the intact stability shall be adequate to withstand the flooding of any three adjacent main compartments.

2.1 The requirements of paragraph 1 shall be determined by calculations which are in accordance with paragraphs 3, 4 and 6 and which take into consideration the proportions and design characteristics of the ship and the arrangement and configuration of the damaged compartments. In making these calculations the ship is to be assumed in the worst anticipated service condition as regards stability.

2.2 Where it is proposed to fit decks, inner skins or longitudinal bulkheads of sufficient tightness to seriously restrict the flow of water, the Administration shall be satisfied that proper consideration is given to such restrictions in the calculations.

2.3 The stability required in the final condition after damage, and after equalization where provided, shall be determined as follows:

2.3.1 The positive residual righting lever curve shall have a minimum range of 15° beyond the angle of equilibrium. This range may be reduced to a minimum of 10°, in the case where the area under the righting lever curve is that specified in paragraph 2.3.2, increased by the ratio:

$$\frac{15}{\text{range}}$$

where the range is expressed in degrees.

2.3.2 The area under the righting lever curve shall be at least 0.015 metre-radians, measured from the angle of equilibrium to the lesser of:

- .1 the angle at which progressive flooding occurs;
- .2 22° (measured from the upright) in the case of one-compartment flooding, or 27° (measured from the upright) in the case of the simultaneous flooding of two or more adjacent compartments.

2.3.3 A residual righting lever is to be obtained within the range of positive stability, taking into account the greatest of the following heeling moments:

- .1 the crowding of all passengers towards one side;
- .2 the launching of all fully loaded davit-launched survival craft on one side;
- .3 due to wind pressure;

as calculated by the formula:

$$GZ \text{ (in metres)} = \frac{\text{heeling moment}}{\text{displacement}} + 0.04$$

However, in no case is this righting lever to be less than 0.1 m.

2.3.4 For the purpose of calculating the heeling moments in paragraph 2.3.3, the following assumptions shall be made:

- .1 Moments due to crowding of passengers:
 - .1.1 four persons per square metre;
 - .1.2 a mass of 75 kg for each passenger;
 - .1.3 passengers shall be distributed on available deck areas towards one side of the ship on the decks where muster stations are located and in such a way that they produce the most adverse heeling moment.
- .2 Moments due to launching of all fully loaded davit-launched survival craft on one side:
 - .2.1 all lifeboats and rescue boats fitted on the side to which the ship has heeled after having sustained damage shall be assumed to be swung out fully loaded and ready for lowering;
 - .2.2 for lifeboats which are arranged to be launched fully loaded from the stowed position, the maximum heeling moment during launching shall be taken;
 - .2.3 a fully loaded davit-launched liferaft attached to each davit on the side to which the ship has heeled after having sustained damage shall be assumed to be swung out ready for lowering;
 - .2.4 persons not in the life-saving appliances which are swung out shall not provide either additional heeling or righting moment;
 - .2.5 life-saving appliances on the side of the ship opposite to the side to which the ship has heeled shall be assumed to be in a stowed position.
- .3 Moments due to wind pressure:
 - .3.1 a wind pressure of 120 N/m² to be applied;
 - .3.2 the area applicable shall be the projected lateral area of the ship above the waterline corresponding to the intact condition;
 - .3.3 the moment arm shall be the vertical distance from a point at one half of the mean draught corresponding to the intact condition to the centre of gravity of the lateral area.

2.4 In intermediate stages of flooding, the maximum righting lever shall be at least 0.05 m and the range of positive righting levers shall be at least 7°. In all cases, only one breach in the hull and only one free surface need be assumed.

3 For the purpose of making damage stability calculations the volume and surface permeabilities shall be in general as follows:

Spaces	Permiability
Appropriated to cargo, coal and stores	60
Occupied by accommodation	95
Occupied by machinery	85
Intended for liquids	0 or 95 (whichever results in the more severe requirements)

Higher surface permeabilities are to be assumed in respect of spaces which, in the vicinity of the damage waterplane, contain no substantial quantity of accommodation or machinery and spaces which are not generally occupied by any substantial quantity of cargo or stores.

4 Assumed extent of damage shall be as follows:

- .1 longitudinal extent: 3 m plus 3% of the length of the ship, or 11 m, whichever is the less. Where the required factor of subdivision is 0.33 or less the assumed longitudinal extent of damage shall be increased as necessary so as to include any two consecutive main transverse watertight bulkheads;
- .2 transverse extent (measured inboard from the ship's side, at right angles to the centreline at the level of the deepest subdivision load line): a distance of one fifth of the breadth of the ship, as defined in regulation 2; and
- .3 vertical extent: from the base line upwards without limit;
- .4 if any damage of lesser extent than that indicated in paragraphs 4.1, 4.2 and 4.3 would result in a more severe condition regarding heel or loss of metacentric height, such damage shall be assumed in the calculations.

5 Unsymmetrical flooding is to be kept to a minimum consistent with efficient arrangements. Where it is necessary to correct large angles of heel, the means adopted shall, where practicable, be self-acting, but in any case where controls to cross-flooding fittings are provided they shall be operable from above the bulkhead deck. These fittings together with their controls shall be acceptable to the Administration. The maximum angle of heel after flooding but before equalization shall not exceed 15°. Where cross-flooding fittings are required the time for equalization shall not exceed 15 min. Suitable information concerning the use of cross-flooding fittings shall be supplied to the master of the ship.**

6 The final conditions of the ship after damage and, in the case of unsymmetrical flooding, after equalization measures have been taken shall be as follows:

- .1 in the case of symmetrical flooding there shall be a positive residual metacentric height of at least 50 mm as calculated by the constant displacement method;
- .2 in the case of unsymmetrical flooding, the angle of heel for one-compartment flooding shall not exceed 7°. For the simultaneous flooding of two or more adjacent compartments, a heel of 12° may be permitted by the Administration;
- .3 in no case shall the margin line be submerged in the final stage of flooding. If it is considered that the margin line may become submerged during an intermediate stage of flooding, the Administration may require such investigations and arrangements as it considers necessary for the safety of the ship.

7.1 The master of the ship shall be supplied with the data necessary to maintain sufficient intact stability under service conditions to enable the ship to withstand the critical damage. In the case of ships requiring cross-flooding the master of the ship shall be informed of the conditions of stability on which the calculations of heel are based and be warned that excessive heeling might result should the ship sustain damage when in a less favourable condition.

7.2 The data referred to in paragraph 7.1 to enable the master to maintain sufficient intact stability shall include information which indicates the maximum permissible height of the ship's centre of gravity above keel (KG), or alternatively the minimum permissible metacentric height (GM), for a range of draughts or displacements sufficient to include all service conditions. The information shall show the influence of various trims taking into account the operational limits.

7.3 Each ship shall have scales of draughts marked clearly at the bow and stern. In the case where the draught marks are not located where they are easily readable, or operational constraints for a particular trade make it difficult to read the draught marks, then the ship shall also be fitted with a reliable draught indicating system by which the bow and stern draughts can be determined.

7.4 On completion of loading of the ship and prior to its departure, the master shall determine the ship's trim and stability and also ascertain and record that the ship is in compliance with stability criteria in the relevant regulations. The determination of the ship's stability shall always be made by calculation. The Administration may accept the use of an electronic loading and stability computer or equivalent means for this purpose.

8.1 No relaxation from the requirements for damage stability may be considered by the Administration unless it is shown that the intact metacentric height in any service condition necessary to meet these requirements is excessive for the service intended.

8.2 Relaxations from the requirements for damage stability shall be permitted only in exceptional cases and subject to the condition that the Administration is to be satisfied that the proportions, arrangements and other characteristics of the ship are the most favourable to stability after damage which can practically and reasonably be adopted in the particular circumstances.

* Refer to MSC/Circ.541 (as may be revised): Guidance notes on the integrity of flooding boundaries above the bulkhead deck of passenger ships for proper application of regulations II-1/8 and 20, paragraph 1, of SOLAS 1974, as amended.

** Refer to the Recommendation on a standard method for establishing compliance with the requirements for cross-flooding arrangements in passenger ships adopted by the Organization by resolution A.266(VIII).

SOLAS II-1/Regulation 15 - Openings in Watertight Bulkheads in Passenger Ships

(This regulation applies to ships constructed on or after 1 February 1992)

1 The number of openings in watertight bulkheads shall be reduced to the minimum compatible with the design and proper working of the ship; satisfactory means shall be provided for closing these openings.

2.1 Where pipes, scuppers, electric cables, etc., are carried through watertight subdivision bulkheads, arrangements shall be made to ensure the watertight integrity of the bulkheads.

2.2 Valves not forming part of a piping system shall not be permitted in watertight subdivision bulkheads.

2.3 Lead or other heat sensitive materials shall not be used in systems which penetrate watertight subdivision bulkheads, where deterioration of such systems in the event of fire would impair the watertight integrity of the bulkheads.

3.1 No doors, manholes, or access openings are permitted:

.1 in the collision bulkhead below the margin line;

.2 in watertight transverse bulkheads dividing a cargo space from an adjoining cargo space or from a permanent or reserve bunker, except as provided in [paragraph 10.1](#) and in regulation 16.

3.2 Except as provided in paragraph 3.3, the collision bulkhead may be pierced below the margin line by not more than one pipe for dealing with fluid in the forepeak tank, provided that the pipe is fitted with a screwdown valve capable of being operated from above the bulkhead deck, the valve chest being secured inside the forepeak to the collision bulkhead. The Administration may, however, authorize the fitting of this valve on the after side of the collision bulkhead provided that the valve is readily accessible under all service conditions and the space in which it is located is not a cargo space.

3.3 If the forepeak is divided to hold two different kinds of liquids the Administration may allow the collision bulkhead to be pierced below the margin line by two pipes, each of which is fitted as required by paragraph 3.2, provided the Administration is satisfied that there is no practical alternative to the fitting of such a second pipe and that, having regard to the additional subdivision provided in the forepeak, the safety of the ship is maintained.

4.1 Watertight doors fitted in bulkheads between permanent and reserve bunkers shall always be accessible, except as provided in [paragraph 9.4](#) for between-deck bunker doors.

4.2 Satisfactory arrangements shall be made by means of screens or otherwise to prevent the coal from interfering with the closing of watertight bunker doors.

5 Subject to [paragraph 11](#), not more than one door, apart from the doors to bunkers and shaft tunnels, may be fitted in each main transverse bulkhead within spaces containing the main and auxiliary propulsion machinery including boilers serving the needs of propulsion and all permanent bunkers. Where two or more shafts are fitted, the tunnels shall be connected by an intercommunicating passage. There shall be only one door between the machinery space and the tunnel spaces where two shafts are fitted and only two doors where there are more than two shafts. All these doors shall be of the sliding type and shall be so located as to have their sills as high as practicable. The hand gear for operating these doors from above the bulkhead deck shall be situated outside the spaces containing the machinery.

6.1 Watertight doors, except as provided in [paragraph 10.1](#) or regulation 16, shall be power-operated sliding doors complying with the requirements of paragraph 7 capable of being

closed simultaneously from the central operating console at the navigation bridge in not more than 60 s with the ship in the upright position.

6.2 The means of operation whether by power or by hand of any power-operated sliding watertight door shall be capable of closing the door with the ship listed to 15° either way. Consideration shall also be given to the forces which may act on either side of the door as may be experienced when water is flowing through the opening applying a static head equivalent to a water height of at least 1m above the sill on the centreline of the door.

6.3 Watertight door controls, including hydraulic piping and electric cables, shall be kept as close as practicable to the bulkhead in which the doors are fitted, in order to minimize the likelihood of them being involved in any damage which the ship may sustain. The positioning of watertight doors and their controls shall be such that if the ship sustains damage within one fifth of the breadth of the ship, as defined in regulation 2, such distance being measured at right angles to the centreline at the level of the deepest subdivision load line, the operation of the watertight doors clear of the damaged portion of the ship is not impaired.

6.4 All power-operated sliding watertight doors shall be provided with means of indication which will show at all remote operating positions whether the doors are open or closed. Remote operating positions shall only be at the navigation bridge as required by paragraph 7.1.5 and at the location where hand operation above the bulkhead deck is required by paragraph 7.1.4.

6.5 In ships constructed before 1 February 1992, doors which do not comply with paragraphs 6.1 to 6.4 shall be closed before the voyage commences, and shall be kept closed during navigation; the time of opening such doors in port and of closing them before the ship leaves port shall be entered into the log-book.

7.1 Each power-operated sliding watertight door:

.1 shall have a vertical or horizontal motion;

.2 shall, subject to [paragraph 11](#), be normally limited to a maximum clear opening width of 1.2 m. The Administration may permit larger doors only to the extent considered necessary for the effective operation of the ship provided that other safety measures, including the following, are taken into consideration:

.2.1 special consideration shall be given to the strength of the door and its closing appliances in order to prevent leakages;

.2.2 the door shall be located outside the damage $\frac{B}{5}$ zone ;

.2.3 the door shall be kept closed when the ship is at sea, except for limited periods when absolutely necessary as determined by the Administration;

.3 shall be fitted with the necessary equipment to open and close the door using electric power, hydraulic power, or any other form of power that is acceptable to the Administration;

.4 shall be provided with an individual hand-operated mechanism. It shall be possible to open and close the door by hand at the door itself from either side, and in addition, close the door from an accessible position above the bulkhead deck with an all round crank motion or some other movement providing the same degree of safety acceptable to the Administration. Direction of rotation or other movement is to be clearly indicated at all operating positions. The time necessary for the complete closure of the door, when operating by hand gear, shall not exceed 90 s with the ship in the upright position;

.5 shall be provided with controls for opening and closing the door by power from both sides of the door and also for closing the door by power from the central operating console at the navigation bridge;

.6 shall be provided with an audible alarm, distinct from any other alarm in the area, which will sound whenever the door is closed remotely by power and which shall sound for at least 5 s but no more than 10 s before the door begins to move and shall continue sounding until the door is completely closed. In the case of remote hand operation it is sufficient for the audible alarm to sound only when the door is moving. Additionally, in passenger areas and areas of high ambient noise the Administration may require the audible alarm to be supplemented by an intermittent visual signal at the door; and

.7 shall have an approximately uniform rate of closure under power. The closure time, from the time the door begins to move to the time it reaches the completely closed position, shall in no case be less than 20 s or more than 40 s with the ship in the upright position.

7.2 The electrical power required for power-operated sliding watertight doors shall be supplied from the emergency switchboard either directly or by a dedicated distribution board situated above the bulkhead deck. The associated control, indication and alarm circuits shall be supplied from the emergency switchboard either directly or by a dedicated distribution board situated above the bulkhead deck and be capable of being automatically supplied by the transitional source of emergency electrical power required by [regulation 42.3.1.3](#) in the event of failure of either the main or emergency source of electrical power.

7.3 Power-operated sliding watertight doors shall have either:

.1 a centralized hydraulic system with two independent power sources each consisting of a motor and pump capable of simultaneously closing all doors. In addition, there shall be for the whole installation hydraulic accumulators of sufficient capacity to operate all the doors at least three times, i.e. closed-open-closed, against an adverse list of 15°. This operating cycle shall be capable of being carried out when the accumulator is at the pump cut-in pressure. The fluid used shall be chosen considering the temperatures liable to be encountered by the installation during its service. The power operating system shall be designed to minimize the possibility of having a single failure in the hydraulic piping adversely affect the operation of more than one door. The hydraulic system shall be provided with a low-level alarm for hydraulic fluid reservoirs serving the power-operated system and a low gas pressure alarm or other effective means of monitoring loss of stored energy in hydraulic accumulators. These alarms are to be audible and visual and shall be situated on the central operating console at the navigation bridge; or

.2 an independent hydraulic system for each door with each power source consisting of a motor and pump capable of opening and closing the door. In addition, there shall be a hydraulic accumulator of sufficient capacity to operate the door at least three times, i.e. closed-open-closed, against an adverse list of 15°. This operating cycle shall be capable of being carried out when the accumulator is at the pump cut-in pressure. The fluid used shall be chosen considering the temperatures liable to be encountered by the installation during its service. A low gas pressure group alarm or other effective means of monitoring loss of stored energy in hydraulic accumulators shall be provided at the central operating console on the navigation bridge. Loss of stored energy indication at each local operating position shall also be provided; or

.3 an independent electrical system and motor for each door with each power source consisting of a motor capable of opening and closing the door. The power source shall

be capable of being automatically supplied by the transitional source of emergency electrical power as required by [regulation 42.4.2](#) - in the event of failure of either the main or emergency source of electrical power and with sufficient capacity to operate the door at least three times, i.e. closed-open-closed, against an adverse list of 15°.

For the systems specified in 7.3.1, 7.3.2 and 7.3.3, provision should be made as follows:

Power systems for power-operated watertight sliding doors shall be separate from any other power system. A single failure in the electric or hydraulic power-operated systems excluding the hydraulic actuator shall not prevent the hand operation of any door.

7.4 Control handles shall be provided at each side of the bulkhead at a minimum height of 1.6 m above the floor and shall be so arranged as to enable persons passing through the doorway to hold both handles in the open position without being able to set the power closing mechanism in operation accidentally. The direction of movement of the handles in opening and closing the door shall be in the direction of door movement and shall be clearly indicated.

7.5 As far as practicable, electrical equipment and components for watertight doors shall be situated above the bulkhead deck and outside hazardous areas and spaces.

7.6 The enclosures of electrical components necessarily situated below the bulkhead deck shall provide suitable protection against the ingress of water.*

7.7 Electric power, control, indication and alarm circuits shall be protected against fault in such a way that a failure in one door circuit will not cause a failure in any other door circuit. Short circuits or other faults in the alarm or indicator circuits of a door shall not result in a loss of power operation of that door. Arrangements shall be such that leakage of water into the electrical equipment located below the bulkhead deck will not cause the door to open.

7.8 A single electrical failure in the power operating or control system of a power-operated sliding watertight door shall not result in a closed door opening. Availability of the power supply should be continuously monitored at a point in the electrical circuit as near as practicable to each of the motors required by paragraph 7.3. Loss of any such power supply should activate an audible and visual alarm at the central operating console at the navigation bridge.

8.1 The central operating console at the navigation bridge shall have a "master mode" switch with two modes of control: a "local control" mode which shall allow any door to be locally opened and locally closed after use without automatic closure, and a "doors closed" mode which shall automatically close any door that is open. The "doors closed" mode shall permit doors to be opened locally and shall automatically reclose the doors upon release of the local control mechanism. The "master mode" switch shall normally be in the "local control" mode. The "doors closed" mode shall only be used in an emergency or for testing purposes. Special consideration shall be given to the reliability of the "master mode" switch.

8.2 The central operating console at the navigation bridge shall be provided with a diagram showing the location of each door, with visual indicators to show whether each door is open or closed. A red light shall indicate a door is fully open and a green light shall indicate a door is fully closed. When the door is closed remotely, the red light shall indicate the intermediate position by flashing. The indicating circuit shall be independent of the control circuit for each door.

8.3 It shall not be possible to remotely open any door from the central operating console.

9.1 All watertight doors shall be kept closed during navigation except that they may be opened during navigation as specified in paragraphs 9.2, 9.3 and 9.4. Watertight doors of width of more than 1.2 m permitted by paragraph 11 may only be opened in the

circumstances detailed in that paragraph. Any door which is opened in accordance with this paragraph shall be ready to be immediately closed.

9.2 A watertight door may be opened during navigation to permit the passage of passengers or crew, or when work in the immediate vicinity of the door necessitates it being opened. The door must be immediately closed when transit through the door is complete or when the task which necessitated it being open is finished.

9.3 Certain watertight doors may be permitted to remain open during navigation only if considered absolutely necessary; that is, being open is determined essential to the safe and effective operation of the ship's machinery or to permit passengers normally unrestricted access throughout the passenger area. Such determination shall be made by the Administration only after careful consideration of the impact on ship operations and survivability. A watertight door permitted to remain thus open shall be clearly indicated in the ship's stability information and shall always be ready to be immediately closed.

9.4 Sliding watertight doors fitted between bunkers in the between-decks below the bulkhead deck may sometimes be open at sea for the purpose of trimming coal. The opening and closing of these doors shall be recorded in such log-book as may be prescribed by the Administration.

10.1 If the Administration is satisfied that such doors are essential, watertight doors of satisfactory construction may be fitted in watertight bulkheads dividing cargo between deck spaces. Such doors may be hinged, rolling or sliding doors but shall not be remotely controlled. They shall be fitted at the highest level and as far from the shell plating as practicable, but in no case shall the outboard vertical edges be situated at a distance from the shell plating which is less than one fifth of the breadth of the ship, as defined in regulation 2, such distance being measured at right angles to the centreline at the level of the deepest subdivision load line.

10.2 Such doors shall be closed before the voyage commences and shall be kept closed during navigation; the time of opening such doors in port and of closing them before the ship leaves port shall be entered in the log-book. Should any of the doors be accessible during the voyage, they shall be fitted with a device which prevents unauthorized opening. When it is proposed to fit such doors, the number and arrangements shall receive the special consideration of the Administration.

11 Portable plates on bulkheads shall not be permitted except in machinery spaces. Such plates shall always be in place before the ship leaves port, and shall not be removed during navigation except in case of urgent necessity at the discretion of the master. The times of removal and replacement of any such portable plates shall be recorded in the log-book, and the necessary precautions shall be taken in replacing them to ensure that the joints are watertight. The Administration may permit not more than one power-operated sliding watertight door in each main transverse bulkhead larger than those specified in [paragraph 7.1.2](#) to be substituted for these portable plates, provided these doors are closed before the ship leaves port and remain closed during navigation except in case of urgent necessity at the discretion of the master. These doors need not meet the requirements of [paragraph 7.1.4](#) regarding complete closure by hand-operated gear in 90 s. The time of opening and closing these doors, whether the ship is at sea or in port, shall be recorded in the log-book.

12.1 Where trunkways or tunnels for access from crew accommodation to the stokehold, for piping, or for any other purpose are carried through main transverse watertight bulkheads, they shall be watertight and in accordance with the requirements of [regulation 19](#). The access to at least one end of each such tunnel or trunkway, if used as a passage at sea, shall be through a trunk extending watertight to a height sufficient to permit access above the margin line. The access to the other end of the trunkway or tunnel may be through a

watertight door of the type required by its location in the ship. Such trunkways or tunnels shall not extend through the first subdivision bulkhead abaft the collision bulkhead.

12.2 Where it is proposed to fit tunnels piercing main transverse watertight bulkheads, these shall receive the special consideration of the Administration.

12.3 Where trunkways in connection with refrigerated cargo and ventilation or forced draught trunks are carried through more than one watertight bulkhead, the means of closure at such openings shall be operated by power and be capable of being closed from a central position situated above the bulkhead deck.

* Refer to the following IEC publication 60529 (1989), as amended by its amendment 1 (1999):

- .1 electrical motors, associated circuits and control components; protected to IPX7 standard;
- .2 door position indicators and associated circuit components; protected to IPX8 standard; and
- .3 door movement warning signals; protected to IPX6 standard.

Other arrangements for the enclosures of electrical components may be fitted provided the Administration is satisfied that an equivalent protection is achieved. The water pressure testing of the enclosures protected to IPX8 shall be based on the pressure that may occur at the location of the component during flooding for a period of 36 h.

SOLAS II-1/Regulation 19 - Construction and Initial Tests of Watertight Decks, Trunks, etc., in Passenger Ships and Cargo Ships

1 Watertight decks, trunks, tunnels, duct keels and ventilators shall be of the same strength as watertight bulkheads at corresponding levels. The means used for making them watertight, and the arrangements adopted for closing openings in them, shall be to the satisfaction of the Administration. Watertight ventilators and trunks shall be carried at least up to the bulkhead deck in passenger ships and up to the freeboard deck in cargo ships.

5 After completion, a hose or flooding test shall be applied to watertight decks and a hose test to watertight trunks, tunnels and ventilators.

SOLAS II-1/Regulation 21 - Bilge Pumping Arrangements

(Paragraphs 1.6 and 2.9 of this regulation apply to ships constructed on or after 1 February 1992)

1 Passenger ships and cargo ships

1.1 An efficient bilge pumping system shall be provided, capable of pumping from and draining any watertight compartment other than a space permanently appropriated for the carriage of fresh water, water ballast, oil fuel or liquid cargo and for which other efficient means of pumping are provided, under all practical conditions. Efficient means shall be provided for draining water from insulated holds.

1.2 Sanitary, ballast and general service pumps may be accepted as independent power bilge pumps if fitted with the necessary connections to the bilge pumping system.

1.3 All bilge pipes used in or under coal bunkers or fuel storage tanks or in boiler or machinery spaces, including spaces in which oil-settling tanks or oil fuel pumping units are situated, shall be of steel or other suitable material.

1.4 The arrangement of the bilge and ballast pumping system shall be such as to prevent the possibility of water passing from the sea and from water ballast spaces into the cargo and machinery spaces, or from one compartment to another. Provision shall be made to prevent any deep tank having bilge and ballast connections being inadvertently flooded from the sea when containing cargo, or being discharged through a bilge pump when containing water ballast.

1.5 All distribution boxes and manually operated valves in connection with the bilge pumping arrangements shall be in positions which are accessible under ordinary circumstances.

1.6 Provision shall be made for the drainage of enclosed cargo spaces situated on the bulkhead deck of a passenger ship and on the freeboard deck of a cargo ship, provided that the Administration may permit the means of drainage to be dispensed with in any particular compartment of any ship or class of ship if it is satisfied that by reason of size or internal subdivision of those spaces the safety of the ship is not thereby impaired.

1.6.1 Where the freeboard to the bulkhead deck or the freeboard deck, respectively, is such that the deck edge is immersed when the ship heels more than 5°, the drainage shall be by means of a sufficient number of scuppers of suitable size discharging directly overboard, fitted in accordance with the requirements of [regulation 17](#) in the case of a passenger ship and the requirements for scuppers, inlets and discharges of the International Convention on Load Lines in force in the case of a cargo ship.

1.6.2 Where the freeboard is such that the edge of the bulkhead deck or the edge of the freeboard deck, respectively, is immersed when the ship heels 5° or less, the drainage of the enclosed cargo spaces on the bulkhead deck or on the freeboard deck, respectively, shall be led to a suitable space, or spaces, of adequate capacity, having a high water level alarm and provided with suitable arrangements for discharge overboard. In addition it shall be ensured that:

- .1 the number, size and disposition of the scuppers are such as to prevent unreasonable accumulation of free water;
- .2 the pumping arrangements required by this regulation for passenger ships or cargo ships, as applicable, take account of the requirements for any fixed pressure water-spraying fire extinguishing system;
- .3 water contaminated with petrol or other dangerous substances is not drained to machinery spaces or other spaces where sources of ignition may be present; and

.4 where the enclosed cargo space is protected by a carbon dioxide fire-extinguishing system the deck scuppers are fitted with means to prevent the escape of the smothering gas.

3 Cargo ships

At least two power pumps connected to the main bilge system shall be provided, one of which may be driven by the propulsion machinery. If the Administration is satisfied that the safety of the ship is not impaired, bilge pumping arrangements may be dispensed with in particular compartments.

SOLAS II-1/Regulation 25-10 - External Openings in Cargo Ships

- 1 All external openings leading to compartments assumed intact in the damage analysis, which are below the final damage waterline, are required to be watertight.
- 2 External openings required to be watertight in accordance with paragraph 1 shall be of sufficient strength and, except for cargo hatch covers, shall be fitted with indicators on the bridge.
- 3 Openings in the shell plating below the deck limiting the vertical extent of damage shall be kept permanently closed while at sea. Should any of these openings be accessible during the voyage, they shall be fitted with a device which prevents unauthorized opening.
- 4 Notwithstanding the requirements of paragraph 3, the Administration may authorize that particular doors may be opened at the discretion of the master, if necessary for the operation of the ship and provided that the safety of the ship is not impaired.
- 5 Other closing appliances which are kept permanently closed at sea to ensure the watertight integrity of external openings shall be provided with a notice affixed to each appliance to the effect that it is to be kept closed. Manholes fitted with closely bolted covers need not be so marked.

SOLAS II-1/Regulation 29 - Steering Gear

5 Main and auxiliary steering gear power units shall be:

- .1 arranged to restart automatically when power is restored after a power failure; and
- .2 capable of being brought into operation from a position on the navigation bridge. In the event of a power failure to any one of the steering gear power units, an audible and visual alarm shall be given on the navigation bridge.

7 Steering gear control shall be provided:

- .1 for the main steering gear, both on the navigation bridge and in the steering gear compartment;
- .2 where the main steering gear is arranged in accordance with paragraph 6, by two independent control systems, both operable from the navigation bridge. This does not require duplication of the steering wheel or steering lever. Where the control system consists of a hydraulic telemotor, a second independent system need not be fitted, except in a tanker, chemical tanker or gas carrier of 10,000 gross tonnage and upwards;
- .3 for the auxiliary steering gear, in the steering gear compartment and, if power-operated, it shall also be operable from the navigation bridge and shall be independent of the control system for the main steering gear.

SOLAS II-1/Regulation 38 - Engineers' Alarm

An engineers' alarm shall be provided to be operated from the engine control room or at the manoeuvring platform as appropriate, and shall be clearly audible in the engineers' accommodation.

SOLAS II-2/Regulation 4 - Prevention of overpressure

- .2.2.4 Provisions shall be made to prevent overpressure in any oil tank or in any part of the oil fuel system, including the filling pipes served by pumps on board. Air and overflow pipes and relief valves shall discharge to a position where there is no risk of fire or explosion from the emergence of oils and vapour and shall not lead into crew spaces, passenger spaces nor into special category spaces, closed ro-ro cargo spaces, machinery spaces or similar spaces.

SOLAS II-2/Regulation 7 - Detection and Alarm

1 Purpose

The purpose of this regulation is to detect a fire in the space of origin and to provide for alarm for safe escape and fire-fighting activity. For this purpose, the following functional requirements shall be met:

- .1 fixed fire detection and fire alarm system installations shall be suitable for the nature of the space, fire growth potential and potential generation of smoke and gases;
- .2 manually operated call points shall be placed effectively to ensure a readily accessible means of notification; and
- .3 fire patrols shall provide an effective means of detecting and locating fires and alerting the navigation bridge and fire teams.

2 General requirements

2.1 A fixed fire detection and fire alarm system shall be provided in accordance with the provisions of this regulation.

2.2 A fixed fire detection and fire alarm system and a sample extraction smoke detection system required in this regulation and other regulations in this part shall be of an approved type and comply with the Fire Safety Systems Code.

2.3 Where a fixed fire detection and fire alarm system is required for the protection of spaces other than those specified in paragraph 5.1, at least one detector complying with the Fire Safety Systems Code shall be installed in each such space.

3 Initial and periodical tests

3.1 The function of fixed fire detection and fire alarm systems required by the relevant regulations of this chapter shall be tested under varying conditions of ventilation after installation.

3.2 The function of fixed fire detection and fire alarm systems shall be periodically tested to the satisfaction of the Administration by means of equipment producing hot air at the appropriate temperature, or smoke or aerosol particles having the appropriate range of density or particle size, or other phenomena associated with incipient fires to which the detector is designed to respond.

4 Protection of machinery spaces

4.1 Installation

A fixed fire detection and fire alarm system shall be installed in:

- .1 periodically unattended machinery spaces; and
- .2 machinery spaces where:
 - .2.1 the installation of automatic and remote control systems and equipment has been approved in lieu of continuous manning of the space; and
 - .2.2 the main propulsion and associated machinery, including the main sources of electrical power, are provided with various degrees of automatic or remote control and are under continuous manned supervision from a control room.

4.2 Design

The fixed fire detection and fire alarm system required in paragraph 4.1.1 shall be so designed and the detectors so positioned as to detect rapidly the onset of fire in any part of those spaces and under any normal conditions of operation of the machinery and variations

of ventilation as required by the possible range of ambient temperatures. Except in spaces of restricted height and where their use is specially appropriate, detection systems using only thermal detectors shall not be permitted. The detection system shall initiate audible and visual alarms distinct in both respects from the alarms of any other system not indicating fire, in sufficient places to ensure that the alarms are heard and observed on the navigation bridge and by a responsible engineer officer. When the navigation bridge is unmanned, the alarm shall sound in a place where a responsible member of the crew is on duty.

5 Protection of accommodation and service spaces and control stations

5.1 Smoke detectors in accommodation spaces

Smoke detectors shall be installed in all stairways, corridors and escape routes within accommodation spaces as provided in paragraphs 5.2, 5.3 and 5.4. Consideration shall be given to the installation of special purpose smoke detectors within ventilation ducting.

5.2 Requirements for passenger ships carrying more than 36 passengers

A fixed fire detection and fire alarm system shall be so installed and arranged as to provide smoke detection in service spaces, control stations and accommodation spaces, including corridors, stairways and escape routes within accommodation spaces. Smoke detectors need not be fitted in private bathrooms and galleys. Spaces having little or no fire risk such as voids, public toilets, carbon dioxide rooms and similar spaces need not be fitted with a fixed fire detection and alarm system.

5.3 Requirements for passenger ships carrying not more than 36 passengers

There shall be installed throughout each separate zone, whether vertical or horizontal, in all accommodation and service spaces and, where it is considered necessary by the Administration, in control stations, except spaces which afford no substantial fire risk such as void spaces, sanitary spaces, etc., either:

- .1 a fixed fire detection and fire alarm system so installed and arranged as to detect the presence of fire in such spaces and providing smoke detection in corridors, stairways and escape routes within accommodation spaces; or
- .2 an automatic sprinkler, fire detection and fire alarm system of an approved type complying with the relevant requirements of the Fire Safety Systems Code and so installed and arranged as to protect such spaces and, in addition, a fixed fire detection and fire alarm system and so installed and arranged as to provide smoke detection in corridors, stairways and escape routes within accommodation spaces.

5.4 Protection of atriums in passenger ships

The entire main vertical zone containing the atrium shall be protected throughout with a smoke detection system.

5.5 Cargo ships

Accommodation and service spaces and control stations of cargo ships shall be protected by a fixed fire detection and fire alarm system and/or an automatic sprinkler, fire detection and fire alarm system as follows, depending on a protection method adopted in accordance with [regulation 9.2.3.1](#).

5.5.1 Method IC - A fixed fire detection and fire alarm system shall be so installed and arranged as to provide smoke detection in all corridors, stairways and escape routes within accommodation spaces.

5.5.2 Method IIC - An automatic sprinkler, fire detection and fire alarm system of an approved type complying with the relevant requirements of the Fire Safety Systems Code

shall be so installed and arranged as to protect accommodation spaces, galleys and other service spaces, except spaces which afford no substantial fire risk such as void spaces, sanitary spaces, etc. In addition, a fixed fire detection and fire alarm system shall be so installed and arranged as to provide smoke detection in all corridors, stairways and escape routes within accommodation spaces.

5.5.3 *Method IIIC* - A fixed fire detection and fire alarm system shall be so installed and arranged as to detect the presence of fire in all accommodation spaces and service spaces, providing smoke detection in corridors, stairways and escape routes within accommodation spaces, except spaces which afford no substantial fire risk such as void spaces, sanitary spaces, etc. In addition, a fixed fire detection and fire alarm system shall be so installed and arranged as to provide smoke detection in all corridors, stairways and escape routes within accommodation spaces.

6 Protection of cargo spaces in passenger ships

A fixed fire detection and fire alarm system or a sample extraction smoke detection system shall be provided in any cargo space which, in the opinion of the Administration, is not accessible, except where it is shown to the satisfaction of the Administration that the ship is engaged on voyages of such short duration that it would be unreasonable to apply this requirement.

7 Manually operated call points

Manually operated call points complying with the Fire Safety Systems Code shall be installed throughout the accommodation spaces, service spaces and control stations. One manually operated call point shall be located at each exit. Manually operated call points shall be readily accessible in the corridors of each deck such that no part of the corridor is more than 20 m from a manually operated call point.

9 Fire alarm signalling systems in passenger ships*

9.1 Passenger ships shall at all times when at sea, or in port (except when out of service), be so manned or equipped as to ensure that any initial fire alarm is immediately received by a responsible member of the crew.

9.2 The control panel of fixed fire detection and fire alarm systems shall be designed on the fail-safe principle (e.g., an open detector circuit shall cause an alarm condition).

9.3 Passenger ships carrying more than 36 passengers shall have the fire detection alarms for the systems required by paragraph 5.2 centralized in a continuously manned central control station. In addition, controls for remote closing of the fire doors and shutting down the ventilation fans shall be centralized in the same location. The ventilation fans shall be capable of reactivation by the crew at the continuously manned control station. The control panels in the central control station shall be capable of indicating open or closed positions of fire doors and closed or off status of the detectors, alarms and fans. The control panel shall be continuously powered and shall have an automatic change-over to standby power supply in case of loss of normal power supply. The control panel shall be powered from the main source of electrical power and the emergency source of electrical power defined by [regulation II-1/42](#) unless other arrangements are permitted by the regulations, as applicable.

9.4 A special alarm, operated from the navigation bridge or fire control station, shall be fitted to summon the crew. This alarm may be part of the ship's general alarm system and shall be capable of being sounded independently of the alarm to the passenger spaces.

* Refer to the Code on Alarms and Indicators adopted by the Organization by resolution A.830(19).

SOLAS II-2/Regulation 9 - Containment of Fire

2.3.1 *Methods of protection in accommodation area*

2.3.1.1 One of the following methods of protection shall be adopted in accommodation and service spaces and control stations:

- .1 *Method IC* - The construction of internal divisional bulkheads of non-combustible "B" or "C" class divisions generally without the installation of an automatic sprinkler, fire detection and fire alarm system in the accommodation and service spaces, except as required by [regulation 7.5.5.1](#); or
- .2 *Method IIC* - The fitting of an automatic sprinkler, fire detection and fire alarm system as required by [regulation 7.5.5.2](#) for the detection and extinction of fire in all spaces in which fire might be expected to originate, generally with no restriction on the type of internal divisional bulkheads; or
- .3 *Method IIIC* - The fitting of a fixed fire detection and fire alarm system as required by [regulation 7.5.5.3](#) in spaces in which a fire might be expected to originate, generally with no restriction on the type of internal divisional bulkheads, except that in no case shall the area of any accommodation space or spaces bounded by an "A" or "B" class division exceed 50 m². However, consideration may be given by the Administration to increasing this area for public spaces.

2.3.1.2 The requirements for the use of non-combustible materials in the construction and insulation of boundary bulkheads of machinery spaces, control stations, service spaces, etc., and the protection of the above stairway enclosures and corridors will be common to all three methods outlined in paragraph 2.3.1.1.

3.1 Where "A" class divisions are penetrated, such penetrations shall be tested in accordance with the Fire Test Procedures Code, subject to the provisions of paragraph 4.1.1.5. In the case of ventilation ducts, paragraphs 7.1.2 and 7.3.1 apply. However, where a pipe penetration is made of steel or equivalent material having a thickness of 3 mm or greater and a length of not less than 900 mm (preferably 450 mm on each side of the division), and there are no openings, testing is not required. Such penetrations shall be suitably insulated by extension of the insulation at the same level of the division.

SOLAS II-2/Regulation 10 - Fire-Fighting

.6.4 Deep-fat cooking equipment

- .4 an alarm for indicating operation of the fire-extinguishing system in the galley where the equipment is installed;

SOLAS II-2/Regulation 18 - Helicopter Facilities

7 Helicopter refuelling and hangar facilities

Where the ship has helicopter refuelling and hangar facilities, the following requirements shall be complied with:

- .1 a designated area shall be provided for the storage of fuel tanks which shall be:
 - .1.1 as remote as is practicable from accommodation spaces, escape routes and embarkation stations; and
 - .1.2 isolated from areas containing a source of vapour ignition;
- .2 the fuel storage area shall be provided with arrangements whereby fuel spillage may be collected and drained to a safe location;
- .3 tanks and associated equipment shall be protected against physical damage and from a fire in an adjacent space or area;
- .4 where portable fuel storage tanks are used, special attention shall be given to:
 - .4.1 design of the tank for its intended purpose;
 - .4.2 mounting and securing arrangements;
 - .4.3 electric bonding; and
 - .4.4 inspection procedures;
- .5 storage tank fuel pumps shall be provided with means which permit shutdown from a safe remote location in the event of a fire. Where a gravity fuelling system is installed, equivalent closing arrangements shall be provided to isolate the fuel source;
- .6 the fuel pumping unit shall be connected to one tank at a time. The piping between the tank and the pumping unit shall be of steel or equivalent material, as short as possible, and protected against damage;
- .7 electrical fuel pumping units and associated control equipment shall be of a type suitable for the location and potential hazards;
- .8 fuel pumping units shall incorporate a device which will prevent over-pressurization of the delivery or filling hose;
- .9 equipment used in refuelling operations shall be electrically bonded;
- .10 "NO SMOKING" signs shall be displayed at appropriate locations;
- .11 hangar, refuelling and maintenance facilities shall be treated as category A machinery spaces with regard to structural fire protection, fixed fire-extinguishing and detection system requirements;
- .12 enclosed hangar facilities or enclosed spaces containing refuelling installations shall be provided with mechanical ventilation, as required by [regulation 20.3](#) for closed ro-ro spaces of cargo ships. Ventilation fans shall be of non-sparking type; and
- .13 electric equipment and wiring in enclosed hangars or enclosed spaces containing refuelling installations shall comply with [regulations 20.3.2, 20.3.3 and 20.3.4](#).

SOLAS II-2/ Regulation 20 - Protection of Vehicle, Special Category and Ro-Ro Spaces

3 Precaution against ignition of flammable vapours in closed vehicle spaces, closed ro-ro spaces and special category spaces

*3.1 Ventilation systems**

3.1.1 Capacity of ventilation systems

There shall be provided an effective power ventilation system sufficient to give at least the following air changes:

.1 Passenger ships:

Special category spaces	10 air changes per hour
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Closed ro-ro and vehicle spaces other than special category spaces for ships carrying more than 36 passengers	10 air changes per hour
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Closed ro-ro and vehicle spaces other than special category spaces for ships carrying not more than 36 passengers	6 air changes per hour
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.2 Cargo ships: 6 air changes per hour

The Administration may require an increased number of air changes when vehicles are being loaded and unloaded.

3.1.2 Performance of ventilation systems

3.1.2.1 In passenger ships, the power ventilation system required in paragraph 3.1.1 shall be separate from other ventilation systems and shall be in operation at all times when vehicles are in such spaces. Ventilation ducts serving such cargo spaces capable of being effectively sealed shall be separated for each such space. The system shall be capable of being controlled from a position outside such spaces.

3.1.2.2 In cargo ships, ventilation fans shall normally be run continuously whenever vehicles are on board. Where this is impracticable, they shall be operated for a limited period daily as weather permits and in any case for a reasonable period prior to discharge, after which period the ro-ro or vehicle space shall be proved gas-free. One or more portable combustible gas detecting instruments shall be carried for this purpose. The system shall be entirely separate from other ventilating systems. Ventilation ducts serving ro-ro or vehicle spaces shall be capable of being effectively sealed for each cargo space. The system shall be capable of being controlled from a position outside such spaces.

3.1.2.3 The ventilation system shall be such as to prevent air stratification and the formation of air pockets.

3.1.3 Indication of ventilation systems

Means shall be provided on the navigation bridge to indicate any loss of the required ventilating capacity.

3.1.4 Closing appliances and ducts

3.1.4.1 Arrangements shall be provided to permit a rapid shutdown and effective closure of the ventilation system from outside of the space in case of fire, taking into account the weather and sea conditions.

3.1.4.2 Ventilation ducts, including dampers, within a common horizontal zone shall be made of steel. In passenger ships, ventilation ducts that pass through other horizontal zones or machinery spaces shall be "A-60" class steel ducts constructed in accordance with regulations 9.7.2.1.1 and 9.7.2.1.2.

3.1.5 Permanent openings

Permanent openings in the side plating, the ends or deckhead of the space shall be so situated that a fire in the cargo space does not endanger stowage areas and embarkation stations for survival craft and accommodation spaces, service spaces and control stations in superstructures and deckhouses above the cargo spaces.

3.2 Electrical equipment and wiring

3.2.1 Except as provided in paragraph 3.2.2, electrical equipment and wiring shall be of a type suitable for use in an explosive petrol and air mixture.**

3.2.2 In case of other than special category spaces below the bulkhead deck, notwithstanding the provisions in paragraph 3.2.1, above a height of 450 mm from the deck and from each platform for vehicles, if fitted, except platforms with openings of sufficient size permitting penetration of petrol gases downwards, electrical equipment of a type so enclosed and protected as to prevent the escape of sparks shall be permitted as an alternative, on condition that the ventilation system is so designed and operated as to provide continuous ventilation of the cargo spaces at the rate of at least ten air changes per hour whenever vehicles are on board.

3.3 Electrical equipment and wiring in exhaust ventilation ducts

Electrical equipment and wiring, if installed in an exhaust ventilation duct, shall be of a type approved for use in explosive petrol and air mixtures and the outlet from any exhaust duct shall be sited in a safe position, having regard to other possible sources of ignition.

3.4 Other ignition sources

Other equipment which may constitute a source of ignition of flammable vapours shall not be permitted.

3.5 Scuppers and discharges

Scuppers shall not be led to machinery or other spaces where sources of ignition may be present.

* Refer to the Design Guidelines and operational recommendations for ventilation systems in ro-ro cargo spaces (MSC/Circ.729).

** Refer to the recommendations of the International Electrotechnical Commission, in particular publication 60079.

SOLAS II-2/ Regulation 42 - Emergency Source of Electrical Power in Passenger Ships

(Paragraphs 2.6.1 and 4.2 of this regulation apply to ships constructed on or after 1 February 1992)

1.1 A self-contained emergency source of electrical power shall be provided.

1.2 The emergency source of electrical power, associated transforming equipment, if any, transitional source of emergency power, emergency switchboard and emergency lighting switchboard shall be located above the uppermost continuous deck and shall be readily accessible from the open deck. They shall not be located forward of the collision bulkhead.

1.3 The location of the emergency source of electrical power and associated transforming equipment, if any, the transitional source of emergency power, the emergency switchboard and the emergency electric lighting switchboards in relation to the main source of electrical power, associated transforming equipment, if any, and the main switchboard shall be such as to ensure to the satisfaction of the Administration that a fire or other casualty in spaces containing the main source of electrical power, associated transforming equipment, if any, and the main switchboard or in any machinery space of category A will not interfere with the supply, control and distribution of emergency electrical power. As far as practicable, the space containing the emergency source of electrical power, associated transforming equipment, if any, the transitional source of emergency electrical power and the emergency switchboard shall not be contiguous to the boundaries of machinery spaces of category A or those spaces containing the main source of electrical power, associated transforming equipment, if any, or the main switchboard.

1.4 Provided that suitable measures are taken for safeguarding independent emergency operation under all circumstances, the emergency generator may be used exceptionally, and for short periods, to supply non-emergency circuits.

2 The electrical power available shall be sufficient to supply all those services that are essential for safety in an emergency, due regard being paid to such services as may have to be operated simultaneously. The emergency source of electrical power shall be capable, having regard to starting currents and the transitory nature of certain loads, of supplying simultaneously at least the following services for the periods specified hereinafter, if they depend upon an electrical source for their operation:

2.1 For a period of 36 h, emergency lighting:

- .1 at every muster and embarkation station and over the sides as required by regulations III/11.4 and III/16.7;
- .2 in alleyways, stairways and exits giving access to the muster and embarkation stations, as required by regulation III/11.5;
- .3 in all service and accommodation alleyways, stairways and exits, personnel lift cars;
- .4 in the machinery spaces and main generating stations including their control positions;
- .5 in all control stations, machinery control rooms, and at each main and emergency switchboard;
- .6 at all stowage positions for firemen's outfits;
- .7 at the steering gear; and
- .8 at the fire pump, the sprinkler pump and the emergency bilge pump referred to in paragraph 2.4 and at the starting position of their motors.

2.2 For a period of 36 h:

- .1 the navigation lights and other lights required by the International Regulations for Preventing Collisions at Sea in force; and
- .2 on ships constructed on or after 1 February 1995, the VHF radio installation required by [regulation IV/7.1.1 and IV/7.1.2](#); and, if applicable:
 - .2.1 the MF radio installation required by [regulations IV/9.1.1, IV/9.1.2, IV/10.1.2 and IV/10.1.3](#);
 - .2.2 the ship earth station required by [regulation IV/10.1.1](#); and
 - .2.3 the MF/HF radio installation required by [regulations IV/10.2.1, IV/10.2.2 and IV/11.1](#).

2.3 For a period of 36 h:

- .1 all internal communication equipment required in an emergency;
- .2 the shipborne navigational equipment as required by [regulation V/12](#);^{*} where such provision is unreasonable or impracticable the Administration may waive this requirement for ships of less than 5,000 gross tonnage;
- .3 the fire detection and fire alarm system, and the fire door holding and release system; and
- .4 for intermittent operation of the daylight signalling lamp, the ship's whistle, the manually operated call points, and all internal signals that are required in an emergency;

unless such services have an independent supply for the period of 36 h from an accumulator battery suitably located for use in an emergency.

2.4 For a period of 36 h:

- .1 one of the fire pumps required by regulation II-2/4.3.1 and 4.3.3;^{**}
- .2 the automatic sprinkler pump, if any; and
- .3 the emergency bilge pump and all the equipment essential for the operation of electrically powered remote controlled bilge valves.

2.5 For the period of time required by regulation 29.14 the steering gear if required to be so supplied by that regulation.

2.6 For a period of half an hour:

- .1 any watertight doors required by [regulation 15](#) to be power-operated together with their indicators and warning signals;
- .2 the emergency arrangements to bring the lift cars to deck level for the escape of persons. The passenger lift cars may be brought to deck level sequentially in an emergency.

2.7 In a ship engaged regularly on voyages of short duration, the Administration if satisfied that an adequate standard of safety would be attained may accept a lesser period than the 36 h period specified in paragraphs 2.1 to 2.5 but not less than 12 h.

3 The emergency source of electrical power may be either a generator or an accumulator battery, which shall comply with the following:

3.1 Where the emergency source of electrical power is a generator, it shall be:

- .1 driven by a suitable prime mover with an independent supply of fuel having a flashpoint (closed cup test) of not less than 43°C;

.2 started automatically upon failure of the electrical supply from the main source of electrical power and shall be automatically connected to the emergency switchboard; those services referred to in paragraph 4 shall then be transferred automatically to the emergency generating set. The automatic starting system and the characteristic of the prime mover shall be such as to permit the emergency generator to carry its full rated load as quickly as is safe and practicable, subject to a maximum of 45 s; unless a second independent means of starting the emergency generating set is provided, the single source of stored energy shall be protected to preclude its complete depletion by the automatic starting system; and

.3 provided with a transitional source of emergency electrical power according to paragraph 4.

3.2 Where the emergency source of electrical power is an accumulator battery, it shall be capable of:

.1 carrying the emergency electrical load without recharging while maintaining the voltage of the battery throughout the discharge period within 12% above or below its nominal voltage;

.2 automatically connecting to the emergency switchboard in the event of failure of the main source of electrical power; and

.3 immediately supplying at least those services specified in paragraph 4.

3.3 The following provisions in paragraph 3.1.2 shall not apply to ships constructed on or after 1 October 1994:

Unless a second independent means of starting the emergency generating set is provided, the single source of stored energy shall be protected to preclude its complete depletion by the automatic starting system.

3.4 For ships constructed on or after 1 July 1998, where electrical power is necessary to restore propulsion, the capacity shall be sufficient to restore propulsion to the ship in conjunction with other machinery, as appropriate, from a dead ship condition within 30 min after blackout.

4 The transitional source of emergency electrical power required by paragraph 3.1.3 shall consist of an accumulator battery suitably located for use in an emergency which shall operate without recharging while maintaining the voltage of the battery throughout the discharge period within 12% above or below its nominal voltage and be of sufficient capacity and so arranged as to supply automatically in the event of failure of either the main or emergency source of electrical power at least the following services, if they depend upon an electrical source for their operation:

4.1 For half an hour:

.1 the lighting required by paragraphs 2.1 and 2.2;

.2 all services required by paragraphs 2.3.1, 2.3.3 and 2.3.4 unless such services have an independent supply for the period specified from an accumulator battery suitably located for use in an emergency.

4.2 Power to operate the watertight doors, as required by [regulation 15.7.3.3](#), but not necessarily all of them simultaneously, unless an independent temporary source of stored energy is provided. Power to the control, indication and alarm circuits as required by [regulation 15.7.2](#) for half an hour.

5.1 The emergency switchboard shall be installed as near as is practicable to the emergency source of electrical power.

5.2 Where the emergency source of electrical power is a generator, the emergency switchboard shall be located in the same space unless the operation of the emergency switchboard would thereby be impaired.

5.3 No accumulator battery fitted in accordance with this regulation shall be installed in the same space as the emergency switchboard. An indicator shall be mounted in a suitable place on the main switchboard or in the machinery control room to indicate when the batteries constituting either the emergency source of electrical power or the transitional source of emergency electrical power referred to in paragraph 3.1.3 or 4 are being discharged.

5.4 The emergency switchboard shall be supplied during normal operation from the main switchboard by an interconnector feeder which is to be adequately protected at the main switchboard against overload and short circuit and which is to be disconnected automatically at the emergency switchboard upon failure of the main source of electrical power. Where the system is arranged for feedback operation, the interconnector feeder is also to be protected at the emergency switchboard at least against short circuit.

5.5 In order to ensure ready availability of the emergency source of electrical power, arrangements shall be made where necessary to disconnect automatically non-emergency circuits from the emergency switchboard to ensure that power shall be available to the emergency circuits.

6 The emergency generator and its prime mover and any emergency accumulator battery shall be so designed and arranged as to ensure that they will function at full rated power when the ship is upright and when inclined at any angle of list up to 22.5° or when inclined up to 10° either in the fore or aft direction, or is in any combination of angles within those limits.

7 Provision shall be made for the periodic testing of the complete emergency system and shall include the testing of automatic starting arrangements.

* This relates to the chapter V in force before 1 July 2002. The equivalent in the amended chapter V is [regulation 19](#).

** These relate to the chapter II-2 in force before 1 July 2002. The equivalents in the amended chapter II-2 are 10.2.2.2 and 10.2.2.3.

SOLAS III/Regulation 36 - Instructions for On-Board Maintenance

Instructions for on-board maintenance of life-saving appliances shall be easily understood, illustrated wherever possible, and, as appropriate, shall include the following for each appliance:

- .1 a checklist for use when carrying out the inspections required by Regulation 20.7;
- .2 maintenance and repair instructions;
- .3 schedule of periodic maintenance;
- .4 diagram of lubrication points with the recommended lubricants;
- .5 list of replaceable parts;
- .6 list of sources of spare parts; and
- .7 log for records of inspections and maintenance.

SOLAS III/ Regulation 35 - Training Manual and On-Board Training Aids

1 This regulation applies to all ships.

2 A training manual complying with the requirements of paragraph 3 shall be provided in each crew mess room and recreation room or in each crew cabin.

3 The training manual, which may comprise several volumes, shall contain instructions and information, in easily understood terms illustrated wherever possible, on the life-saving appliances provided in the ship and on the best methods of survival. Any part of such information may be provided in the form of audio-visual aids in lieu of the manual. The following shall be explained in detail:

- .1 donning of lifejackets, immersion suits and anti-exposure suits, as appropriate;
- .2 muster at the assigned stations;
- .3 boarding, launching, and clearing the survival craft and rescue boats, including, where applicable, use of marine evacuation systems;
- .4 method of launching from within the survival craft;
- .5 release from launching appliances;
- .6 methods and use of devices for protection in launching areas, where appropriate;
- .7 illumination in launching areas;
- .8 use of all survival equipment;
- .9 use of all detection equipment;
- .10 with the assistance of illustrations, the use of radio life-saving appliances;
- .11 use of drogues;
- .12 use of engine and accessories;
- .13 recovery of survival craft and rescue boats including stowage and securing;
- .14 hazards of exposure and the need for warm clothing;
- .15 best use of the survival craft facilities in order to survive;
- .16 methods of retrieval, including the use of helicopter rescue gear (slings, baskets, stretchers), breeches-buoy and shore life-saving apparatus and ship's line-throwing apparatus;
- .17 all other functions contained in the muster list and emergency instructions; and
- .18 instructions for emergency repair of the life-saving appliances.

4 Every ship fitted with a marine evacuation system shall be provided with on-board training aids in the use of the system.

SOLAS IV/Regulation 7 - Radio Equipment: General

1 Every ship shall be provided with:

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

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

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

*Certain ships may be exempted from this requirement (see regulation 9.4).

SOLAS IV/Regulation 9 - Radio Equipment: Sea Areas A1 and A2

1 In addition to meeting the requirements of [regulation 7](#), every ship engaged on voyages beyond sea area A1, but remaining within sea area A2, shall be provided with:

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

.1.1 2,187.5 kHz using DSC; and

.1.2 2,182 kHz using radiotelephony;

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

SOLAS IV/Regulation 10 - Radio Equipment: Sea Areas A1, A2 and A3

1 In addition to meeting the requirements of [regulation 7](#), every ship engaged on voyages beyond sea areas A1 and A2, but remaining within sea area A3, shall, if it does not comply with the requirements of paragraph 2, be provided with:

- .1 an INMARSAT ship earth station capable of:
 - .1.1 transmitting and receiving distress and safety communications using direct-printing telegraphy;
 - .1.2 initiating and receiving distress priority calls;
 - .1.3 maintaining watch for shore-to-ship distress alerts, including those directed to specifically defined geographical areas;
 - .1.4 transmitting and receiving general radiocommunications, using either radiotelephony or direct-printing telegraphy; and
- .2 an MF radio installation capable of transmitting and receiving, for distress and safety purposes, on the frequencies:
 - .2.1 2,187.5 kHz using DSC; and
 - .2.2 2,182 kHz using radiotelephony; and
- .3 a radio installation capable of maintaining a continuous DSC watch on the frequency 2,187.5 kHz which may be separate from or combined with that required by subparagraph .2.1; and

2 In addition to meeting the requirements of [regulation 7](#), every ship engaged on voyages beyond sea areas A1 and A2, but remaining within sea area A3, shall, if it does not comply with the requirements of paragraph 1, be provided with:

- .1 an MF/HF radio installation capable of transmitting and receiving, for distress and safety purposes, on all distress and safety frequencies in the bands between 1,605 kHz and 4,000 kHz and between 4,000 kHz and 27,500 kHz:
 - .1.1 using DSC;
 - .1.2 using radiotelephony; and
 - .1.3 using direct-printing telegraphy; and
- .2 equipment capable of maintaining DSC watch on 2,187.5 kHz, 8,414.5 kHz and on at least one of the distress and safety DSC frequencies 4,207.5 kHz, 6,312 kHz, 12,577 kHz or 16,804.5 kHz; at any time, it shall be possible to select any of these DSC distress and safety frequencies. This equipment may be separate from, or combined with, the equipment required by subparagraph .1; and

3 It shall be possible to initiate transmission of distress alerts by the radio installations specified in paragraphs 1.1, 1.2, 1.4, 2.1 and 2.3 from the position from which the ship is normally navigated.

SOLAS V/Regulation 12 - Vessel Traffic Services

1 Vessel traffic services (VTS) contribute to safety of life at sea, safety and efficiency of navigation and protection of the marine environment, adjacent shore areas, work sites and offshore installations from possible adverse effects of maritime traffic.

2 Contracting Governments undertake to arrange for the establishment of VTS where, in their opinion, the volume of traffic or the degree of risk justifies such services.

3 Contracting Governments planning and implementing VTS shall, wherever possible, follow the guidelines developed by the Organization.* The use of VTS may only be made mandatory in sea areas within the territorial seas of a coastal State.

4 Contracting Governments shall endeavour to secure the participation in, and compliance with, the provisions of vessel traffic services by ships entitled to fly their flag.

5 Nothing in this regulation or the guidelines adopted by the Organization shall prejudice the rights and duties of Governments under international law or the legal regimes of straits used for international navigation and archipelagic sea lanes.

*Refer to the Guidelines on vessel traffic services adopted by the Organization by resolution A.857(20).

SOLAS V/Regulation 22 - Navigation Bridge Visibility

1 Ships of not less than 55 m in length, as defined in regulation 2.4, constructed on or after 1 July 1998, shall meet the following requirements:

- .1 The view of the sea surface from the conning position shall not be obscured by more than two ship lengths, or 500 m, whichever is less, forward of the bow to 10° on either side under all conditions of draught, trim and deck cargo;
- .2 No blind sector, caused by cargo, cargo gear or other obstructions outside of the wheelhouse forward of the beam which obstructs the view of the sea surface as seen from the conning position, shall exceed 10°. The total arc of blind sectors shall not exceed 20°. The clear sectors between blind sectors shall be at least 5°. However, in the view described in .1, each individual blind sector shall not exceed 5°;
- .3 The horizontal field of vision from the conning position shall extend over an arc of not less than 225°, that is from right ahead to not less than 22.5° abaft the beam on either side of the ship;
- .4 From each bridge wing, the horizontal field of vision shall extend over an arc of at least 225°, that is from at least 45° on the opposite bow through right ahead and then from right ahead to right astern through 180° on the same side of the ship;
- .5 From the main steering position, the horizontal field of vision shall extend over an arc from right ahead to at least 60° on each side of the ship;
- .6 The ship's side shall be visible from the bridge wing; .
- .7 The height of the lower edge of the navigation bridge front windows above the bridge deck shall be kept as low as possible. In no case shall the lower edge present an obstruction to the forward view as described in this regulation;
- .8 The upper edge of the navigation bridge front windows shall allow a forward view of the horizon, for a person with a height of eye of 1,800 mm above the bridge deck at the conning position, when the ship is pitching in heavy seas. The Administration, if satisfied that a 1,800 mm height of eye is unreasonable and impractical, may allow reduction of the height of eye but not to less than 1,600 mm;
- .9 Windows shall meet the following requirements:
 - .9.1 To help avoid reflections, the bridge front windows shall be inclined from the vertical plane top out, at an angle of not less than 10° and not more than 25°;
 - .9.2 Framing between navigation bridge windows shall be kept to a minimum and not be installed immediately forward of any work station;
 - .9.3 Polarized and tinted windows shall not be fitted;
 - .9.4 A clear view through at least two of the navigation bridge front windows and, depending on the bridge configuration, an additional number of clear-view windows shall be provided at all times, regardless of weather conditions.

2 Ships constructed before 1 July 1998 shall, where practicable, meet the requirements of paragraphs 1.1 and 1.2. However, structural alterations or additional equipment need not be required.

3 On ships of unconventional design which, in the opinion of the Administration, cannot comply with this regulation, arrangements shall be provided to achieve a level of visibility that is as near as practical to that prescribed in this regulation.

SOLAS V/Regulation 23 - Pilot Transfer Arrangements

1 Application

1.1 Ships engaged on voyages in the course of which pilots are likely to be employed shall be provided with pilot transfer arrangements.

1.2 Equipment and arrangements for pilot transfer which are installed on or after 1 January 1994 shall comply with the requirements of this regulation, and due regard shall be paid to the standards adopted by the Organization.*

1.3 Equipment and arrangements for pilot transfer which are provided on ships before 1 January 1994 shall at least comply with the requirements of regulation 17 of the International Convention for the Safety of Life at Sea, 1974 in force prior to that date, and due regard shall be paid to the standards adopted by the Organization prior to that date.

1.4 Equipment and arrangements which are replaced after 1 January 1994 shall, in so far as is reasonable and practicable, comply with the requirements of this regulation.

2 General

2.1 All arrangements used for pilot transfer shall efficiently fulfil their purpose of enabling pilots to embark and disembark safely. The appliances shall be kept clean, properly maintained and stowed and shall be regularly inspected to ensure that they are safe to use. They shall be used solely for the embarkation and disembarkation of personnel.

2.2 The rigging of the pilot transfer arrangements and the embarkation of a pilot shall be supervised by a responsible officer having means of communication with the navigation bridge who shall also arrange for the escort of the pilot by a safe route to and from the navigation bridge. Personnel engaged in rigging and operating any mechanical equipment shall be instructed in the safe procedures to be adopted and the equipment shall be tested prior to use.

3 Transfer arrangements

3.1 Arrangements shall be provided to enable the pilot to embark and disembark safely on either side of the ship.

3.2 In all ships where the distance from sea level to the point of access to, or egress from, the ship exceeds 9 m, and when it is intended to embark and disembark pilots by means of the accommodation ladder, or by means of mechanical pilot hoists or other equally safe and convenient means in conjunction with a pilot ladder, the ship shall carry such equipment on each side, unless the equipment is capable of being transferred for use on either side.

3.3 Safe and convenient access to, and egress from, the ship shall be provided by either:

.1 a pilot ladder requiring a climb of not less than 1.5 m and not more than 9 m above the surface of the water, so positioned and secured that:

.1.1 it is clear of any possible discharges from the ship;

.1.2 it is within the parallel body length of the ship and, as far as is practicable, within the mid-ship half length of the ship;

.1.3 each step rests firmly against the ship's side; where constructional features, such as rubbing bands, would prevent the implementation of this provision, special arrangements shall, to the satisfaction of the Administration, be made to ensure that persons are able to embark and disembark safely;

.1.4 the single length of pilot ladder is capable of reaching the water from the point of access to, or egress from, the ship and due allowance is made for all conditions of

loading and trim of the ship, and for an adverse list of 15°; the securing strong point, shackles and securing ropes shall be at least as strong as the side ropes;

.2 an accommodation ladder in conjunction with the pilot ladder, or other equally safe and convenient means, whenever the distance from the surface of the water to the point of access to the ship is more than 9 m. The accommodation ladder shall be sited leading aft. When in use, the lower end of the accommodation ladder shall rest firmly against the ship's side within the parallel body length of the ship and, as far as is practicable, within the mid-ship half length and clear of all discharges; or

.3 a mechanical pilot hoist so located that it is within the parallel body length of the ship and, as far as is practicable, within the mid-ship half length of the ship and clear of all discharges.

4 Access to the ship's deck

Means shall be provided to ensure safe, convenient and unobstructed passage for any person embarking on, or disembarking from, the ship between the head of the pilot ladder, or of any accommodation ladder or other appliance, and the ship's deck. Where such passage is by means of:

.1 a gateway in the rails or bulwark, adequate handholds shall be provided;

.2 a bulwark ladder, two handhold stanchions rigidly secured to the ship's structure at or near their bases and at higher points shall be fitted. The bulwark ladder shall be securely attached to the ship to prevent overturning.

5 Shipside doors

Shipside doors used for pilot transfer shall not open outwards.

6 Mechanical pilot hoists

6.1 The mechanical pilot hoist and its ancillary equipment shall be of a type approved by the Administration. The pilot hoist shall be designed to operate as a moving ladder to lift and lower one person on the side of the ship, or as a platform to lift and lower one or more persons on the side of the ship. It shall be of such design and construction as to ensure that the pilot can be embarked and disembarked in a safe manner, including a safe access from the hoist to the deck and vice versa. Such access shall be gained directly by a platform securely guarded by handrails.

6.2 Efficient hand gear shall be provided to lower or recover the person or persons carried, and kept ready for use in the event of power failure.

6.3 The hoist shall be securely attached to the structure of the ship. Attachment shall not be solely by means of the ship's side rails. Proper and strong attachment points shall be provided for hoists of the portable type on each side of the ship.

6.4 If belting is fitted in the way of the hoist position, such belting shall be cut back sufficiently to allow the hoist to operate against the ship's side.

6.5 A pilot ladder shall be rigged adjacent to the hoist and be available for immediate use so that access to it is available from the hoist at any point of its travel. The pilot ladder shall be capable of reaching the sea level from its own point of access to the ship.

6.6 The position on the ship's side where the hoist will be lowered shall be indicated.

6.7 An adequate protected stowage position shall be provided for the portable hoist. In very cold weather, to avoid the danger of ice formation, the portable hoist shall not be rigged until its use is imminent.

7 Associated equipment

7.1 The following associated equipment shall be kept at hand ready for immediate use when persons are being transferred:

- .1 two man-ropes of not less than 28 mm in diameter, properly secured to the ship, if required by the pilot;
- .2 a lifebuoy equipped with a self-igniting light;
- .3 a heaving line.

7.2 When required by paragraph 4, stanchions and bulwark ladders shall be provided.

8 Lighting

Adequate lighting shall be provided to illuminate the transfer arrangements overside, the position on deck where a person embarks or disembarks and the controls of the mechanical pilot hoist.

* Refer to the Recommendation on pilot transfer arrangements adopted by the Organization by resolution A.889(21) and to MSC/Circ.568/Rev.1, Required boarding arrangements for pilots.

MARPOL - Annex V - Regulation 3 - Disposal of Garbage outside Special Areas

(1) Subject to the provisions of [regulations 4](#), [5](#) and [6](#) of this Annex:

- (a) the disposal into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets, plastic garbage bags and incinerator ashes from plastic products which may contain toxic or heavy metal residues, is prohibited;
- (b) the disposal into the sea of the following garbage shall be made as far as practicable from the nearest land but in any case is prohibited if the distance from the nearest land is less than:
 - (i) 25 nautical miles for dunnage, lining and packing materials which will float;
 - (ii) 12 nautical miles for food wastes and all other garbage including paper products, rags, glass, metal, bottles, crockery and similar refuse;
- (c) disposal into the sea of garbage specified in subparagraph(b)(ii) of this regulation may be permitted when it has passed through a comminuter or grinder and made as far as practicable from the nearest land but in any case is prohibited if the distance from the nearest land is less than 3 nautical miles. Such comminuted or ground garbage shall be capable of passing through a screen with openings no greater than 25 mm.

(2) When the garbage is mixed with other discharges having different disposal or discharge requirements the more stringent requirements shall apply.

MARPOL - Annex V - Regulation 4 - Special Requirements for Disposal of Garbage

(1) Subject to the provisions of paragraph (2) of this regulation, the disposal of any materials regulated by this Annex is prohibited from fixed or floating platforms engaged in the exploration, exploitation and associated offshore processing of sea-bed mineral resources, and from all other ships when alongside or within 500 m of such platforms.

(2) The disposal into the sea of food wastes may be permitted when they have been passed through a comminuter or grinder from such fixed or floating platforms located more than 12 nautical miles from land and all other ships when alongside or within 500 m of such platforms. Such comminuted or ground food wastes shall be capable of passing through a screen with openings no greater than 25 mm.

MARPOL - Annex V - Regulation 5 - Disposal of Garbage within Special Areas

(1) For the purposes 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 North Sea area, the Antarctic area and the Wider Caribbean Region, including the Gulf of Mexico and the Caribbean Sea, which are defined as follows:

- (a) 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 5°36' W.
- (b) The *Baltic Sea area* means the Baltic Sea proper with the Gulf of Bothnia and 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.
- (c) 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.
- (d) 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).
- (e) 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).
- (f) The *North Sea area* means the North Sea proper including seas therein with the boundary between:
 - (i) the North Sea southwards of latitude 62° N and eastwards of longitude 4° W;
 - (ii) the Skagerrak, the southern limit of which is determined east of the Skaw by latitude 57°44.8' N; and
 - (iii) the English Channel and its approaches eastwards of longitude 5° W and northwards of latitude 48°30' N.
- (g) The *Antarctic area* means the sea area south of latitude 60° S.
- (h) The *Wider Caribbean Region*, as defined in article 2, paragraph 1 of the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena de Indias, 1983), means the Gulf of Mexico and Caribbean Sea proper including the bays and seas therein and that portion of the Atlantic Ocean within the boundary constituted by the 30° N parallel from Florida eastward to 77°30' W meridian, thence a rhumb line to the intersection of 20° N parallel and 59° W meridian, thence a rhumb line to the intersection of 7°20' N parallel and 50° W meridian, thence a rhumb line drawn southwesterly to the eastern boundary of French Guiana.

2 Subject to the provisions of [regulation 6](#) of this Annex:

- (a) disposal into the sea of the following is prohibited:
 - (i) all plastics, including but not limited to synthetic ropes, synthetic fishing nets, plastic garbage bags and incinerator ashes from plastic products which may contain toxic or heavy metal residues; and
 - (ii) all other garbage, including paper products, rags, glass, metal, bottles, crockery, dunnage, lining and packing materials;
- (b) except as provided in subparagraph (c) of this paragraph, disposal into the sea of

food wastes shall be made as far as practicable from land, but in any case not less than 12 nautical miles from the nearest land;

- (c) disposal into the Wider Caribbean Region of food wastes which have been passed through a comminuter or grinder shall be made as far as practicable from land, but in any case not less than 3 nautical miles from the nearest land. Such comminuted or ground food wastes shall be capable of passing through a screen with openings no greater than 25 mm.

(3) When the garbage is mixed with other discharges having different disposal or discharge requirements the more stringent requirements shall apply.

(4) Reception facilities within special areas:

- (a) The Government of each Party to the Convention, the coastline of which borders a special area, undertakes to ensure that as soon as possible in all ports within a special area adequate reception facilities are provided in accordance with [regulation 7](#) of this Annex, taking into account the special needs of ships operating in these areas.
- (b) The Government of each Party concerned shall notify the Organization of the measures taken pursuant to subparagraph (a) of this regulation. Upon receipt of sufficient notifications the Organization shall establish a date from which the requirements of this regulation in respect of the area in question shall take effect. The Organization shall notify all Parties of the date so established no less than twelve months in advance of that date.
- (c) After the date so established, ships calling also at ports in these special areas where such facilities are not yet available, shall fully comply with the requirements of this regulation.

(5) Notwithstanding paragraph 4 of this regulation, the following rules apply to the Antarctic area:

- (a) The Government of each Party to the Convention at whose ports ships depart *en route* to or arrive from the Antarctic area undertakes to ensure that as soon as practicable adequate facilities are provided for the reception of all garbage from all ships, without causing undue delay, and according to the needs of the ships using them.
- (b) The Government of each Party to the Convention shall ensure that all ships entitled to fly its flag, before entering the Antarctic area, have sufficient capacity on board for the retention of all garbage while operating in the area and have concluded arrangements to discharge such garbage at a reception facility after leaving the area.

MARPOL - Annex V - Regulation 6 - Exceptions

[Regulations 3, 4](#) and [5](#) of this Annex shall not apply to:

- (a) the disposal of garbage from a ship necessary for the purpose of securing the safety of a ship and those on board or saving life at sea; or
- (b) the escape of garbage resulting from damage to a ship or its equipment provided all reasonable precautions have been taken before and after the occurrence of the damage, for the purpose of preventing or minimizing the escape; or
- (c) the accidental loss of synthetic fishing nets, provided that all reasonable precautions have been taken to prevent such loss.

MARPOL - Annex V - Regulation 7 - Reception Facilities

(1) The Government of each Party to the Convention undertakes to ensure the provision of facilities at ports and terminals for the reception of garbage, without causing undue delay to ships, and according to the needs of the ships using them.

(2) The Government of each Party shall notify the Organization for transmission to the Parties concerned of all cases where the facilities provided under this regulation are alleged to be inadequate.

MARPOL - Annex V - Regulation 9 - Placards, Garbage Management Plans and Garbage Record-Keeping

1 (a) Every ship of 12 m or more in length overall shall display placards which notify the crew and passengers of the disposal requirements of [regulations 3](#) and [5](#) of this Annex, as applicable.

(b) The placards shall be written in the working language of the ship's personnel and, for ships engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention, shall also be in English, French or Spanish.

(2) Every ship of 400 gross tonnage and above, and every ship which is certified to carry 15 persons or more, shall carry a garbage management plan which the crew shall follow. This plan shall provide written procedures for collecting, storing, processing and disposing of garbage, including the use of the equipment on board. It shall also designate the person in charge of carrying out the plan. Such a plan shall be in accordance with the guidelines developed by the Organization* and written in the working language of the crew.

(3) Every ship of 400 gross tonnage and above and every ship which is certified to carry 15 persons or more engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention and every fixed and floating platform engaged in exploration and exploitation of the sea-bed shall be provided with a Garbage Record Book. The Garbage Record Book, whether as a part of the ship's official log-book or otherwise, shall be in the form specified in the appendix to this Annex;

(a) each discharge operation, or completed incineration, shall be recorded in the Garbage Record Book and signed for on the date of the incineration or discharge by the officer in charge. Each completed page of the Garbage Record Book shall be signed by the master of the ship. The entries in the Garbage Record Book shall be at least in English, French or Spanish. Where the entries are also made in an official language of the State whose flag the ship is entitled to fly, these entries shall prevail in case of a dispute or discrepancy;

(b) the entry for each incineration or discharge shall include date and time, position of the ship, description of the garbage and the estimated amount incinerated or discharged;

(c) the Garbage Record Book shall be kept on board the ship and in such a place as to be available for inspection in a reasonable time. This document shall be preserved for a period of two years after the last entry is made on the record;

(d) in the event of discharge, escape or accidental loss referred to in [regulation 6](#) of this Annex an entry shall be made in the Garbage Record Book of the circumstances of, and the reasons for, the loss.

(4) The Administration may waive the requirements for Garbage Record Books for:

(a) any ship engaged on voyages of 1 hour or less in duration which is certified to carry 15 persons or more; or

(b) fixed or floating platforms while engaged in exploration and exploitation of the sea-bed.

(5) The competent authority of the Government of a Party to the Convention may inspect the Garbage Record Book on board any ship to which this regulation applies while the ship is in

its ports or offshore terminals and may make a copy of any entry in that book, and may require the master of the ship to certify that the copy is a true copy of such an entry. Any copy so made, which has been certified by the master of the ship as a true copy of an entry in the ship's Garbage Record Book, shall be admissible in any judicial proceedings as evidence of the facts stated in the entry. The inspection of a Garbage Record Book and the taking of a certified copy by the competent authority under this paragraph shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

(6) In the case of ships built before 1 July 1997, this regulation shall apply as from 1 July 1998.

* Refer to the Guidelines for the development of garbage management plans adopted by the Marine Environment Protection Committee of the Organization by resolution MEPC.71(38); see MEPC/Circ.317 and IMO sales publication IA656E.