Small Craft Code
(Up to 24m in Length)

January 2025

Contents

Introduction

These technical codes are published by the Merchant Shipping Secretariat of the Ministry of Shipping under the delegated authority of the Minister as given in Merchant Shipping (Non- Convention Vessel) Regulations, No.1 of 2024 published in the Gazette No 2417/16 dated 31st December 2024 .

These technical codes relate especially to the construction of a vessel, its machinery, equipment watertight integrity, stability, safety of embarked persons and to the correct operation of non-convention vessels in Sri Lankan waters

The codes are based and representative of the industry best practices and applicable standards taking into consideration the requirements peculiar to Sri Lanka

Compliance with the applicable code is mandatory for registration and operation of non-convention vessels in Sri Lanka on a commercial basis.

Whilst the Code sets minimum standards to be met for the issue of a Certificate, the Owner, or the Administration, may choose to enhance the provision of safety equipment, and this may be reflected in the Survey Record as an additional requirement.

Compliance with the Code in no way obviates the need for boats and/or Boat Operators to comply with relevant bylaws made by either the local/navigation authority or the port/harbour authority for the area in which the boat operates.

Definitions and Abbreviations

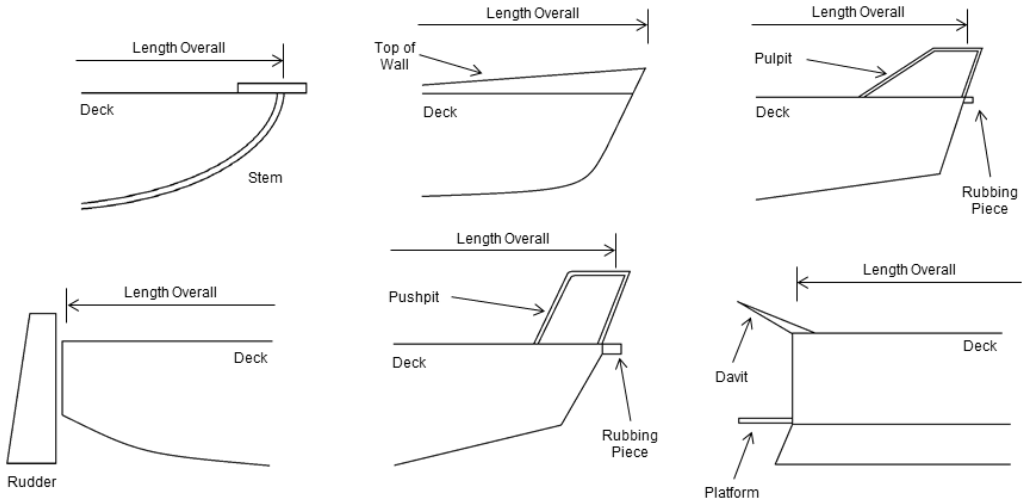
Term	Meaning
Accommodation space	A space, enclosed on all six sides by solid divisions, provided for the use of persons onboard.
Approved	Means' acceptable to 'the Merchant Shipping Secretariat and does not have the same meaning as' type approved' or' type tested'unless otherwise specified in the Code.
Authorised person	Means a Surveyor who holds the appropriate authorisations to carry out the examinations required by the Code on behalf of the Merchant Shipping Secretariat.
Boat	A vessel of less than 24 m in length, or a vessel of less than 150gt. A boat can be a boat, air cushion vehicle, sailing craft, inflatable craft, etc.
Boat Operator	Meaning Master, Skipper, Coxswain, Commanding Officer. The person in command of the boat and all persons on board.
Boats fitted with a buoyant collar	A rigid inflatable boat, or a boat of similar hull form, where the inflatable tube sare replaced by solid, or hollow, buoyant sections.
Cargo	For the purpose of the Code means all items which are transported by the boat except fuel for the boat, ballast (either solid or liquid), consumables to be used on board, permanent out fit and equipment of the boat, stores and spare gear for the boat, crew and their personal baggage and passengers and their personal baggage, and activity related equipment.
Categorised waters	Means waters the location of which are explicitly defined in the Merchant Shipping (Categorization of Waters) Regulations, No.2 of 2024, having regard for the safety of the boats which operate in those waters.
Certifying Body	A company or professional to whom the Director General Merchant Shipping has delegated the examination (survey) and certification of vessels to which the Merchant Shipping (Non- Convention Vessel) Regulations, No.1 of 2024 and Technical codes apply
Code	This Code unless another Code is specified.
Compartment	All living and working spaces within the water tight or fire-resisting boundaries on any one level which have inter-communicating access.
Competent person	Means a person who by reason of relevant professional qualifications, practical experience or expertise is nominated by the Owner to carry out specialist servicing or inspections required by the Code. For example, rigging inspections, gas system servicing and testing, inclining experiments. For fire extinguishing equipment the person shall have the necessary training, experience, access to the relevant tools, equipment and information manuals and knowledge of any special procedures recommended by the manufacturer to carry out the relevant maintenance procedures.
Conning	to conduct or direct the steering of a vessel
Control position	A conning position which is continuously manned whilst the boat is underway.

Definitions and Abbreviations

Craft	Having the same meaning as boat.
Critical Down-flooding	Is deemed to occur when openings, having an aggregate area in square metres greater than $\frac{\text{boats displacement in tonnes}}{1500}$ are immersed. Moreover, it is the angle at which the lower edge of the actual opening which results in critical flooding becomes immersed. All openings regularly used for crew access and for ventilation should be considered when determining the down-flooding angle. Air pipes to tanks can, however, bed is regarded. Where an appropriate ISO standard isused, the definition should be taken from those standards as applicable.
Daylight	Time from sunrise to sunset.
Decked boat	A boat with a continuous water tight weather deck which extends from stem to stern and has positive free board throughout, in any condition of loading of the boat. Where an appropriate ISO standard is used, the definition should be taken from those standards as applicable.
Design category	A description of the wind and sea conditions for which a boat is considered suitable for in terms of construction, stability and buoyancy
Domestic voyage	A voyage from a port in Sri Lanka to the same or another port in Sri Lanka
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.
Existing Craft	Craft already in operation in Sri Lanka at the time these regulations come into force, this does not include any craft built before the entry into force date that has not been in operation in Sri Lankan waters..
Favourable weather	Means wind, sea and visibility conditions which are deemed by the Boat Operator to be safe for a small boat to operate within the limits applied to it; or, in any other case means conditions existing throughout a voyage or excursion in which the effects either individually or in combination of swell, height of waves, strength of wind and visibility cause no hazard to the safety of the boat, including handling ability. In making a judgement on favourable weather, the Boat Operator should have due regard to official weather forecasts for the service area of the boat or to weather information for the area which may be available from the National Administration or similar coastal safety organisation.
Freeboard	The distance measured vertically downwards from the lowest point of the upper edge of the weather deck to the water line in still water or, for an open boat, the distance measured vertically downward from the lowest point of the gunwale to the waterline.
Gross Tonnage (GT)	As defined by the International Convention on Tonnage Measurement of Ships 1969 and as stated on the tonnage certificate
IMO	International Maritime Organization.
Inflatable boat	A boat which attains its form through inflatable tubes only, which are not attached to a solid hull.
Internal Waters	All water and waterways on the landward side of the baseline from which the territorial waters are measured

Definitions and Abbreviations

International voyage	Voyage outside territorial jurisdiction of SL, i.e. voyages from or to a port in the territorial waters of Sri Lanka to a port or from a port of another country
ISO	International Organization for Standardization.
Length overall	The overall length from the foreside of the foremost fixed permanent structure to the aft side of the aftermost fixed permanent structure of the boat. With regard to inflatable, rigid inflatable boats, or boats fitted with a buoyant collar, length should be taken from the fore most part of tube or collar, to the aft most part of the tube or collar.



Length	Either 96 percent of the total length on a waterline at 85 percent of the least moulded depth measured from the top of the keel, or the length from the foreside of the stem to the axis of the rudder stock on that waterline, whichever is the greater. In a boat designed with a rake of keel, the waterline on which this length is measured should be parallel to the design waterline.
Maximum permissible weight	The maximum total permissible weight of persons and their effects, cargo and activity related equipment, i.e. diving equipment.
MED	European Union Marine Equipment Directive.
Motorboat	A power driven boat which is not a sailing boat.
Multi hull boat	Any boat 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.
Nautical mile	A nautical mile of 1852 m.
Net tonnage (NT)	As defined by the International Convention on Tonnage Measurement of Ships 1969 and stated on the tonnage certificate
New boat	A boat not in possession of a Certificate issued prior to the date of this Code coming into force.
Nominated point of	The designated point of departure of the boat, as specified on the boats Certificate. Where this point lies within the Internal waters, it is to be taken as the seaward boundary of the baseline.

Definitions and Abbreviations

Non-compliances	Items or arrangements that do not meet the requirements of the Code.
Non-Convention Vessels	Vessels for which the IMO conventions do not apply, and/or vessels operating solely on domestic voyages for which the Director General of Merchant Shipping has granted exemptions from the applicable IMO conventions that apply due to the vessels GT. Where due to the GT of the vessel or
Open boat	For the application of the Code means a boat which within its length is : not fitted with a watertight weather deck; is fitted with a water tight weather deck over par to fits length; or is fitted with a water tight weather deck over the whole of its length but the freeboard to the deck does not meet the minimum requirement for free board
Owner	The registered Owner, or the Owner or managing agent of the registered Owner or Owner, or Owner ipso facto, as the case maybe.
Persons on board	Persons shall fall in to one of three categories: a. Crew members. Persons carried on board the boat to provide navigation and maintenance of the boat, operation and maintenance of its machinery and systems (including weapon and radio-communication systems), and arrangements essential for propulsion and safe navigation or to provide services for other embarked persons. Crew members are expected to be well-disciplined and able-bodied, and have an excellent knowledge of the layout of the boat and its safety equipment;
Pilot boat	A boat employed or intended to be employed in pilot age services, and 'dedicated pilot boat' means a pilot boat of whatever size which is primarily employed in pilotage services and other occasional services undertaken such as the carriage of personnel, mail, and/or small quantities of stores to or from boats in the pilotage district.
Recess	An indentation or depression in a deck and which is surrounded by the deck and has no boundary common with the shell of the boat. Where an appropriate ISO standard is used, the definition should be taken from those standards as applicable.
Registration	The process of registering a vessel with the Merchant Shipping Secretariat of the SL Ministry of Ports and Shipping
RHIB	Rigid hulled inflatable boat having the same meaning as a RIB–a boat with inflatable tubes, attached to a solid hull. The tubes are inflated during normal craft operation.
Rigid inflatable boat(RIB)	Rigid inflatable boat having the same meaning as a RHIB–a boat with inflatable tubes, attached to a solid hull. The tubes are inflated during normal craft operation.
Safe haven	Any naturally or artificially sheltered area which may be used as a shelter by a boat under conditions likely to endanger its safety. This may be a ship from which the boat was deployed or an alternative mother ship.
Sailing boat	A boat which is designed to be navigated under wind power alone and for which any motor provided is an auxiliary means of propulsion and/or which possesses a non-dimensional ratio of (sail area) divided by (volume of displacement) 2/3 of more than 7.

Definitions and Abbreviations

Ship	A waterborne vessel of more than 24m in length, or a vessel of more than 150gt
Short Range	Means a vessel under 500GT, restricted to operating in area categories 4 and 5 and within 60 nautical miles of a safe haven.
Special personnel	Persons who are not members of the crew who are carried on board in connection with the special purpose of the boat, the special work being carried out aboard the boat or in its role as a support vessel. Special personnel (which may include scientific staff, trials personnel and equipment
Standards	Those recognised such as BS (British Standard), EN (European Standard accepted by the European Committee for Standardization, CEN), IEC (International Electro technical Commission) and ISO (International Organization for Standardization) identified in the Code should include any standards which amend or replace them or other standards recognised as equivalent.
To sea	Beyond Area Category 6,7,8 and 9 waters
Vessel	A ship or a boat as defined in these regulations.
Vessel Groups	The categorisation of a boat or ship in accordance to its intended use as defined by the Merchant Shipping (Vessel Classification and Certification) Regulations No.3 of 2024.
Void space	Any space, having no practical function on board the boat, not capable of readily collecting water under normal operating circumstances.
Watertight	Capable of withstanding a pressure head of water to a specified level, usually the damage waterline. Watertight components are to be demonstrated as capable of withstanding the declared pressure head
Weather deck	Means the main deck which is exposed to the elements.
Weather tight	Of sufficient strength and integrity to withstand temporary immersion from green seas or spray. Weather tight closures are to be subject to a suitable test to confirm tightness.

Application and Interpretation

1.1. General

1.1.1. This code applies to all non-convention vessels of up to 24 metres in Length, registered and operating on a commercial basis, in area categories 0 to 5, as categorised in the "Merchant Shipping (Categorisation of Waters) Regulations No.2 of 2024" published by the Ministry of Shipping.

1.1.2. Non-Convention vessels operating in area categories 6 to 9 only, need comply with the requirements of "Technical Code-Internal Waterways Craft" published by the Director General Merchant Shipping

1.1.3. Passenger vessels carrying more than 250 passengers are required to meet the requirements of the IMO SOLAS Convention

1.1.4. This code in its entirety does not apply to self-hire craft or leisure vessels, however the requirements in respect of safety of navigation and pollution prevention applies

1.1.5. High Speed craft are required to meet the requirements of the IMO High Speed craft code or IACS class society equivalent

1.1.6. All vessels shall comply with the requirements of the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs), as amended and applicable

1.1.7. Existing craft already in operation in Sri Lankan waters are only required to comply with the sections on Stability, Freeboard, Life Saving Appliances, Navigation and Pollution prevention, compliance with other sections are voluntary

1.2. Vessel Category

1.2.1. This code applies to all the vessel classes as defined in the "Merchant Shipping (Vessel Classification and Certification) Regulations No.3 of 2024".

1.3. Design Category

1.3.1. The design category assigned to a vessel takes into consideration the standard of construction and compliance against the requirements for stability and buoyancy of the applicable design category

1.3.2. The wind and wave limits of the respective design categories are listed and summarised in the table below

The significant wave height is the mean height of the highest one-third of the waves, which approximately corresponds to the wave height estimated by an experienced observer, some waves may be double this height

Design category	Wave height	Wind force (Beaufort scale)	Wind Speed -Max gust (m/s)
A	up to, and including 7m significant (H_s)	up to 10	24.4
B	up to, and including 4m significant (H_s)	up to 8	20.7
C	up to, and including 2m significant (H_s)	up to 6	13.8

D	up to and including 0.3m significant (Hs) 0.5m maximum	up to 4	7.9

1.3.3. A boat assigned with design category "A "is considered suitable to operate in the wind and wave conditions for the category and can survive more severe conditions for a short period. Such conditions may be faced on extended voyages or in unsheltered waters exposed to wind and waves from for several hundred nautical miles

1.3.4. A boat assigned with design category "B" is considered suitable to operate in the wind and wave conditions for the category. Such conditions may be faced on offshore voyages of sufficient length or on exposed coasts.

1.3.5. A boat assigned with design category "C" is considered suitable to operate in the wind and wave conditions for the category. Such conditions may be faced on exposed inland waters, bays, inlets and estuaries and in coastal waters in moderate weather conditions

1.3.6. A boat assigned with design category "D" is considered suitable to operate in the wind and wave conditions for the category. Such conditions may be faced on sheltered inland waters and in bays, inlets, estuaries and in coastal waters in fine weather conditions

1.4. Area of Operation

1.4.1. The area of operation for a vessel will be assigned based on the design category of the vessel. The area categories for the waters of Sri Lankan has been defined in the "Merchant Shipping (Categorization of Waters) Regulations, No.2 of 2024".

1.4.2. For convenience the table below maps and summarises the Waterway and areas of operation categorisation against the design categories

Waterway categorisation	Areas of Operation	Design Category
Seagoing	Area Category 0	A
Coastal Waters	Area Category 1	A
	Area Category 2	B
	Area Category 3	B
Exposed Waters	Area Category 4	C
	Area Category 5	C
Internal Waters	Area Category 6	C
	Area Category 7	C
	Area Category 8	D
	Area Category 9	D

1.4.3. The owner of the vessel will need to request in the application the intended area of operation and the application must be supported with evidence that the design criteria for the intended area of operation has been complied with, the area of operation will be stated in the survey records, certification and the registration of the craft

1.5. Standards and Equivalence

1.5.1. Designers and Builders of boats will need to pay special regard to the intended area of operation and the working conditions to which a boat will be subjected when selecting the materials and equipment to be used in its construction

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

1.5.3. Standards referenced throughout the Code are for reference information. When referencing the standards for use during construction, or supply of equipment, the latest edition of the standard should be used.

1.5.4. Any craft designed to the equivalent rules of an IACS class society and constructed under survey of the society would be deemed as having met the requirements of this technical code.

1.5.5. Any craft designed to the equivalent ISO standards or national standard and constructed under survey of the flag administration would be deemed as having met the requirements of this technical code

1.5.6. The Merchant Shipping Secretariat has the discretion of determining equivalence, however in case of any ambiguity or applicability the issue must be referred to the technical panel of experts appointed to maintain and amend the technical codes

1.6. Approved Equipment and Material

1.6.1. Equipment and material that is required by the Code shall be of an approved type. The Merchant Shipping Secretariat will accept equipment approvals granted by a Recognized Organization (RO) acting on behalf of the Merchant Shipping Secretariat of Sri Lanka or by the United States Coast Guard(USCG) ,Maritime Coast Guard Agency in UK(UKMCA) or Maritime administration of Japan provided, the approvals are fully in accordance with the recognized standards.

1.6.2. The Administration will also accept equipment that has been approved under the European Union Marine Equipment Directive (MED) procedures or any other recognized standards such as Sri Lanka Standards organisation and International Standard Organisation

1.7. Passenger and Crew Capacity

1.7.1. The carrying capacity of a vessel covered by this code is mainly limited by stability concerns, the total number of persons that a craft can carry is determined as the minimum of;

- The maximum number of persons with which the craft satisfied the stability criteria
- The maximum number of persons for whom lifesaving appliances has been provided

1.7.2. The total persons on board are the sum of the passengers, special personnel andcrew and must not exceed the maximum number as determined in section 1.7.1

1.7.3. The passenger capacity of a vessel is determined as the minimum of

- The number of passengers included in the determination of the total carrying capacity (see section 1.7.1)
- Clear deck area requirements given in section 16.2
- Seating requirements given in section 16.2

1.7.4. Vessels other than passenger vessels should not carry more than 12 passengers on any voyage. The following meanings apply:

"Passenger" means any person carried in a vessel except:

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

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

(c) a child under one year of age; and

"a person employed or engaged in any capacity on board the vessel on the business of the vessel" may reasonably include:

.1 bona-fide members of the crew over the minimum school leaving age (about 16 years) who are properly employed on the operation of the vessel;

.2 person(s) employed either by the owner or the charterer in connection with business interests and providing a service available to all passengers; and

.3 person(s) employed either by the owner or the charterer in relation to social activities on board and providing a service available to all passengers.

.4 Special personnel

1.7.5. With reference to .2 and .3 above, such persons should be included in the crew list required for the vessel, should have received on board familiarisation training, and should not be assigned duties on the muster list.

1.8. Interpretation

1.8.1. Where question of application of the Code, or an interpretation of a part of the Code arises, the owner/managing agent of the vessel concerned should in the first instance seek clarification from the Certifying Body. In situations where it is not possible to resolve an issue of interpretation a decision may be obtained on written application to the Merchant Shipping Secretariat, who may consult with the technical panel of experts appointed to develop and maintain the technical codes

Inspections Certification and Maintenance

2.1. General

2.1.1. All non-convention vessels in commercial service in Sri Lankan waters are required to have a valid Certificate for the vessel issued by the Merchant Shipping Secretariat

2.1.2. A certificate will be issued by the Merchant Shipping secretariat upon completion of all items on the survey report.

2.1.3. The plans and drawings of the vessel must be submitted to an approved certifying body for appraisal.

2.1.4. The vessel must be built under survey by an approved certifying body, and upon completion of the vessel an Interim survey report must be completed and forwarded to the Merchant Shipping Secretariat.

2.2. Survey & Inspections

2.2.1. All non-convention vessels are required to have an initial survey, annual surveys, intermediate survey and a renewal survey to maintain valid certification and registration

2.2.2. All surveys & inspections are to be carried out by surveyors from an approved certifying body of by the surveyors of the Merchant Shipping Secretariat

2.2.3. Annual, intermediate and renewal surveys should be carried out within 3 months either side of the anniversary date of the initial survey compliance examination date to maintain the certification.

2.2.4. Should an annual, intermediate examination not be carried out within the permitted range, the Certificate will be automatically suspended, and the Owner notified of the suspension and the vessel will be required to undergo a renewal survey or an initial survey dependent on the condition of the craft and the elapsed time from the last survey.

2.2.5. At renewal survey the craft would need to be examined out of the water paying special attention to the exterior hull condition, through-hull valves and exterior rudder and propulsion equipment in the presence of an authorised surveyor and the survey results documented

2.2.6. Craft built of wood and similar material are required to be examined out of the water at the Intermediate survey in addition to the renewal survey. The Merchant Shipping Secretariat may at its discretion considering the age, area of operation may require out of water examinations to be at lesser interval as required

2.2.7. The Merchant Shipping Secretariat may at its discretion considering the hull construction material, age, type, service and area of operation may require out of water examinations to be at lesser interval as required.

2.2.8. Initial Survey - The Owner shall arrange for a full examination of the boat and its systems. Part of the examination shall be conducted with the boat out of the water, the following areas will need to be addressed;

- approved construction plans, and drawings must be submitted to the surveyor and the surveyor must be satisfied that the boat has been designed and built in accordance to this technical doe or equivalent standard
- For existing boats considered on the basis of safe history of boat or of design, the surveyor must be satisfied that the requirements of Structural strength are fulfilled with regard to confirmation of that safe history and supported by an appropriate structural survey and technical specification.

- The arrangements, fittings and equipment provided on the boat are to be documented on the Survey Record and should be in compliance with this code and copies of any required declarations should be retained for the boats technical file.
- Where a boat is required to have approved stability information, the Owner must be in possession of an approved Stability Information Booklet before the Certificate can be issued.
- For all other boats, the Owner should provide the information necessary to confirm that the stability of the boat meets the standard required by the Code for the permitted area of operation and intended use of the boat.
- Upon satisfactory completion of the examination and review of the documented arrangements, hull structure, machinery, fittings and equipment provided in compliance with the Code, and approval as appropriate of either the Stability Information Booklet or required stability information and the conduct of the stability test, the survey reports must be completed and finalized and the Certificate for the requested area of operation would be issued.

2.2.9. Annual Survey - The Owner shall arrange for an annual examination of the boat and its systems within 3 months either side of the anniversary date of the initial/renewal examination, at intervals not exceeding 15 months. the following areas will need to be addressed;

- In the case of a dedicated pilot boat and, under certain circumstances a boat with pilot boat endorsement, the hull and associated fittings are, additionally, to be examined out of the water, the following areas will need to be addressed
- The annual examination shall be general or partial examination of the boat, its machinery, fittings and equipment, as far as can readily be seen, to ascertain that it has been satisfactorily maintained as required by the Code and that the arrangements, fittings and equipment provided are as documented in the Survey Record.
- On satisfactory completion of the annual examination, the authorised surveyor should enter a record of the examination on the Certificate and Survey record.

2.2.10. Intermediate Survey - The Owner shall arrange for an intermediate examination of the boat and its systems at least once during the life of the Certificate, in order that the interval between successive examinations by an authorised person does not exceed three years and 3 months. The intermediate survey would replace the annual survey that is due between the 2nd and 4th year of the life of the certificate. An intermediate survey may be an out of water survey as required by clause 2.2.6 and 2.2.7. The following areas will need to be addressed

- The scope of the survey would be similar to an annual survey, unless an out of water survey is required
- In the case of an out of water survey the scope would be similar to a renewal survey

2.2.11. Renewal Survey - The Owner shall arrange for a renewal examination of the boat and its systems prior to the expiry of the current certificate. Part of the examination shall be conducted with the boat out of the water, the following areas will need to be addressed;

- Upon satisfactory completion and verification that the arrangements, fittings and equipment documented in the Survey Record, remain in compliance with the Code and that the boat and its machinery are in a sound and well maintained condition, the Certificate in force should be endorsed to indicate a 3 month extension
- Copies of the survey record and report must be submitted to the merchant Shipping Secretariat
- The Merchant Shipping Secretariat will renew the boat's Certificate if it is satisfied that the arrangements, fittings, and equipment documented in the Survey Record are in compliance with the Code.

2.3. Certification

2.3.1. A Certificate should be valid for not more than 5 years from the date of examination of the boat out of the water by the authorised person. The Certificate may be valid for a lesser period as determined by the Merchant Shipping Secretariat.

2.3.2. For a newly constructed boat, built under full construction survey for the purposes of this Code, the Certificate may begin from the final in-water compliance survey if less than 12 months from the last out of water date.

2.3.3. A signed and authenticated copy of the Certificate and the associated Survey Record is to be retained on board the boat. Where it is not reasonable to keep these aboard, they may be retained on shore, but must be made available if requested by any person in authority.

2.3.4. The renewal Certificate should be valid for not more than 5 years from the expiry of the existing Certificate, so long as the renewal examination was completed within three months prior to the expiry of the existing Certificate. If the renewal examination is conducted more than three months prior to the expiry of the existing Certificate, the Certificate should be valid for not more than 5 years from the completion date of the renewal examination

2.4. Reporting of non-compliances identified during periodical examinations

2.4.1. On completion of an examination, non-compliances will be reported to the Owner by letter/email with the action required. The nature of the non-compliances will determine whether a Certificate can be issued or endorsed at the time or whether certain corrective actions must be completed before the Certificate can be signed or endorsed. A priority will be assigned to each defect as follows:

- .Priority 1 - Critical defect

A renewal Certificate will not be issued, and an existing Certificate will be suspended. On rectification of the non- compliances the Owner shall arrange a re-inspection of the boat. The Certificate may be signed/endorsed upon satisfactory completion of the re-inspection.

- Priority 2 – Important defect

The Certificate may be signed or endorsed with a time frame specified for rectifications to be made; or

Issue of the Certificate or endorsement may be held in abeyance. Upon completion of remedial actions the Owner shall provide evidence of the completed work to the attending Surveyor within the agreed time period for action. Evidence shall be as agreed with the attending Surveyor and could include copies of Certificates, photographs or a written confirmation of actions.

If the Owner fails to provide evidence of the completed work to the attending Surveyor within the agreed time period, the Certificate will be automatically suspended.

- Priority 3 - Other non-compliances

These are most likely to be items of loose equipment that were not available at the time of examination. It is recognised that many boats are seen at maintainers' premises and the loose equipment is retained at the Boat Operator's base. In some cases operating units have spare boats to cover for maintenance periods and breakdown and interchange loose equipment between the in-service boats. The Boat Operator shall be responsible for ensuring the loose equipment is on board prior to sailing, in a serviceable condition, serviced and in date where applicable.

2.5. Repairs and Maintenance

2.4.2. The Merchant Shipping Secretariat may examine a certificated vessel at any time

2.4.3. It is the responsibility of the Owner to ensure that at all times a boat is maintained and operated in accordance with the requirements of the Code, the arrangements as documented in Survey Record and any conditions stated on the boat's Certificate

2.4.4. It is the responsibility of the Owner to ensure that the boat is maintained in accordance with manufacture's recommendations or best engineering practice. If for any reason the boat does not continue to comply with any of these requirements, the Owner should notify the Merchant Shipping Secretariat immediately.

2.4.5. Repairs or alterations to the hull, machinery or equipment that is covered by the requirements of this code and which affect the safety of the vessel shall not be made without the approval of the Merchant Shipping Secretariat, except in an emergency. Drawings or written specifications of proposed alterations should be submitted to the Merchant Shipping Secretariat and the certifying body in advance for appraisal and approval to proceed.

2.4.6. Safe working practices shall be observed in the planning and execution of any alterations, repairs or other operations involving riveting, welding, burning or other fire producing actions aboard a vessel particularly where these take place adjacent to fuel tanks or apparatus connected to the fuel tanks

2.4.7. Repairs, alterations and modifications of a major character and outfitting related thereto on existing vessels shall meet the requirements prescribed for a new vessel to such extent as the Merchant Shipping Secretariat deems reasonable and practicable. The owner shall inform the Merchant Shipping Secretariat of the proposed alterations and modifications before such alterations and modifications are carried out

2.4.8. For the purpose of the Code, the following repairs, alterations and modifications shall be recognized as being of "major character":

any changes that substantially alter the dimensions of the vessel;

any changes that substantially increase a vessel's service life; or

any conversions that alter the functional aspects of the vessel

2.4.9. In cases where the boat suffers major damage, e.g. as a result of a collision, grounding, fire or other event, the Owner must notify the Merchant Shipping Secretariat immediately, explaining the circumstances by which the boat became damaged. The nature and extent of major repairs are subject to the approval of the Merchant Shipping Secretariat

2.4.10. Minor damage, detrimental to the safety of the boat, must also be reported to the Merchant Shipping Secretariat, together with the measures proposed to effect repairs, who may take action as it may deem appropriate which may include a full or part examination of the boat.

Construction and Structural Strength

3.1. General

3.1.1. The design of the hull structure, its construction, and the materials and equipment used should be suitable for the service intended and provide adequate strength and service life for the safe operation of the vessel at its service draught and maximum speed. The design should also withstand the conditions likely to be encountered in the intended area of operation.

3.1.2. A boat compliant with this code which is not fitted with a watertight weather deck along the length of the vessel as required by section 3.3, would be restricted to operations in Area Category 4 or 5 only, provided that adequate reserves of buoyancy and stability for the boat to survive the consequences of swamping when loaded with the boats fuel, cargo, specialist equipment and the number of persons for which the boat is certified, is deemed to have been met

3.1.3. An open boat compliant with the other required provisions of this code would be restricted to service in area category 5 only provided that adequate reserves of buoyancy and stability for the boat to survive the consequences of swamping when loaded with the boats fuel, cargo, specialist equipment and the number of persons for which the boat is certified, is deemed to have been met

3.1.4. A sailing vessel which is not fitted with a watertight weather deck as required by section 3.3, would be restricted to operations in Area Category 5 only

3.1.5. An open boat should not carry cargo, or a combination of passengers and cargo, in excess of 1000kg. The passenger element must confirm to the restrictions imposed by the stability test. Such a vessel may not be fitted with a lifting device, or be engaged in towing operations

3.2. Structural Strength

3.2.1. New vessels should comply with an appropriate standard such as ISO 12215 Small Craft Hull Construction and Scantlings or to the rules of an IACS class society

3.2.2. A vessel may be built to an equivalent national standard of. safety to the standards in paragraph 3.2.1 above, provided that full information (including calculations, drawings, details of materials and construction) is submitted for appraisal and retained for reference

3.2.3. Inflatable or rigid inflatable boat, in any category, should comply with ISO 6185-1 Inflatable Boats: Boats with a maximum motor rating of 4.5kW; ISO 6185-2: Inflatable Boats: Boats with a maximum motor rating of 4,5kW to 15kW inclusive; ISO 6185-3 Inflatable Boats: Boats with a maximum motor rating of 15kW and greater, or equivalent standards. Alternatively, rigid inflatable craft or craft over 8 meters may be constructed in compliance with paragraph 3.2.1 above

3.2.4. For existing vessels, constructed before this code came into effect, the operator should be able to demonstrate a recent history of safe operation in a similar or more onerous operating category by this vessel.

3.2.5. The craft shall be fitted with suitable attachment points and internal support of sufficient strength for lifting launching and recovery and transport and hold down arrangements.

3.2.6. The design, materials, and construction of masts, posts, yards, booms, bowsprits, and standing rigging on a sailing

vessel should be suitable for the intended service. The hull structure should be adequately reinforced to ensure sufficient strength and resistance to plate buckling

3.3. Decks

3.3.1. The watertight weather deck should extend from stem to stern and have positive freeboard throughout, in any condition of loading of the boat.

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

3.3.3. Decks should be suitable for the intended cargo with consideration given to payload and lashing/tie down points.

3.3.4. A recess in a weather deck should be of watertight construction and have means of drainage capable of efficient operation when the boat is heeled to 10degrees. Such drainage is to have an effective area, excluding grills and baffles, of at least 20 cm^2 for each cubic metre of volume of recess below the weather deck

3.3.5. For sailing boats, means of drainage should be capable of efficient operation when the boat is heeled to 30 degrees. Such drainage to have an effective area, excluding grills and baffles, of at least 10cm2 for a vessel operating in Area Category 2, 3 or 4 and of at least 20cm2 for a vessel operating in Area Category 0 or 1

3.3.6. The total volume (Vc)of recesses on the watertight weather deck of a sailing boat must not exceed;

$$(Vc) = V1 + V2 + V... + Vn \leq 0.1 \times \text{length of vessel} \times \text{breadth of vessel} \times (F1 + F2 + F... + Fn)/n$$

Where:

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

3.3.7. Alternative arrangements for the size and drainage of a recess may be accepted provided it can be demonstrated that, with the boat upright and at its deepest draught, the recess drains from a swamped condition within 3 minutes, or the cockpit or recess should comply with ISO 11812 (Small craft- Watertight and Quick Draining Cockpits) for the relevant design category or other standard accepted by the Merchant Shipping Secretariat.

3.3.8. If a recess is provided with a locker which gives direct access to the interior of the hull, the locker should be fitted with weather tight covers. In addition, the covers to the locker should be permanently attached to the boats structure and fitted with efficient locking devices to secure the covers in place

3.4. Watertight Bulkheads

3.4.1. The strength of a watertight bulkhead and the effectiveness of any alternative means should be adequate for the intended purpose and to the satisfaction of the Merchant Shipping Secretariat.

3.4.2. Watertight bulkheads must extend to the weather deck, steps or recesses in the bulkhead are generally not permitted and where fitted must be of the same watertight standard as the bulkhead

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

3.4.4. A doorway fitted in a watertight bulkhead should be constructed so as to be watertight from both sides and be

kept closed at sea, unless opened for access only, at the discretion of the Skipper. A notice should be fitted to both sides of the door: 'To be kept closed at sea, open for access only'. Sliding watertight doors, where fitted, are to be provided with suitable safety provision to avoid injury to personnel by closure of the door.

3.4.5. For new boats with a waterline length greater than 12 m and operating in Area Category 4 and 5a watertight collision bulkhead and watertight bulkheads at each end of the machinery space should be fitted. The collision bulkhead is to be positioned such that the distance from the forward perpendicular shall be equal to or more than 5% and equal to or less than 3 m + 5% of the length (L) of the vessel

3.4.6. For new boats operating in Area Category 0,1,2 and 3 a watertight collision bulkhead and watertight bulkheads at each end of the machinery space should be fitted. The collision bulkhead is to be positioned such that the distance from the forward perpendicular shall be equal to or more than 5% and equal to or less than 3 m + 5% of the length (L) of the vessel

3.4.7. The collision bulkhead shall be watertight up to the weather deck and on vessels having a long forward superstructure (i.e. extending beyond the collision bulkhead) it shall be extended at least weather tight up to the next deck above the weather deck.

3.4.8. The number of penetrations by pipes through the collision bulkhead shall be kept to a minimum. Such pipes shall be fitted with valves installed on the front side of the bulkhead that shall be operable from above the weather d deck.

3.4.9. Passenger boats operating in all areas and non-passenger boats with more than 7 persons onboard operating in area categories 0,1 and 2,are required to have further subdivision to a one compartment flooded standard, additional watertight bulkheads must be fitted such that when any one compartment – that is limited by such bulkheads – is flooded, the margin line of the vessel will not be immersed and during intermediate stages of flooding, and at final equilibrium, the stability criteria given in section 6.2.4 are met

Watertight and Weathertight Integrity

4.1. Weathertight Integrity

4.1.1. A vessel should be constructed so that in the most extreme conditions expected in the area of operation, openings do not allow ready ingress of water, which might threaten the safety of the vessel and those onboard

4.2. Water Freeing Arrangements/Deck Drainage

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

4.2.2. In Motor boats;

- In a motor boat, the area of freeing ports should be at least 5 per cent of the bulwark area and be situated in the lower third of the bulwark height, as close to the deck as practicable
- Alternatively a boat of less than 12 m in length, having a well deck aft which is fitted with bulwarks all round and which is intended to operate no more than 60 miles from a safe haven (Area Categories 2–5) s may be provided with a minimum of two ports fitted (one port and one starboard), which may be in the transom, each having a clear area of at least 225 cm2 (0,0225 m2). Ports may only be fitted in the transom on boats where the shipping of water will not result in a trim by the head such that water will not drain

4.2.3. In Sailing boats

- In a sailing boat the area of freeing ports should be at least 10 per cent of that part of the bulwark area which extends for two-thirds of the boat's length amidships. A freeing port should be located in the lower third of the bulwark height, as close to the deck as practicable. A freeing port should be fitted with a grid which has a spacing of not more than 50 mm in any direction
- Where the average height of the bulwark over its length does not exceed 150 mm, freeing ports will not be required, however attention should be paid to suitable drainage arrangements.

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

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

Where

FP_{REQ} = Freeing port area required

FP_{MAX} = Maximum freeing port area required

A_{ACT} = Actual area of deck fitted with enclosed bulwarks, excluding superstructure or deckhouse area

A_{MAX} = Area of maximum sized well (0.7L x B) where L and B are the dimensions of the vessel

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

4.2.6. In a vessel where, freeing ports cannot be fitted, other efficient means of clearing trapped water from the vessel should be provided to the satisfaction of the Merchant Shipping Secretariat

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

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

4.3. Hatchways & Hatches

4.3.1. A hatchway which gives access to spaces below the weather deck should be of efficient construction and be provided with efficient means of weathertight closure

4.3.2. A cover to a hatchway should be hinged, sliding or permanently secured by other equivalent means to the structure of the boat and be provided with sufficient locking devices to enable it to be positively secured in the closed position. This is not intended to apply to small technical spaces where the hatch would normally remain closed at sea

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

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

4.3.5. Hatches in recessed or stepped decks of vessels described in section 3.3.2, that provide access to sea inlet valves, should have access openings at least 300mm above the minimum freeboard to deck, or the sea inlet valves fitted with remote closing devices

4.3.6. In general, hatches should be kept secured closed at sea. Where operational needs exist for specified hatches to be open at sea for lengthy periods these hatches shall be:

- kept as small as practicable, but never more than 1 m2 in plane area at the top of the coaming;
- located on the centre line of the boat or as close thereto as practicable;
- fitted such that the access opening is at least 300 mm above the top of the adjacent weather deck at side.

4.4. Doorways and Companionways

4.4.1. A doorway located above the weather deck which gives access to spaces below should be provided with a weathertight door. The door should be of efficient construction, permanently attached to the bulkhead, not open inwards and have efficient means of closure which can be operated from either side

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

4.4.3. A doorway which is either forward or side facing should be provided with a coaming, the top of which is at least 300 mm above the weather deck. A coaming may be portable provided it can be permanently secured to the structure of the boat and can be locked in position whilst at sea. An aft facing door shall be provided with a sill which may be less than 300 mm

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

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

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

4.5. Skylights

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

4.5.2. A skylight on the weather deck, which gives access to spaces below, shall be fitted with a coaming, the top of which is at least 150mm (6 inches) above the deck

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

4.5.4. When a skylight is provided as a means of escape it must be capable of being opened from both sides.

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

4.6. Portlights and windows

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

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

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

4.6.4. Portlights, windows and their frames should meet the requirements of ISO 12216 - Windows, portlights, hatches, deadlights and doors - strength and tightness requirements, or equivalent national Standards or Classification Rules.

4.6.5. A portlight fitted below the weather deck and not provided with an attached deadlight should be provided with a 'blank' (the number of blanks should be sufficient for at least half of the number of such portlights of each different size in the boat), which is readily available and can be efficiently secured in place in the event of breakage of the portlight. The blank should be of suitable material and strength to the satisfaction of the Merchant Shipping Secretariat

4.6.6. Such a 'blank' is not required for a non-opening portlight which satisfiespara 4.6.2

4.6.7. A window fitted in the main hull below the weather deck should meet the requirements of para 4.6.2 or be provided with a blank meeting the requirements of para 4.6.5

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

4.6.9. .For the wheelhouse

- windows and other openings at the operating station shall be of sufficient size and properly located to provide an adequate view for safe navigation in all operating conditions
- windows and their frames should meet the requirements of section 4.6.4, having due regard to the increased thickness of windows comprising one or more laminations in order to achieve equivalent strength;
- polarised or tinted glass should not be used in windows provided for navigational visibility (although portable tinted screens may be provided for nominated windows).

4.7. Ventilators and exhausts

4.7.1. A ventilator should be of efficient construction and, where situated on the weather deck should be provided with a readily available means of weathertight closure, consideration should be given to requirements of fire protection

4.7.2. A ventilator should be kept as far inboard as practicable and the height above the deck of the ventilator opening should be sufficient to prevent the ready admission of water when the boat is heeled.

4.7.3. A ventilator which must be kept open, e.g. for the supply of air to machinery or for the discharge of noxious or flammable gases, should be specially considered with respect to its location and height above deck to ensure that the downflooding does not occur at all operational angles and that stability consideration in respect of downflooding angle are met. Ventilators shall have a height of at least 760mm above the freeboard /weather deck and 450mm above superstructure decks.

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

4.8. Air Pipes

4.8.1. When located on the weather deck, an air pipe should be kept as far inboard as possible and have a height above deck sufficient to prevent inadvertent downflooding when the boat is heeled. Air pipes shall have a height of at least 760mm above the freeboard /weather deck and 450mm above superstructure decks

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

4.8.3. An air pipe serving a fuel tank or other tank, where provided with a closing appliance, should be of a type which

will prevent excessive pressure on the tank boundaries. Provision should be made for relieving a vacuum when tanks are being drawn from or emptied

4.9. Sea inlets and discharges

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

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

4.9.3. Alternative arrangements such as inlet tubes that are above the waterline (i.e. sterndrive units) may be accepted

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

4.9.5. A non-metallic, or non-flush metallic fitting, log or sensor should not be fitted in machinery spaces or in any spaces in boats that operate at high speed unless located in small cofferdams designed for the purpose and with any access panels and service transits made watertight. If access is designed to be opened at sea, a test cock should be provided

4.10. Materials for valves and associated piping

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

4.10.2. When plastic piping or flexible pipe is used it should not contribute any additional risks or spread of fire, be of good quality and of a type suitable for the intended purpose. Plastic/non-metallic piping should only be allowed where consideration has been given to the usage of the pipe, e.g. with respect to system type (open or closed loop), system pressure, system temperature, system pipe internal fluid, location etc.,. Plastic pipes should not be used for cargo pipes carrying flammable liquids.

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

4.10.4. Materials readily rendered ineffective by heat must not be used for fire main, hydrants, valves or cocks. Materials with a melting point above 1000°C may normally be accepted as meeting the above. Fittings which incorporate low melting point components may be accepted, provided they have passed a standard fire test, 800°C for 10 minutes. It should be taken into account in the test that it cannot be guaranteed that the fire main will not be flooded at all times.

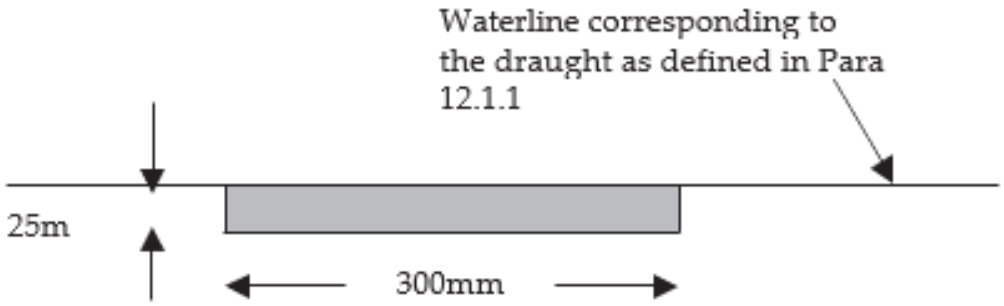
Freeboard

5.1. General

5.1.1. Where stability is assessed using any part of ISO 12217, freeboard is to be assigned using the appropriate part of that standard

5.1.2. A vessel that has been assigned a freeboard in accordance with this section shall have a permanent freeboard mark placed on each side of the vessel at the longitudinal position of the longitudinal centre of flotation for the maximum draught at which the stability of the boat has been determined, unless requirement is waived in the specific section. In no case should this draught be greater than the draught corresponding to the maximum displacement for which the scantlings have been approved.

5.1.3. The freeboard mark shall be a horizontal line of 300mm (12 inches) in length and 25mm (1 inch) in height, with its upper edge passing through the point of maximum draft. The loading mark shall be painted in a contrasting colour to the sideshell paint.



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

5.1.5. A scale of draught marks should be permanently marked clearly at the bow and stern, on both sides of the vessel. The longitudinal position of the draught marks, relative to the longitudinal datum for the hydrostatic data, should be recorded in the Stability Information Booklet, where provided. Where it is considered that the addition of a scale of draught marks is neither practicable or meaningful, for example, due to restricted loading variations, application for special consideration should be made to the Administration

5.1.6. Additionally, where the line of the deck is not immediately discernible, a vessel should be provided with a deck line. The deck line and freeboard mark should be permanent and painted on a contrasting background

5.1.7. Where the design of the vessel, or other circumstances, render it impracticable to mark the deck line, the Certifying Body may direct that it be marked by reference to another fixed point as near as practicable to the position described above

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

5.2. Freeboard requirements for Motor Vessels

5.2.1. The freeboard, for a motor vessel whose stability has not been assessed using ISO 12217 ‘Small craft - Stability and buoyancy assessment and categorisation’ Part 1 in conjunction with the relevant sections of section 6, should be not less than that determined by the following

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

- A vessel, other than an inflatable or rigid inflatable boat covered by Section 5.4, when fully loaded with cargo and non-cargo deadweight items certificated to be carried (each person taken as 75kg) should be upright and.
    1) in the case of a vessel with a continuous watertight weather deck in accordance with Section 3.3, which is neither stepped or recessed or raised, have a freeboard measured down from the lowest point of the weather deck of not less than 300 mm for vessels of 7 metres in length or under and not less than 750 mm for vessels of 18 metres in length or over. For a vessel of intermediate length the freeboard should be determined by linear interpolation.
    2) in the case of a vessel with a continuous watertight weather deck in accordance with Section 3.3, which may be stepped, recessed, or raised, have a freeboard measured down from the lowest point of the weather deck, of not less than 200 mm for vessels of 7 metres in length or under and not less than 400 mm for vessels of 18 metres in length or over. For a vessel of intermediate length the freeboard should be determined by linear interpolation. The raised portion(s) of the watertight weather deck should extend across the full breadth of the vessel and the average freeboard over the length of the vessel should comply with 1) above for a vessel with a continuous watertight weather deck.
    3) in the case of an open boat, have a clear height of side (i.e. the distance between the waterline and the lowest point of the gunwale*) of not less than 400mm for vessels of 7 metres in length or under and not less than 800mm for vessels of 18 metres in length or over. For a vessel of intermediate length the clear height should be determined by linear interpolation;

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

5.2.3. Vessels which carry cargo or a combination of passengers and cargo for which the cargo element exceeds 1000kg

- Freeboard should be assigned in accordance with the International (Load Line) Regulations

5.2.4. A vessel required to be provided with an approved Stability Information Booklet should be assigned a freeboard which corresponds to the draught of the vessel in sea water when fully loaded (each person taken as 75kg), but which in no case should be less than the freeboard required by Section 5.2.1or that corresponding to the scantling draught.

5.3. Freeboard Requirements for Sailing Vessels

5.3.1. A sailing vessel required to be provided with an approved Stability Information Booklet, other than a vessel assessed in conjunction with Section 6.6.4, should have a freeboard mark placed on each side of the hull at the longitudinal position of the longitudinal centre of flotation for the maximum draught at which the stability of the vessel has been determined. In no case should this draught be greater than the draught corresponding to the maximum displacement for which the scantlings have been approved

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

5.4. Inflatable boats in all Categories

5.4.1. The freeboard of an inflatable boat, or rigid inflatable boat, should be not less than 300mm measured from the upper surface of the buoyancy tubes, and not less than 250mm at the lowest part of the transom. With the inflatable boat, or rigid inflatable boat, in the following conditions, and with the drainage socks (if fitted) tied up:

- the inflatable boat or rigid inflatable boat with all its equipment,
- the inflatable boat or rigid inflatable boat with all its equipment, engine and fuel, or replaced by an equivalent mass,
- the inflatable boat or rigid inflatable boat with all its equipment, fuel, cargo, activity related

equipment –e.g. diving equipment – and the number of persons which it is to carry, so arranged that a uniform freeboard is achieved at the side buoyancy tubes; and

– the inflatable boat or rigid inflatable boat with all its equipment, fuel, activity related equipment – e.g. diving equipment – and the number of persons which it is to carry, and the inflatable boat re-trimmed as necessary to represent a normal operating condition.

5.4.2. 1A freeboard mark is not required, the minimum freeboards recorded during the tests, and the permissible maximum weight which can be carried, should be recorded on the certificate for the vessel

5.4.3. For inflatable boats or rigid inflatable boats operating in area category 5 only, which do not meet the above freeboard provisions, may still be acceptable provided it can be demonstrated that the boat is self-draining when moving ahead, and has a substantial reserve of buoyancy.

Stability

6.1. General

6.1.1. The standard of stability to be achieved by a new boat is dependent on the maximum number of persons permitted to be carried and the intended area of operation.

6.1.2. Boats to which this code applies must satisfy one of the stability standards as defined in this section, the table below summarises the requirements, the table applies to motor vessels only, and the requirements for sailing boats, and other craft type are as per the relevant paragraphs in this section

Craft Type & Category	No of Persons on board including crew	Cargo on Board	Area of Operation	Stability Standard	Stability Information Book
Non-Passenger	Less than 16	Less than 1000kg	3, 4 and 5	Small Craft code or ISO 12217	Not Required
Non-Passenger	Less than 16	More than 1000 kg	3, 4 and 5	Small Craft code or ISO 12217	Required
Non-Passenger	Less than 16	As per boat capacity	0, 1 and 2	Small Craft code or ISO 12217	Required
Passenger	Less than 60	Less than 1000kg	3, 4 and 5	Small Craft code or ISO 12217	Required
Passenger	As per boat capacity,	Less than 1000kg	0, 1, 2, 3, 4 and 5	IMO Intact Stability Code	Required

6.1.3. The following boats are required to be provided with a Stability Information Booklet which is to be approved by the Merchant Shipping Secretariat or a certifying body for form and content;

i) boats operating in area Category 0, 1 or 2;
ii) boats carrying 16 or more persons;
iii) boats carrying cargo greater than 1000 kg;
iv) boats fitted with a deck crane or other lifting device;
v) boats towing where the towed object's displacement is greater than twice the displacement of the towing boat
vi) seagoing pilot boats

Note 1 : Motor boats covered by (i) or (ii) are not required to carry Stability Information Booklets if the stability is assessed in accordance to section 6.3.10 using ISO 12217 Part 1 'Small craft - Stability and buoyancy assessment and categorisation - Non-sailing boats of hull length greater than or equal to 6 metres'

6.1.4. A boat carrying 15 or less persons, carrying 1000 kg or less of cargo, and operating in area categories other than 0, 1 or 2 shall either comply with the stability standards as given in section 6.1.2 or be subject to a simplified assessment of stability, and is not required to be provided with approved stability information

6.1.5. If a boat cannot meet the stability criteria given within this section (section 6), it would be specially considered by the Certifying body, and such cases should be reported to the Merchant Shipping Secretariat

6.1.6. The stability of sailing boats fitted with non-fore and aft rigs, or moveable/variable ballast is to be specifically considered on application to the Merchant Shipping Secretariat.

6.1.7. A sailing multihull over 6 m in length should be provided with a Stability Information Booklet approved by the Merchant Shipping Secretariat

6.1.8. Where a monohull boat cannot comply with the specified criteria, due to its hull form displaying stability characteristics similar to that of a multihull boat, the stability criteria for a multihull boat may be applied, as appropriate for sailing or motor boats

6.1.9. A motor multihull type vessel failing to comply with the criteria of either Section 6.3.8 or 6.3.9 may be given special consideration. In such a case, calculations should be submitted to the Administration for assessment

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

6.2. Damage Survivability

6.2.1. This section applies to all monohull vessels carrying 16 or more persons and those operating in Area Category 0, 1 or 2, with 7 or more persons, subject to minimum safe manning levels being agreed with the Merchant Shipping Secretariat.

6.2.2. Vessels should be so arranged (see also section 3.4.9) that after minor hull damage or failure of any one hull fitting in any one watertight compartment, it will satisfy the residual stability criteria below. This may be achieved by fitting water-tight subdivision or alternative methods to the satisfaction of the Merchant Shipping Secretariat. Minor damage should be assumed to occur anywhere in the length of the vessel but not on a watertight subdivision.

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

Space	Permeability %
Appropriated for stores	60
Appropriated for stores but not bya substantial quantity thereof	95
Appropriated for accommodation	95
Appropriated for machinery	85
Appropriated for liquids	0 or 95 whichever results in the more onerous requirements

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

6.2.5. Generally, the requirements of section 6.2.2 to 6.2.4 for a monohull vessel should apply to a multihull motor vessel carrying 16 or more persons or operating in Area Category 0, 1 and 2, with 7 or more persons. Damage and inverted stability requirements for multihull sailing vessels are contained in Section 6.8. If a multihull vessel is of unconventional design or cannot meet the damage criteria given in Sections 6.2.2 to 6.2.4, the results of the calculations should be submitted to the Merchant Shipping Secretariat for assessment.

6.3. Stability of Motor Vessels

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

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

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

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

- Loaded departure, 100% consumables;
- Loaded arrival, 10% consumables;
- Anticipated service conditions; and
- Conditions involving lifting appliances (when appropriate).

6.3.5. Maximum free surface moments should be included within the Loaded Departure condition, and as a minimum, factored according to tank percentage fill for all other conditions

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

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

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

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

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

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

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

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

6.3.9. If a vessel of catamaran or multihull type does not meet the stability criteria given in Section 6.3.8, the vessel should meet the following criteria:-

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

When the maximum righting lever, GZmax, occurs between θ= 15º and θ= 30º the required area under the GZ Curve up toθ_{GZmax} should not be less than:

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

where: $\theta_{GZmax}$is the angle of heel in degrees at which the righting lever curve reaches its

maximum.

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

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

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

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

6.3.10. Vessels complying with all requirements of ISO 12217 Part 1 'Small craft - Stability and buoyancy assessment and categorisation - Non-sailing boats of hull length greater than or equal to 6 metres', assessed using Options 1 or 2 of Section 5.3 - `Test and calculations to be applied' of the standard, may as an alternative, after verification of the stability assessment by the Certifying body, be assigned an area of operation in accordance with Section 6.1.2 and section 6.3.11

6.3.11. Permitted areas of operation when stability assessment is done using ISO standard 12217 Part 1 'Small craft - Stability and buoyancy assessment and categorisation - Non-sailing boats of hull length greater than or equal to 6 metres'

Merchant Shipping Secretariat Area Category	Merchant Shipping Secretariat Design Category	ISO 12217 Design Category
0	A	A
1	A	A
2	B	B
3	B	B
4	C	C
5	C	C

6.4. Simplified assessment of Stability of Motor Vessels

6.4.1. The following assessment method is a simplified assessment of stability to be applied for motor vessels as provided in section 6.1.4

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

6.4.3. In a boat where the projected windage area is more than or equal to half the product of the vessel's length and breadth, the wind heeling lever for the vessel in both the minimum loading condition and full load arrival condition should be calculated according to the following formula and guidelines. Using the equivalent static heeling moments, the vessel should be tested in both loaded conditions to ascertain the angle of heel and the position of the waterline. The contents of tanks must be such that the effect of free surfaces is included in the test

The heeling moment due to wind (M_w) in newton metres is given by;

$$M_w = 0.3\ A_{LV}(A_{LV}/L_{WL} + T_M)\ v_W^2$$

Where ;

A_{LV} = the projected windage area of the boat and outfit but not less than $0.5L_HB_H$

L_H = Maximum length of the hull

B_H = Maximum beam of the hull

L_{WL} = Length on the waterline in metres

T_M = the draft at the midpoint of the waterline length in metres

v_w = 17 $ms^{-1}$for design category C and 21ms^{-1} for design category B

6.4.4. The vessel has an acceptable standard of stability if the test shows that

- the angle of heel due to passenger movement does not exceed 7 degrees, and
- in the case of a vessel with a watertight weatherdeck extending from stem to stern, the freeboard to deck is not less than 75mm at any point
- the angle of heel due to passenger movement may exceed 7 degrees, but should not exceed 10 degrees, if the least freeboard to downflooding in the heeled condition is in accordance with section 5 of the Code for the upright condition.
- the angle of heel due to wind should be less than 70% of the recorded heel due to passenger movement and
- the angle of heel due to wind should also be less that 70% of the angle to downflood

6.4.5. Additionally, for vessels over 15 metres in length, the heeling moment applied during the test described in 6.4.2 to 6.4.3 should be calculated. Using the formula below, the vessel should attain a value of initial GM not less than 0.5m if using an estimated displacement, or 0.35m if the displacement of the vessel is known and can be verified by the Certifying Body.

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

where: HM = Heeling moment in kilogramme-metres

θ= angle of heel in degrees obtained from the test as defined in in 6.4.2 and 6.4.3

Δ= displacement of boat in kilogrammes, either estimated, or measured and verified by the Certifying Body

6.4.6. For vessels carrying a combination of passengers and cargo, for which the cargo element does not exceed 1000kg (see definitions), the test defined in Section 6.4.2 and 6.4.3 should be carried out with the full complement of passengers and cargo, and additionally with passengers only. For the purposes of these tests the cargo may be assumed to retained at its normal stowage position

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

e.g. diving equipment

6.4.8. It should be demonstrated by test(as described in section 6.5.9 swamp test) or by calculation that an open boat, when fully swamped, is capable of supporting its full outfit of equipment, the total number of persons for which it is to be certificated and a mass equivalent to its engine and full tank of fuel.

6.5. Stability of Inflatable Boats or Boats Fitted with a Buoyant Collar

6.5.1. The heel test provisions stated previously are not appropriate for an inflatable boat, rigid inflatable boat or those vessels with a buoyant collar. Unless a boat to which this Code applies is completely in accordance with a standard production type (refer to relevant part of BS/EN/ISO 6185-1,2,3:2001), for which a certificate of approval has been provided for the tests, the tests detailed below should be carried out.

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6.5.2. The tests should be carried out on vessels floating in still water.

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

6.5.4. The Intact and Damage tests should be carried out with all the vessel's equipment, fuel, cargo, activity related equipment e.g. diving equipment – and number of persons which it will carry. The engine, equipment and cargo maybe replaced by an equivalent mass. Each person may be substituted by a mass of 75kg for the purpose of the tests

6.5.5. Intact Stability tests

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

6.5.6. Damage Tests – Inflatable Boats

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

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

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

6.5.7. Purely inflatable boats failing to meet Section 5.3.5 may be specially considered taking into account operational service limitations.

6.5.8. Person recovery stability test

- Two persons should recover a third person from the water into the inflatable boat or rigid inflatable boat or vessel with a buoyant collar. The third person should feign to be unconscious and be facing away from the inflatable boat or rigid inflatable boat so as not to assist the rescuers. Each person involved should wear an approved lifejacket. The stability of the inflatable boat or rigid inflatable boat should remain positive throughout the recovery

6.5.9. Swamp Test

- It should also be demonstrated that an inflatable boat, or rigid inflatable boat or vessel with a buoyant collar, when fully swamped, is capable of supporting its full outfit of equipment, the total number of persons which it will carry, and a mass equivalent to its engine and full tank of fuel
- In the swamped condition, the inflatable boat, rigid inflatable boat or vessel with a buoyant collar, should not be seriously deformed.
- A practical means of draining the boat should be demonstrated at the conclusion of this test. This should not include the use of electric bilge pumps

6.6. Stability of Sailing Mono Hull Vessels

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

produced.

Notes:-

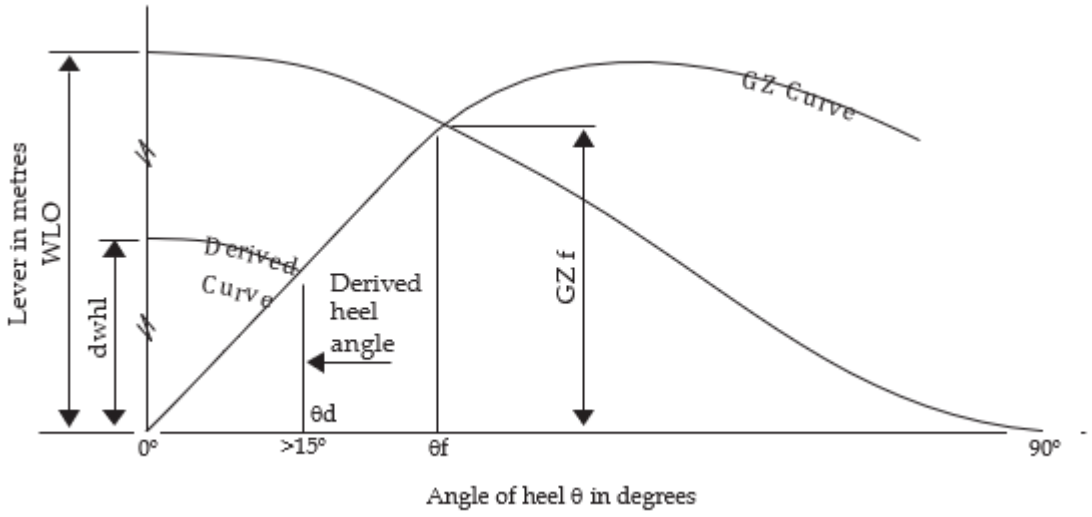
1) The above conditions may include a margin for growth up to 5% of the lightweight, at the discretion of the Certifying Body, with the VCG positioned at the upper deck amidships.
2) Buoyant structures intended to increase the range of positive stability should not be provided by fixtures to either a mast, rigging, or superstructure.
3) For standard production series-built vessels, the statical stability (GZ) may be derived from an inclining experiment conducted on another vessel of the series, subject to corrections for differences in outfit, to the satisfaction of the Certifying Body.
4) Maximum free surface moments should be included within the loaded departure condition, and as a minimum, factored according to tank percentage fill for the loaded arrival condition.

6.6.2. The GZ curves required by Section 6.6.1 should have a positive range of not less than the angle determined by the formula in the table in Section 11.9.5, or 90°, whichever is the greater

6.6.3. In addition to the requirements of Section 6.6.2, the angle of steady heel obtained from the intersection of a "derived wind heeling lever" curve with the GZ curves referred to in Section 6.6.1 above should be greater than 15 degrees (see Figure below).

`DWHL' = the "derived wind heeling lever" at any angle θ degrees= $0.5 \times WL_0 \times \cos^{1.3}\theta$

where $WL_0 = \frac{GZ_f}{\cos^{1.3}\theta_f}$



Noting that, when using this method:-

WL_0- is the magnitude of the actual wind heeling lever at 0 degrees which would cause the vessel to heel to the `down flooding angle' (θ_f) or 60 degrees whichever is least.

GZ_f- is the lever of the vessel's GZ at the `down flooding angle' (θ_f) or 60 degrees 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 degrees the vessel will be considered as having insufficient stability for the purpose of the Code).

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

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

Moreover, it is the angle at which the lower edge of the actual opening which results in critical flooding

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

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

It might be noted that provided that the vessel complies with the requirements of Section 6.6.1, 6.6.2 and 6.6.3 and it is sailed with an angle of heel which is no greater than the 'derived angle of heel', it should be capable of withstanding a wind gust equal to 1.4 times the actual wind velocity (i.e. twice the actual wind pressure) without immersing the `down flooding openings', or heeling to an angle greater than 60 degrees

6.6.4. Vessels complying with ISO 12217 Part 2 'Small craft - Stability and buoyancy assessment and categorisation - Sailing boats of hull length greater than or equal to 6 metres', assessed using Options 1 and 2 of Section 6.1 - `Requirements to be applied', may as an alternative and in lieu of section 6.6.2, be assigned a permitted area of operation in accordance with section 6.7.4, provided that the righting lever curve produced for this standard, is verified and corrected in accordance with Annex 5before performing the calculations . In this case the calculated steady heel angle required by 6.6.3 is to be reduced by 10%

6.6.5. A Stability Information Booklet, based on the Administration's model booklet, should be submitted to and approved by the Certifying Body and placed on-board the vessel. The booklet should include details of the maximum steady angle of heel for the worst sailing condition. The steady angle of heel is to be calculated in accordance with Section 6.6.3 or 6.6.4. The booklet should also include curves of maximum recommended steady angle of heel for the prevention of down flooding in the event of squall conditions. Details of the development of such curves are given in the Model Stability Information Booklet.

6.7. Simplified assessment of Stability of Sailing Mono Hull Vessels

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

6.7.2. Vessels without external ballast keels

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

  Notes:-

  1) The above conditions may include a margin for growth up to 5% of the lightweight, at the discretion of the Certifying Body, with the VCG positioned at the upper deck amidships.
  2) Buoyant structures intended to increase the range of positive stability should not be provided by fixtures to either a mast, rigging, or superstructure
  3) For standard production series built vessels, the statical stability (GZ) may be derived from an inclining experiment conducted on another vessel of the series, subject to corrections for differences in outfit, to the satisfaction of the Certifying Body

  The permitted area of operation is dependent upon a vessel's range of stability as indicated in the table in Section 6.7.4. (The range of stability is to at least 90° in all cases)

  For vessels operating in Area Category 5, it may be demonstrated by test or calculation, that an open sailing boat when fully swamped is capable of supporting its full outfit of equipment and the total number of persons for which it is to be certificated. Sailing dinghies (small non-decked boats

generally in the range of 2.5 to 6 metres in length which are not mechanically propelled) and small un-ballasted sailing dayboats are to be capable of being righted by their crew after inversion.

- Method 2: By the full application verified or performed by a Certifying Body as required, of ISO12217 Part 2 'Small craft - Stability and buoyancy assessment and categorisation - Sailing boats of hull length greater than or equal to 6 metres', in accordance with Section 6.7.4.. Vessels under 6 metres in length may not be considered by this method:

  The permitted area of operation is dependent upon a vessel's assigned Design Category as indicated in the table in section 6.7.4.

6.7.3. Vessels fitted with external ballast keels, the stability assessment of a vessel may be made by any one of the following methods:

- Method 1: as for vessels without external ballast keels, see 6.7.2 above;

- Method 2: By the full application verified or performed by a Certifying Body as required, of ISO12217 Part 2 'Small Craft - Stability and Buoyancy Assessment and Categorisation - Sailing Boats of hull length greater than or equal to 6m' in accordance with section 6.7.4.Vessels under 6m in length may not be considered by this method

- Method 3: by the 'Sail Training Operational Stability (STOPS)' Numeral developed by the Royal Yachting Association (RYA) of the United Kingdom.

  Notes:

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

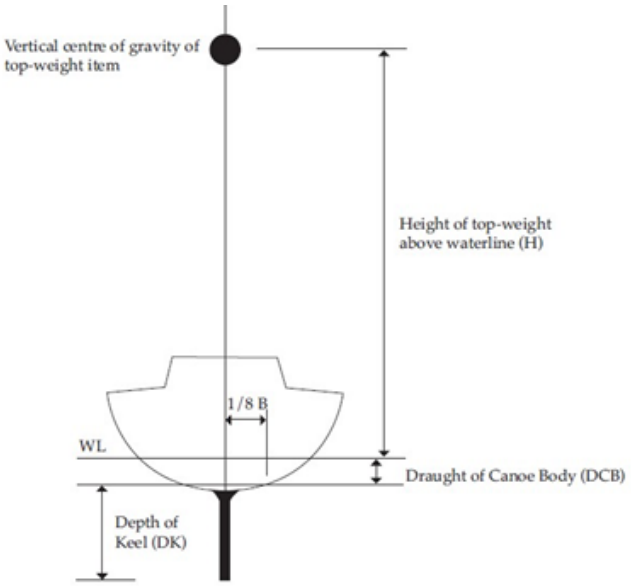
  ii) Moments are to be taken about the vertical centre of gravity, which is assumed to be at the waterline. The heeling moments attributed to the top-weight items are resolved, and the ballast weight is reduced, using the formula below.

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

Noting that:

CBW is the correction to the ballast weight.
TW is the weight of the top-weight items being considered.
H is the height of the vertical centre of gravity above the waterline.
DCB is the draught of the canoe body, taken by measuring the maximum draught at 1/8 of the full beam from the centreline in way of the transverse Section, at greatest beam.
DK is the depth of the keel, taken as the distance between the draught of the canoe body and the bottom of the keel.
The dimensions above are illustrated in Figure below.

Stability



Examples of top-weight items are given below:

in-mast or behind-mast roller furling mainsail; roller furling headsail

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

The vessel should achieve a STOPS3 numeral of 11 or higher
Ballast weight reductions are to be conducted to the satisfaction of the Certifying Body
The permitted area of operation is dependent upon a vessel's range of stability, STOPS Numeral, or Design Category as indicated in the table in section 6.5.4.

A "SSS" numeral calculated by the Royal Ocean Racing Club (RORC) will be accepted in place of a STOPS numeral, provided that it includes a self- righting factor based on an inclining experiment and shown on a valid International Rating Certificate (IRC) or International Measurement System (IMS) rating certificate.

6.7.4. Table showing permitted areas of operation, STOPS Numerals and Design Categories for Mono Hull Sailing Boats

	Minimum Required Standard			
Merchant Shipping Secretariat Area Category	Range of Stability	Stops Numeral	ISO 1221 Design Category	Permitted ISO Stability Assessment Options
0	90+60x(24 - LOA)/17	N/A	A	1
1	90+60x(24 - LOA)/17	N/A	A	1
2	90+60x(24 - LOA)/20	30	B	1
3	90+60x(24 - LOA)/25	20	B	1
4	90+60x(24 - LOA)/25	20	C	1 and 2

5	90+60x(24 - LOA)/25	20	C	1 and 2

6.8. Stability of Sailing Multihull Vessels

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

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

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

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

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

where

υ_w = maximum safe apparent wind speed (knots)
LM_R = limiting restoring moment in roll (newton-metres)
LM_P = limiting restoring moment in pitch (newton-metres)
A'_S = area of sails set including mast and boom (square metres)
h = height between the geometric centre of area of A's and the below-water profile of the hull, with centre/dagger boards lowered and the boat upright (metres)
Φ_R = heel angle at maximum roll righting moment (in conjunction with LMR)
Φ_P = limiting pitch angle used when calculating LMP (in conjunction with LMP)
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

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

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

Merchant Shipping Secretariat Area Category	ISO 12217 Design Category	"Bare Poles" safe wind speed should exceed
0	A	36 knots
1	A	36 knots
2	B	32 knots
3	B	28 knots
4	C	25 knots
5	C	25 knots

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

6.9. Stability of Vessels fitted with a Deck Crane or other Lifting Device

6.9.1. For the purposes of Section 6 only, a lifting device does not include a person retrieval system, the vessel's own anchor handling equipment, or davits for tenders, where judged by the Certifying Body not to have a detrimental effect on the stability of the vessel

6.9.2. Reference should be made to Annex 7 for requirements for safety standards other than stability for a vessel fitted with a deck crane or other lifting device

6.9.3. A vessel fitted with a deck crane or other lifting device should be a decked vessel and comply with the general requirements of Section 6, which are appropriate to it.

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

- With the crane or other lifting device operating at its maximum load moment, with respect to the vessel, the angle of heel generally should not exceed 7 degrees or that angle of heel which results in a freeboard to deck edge anywhere on the periphery of the vessel of 250mm, whichever is the lesser angle. (Consideration should be given to the operating performance of cranes or other lifting devices of the variable load-radius type and the load moment with respect to the vessel for lifting devices situated off centreline)
- When an angle of heel greater than 7 degrees but not exceeding 10 degrees occurs, the Certifying Body may accept the lifting condition providing that all the following criteria are satisfied when the crane or other lifting device is operating at its maximum load moment:-
    1) the range of stability from the angle of static equilibrium to downflooding or angle of vanishing stability, whichever is the lesser, is equal to or greater than 20 degrees;
    2) the area under the curve of residual righting lever, up to 40 degrees from the angle of static equilibrium or the downflooding angle, if this is less than 40 degrees, is equal to or greater than 0.1 metre-radians; and
    3) the minimum freeboard to deck edge fore and aft throughout the lifting operations should not be less than half the assigned freeboard to deck edge at amidships. For vessels with less than 1000mm assigned freeboard to deck edge amidships the freeboard fore or aft should not be less than 500mm.
    4) The freeboard to deck edge anywhere on the periphery of the vessel is at least 250mm.

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

1) the maximum permitted load and outreach which satisfy the requirements of Section 6.9.2, or the Safe Working Load (SWL), whichever is the lesser (operating performance data for a crane or other lifting device of variable load-radius type should be included as appropriate);
2) details of all openings leading below deck which should be secured weathertight; and
3) the need for all personnel to be above deck before lifting operations commence.

6.9.6. Requirements for a lifting system which incorporates counterbalance weight(s) or vessels that cannot comply with the requirements of Section 6.9.2 but is deemed to have adequate residual stability would be specially considered by the Merchant Shipping Secretariat

6.10. Stability of Vessels engaged in Towing

6.10.1. Reference should be made to Annex 7 for requirements for safety standards other than stability for a vessel engaged in towing.

6.10.2. Generally, a vessel engaged in towing should be a decked vessel and comply with the general requirements of Section 6 which are appropriate to the vessel.

6.10.3. The danger to safety of deck edge immersion makes an open boat unsuitable for towing other vessels or floating objects

6.11. Approval of Intact and Damage Stability

6.11.1. The owner(s) of a vessel is responsible for the submission of the Intact and damage stability documentation including calculations as appropriate, prepared by a competent person(s), the content and form in which stability information is presented, their accuracy (including methods and procedures used for calculations), and compliance with the requirements of Section 6.for the standards required for the vessel

6.11.2. A vessel for which stability is assessed on the basis of practical tests or simplified methods, defined in Section 6 of the Code, conducted by a competent person(s), should be approved by the Certifying Body. In order to give approval, the Certifying Body should be satisfied that the requirements have been met, accepting the results obtained and keeping a detailed record of the procedure of the tests or calculations and the results which were accepted. The Certifying Body should file the details in the records retained for the vessel, and these details are to be entered on the certificate.

6.11.3. The owner(s) should submit three (3) copies of the documents to the Certifying Body for approval.

6.11.4. The Stability Information Booklet should be based on the Merchant Shipping Secretariat's model booklet.

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

6.11.6. The Certifying body should approve the results of the damage stability cases provided that the results meet the defined standards Section 6.Approval (of the results but not the accuracy of the calculations) should be given in a formal letter from the Certifying Body to the owner(s) and the calculations marked with the name of the Certifying Body, the date and "RESULTS APPROVED".

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

6.11.8. The owner(s) is responsible for the conducting of all practical tests including the inclining test of a vessel and for the calculation of the lightship particulars, which are used in the stability calculations and should ensure that the test is conducted by competent persons.

6.11.9. A person competent to the satisfaction of the Merchant Shipping Secretariat should witness the practical tests including the inclining test of a vessel and be satisfied as to conditions and the manner in which the test is conducted

6.12. Addition of Solid Ballast and Flotation material

6.12.1. When it is required to fit solid ballast for the purposes of vessel stability, ballast should be fitted in the lowest

possible placement within the hull and stowed in such a may that there is no shift of the ballast due to vessel movements in a seaway.

6.12.2. Flotation material used must be of a standard and quality acceptable to the Merchant Shipping Secretariat

6.12.3. Any floatation material fitted must be properly secured and not liable to shift due to vessel movements in a seaway and should be capable of being removed for inspection of spaces, this requirement does not apply where floatation material is formed in situ.

6.12.4. Where floatation material is formed and applied in situ, care should be taken to ensure that all areas of the void is filled, several measured pouring may be required

6.12.5. Floatation material used shall be;

- impervious to water absorption;
- structurally stable under service conditions;
- chemically inert in relation to other medium with which it may be in contact;

Machinery

7.1. General

7.1.1. In motor vessels, the main propulsion machinery and all auxiliary machinery essential to the propulsion and the safety of the vessel should be designed to operate when the vessel is upright and when inclined at any angle of heel and trim up to and including 15 degrees and7.5 degrees respectively either way under static conditions.

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

7.1.3. Machinery, fuel tanks and associated piping systems and fittings should be fit for purpose and be of a design and construction adequate for the service for which they are intended. Moving parts, hot surfaces and other hazards should be installed and protected so as to minimise danger to persons during normal movement about the vessel. Materials should be fire resistant or otherwise protected from fire. Plastic fittings at the Hull are not recommended.

7.1.4. A vessel should be provided with a fuel tank of sufficient capacity for the main engines, and its area of operation. All fuel tanks vents should be fitted with a flame gauze as required by BS/EN/ISO 10088, and carried to at or above tank filling plate level and where there should be no danger from escapingfuel or vapour.

7.1.5. Where the machinery is in its own dedicated compartment and remote from the operator, means should be provided to isolate a source of fuel, which may feed a fire. A valve or cock, which can be shut from a position outside the engine space should be fitted in the fuel-feed pipe, as close to the fuel tank as possible. Where the machinery is situated directly below the operator, and within easy reach for control and isolation in event of emergency, these conditions need not apply. Petrol tanks for outboards motors should have quick connection shut off devices.

7.1.6. Measures should be taken to prevent spillage and build-up of flammable vapours in any part of the vessel, including bilges during fuelling.

7.1.7. Vessels should have an efficient and reliable starting mechanism. Where the means of starting is by battery, charging facilities for the battery should be available.

7.1.8. Where the sole means of starting is by battery, there should be a duplicate battery connected to the starter motor by a “change over switch” so that either battery or other means of obtaining power can be used to start the engine

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

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

7.1.11. All engines fitted shall meet the local emissions criteria.

7.2. Diesel Engines

7.2.1. A vessel fitted with either an inboard or an outboard diesel engine should be provided with an efficient engine suitable for marine use and with sufficient fuel tankage for its area of operation. Where a vessel is fitted with a fuel tank that has a sight glass, self- closing valves should be fitted to prevent spillage in the event of a breakage.

7.2.2. When storing diesel fuels in portable tanks or containers, consideration should also be given to the following:

- a secure and robust storage unit ,cupboard, bin, cabinet etc. should be provided which is metal and fitted with a means to contain leaks/spills from containers and with direct overside drainage of any spillage;
- the storage unit should be located on deck away from direct sources of heat, and should be fire-resistant;
- containers should be stored upright and secured, such that they are not likely to shift or fall over with movement of the vessel;
- the unit should be suitably labelled according to contents (eg materials stored, hazards signs, no smoking/ignition sources etc);
- storage should be suitably distanced from potential sources, or situations where build up of vapours may occur;
- diesel type fuels should be stored separately from LPG;
- storage locations should not restrict or impede normal movement of people about the vessel or be on escape routes
- the storage unit should house both full and empty spare fuel containers (empty containers will contain liquid dregs and vapours

7.3. Petrol Engines

7.3.1. Petrol engines should be a suitable outboard type.

7.3.2. The engine, its fuel systems and tanks should comply with ISO10088 Permanently installed fuel systems and fixed fuel tanks, and the following:

- Fuel tank filling pipes should be arranged so as to ensure that any overflowing fuel will not be discharged into the vessel, including the bilges. Filling pipes should be adequately supported and connected to the fuel tank with leakproof joints. Flexible filling pipes should be suitable for use with petrol and meet the fire resistance test of ISO 7840 Small Craft Fire resistant fuel hoses (as amended), or equivalent;
- Fuel tanks should be properly secured and be installed as low as is practicable. They should be constructed of a non-corrosive material suitable for use with petrol. Fuel tanks should have a fire resistance of 30 minutes in accordance with BS 476- 20 Fire tests on building material and structures. Methods for determination of the fire resistance of elements of construction (General Principles) and have sustained a pressure test of 0.25 kgf/sq cm;
- All fuel tank joints and seams should be efficiently welded, brazed or close rivetted;
- No fixed petrol fuel tank of more than 2.5.litres should be installed within 1 metre of any engine or heating appliance, unless insulated and protected by an efficient baffle of fire resistant material;
- Glass or plastic fuel sight gauges should not be used. Fuel level indicators, if fitted, should be of a type which do not allow fuel to escape in the event of damage. Fuel tank dipsticks, when fitted, should only be used via gas-tight fittings;
- All fuel tank connections should be readily accessible for inspection;
- Fuel tanks should be effectively bonded by a low resistance metallic conductor to their deck filling

plate, and also be effectively bonded to an earth point in direct contact with the water surrounding the hull

- The fuel supply should be drawn through the top of the fuel tank, or as near the top of the tank as possible. Only in the case of a gravity feed system should there be a connection from a cock or valve screwed directly in near the bottom of the tank, so that damage to the valve or fuel line cannot dump petrol into the machinery space
- Fuel tank balance pipes should not be used in petrol or paraffin engine installations
- All fixed fuel feed pipes should be of a metallic material suitable for use with petrol and/ or paraffin.
- Flexible fuel pipes should be of a material suitable for use with petrol and/or paraffin and meet the fire resistance requirements of BS/EN/ISO 7840 Small Craft fire resistant fuel hoses, or equivalent.
- All fuel pipes should be adequately supported to minimise vibration and strain, and fixed clear of exhaust systems and heating apparatus.
- All fuel pipe connections should be made with efficient screwed, compression, cone, brazed or flanged joints. Soft solder joints should not be used.
- All fuel filters should be suitable for marine use, and be of fire resistant quality.
- Carburettors (other than down-draught type) should be fitted so as to allow any overflowing fuel to drain into a spirit tight metal drip tray – the top of which should be covered with a flame-arresting copper or brass gauze which is mesh-soldered all around the tray. The tray should be removable, or fitted with a cock for emptying.
- A flame trap or air filter should be fitted to the air intake of any engine

7.3.3. A vessel may be fitted with a small auxiliary engine (usually not more than 5 horse power) manufactured with an integral fuel tank, provided a safety warning sign is displayed with details of the appropriate precautions to be taken when filling the fuel tank.

7.3.4. Vessels should supply fuel to the engine from either:

- (other than inflatable boats) a permanently installed fuel tank constructed to an appropriate standard and, in the case of vessels fitted with a weather- tight deck, should have arrangements such that spillage during fuel handling will drain directly overboard; or
- a portable tank of 27 litres or less in capacity complying with an appropriate standard.

7.3.5. A suitable hydrocarbon gas detector should be fitted in any enclosed location where an accumulation of hydrocarbon vapours is likely to occur – e.g. under or adjacent to the fixed tank. The detector components in the vapour area should not be capable of causing ignition.

7.3.6. Spare portable petrol containers should not be carried on board unless it is judged to be essential to assure the safe completion of a voyage or excursion. Should this be the case, the containers should be fit for purpose and soundly constructed. They should be clearly marked as containing petrol, and should normally be stowed either:

- on the deck where they can be readily jettisoned, and where spillage will drain directly overboard; or
- in a fire-resistant deck locker with overside drainage.

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

7.3.8. In small vessels where Section 7.3.6 is not practicable, a 5-litre container of petrol may be stowed in a deck locker which meets the requirements of Section 7.3.8

7.3.9. Alternatively it may be stowed in a deck locker or protective enclosure which meets the following requirements:-

- vapour tight to the vessel's interior;
- not openable from the vessel's interior; and
- adequately drained overboard and ventilated to atmosphere.
- When storing petrol fuels in portable tanks or containers, consideration should also be given to the following:
- a secure and robust storage unit ,cupboard, bin, cabinet etc. should be provided, which is metal and fitted with a means to contain leaks/spills from containers and with direct overside drainage of any spillage;
- the storage unit should be located on deck away from direct sources of heat, and should be fire-resistant;
- containers should be stored upright and secured, such that they are not likely to shift or fall over with movement of the vessel;
- the unit should be suitably labelled according to contents (eg materials stored, hazards signs, no smoking/ignition sources etc);
- storage should be suitably distanced from potential sources, or situations where build up of vapours may occur. (Note: petrol vapour is heavier than air);
- petrol type fuels should be stored separately from LPG;
- storage locations should not restrict or impede normal movement of people about the vessel or be on escape routes;
- the storage unit should house both full and empty spare fuel containers (empty containers will contain liquid dregs and vapours).

7.4. Electrically Powered Propulsion

7.4.1. An electrically powered propulsion engine may be used provided;

- the installation complies with the provisions of Section 8 of this Code in so far as they are applicable, and to The Institution of Electrical
- Engineers (IEE) Regulations for the electrical and
- electronic equipment of vessels as is appropriate to the size of the installation.
- the arrangement of batteries, including in particular their stowage and adequate ventilation, should comply with the IEE regulations – Section 15.
- a manually operated master switch, which can be operated from the steering position, should be fitted. It should be capable of cutting off the electrical supply to the propulsion motor.
- the connection from the battery charger on board the vessel to the charging point ashore should be by means of a 3-core flexible cable of adequate current carrying capacity, suitably constructed and graded, complying with the slash-proof category of BS/EN/ 6030-2, IEC60309-2, Plugs, socket outlets and couplers for industrial purposes - Dimensional interchangeability requirements for pin and contact tube accessories. The battery charging panel of the vessel should be adequately ventilated and have a positive switch and an indication light to show when charging of the vessel's batteries is taking place.
- the battery charging arrangement should incorporate control of the battery compartment exhaust ventilation fan, if fitted, so that the fan is automatically switched ON when battery charging commences and continues for one hour after charging is completed.
- the motor and controller compartments should be adequately ventilated.

7.4.2. Small electrically powered outboards may be used in the event of an emergency

7.5. Fuel Tank Shut offs

7.5.1. Directly at tank outlets the pipe work for the distribution of liquid fuels shall be fitted with a shutoff device that can be operated from the deck. This requirement shall not apply to tanks mounted directly on the engine

7.6. Portable Equipment

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

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

- .vapour tight to the vessel's interior;
- not openable from the vessel's interior; and
- adequately drained overboard and ventilated to atmosphere.

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

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

Steering and Propulsion Systems

8.1. Steering Systems

8.1.1. A vessel should be provided with an effective means of steering.

8.1.2. The control position should be located so that the person steering the vessel has a clear view for safe navigation.

8.1.3. When steering gear is fitted with remote control, arrangements should be made for emergency steering in the event of failure of the control system.

8.1.4. Emergency arrangements may take the form of;

- a tiller to fit to the head of the rudder stock; or
- a steering oar; or
- a rod attachment which may be fitted to a Z-drive framework; or
- in the case of twin screw vessels manipulation of power distribution between the drives. In the case of twin stern-drive arrangements, means should be provided to lock the drives in the midships position; or
- in the case of a vessel fitted with outboard(s), a means to control the direction of thrust

8.1.5. Steering systems should comply with an appropriate standard for small craft steering systems

8.1.6. Existing boats with 5 years' satisfactory service history may be considered of adequate standard after examination by the attending Surveyor

8.2. Rudder Systems

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

8.2.2. Construction and fittings should be to an appropriate standard, to the satisfaction of Merchant Shipping Secretariat.

8.3. Propeller System

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

8.3.2. Construction and fittings should be to an appropriate standard, to the satisfaction of Merchant Shipping Secretariat.

8.4. Waterjets

8.4.1. As appropriate to the boat, waterjet line shaft(s) construction materials and design in total (including waterjet unit, steering buckets, bearings, shaft, couplings and thrust block) and supporting structures should be adequate for the operating conditions for the boat. Recognised design standards should be used.

8.4.2. Construction and fittings should be to an appropriate standard, to the satisfaction of Merchant Shipping Secretariat.

Vessel Systems

9.1. Bilge Piping System

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

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

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

9.1.4. A bilge pipe piercing the collision bulkhead shall be fitted with a screw-down valve located on the forward side of the collision bulkhead and operates from the weather deck, or, where it is readily accessible under service conditions, a screw-down valve without remote operation may be fitted to the bilge line on the after side of the collision bulkhead

9.2. Bilge Pumping / Draining

9.2.1. All vessels should be fitted with a powered or hand- operated bilge pumping system adequate for the size of the vessel, so that any compartment can be drained. Auto start bilge pumps are recommended, provided they are inspected regularly. To prevent water pollution from oily bilges, a holding tank with sufficient capacity must be fitted.

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

9.2.3. To prevent pollution, compartments containing potential pollutants should not be fitted with auto-start bilge pumps. No fixed bilge pump should draw from an oil tight area beneath any engine or gearbox.

9.2.4. Unless otherwise stated, pump capacities should meet the following minimum requirements, and should be sufficient to evacuate the spaces of firefighting water no less quickly than the rate of input from the firefighting system:

10 litres per minute for boats of 6 m in length or less;

15 litres per minute for boats of between 6 and 12 m in length;

30 litres per minute for boats of 12 m in length or greater

9.2.5. Bilge system requirements for boats carrying 16 or more persons or operating in Area Category, 0,1 or 2:

- A vessel should have at least one hand bilge pump and one engine driven or independent power bilge pump, situated in not less than two separate spaces. All pumped spaces should be capable of being drained after the failure of one pump;
- For motor vessels, all compartments shall be able to be drained when the vessel is heeled up to an angle of +/- 10 degrees;
- For vessels carrying cargo exceeding 1000kg, towing or carrying out lifting operations (excluding own anchors), in addition to the above, the bilge pumps should have a combined capacity of not less than 210 litres per minute. One pump should be power driven with a capacity not less than 140 litres per minute, and the other(s) may be hand pump(s) suitable for the suction lift head and of capacity not less than 70 litres per minute,

9.2.6. Bilge system requirements for boats carrying 15 or less persons and operating in Area Category, 3 to 5:

- Unless otherwise specified in Section 9.1.9, a vessel should be provided with at least two bilge pumps, one of which may be power driven situated in two separate spaces. All pumped spaces should be capable of being drained after the failure of one pump;
- For vessels carrying cargo exceeding 1000kg or towing or carrying out lifting operations (excluding own anchors) in addition to the above the bilge pumps should have a combined capacity of not less than 140 litres per minute. One pump may be power driven and the other(s) should be hand pump(s) suitable for the suction lift head and of capacity not less than 70 litres per minute.

9.2.7. Bilge system requirements for Open Boats, Inflatable Boats and Boats with a Buoyant Collar:

- All open boats, of 6 metres in length and over, should carry a hand bailer or bucket in addition to the bilge pumping requirements in Section 9.1.7 and 9.1.8
- For vessels of less than 6 metres in length, operating in Area Category 5, a minimum of one hand powered bilge pump or a bailer or a bucket is to be provided
- Buckets required for this section may also be counted in any requirements for buckets given in Section12

9.3. Bilge Alarms

9.3.1. Consideration should be given to the fitting of bilge alarms in compartments likely to accumulate bilge water (excluding void spaces), and where the rising water would not be obvious to the skipper, or where propulsion machinery is fitted in an unmanned, enclosed, watertight compartment.

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

9.3.3. If fitted, the alarm should provide an audible warning, and preferably a visual warning also, at the control position.

9.4. Ventilations systems for Machinery and Tank spaces

9.4.1. Where the machinery is in its own dedicated compartment, and in compartments containing fuel tanks, adequate ventilation must be provided to ventilate the space and to provide the air requirements of the engine manufacturer, as a minimum;

- For an enclosed machinery space:
  1) at least two ventilation supply ducts located at one end of the space and that extend to the lowest part of the space or to the bilge on each side of the space and should not discharge directly onto hot surfaces such as the engine; and
  2) at least two ventilation exhaust ducts located at the top of the space and or directly over the main heat producers at locations furthest away from the supply ducts and
  3) a mechanical ventilation system as per section 9.4.2,9.4.3 and 9.4.4
- For a partially enclosed machinery space and in compartments containing fuel tanks only,
  1) at least one ventilation duct installed in the forward part of the space and one ventilation duct installed in the after part of the space
  2) A mechanical ventilation system may be required in compartments containing fuel tanks only when natural ventilation is insufficient to remove hydrocarbon vapours, the components of the

system must not be a potential source of ignition

9.4.2. A mechanical ventilation system should be sized to provide sufficient number of air changes for the room and the installed machinery. As a guidance when ventilation ducts are routed correctly, the system should be capable of providing air changes every one or two minutes.

9.4.3. The mechanical system may be fitted to either the supply side or to the exhaust side of the ventilation system and should be sized to ensure that exhaust ventilation air should be 110to 120% of the incoming ventilation air. In spaces where small auxiliary petrol engines are fitted, the mechanical system must be fitted to the exhaust side.

9.4.4. Designs where the sizing of the ducts and the routing are capable of providing the required number of air changes for ventilation and engine consumption by natural means would be acceptable to the Merchant Shipping Secretariat subject to the provision of applicable calculations.

9.4.5. An exhaust/blower motor when mounted, shall be located as high above the bilge as practicable. Blower blades shall be non-sparking with reference to their housings

9.4.6. All powered exhaust/blowers serving spaces where a fixed gas fire extinguishing system is fitted should be capable of being shut down by emergency means upon release of the extinguishing agent

9.4.7. Exhaust blower switches shall be located outside of any space required to be ventilated by this section, and shall be of the type interlocked with the starting switch and the ignition switch so that the blowers are started before the engine starter motor circuit or the engine ignition is energized. This requirement is only applied to vessels with inboard engines with fuel tank in the same space.

A red warning sign at the switch shall state that the blowers shall be operated prior to starting the engines for the time sufficient to insure at least one complete change of air in the space served

9.4.8. The cross-sectional area of the total inlet or exhaust ducts should in excess of the guidance given below, there should be no more than three right angle bends in any ducting run.

4-6 cm^2 per installed kW (0.5-0.75 sq.in per installed horse power)

9.4.9. The area of the ventilation ducts shall be sufficient to limit the air velocity to a maximum of 10 m/s(2,000 ft/min). A duct may be of any shape, provided that in no case will one cross sectional dimension exceed twice the other

9.4.10. Dampers shall be fitted on all ventilation ducts

Electrical and Control Systems

10.1. General

10.1.1. The electrical installation is to be such as to minimise the risk of fire and electrical shock. Tanks, machinery or other metallic objects, which do not have good electrical continuity with the water surrounding the vessel, should have special earthing arrangements to reduce such risks. Cables should meet a recognised small craft standard suitable for the intended use. BS/EN/ISO 10133 Electrical systems –Extra-low- voltage d.c. installations and BS/EN/ISO 13297 Electrical systems – Alternating current installations.

10.1.2. Electrical equipment should be suitable for use in a marine environment with due consideration of humidity, temperature and vibration. Special consideration should be given to the choice and installation of electrical equipment that could be subjected to large vibration and impact loadings.

10.1.3. As far as practicable, electrical equipment should not be installed in a space where petroleum vapour or other hydrocarbon gas is likely to accumulate. Where equipment is installed in such a space it should comply with a recognised standard for prevention of ignition of a flammable atmosphere. Refer to BS/EN28846 (ISO 8846) (Amendment 1) Electrical devices – Protection against ignition of surrounding flammable gas.

10.1.4. Any compartment which contains a gas consuming appliance or any compartment into which flammable gas may leak or accumulate, should be provided with a hydrocarbon gas detector and alarm. The detector and alarm should be designed to comply with a recognised standard

10.1.5. Where lighting within a vessel is provided by a centralised electrical system, an alternative source of lighting (which may include suitable torches if practical) should be provided, sufficient to:

- enable people to make their way to the open deck
- deploy life saving appliances safely
- Illuminate man-overboard rescue equipment and rescue areas
- permit work on essential machinery.

10.1.6. Consideration should be given to the design and placement of lighting in order to preserve the night vision of Navigation Watchkeepers.

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

10.1.8. Existing boats with 5 years' satisfactory service history may be considered of adequate standard after examination by the attending Surveyor.

10.2. Control systems

10.2.1. Where a control system is installed:

- It shall operate machinery and systems in a safe, controlled and stable manner throughout the machinery's/systems' defined operational limits and shall recover automatically in a safe manner after a loss of power supply.
- It shall not be possible for any item of machinery to be controlled from more than one location at one time.
- Appropriate indication and feedback shall be provided to confirm that the system has responded to operator demands. The status of automatic control systems shall be indicated.

- It shall be possible to disable the automatic or remote-control operation of machinery and systems to allow inspection and maintenance tasks to be safely performed on the machinery and systems.

10.2.2. Where a system is controlling essential functions (e.g. power and steering):

- It shall be provided with a continuous electrical supply. An audible and visual alert shall be initiated in the event of the failure of any of the power supplies.
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- It shall fail to a safe known state or not prevent any manual or reversionary mode.

10.2.3. Where an alert system is installed it shall inform operators as soon as reasonably practicable of deviations from normal operation of machinery and systems

10.2.4. Software is to be developed in accordance with a defined standard appropriate for the identified hazards and the evidence of compliance to the standard is to be submitted for consideration

10.3. Systems

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

10.3.2. AC systems should normally be two-wire insulated for single phase, or three or four wire three-phase system, with insulated neutral in the case of a four-wire system. Alternative arrangements with earthing of neutral conductor may be specially considered.

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

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

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

10.3.6. Steering circuits, the loss of which would lead to steering failure, should have an overload alarm in lieu of overload protection (this does not apply to auto-pilot motors).

10.3.7. AC circuits supplying domestic consumers and socket outlets should be provided with earth leakage protection with maximum trip setting of 30 mA.

10.4. Shore supply

10.4.1. Shore supply circuits should be provided with earth leakage protection with maximum trip setting of 30 mA

10.4.2. Shore supply systems should be protected against overloads and short circuits, with protection on all insulated poles.

10.4.3. Shore supply systems should be protected against overloads and short circuits, with protection on all insulated poles.

10.4.4. On metal boats, shore supply systems should be fitted with efficient galvanic isolation.

10.4.5. On all boats consideration should be given to the efficient bonding of metal components in contact with sea water to minimise galvanic corrosion

10.5. Batteries

10.5.1. Battery system requirements

- The battery terminals should be protected against accidental contact with metallic objects.
- Battery charging systems should be fitted with circuitry to prevent overcharging.
- A battery cut-out switch should be provided for all systems. It is preferred that this switch acts as an isolator, i.e. it is double pole, however, single pole is acceptable on the positive conductor. If a battery change-over switch is fitted and is provided with an 'off' position, this may serve as the cut-out switch also.
- Batteries supplying essential services (emergency lighting, steering systems, navigation and communications equipment) should be located in a position not likely to flood in normal operations or in the event of minor damage.
- In the case of a sailing boat, batteries should be of the sealed type to prevent electrolytic loss in the event of a knockdown or immersion.
- Lithium Ion batteries may be accepted subject to special consideration

10.5.2. Batteries should be firmly secured in position

10.5.3. Where the maximum charging power output exceeds 0.2 kW the batteries should be located in a well-ventilated space. Where the charging capacity exceeds 2.0 kW it should be located in a well- ventilated, dedicated compartment within the vessel or on the open deck.

10.5.4. Where there is environmentally-friendly technology used – e.g. in solar powered vessels – these should comply with current industry best practice and currently recognised safety standards. Where vessels use natural ventilation of battery spaces, and there is a proven record of safe operation, a risk assessment should confirm that there is little risk to life.

10.5.5. Attention should be paid to any battery-operated safety critical equipment to ensure continuous operation in the event of an emergency – e.g. a spare battery and charging facilities where necessary. Safety critical equipment includes, but is not necessarily limited to, communications and navigation lights.

10.5.6. Batteries used to power an emergency outboard motor can be charged ashore when no charging facility is provided onboard

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

10.5.8. If mechanical means are employed to ventilate a battery compartment directly, then the components must not be a potential source of ignition.

10.5.9. Where mechanical ventilation is employed, the battery charging system(s) shall be interlocked so as to switch

off if the ventilation fails. A warning device shall be provided and operate if failure occurs

10.5.10. Switches and fuses or other equipment, which may generate sparks shall not be placed in battery compartments or containers

10.6. Electric Cables

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

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

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

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

Life Saving Appliances, Escape, Evacuation and Rescue

11.1. General

11.1.1. All life-saving equipment must be of an approved type and in compliance with international standards such as IMO's LSA code

11.1.2. The minimum required life-saving equipment is indicated in the table in section 11.12, while the specifications and other requirements are listed in the relevant sections

11.2. Lifebuoys

11.2.1. Lifebuoys and holders shall comply with harmonized standards BS EN 14144:2003 'Lifebuoys Requirements & tests' and BS 14145:2003 'Holders for Lifebuoys'.

11.2.2. Lifebuoys should be marked with the vessel's name and one other means of identification, e.g. Port of Choice, SSR number, home port if not registered, etc

11.2.3. Vessels certified to operate in Categories 4 and 5 need not carry lifebuoys fitted with lights

11.2.4. Buoyant lines, where fitted, should not be less than 18 metres in length

11.2.5. Where light-weight lifebuoys (e.g. horseshoe type) are used, if not fitted with a buoyant line, they shall be fitted with a drogue (the drogue is required to prevent the lifebuoy being blown across the sea surface at high speed)

11.2.6. There shall be at least two lifebuoys on vessels of less than 24m in length, at least one of which shall be located by the wheelhouse.

11.2.7. For sailing vessels, the Dan-buoy should be attached to one of the lifebuoys and where applicable, a light

11.3. Lifejackets and buoyant apparatus

11.3.1. Lifejackets can be of a solid buoyancy or inflatable type, and should comply with BS/EN 396: Life Jackets and personal buoyancy aids of 150N, or BS/EN 399: Life Jackets and personal buoyancy aids of 275N.

11.3.2. All lifejackets should be fitted with a whistle, retro-reflective materials and, if operating in area categories 0, 1, 2 or 3, a light

11.3.3. If the lifejackets are the inflatable type, an additional 10% or 2, whichever is the greater, should be provided

11.3.4. Inflatable lifejackets for new vessels and new inflatable lifejackets for existing vessels are to be of the compressed gas inflation type, with either manual or automatic inflation, and fitted with oral top up valves.

11.3.5. Compressed gas inflatable lifejackets should be serviced within one month either side of the Compliance, Renewal and Intermediate examination. In the intervening years they are to be examined annually to the manufacturer's recommendation. Certification/declaration of servicing must be available for inspection by the Certifying Body/Merchant Shipping Secretariat. As far as is reasonable and practicable, visual examinations should be carried out weekly by the owner/managing agent to determine whether they are safe to use

11.3.6. A suitable lifejacket should be provided for each person on board under 32 kilogrammes

11.3.7. No more than two different types of lifejacket are permitted on any vessel, to limit any confusion in use

11.4. Liferafts

11.4.1. Requirements for vessels operating in area category 0: -

- should be provided with liferafts of such number and capacity that, in the event of any one liferaft being lost or rendered unserviceable, there is sufficient capacity remaining for all on board
- the liferafts provided should be constructed to SOLAS standard, have insulated floor and canopy and be equipped with a "SOLAS A pack";
- the liferafts should, in general, be contained in FRP containers (which may be a suitable container other than a SOLAS container) stowed on the weather deck or in an open space and should be fitted with float free arrangements (hydrostatic release units) so that the liferafts float free and inflate automatically;
- stowage and release mechanisms other than above will be considered when they can be demonstrated, to the satisfaction of the Administration, to give an equivalent level of safety;

11.4.2. Requirements for vessels operating in area category 1 and 2: -

- the liferaft requirements are as Section 11.4.1 except that, the liferaft need not have an insulated floor or insulated canopy
- where the vessel is certificated to carry less than 16 persons, the liferaft requirement may be satisfied by a single liferaft. The liferaft capacity should accommodate at least the total number of persons on board;
-

11.4.3. Requirements for vessels operating in area category 3,4 and 5: -

- should be provided with liferaft capacity to accommodate at least the total number of persons on board
- the liferaft(s) provided should be either:
  1) in accordance with Section 11.4.1 except that the liferaft(s) should be equipped with "SOLAS B PACK" and need not have an insulated floor or insulated canopy; or
  2) built to the International Sailing Federation (ISAF), Offshore Special Regulations (OSR) Appendix A Part 2 requirements. Liferaft(s) should be equipped to a level equivalent to that of a "SOLAS B PACK". This may, where necessary, include a "grab bag" to supplement the equipment integral to the liferaft
- Liferafts should be carried either:
  1) in approved FRP containers stowed on the weather deck or in an open space, and fitted with float free arrangements so that the liferafts float free and inflate automatically; or
  2) in FRP containers or valise stowed in readily accessible and dedicated weathertight lockers opening directly to the weather deck

11.4.4. All liferafts should be serviced at a service station approved by the manufacturer and at the manufacturers recommended intervals, however, where the liferaft(s) are stored in valises this should be at least annually

11.4.5. Inflatable liferaft hydrostatic release units (other than the types which have a date limited life and are test fired prior to disposal) should be serviced annually at a service station approved by the manufacturer

11.4.6. Liferafts provided on sailing multihull vessels should be located so that they are accessible when the vessel is either upright or after an inversion

11.4.7. To facilitate rapid abandonment in an emergency where a 'grab bag' is provided it should be in an accessible position known to all on board

11.5. Thermal protective Aids

11.5.1. On vessels operating in area category 0, Thermal Protective Aids must be provided**,** TPAs may be stowed in the 'grab bag

11.5.2. The requirement for thermal protection aids does not apply if the vessels operation is limited to the tropical zone

11.5.3. When immersion suits are provided for all on board, as part of the vessel's equipment, only 2 TPAs need to be provided for the use of injured persons

- Immersion suits may be of the non insulated type
- Immersion suits are to be compatible with the lifejackets provided

11.6. EPIRB and SART

11.6.1. On all vessels operating in area category 0, 1 and 2 and on vessels carrying more than 16 persons operating in area category 3, a 406MHz satellite EPIRB should be installed in an easily accessible position ready to be manually released, capable of being placed in a liferaft, and capable of floating free and automatic activation if the vessel sinks

11.6.2. Where compliance with Section 11.6.1 is not practicable and the vessel carries less than 16 persons, the EPIRB may be stowed in an accessible place and be capable of being placed readily in a liferaft without being capable of floating free

11.6.3. EPIRBS should be maintained in accordance with the manufacturer's recommendations. Batteries should be replaced as required by a manufacturers approved service station. Additionally, it is a requirement that all EPIRBs are registered.

11.6.4. Owners and operators of crafts operating in area categories 3,4,and 5 who are not required to install an EPIRB according to section 11.6.1 are advised to install an EPIRB

11.6.5. On all vessels operating in area category 0, 1 and 2 and on vessels carrying more than 16 persons operating in area category 3, a SART should be provided and 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 1 metre above sea level.

11.6.6. A SART as required by 11.6.5 is not required if the EPIRB provided has a 121.5 MHz frequency transmitting capability

11.7. Instructions

11.7.1. An instruction manual should be carried for onboard maintenance of the life-saving appliances. The manual may be kept ashore by the operator in the case of an open boat. It is to include the following where applicable:

- Check list for use when carrying out inspections.
- Maintenance and repair instructions (including a list of replaceable parts and sources for spare parts, and a log of records of inspection and maintenance).
- Schedule of periodic maintenance.

11.8. Training Manual

11.8.1. A training and instruction manual must be on board which contain instructions and information on the life-

saving appliances provided in the vessel and also contain information on the best methods of survival

11.8.2. It may take the form of instructions from the manufacturers of the life-saving equipment provided, as a minimum, with the following explained in detail:

- donning of lifejackets;
- boarding, launching, and clearing the survival craft from the vessel;
- illumination in launching areas;
- use of all survival equipment;
- use of all aids to location
- use of sea anchors;
- recovery of persons from the water;
- hazards of exposure and the need for warm clothing;
- best use of the survival craft facilities in order to survive;
- methods of retrieval, including the use of helicopter rescue gear (slings, baskets, stretchers), breeches-buoy and shore life-saving apparatus;
- instructions for emergency repair of the life-saving appliances;
- "Personal Survival at Sea" booklet,.

11.9. Maintenance

11.9.1. All lifesaving appliances should be serviced at the manufacturer's recommended service station at recommended intervals.:

11.10. Other equipment

11.10.1. The following shall be on board:

- A heaving line;
- An appropriate first aid kit suitable for crew and passengers, should be carried and stored in an accessible place kit
- General/Fire Alarm , may take the form of a bell or Klaxon or the vessel's whistle or siren providing it can be heard in all parts of the vessel
- Pyrotechnics
- On boats with more than 16 persons on board one line throwing apparatus must be carried

11.11. Tenders (Dinghies)

11.11.1. If a tender is carried, it should be marked with its carrying capacity and the name of the vessel.

11.11.2. On vessels carrying more that 16 persons, where suitable arrangements for the recovery of a helpless person from the water is not provided a rescue boat shall be fitted, with appropriate launching arrangements.

11.11.3. Posters and signs shall be provided in the vicinity of the rescue boat illustrating the purpose of the controls and the procedures for launching and manoeuvring the rescue boat

11.11.4. All tenders or dinghies should be fit for the purpose intended, regularly inspected by the owner/managing agent and maintained in a safe condition. An inflatable tender is not required to meet the requirements for inflatable boats or rigid inflatable boats in Section 3.2

11.11.5. It is strongly recommended that a sailing vessel should carry (or tow) one or more rigid or inflatable tenders

11.12. Minimum Required Life Saving Appliances

Life Saving Appliances, Escape, Evacuation and Rescue

11.12.1. The table below summarises the minimum requirements by area of operation.

Area of Operation Category		5	4	3	2	1	0
Liferafts (see 11.4)		Yes	Yes	Yes	Yes	Yes	Yes
Total Number of Lifebuoys	<16 persons	2	2	2	2	2	2
	≥16 persons	4	4	4	4	4	4
Lifebuoy with Dan-buoy(see 11.2)	<16 persons	Sail 1 Motor0	Sail 1 Motor0	NA	NA	NA	NA
	≥16 persons	Sail 1 Motor0	Sail 1 Motor0	NA	NA	NA	NA
Lifebuoy with Dan-buoy and light (see 11.2)	<16 persons	NA	NA	Sail 1 Motor0	Sail 1 Motor0	Sail 1 Motor0	Sail 1 Motor0
	≥16 persons	NA	NA	Sail 1 Motor0	Sail 1 Motor0	Sail 1 Motor0	Sail 1 Motor0
Lifebuoy With light(see 11.2)	<16 persons	NA	NA	Sail 0 Motor1	Sail 0 Motor1	Sail 0 Motor1	Sail 0 Motor1
	≥16persons	NA	NA	Sail 1 Motor2	Sail 1 Motor2	Sail 1 Motor2	Sail 1 Motor2
Lifebuoy with buoyant line (see 11.2)	<16 persons	1	1	1	1	1	1
	≥16persons	1	1	1	1	1	1
Lifebuoys without attachments(see 11.2)	<16 persons	Sail 0 Motor1	Sail 0 Motor1	Sail 0 Motor0	Sail 0 Motor0	Sail 0 Motor0	Sail 0 Motor0
	≥16 persons	Sail 2 Motor3	Sail 2 Motor3	Sail 1 Motor1	Sail 1 Motor1	Sail 1 Motor1	Sail 1 Motor1
Additional Buoyant Line	<16 persons	0	0	0	0	0	0
	≥16persons	1	1	1	1	1	1
Lifejacket(see 11.3)	<16 persons	100%	100%	100%	100%	100%	100%
	≥ 16 persons	105%	105%	105%	105%	105%	105%
Parachute Flares		0	0	4	4	6	12
Red hand Flares		2	2	6	6	6	6
Smoke signals		2 buoyant or handhe	2 buoyant or handhe	2 buoyant or handh	2 buoyant or handh	2 buoyant	2 buoyant
Line Throwing apparatus on vessels carrying more than 16 persons		1	1	1	1	1	1
Thermal protective aids (TPA) (see 11.5)		None	None	None	None	None	100%
Portable VHF		One set required on all vessels					

Life Saving Appliances, Escape, Evacuation and Rescue

Area of Operation Category	5	4	3	2	1	0
EPIRB(see 11.6) * Only on vessels carrying more than 16 persons	None	None	1 *	1	1	1
SART(see 11.6) * Only on vessels carrying more than 16 persons	None	None	1 *	1	1	1
General Alarm ≥ 16 persons	None	None	Yes	Yes	Yes	Yes
General Alarm > 750 kW installed power	Yes	Yes	Yes	Yes	Yes	Yes
Life-saving signals table 2 X SOLAS No.2 or 1 x SOLAS No. 1	Yes	Yes	Yes	Yes	Yes	Yes
Training Manual (see 11.8)	Yes	Yes	Yes	Yes	Yes	Yes
Instructions for onboard maintenance (see 11.7)	Yes	Yes	Yes	Yes	Yes	Yes

Fire Protection, FireSafety Appliances and Systems

12.1. General

12.1.1. Combustible materials and liquids should not be stowed in the engine space. If non- combustible materials are stowed in the engine space, they should be adequately secured against falling on machinery and cause no obstruction to access to or from the space

12.1.2. The boundaries of areas of high fire risk in boats constructed in aluminium should be insulated to B-15 standard and prevent the passage of smoke and flame for 15 minutes when tested in accordance with the procedure shown in the IMO International Code for application of Fire Test Procedures, FTP Code Annex 1 Part 3.

12.1.3. Builders of aluminium boats should pay particular attention to areas of the hull/decks/bulkheads where high heat items pass through (e.g. exhaust outlet) that may lead to cracking or hardening of the structure due to the increased ambient temperature which leads to changes to the structure on a molecular level. It is known that painting aluminium can lead to problems with pitted corrosion below the paint

12.1.4. The boundaries of areas of high fire risk in boats constructed in FRP should have hull, should be to a B-15 standard that prevent the passage of smoke and flame for 15 minutes and tested in accordance with the procedure shown in the IMO International Code for application of Fire Test Procedures, FTP Code Annex 1 Part 3 or as given in annex 4 "Fire Test for FRP"

12.1.5. Fire resistance of FRP may be achieved by the use of woven roving glass layers or additives, which must be added strictly in accordance with the manufacturer's requirements, to the resin. Intumescent polyester, epoxy, vinyl ester or phenolic resin surface coatings may also be used provided that it can be demonstrated that the coating can protect the structural integrity of the bulkhead or structure. Solvent borne intumescent paints are not acceptable

12.1.6. Where insulation is fitted to provide an equivalent level of fire protection, the insulation should be fitted to the hull, bulkheads and decks in their entirety and need not be fitted on the hull sides lower than 300 mm below the waterline. Insulation that has been approved to meet A-15 standards (with steel) will be considered to meet this standard.

12.1.7. Fire resistant or fire-retardant materials are to be used for furnishings and fittings.

12.2. Fire Protection in Machinery Spaces

12.2.1. Machinery space boundaries constructed of steel require no additional fire protection. However, surfaces on the opposite side of the machinery space should only be coated with finishes which have a Class 1 surface spread of flame rating when tested in accordance with standards in Annex 5. Also, due consideration should be given to insulation of steel machinery space boundaries where contiguous with accommodation, stores or other fire risk or sensitive spaces, and the fitting of fire dampers at machinery vent boundaries

12.2.2. Boats constructed in aluminium should be insulated in way of the hull, bulkheads and deck boundaries in machinery spaces to B-15 standard as outlined in section 12.1.2 and attention should be paid to boundary penetrations as outlined in section 12.1.3

12.2.3. Boats constructed in FRP should have hull, bulkheads and deck boundaries in machinery spaces to -15 standard as outlined in section 12.1.4 with reference to 12.1.5

12.2.4. Machinery compartment boundaries should be of an adequate standard, such that a fire fighting medium

released or injected into the compartment can be retained sufficiently to extinguish a fire

12.2.5. Any fans located within or feeding a machinery space should be capable of being stopped from outside the space in the event of a fire. Systems compromising automatic stopping of fans in the event of a fire should be supplemented with a manual override

12.2.6. Where it is not practical to have a machinery space, the engine should be enclosed in a box. The box should perform the same function as the machinery space boundaries

12.2.7. Portlights or windows should not be fitted in the boundary of the engine space except that an observation port having a maximum diameter of 150mm may be fitted in an internal boundary bulkhead, provided that the port is of the non-opening type, the frame is constructed of steel or other equivalent material, and the port is fitted with a permanently attached cover with securing arrangements. Only fire rated toughened safety glass (rated A0 in accordance with the FTP Code) should be used in an observation port

12.2.8. Sound proofing insulation within the machinery compartment should be non-combustible (not readily ignitable can be accepted in existing vessels) and be impervious to impregnation by oil or oil vapour

12.2.9. Suitable means are to be provided so that a machinery compartment may be kept clean, and able to contain any oil spillage for discharge to a disposal facility ashore. Oily water should not be discharged overboard

12.3. Fire Protection in Galleys

12.3.1. Galleys are considered as high-risk areas and the boundaries must confirm to B-15 fire standards

12.3.2. Only LPG and/or low powered electrical appliances must be fitted, on vessels where the galley space is bounded by A-30 fire standard divisions, equipment of more than 5kW or deep fat fryers may be fitted, on such galleys any serving hatches must be fitted with steel shutters

12.3.3. LPG installations should comply with ISO 10239: Small Craft – Liquefied Petroleum Gas (LPG) systems. Installations should be inspected annually by a competent person

12.3.4. When deep fat cooking equipment is fitted they must be fitted with
- an automatic or manual extinguishing system which complies with the requirements of the MED,
- a primary and back-up thermostat with an alarm to alert the operator in the event of failure of either thermostat,
- arrangements for automatically shutting off the electrical power upon activation of the extinguishing system,
- an alarm for indicating operation of the extinguishing system in the galley where the equipment is installed, and
- controls for manual operation of the extinguishing system which are clearly labelled for ready use by the crew

12.3.5. Materials which are in the vicinity of open flame cooking or heating appliances should be non-combustible, except that these materials may be faced with any surface finish having a Class 1 surface spread of flame rating when tested in accordance with a recognised standard.

12.3.6. Combustible materials and other surfaces which do not have a surface spread of flame rating should not be left unprotected within the following distances of a standard cooker:-
- 400mm vertically above the cooker, for horizontal surfaces, when the vessel is upright;
- 125mm horizontally from the cooker, for vertical surfaces.

12.3.7. Curtains or any other suspended textile materials should not be fitted within 600mm of any open flame cooking, heating or other appliance

12.4. Fire Detection

12.4.1. On any vessel, where an area is identified as posing a fire risk to either passengers or crew (e.g. galleys, sleeping accommodation), fire detection equipment shall be installed to protect that area.

12.4.2. The fire detectors should be appropriate to the hazard identified (generally smoke detectors) and should give an audible warning that can be heard in the space concerned and in the control position when the vessel is in operation

12.4.3. In boats where the total installed power (propulsion and electrical generation) is greater than 750 kW efficient fire detectors should be fitted in the engine space(s).

12.4.4. In a boat carrying 12 or more passengers, efficient fire detectors should be fitted in the engine space(s) and spaces containing open flame devices

12.5. Means of Escape

12.5.1. The means of escape should be such that a single hazardous event will not cut off all possible escape routes. Two means of escape should be provided in:

- each compartment used for sleeping or rest; and
- other compartments used for accommodation affected by a fire risk, and
- machinery spaces affected by a fire risk except:

  those spaces visited only occasionally , and where the single access gives ready escape, at all times, in the event of fire; or

  those spaces where any person entering and moving about the space is within 5 metres of the single entrance, at all times.

12.5.2. In existing vessels which have only a single means of escape from accommodation spaces, efficient fire detectors should be provided as necessary to give early warning of a fire that could cut off that single means of escape.

12.5.3. A passenger vessel should be provided with an efficient escape route or routes, taking into account the passengers to be carried and any restrictions on use of the routes.

12.5.4. Means of escape should be clearly marked for their purpose on both sides, and the function of each escape route demonstrated by practical tests to the satisfaction of the Certifying Body

12.5.5. All sailing multihulls over 12 metres length shall be fitted with an emergency escape hatch in each main inhabited watertight compartment to permit the exit of personnel in the event of an inversion. Such escape hatches shall be located above both upright and inverted waterlines.

12.6. Fire Fighting Appliances

12.6.1. In a non-decked or partially decked vessel without engine, cookers, heating, lighting or other fuel burning appliances, no fire extinguisher is necessary.

12.6.2. Any inboard engine space should be fitted with a fixed fire extinguishing system which is remotely operated

(whether manually or automatically) from outside that space. Such a system may consist of a portable fire extinguisher arranged to discharge into the space, operable without entering the space, eg through a fire hole. This should be suitable for the size of the engine space but should have a minimum rating of 5A/34B (shown on the extinguisher).

12.6.3. When a fixed fire extinguishing system (which is not a portable extinguisher) is installed in a machinery space, it should be of a approved type appropriate to the space to be protected and be installed and maintained in accordance with the manufacturer's requirements.

Fixed installations in machinery spaces could be:-

- low expansion foam;
- medium expansion foam;
- high expansion foam;
- carbon dioxide;
- pressure water spraying;
- vaporising fluids (HFC's hydrofluorocarbons);
- aerosols (solid pyrotechnic type).

12.6.4. In a vessel of less than 6 metres in length, which is not fitted, or is only partially fitted with a watertight weather deck and with no cooking appliances, a single extinguisher capable of discharging into the engine space is to be fitted. The extinguisher should be suitably sized for the engine space, but be a minimum of 34B

12.6.5. Open vessels, inflatable boat or boat with a buoyant collar, not fitted with a substantial enclosure, with no cooking appliances, should be fitted with a minimum of two fire extinguishers, minimum rating of 5A/34B each

12.6.6. Vessels Less than 15 metres in Length and Carrying 15 or Less Persons, not covered by Sections 12.6.4 or 12.6.5 should carry a hand-powered or power driven fire pump with sea and hose connections capable of delivering one jet of water to any part of the vessel through a hose of adequate length with 10mm nozzle and suitable spray nozzles, or at least one multi- purpose fire extinguisher to a recognised standard with a minimum fire rating of 13A/113B, or smaller extinguishers giving the equivalent fire rating. These should be kept outside the engine space.

12.6.7. Vessels more than 15 metres in Length, should carry a hand-powered or power driven fire pump with sea and hose connections capable of delivering one jet of water to any part of the vessel through a hose of adequate length with 10mm nozzle and suitable spray nozzles, or at least two multi- purpose fire extinguisher to a recognised standard with a minimum fire rating of 13A/113B, or smaller extinguishers giving the equivalent fire rating. These should be kept outside the engine space

12.6.8. Vessels carrying 16 or more Persons, should be fitted with two power driven fire pumps with sea and hose connections capable of delivering one jet of water to any part of the vessel through a hose of adequate length with 10mm nozzle and suitable spray nozzles, one of the pumps must be driven from an independent source of emergency power.

12.6.9. The fire pump requirement in section 12.6.6, 12.6.7 and 12.6.8 may be fulfilled using one of the pumps required by Section 9 that do not service the machinery space, when fitted with a suitable change over arrangement which is readily accessible

12.6.10. In addition, for all vessels other than those covered by 12.6.1, there should be at least one multi-purpose fire extinguisher to a recognised standard with minimum fire rating of 5A/34B provided at each exit from accommodation spaces to the open deck. In no case should there be less than two such extinguishers on vessels less than 15 metres and three on vessels more than 15 metres. For vessels carrying more than 15 persons, the minimum requirement is not less than four fire extinguishers with minimum fire rating of 13A/113B

12.6.11. At least two fire buckets with lanyards. Buckets may be of metal, plastic or canvas and should be suitable for their intended service

12.6.12. If there is a galley or cooking area, a fire blanket of a recognised standard should be provided and located between the door and stove.

12.6.13. Portable fire extinguisher shall be of an approved type meeting the requirements of BS EN3 Series: 1996 and have a rating of at least 13A/113B. For vessels under 6m, a rating of 13A/70B is acceptable and maintained in good condition

12.6.14. The extinguishing substance used in the portable fire extinguishers required by section 1 shall be suitable for at least the fire category that is most likely to occur within the area for which the extinguishers is intended

12.6.15. The extinguishing substance on board vessels whose electrical systems have a service voltage of more than 50 V shall also be suitable for fighting electrical fires. The instructions for use shall be clearly set out on each portable extinguisher

12.6.16. The extinguishing substance may not be halon or contain a product which is likely to release toxic gases during use, such as carbon tetrachloride. Portable fire extinguishers using CO2 may only be used to fight fires at specific locations such as control panels, kitchens; the quantity of CO2 should not constitute a health hazard.

12.6.17. Extinguishers that are sensitive to freezing or to heat shall be installed or protected in such a way that their proper functioning is always guaranteed

12.6.18. Fire extinguishers shall be serviced at the manufacturer's recommended service intervals by an approved service agent.

12.6.19. If extinguishers are installed in such a way that they are out of sight the panel covering them shall be identified by an appropriate international symbol

12.6.20. Summary table of required minimum fire extinguishers/appliances, the minimum required for the type and size of the vessel is given, followed by the additional requirements due to the vessels out fit and space arrangements

Vessel Type and Size Description	Vessel Space Description	Fire Appliance and Qty
In a vessel of less than 6 metres in length, which is not fitted, or is only partially fitted with a watertight weather deck		2 portable fire extinguishers, one of which is to be suitably sized to discharge into the engine space
open vessel, inflatable boat or boat with a buoyant collar, not fitted with a substantial enclosure		2 portable fire extinguisher
All vessels over 15 metres		one hand fire pump or one power driven fire pump plus 2 portable fire extinguisher or 3 portable fire

		extinguishers
All vessels over 15 metres		one hand fire pump or one power driven fire pump plus 3 portable fire extinguisher or 5 portable fire extinguishers
All vessels carrying 16 or more persons		Two power driven fire pumps plus 4 portable fire extinguisher
All vessels	In the wheelhouse:	1 portable fire extinguisher
All vessels	Close to each means of access to the deck and accommodation	1 portable fire extinguisher
All vessels	Close to each means of access to service premises that are not accessible from the accommodation, and which contain heating, cooking or refrigeration equipment using solid or liquid fuels	1 portable fire extinguisher
All vessels	At each entrance to the engine room and boiler rooms	1 portable fire extinguisher
All vessels	At suitable points in engine rooms and boiler rooms such that no position in the space is more than 10 metres away from an extinguisher,	1 portable fire extinguisher
All vessels	By the galley	1 fire blanket
All vessels		2 fire buckets with lanyards

Communications Equipment and Systems

13.1. General

13.1.1. Radio equipment carried by a vessel shall be capable of fulfilling the following functional requirements with respect to distress and safety communications when the vessel is at sea

- Provide for the safety of the vessel by:-
  1) transmitting ship-to-shore distress alerting;
  2) transmitting ship-to-ship distress alerting;
  3) transmitting and receiving on-scene communications, including appropriate search and rescue co-ordinating communications; and
  4) transmitting locating signals
- Assist other vessels in distress by:-
  1) receiving shore-to-ship distress alerting; and
  2) receiving ship-to-ship distress alerting
- Receive navigational and meteorological warnings and urgent safety information (Maritime Safety Information).

13.1.2. Vessels operating in area categories 0 and 1 are required to comply with the applicable GMDSS requirement.

13.1.3. Mobile phones or portable VHF should be contained in a waterproof pouch or be waterproof in their own right.

13.1.4. A fixed radio installation should be clearly marked with the vessel's call sign, any other codes applicable to the use of the radio, and MMSI number where applicable. A card or cards giving a clear summary of the radio distress, urgency and safety procedures should be displayed in full view of the radio operating position(s).Brief and clear operating instructions should also be provided for the hand-held VHF (which is part of the vessels Life Saving Appliances).

13.1.5. Where a fixed VHF radio is fitted, VHF radio communication set with Digital Selective Calling (DSC)to be provided

13.1.6. Aerials should be mounted as high as is practicable to maximise performance. When the main aerial is fitted to a mast, which is equipped to carry sails, an emergency aerial should be provided

13.1.7. Skippers, owners and managing agents should be aware of VHF coverage in the intended area of operation. Where the certainty of good VHF coverage in the Sri Lankan coastal area is in doubt, skippers owners and managing agents should seek advice from the Merchant Shipping Secretariat on whether Medium Frequency (MF) or other equipment with long range transmission capability should be carried (i.e. Inmarsat Ship Earth Station etc)

13.1.8. When batteries are used for the electrical supply to radio equipment, the batteries, when fully charged, should provide sufficient hours of operation to ensure effective use of the GMDSS installation bearing in mind the distance from shore that the vessel can operate. Appropriate charging facilities or a duplicate battery of capacity sufficient for the voyage shall be

13.1.9. The battery electrical supply (reference should be made to Section 10) to the radio equipment should be protected against flooding/swamping as far as practicable and arranged so that radio communications are not interrupted in adverse conditions.

Communications Equipment and Systems

13.1.10. The minimum and recommended radio equipment for the area categories is listed in the following table.

Area of operation category	3, 4 & 5	2	1	0	Notes
VHF fixed radio installation[1].	1	1	1	1	See 13.1.5 An appropriate radio operators' certificate should be carried by any person operating this equipment.
Portable VHF[3]	1	1	1	1	It is recommended that, where practicable, vessels carrying more than one liferaft carry one portable VHF per raft.
MF SSB radio installation with DSC[1].	None	R[2]	1[2]	None	An appropriate GMDSS certificate should be carried by any person operating this equipment.
Inmarsat Ship Earth Station[1] (or an MF/HF transceiver with DSC)[1]	None	None	R	1	An appropriate GMDSS certificate should be carried by any person operating this equipment.
NAVTEX receiver	R	R	1	1	

R = Recommendation only
1 = Number required to be fitted

1An appropriate GMDSS certificate should be carried by any person operating this equipment. The MCA can give advice on suitable training courses.

2or an Inmarsat Ship Earth Station on the advise of the Merchant Shipping Secretariat

3 Arrangements should be provided to protect the portable VHF from water damage e.g. waterproof cover.

Navigation Lights and Equipment

14.1. General

14.1.1. Vessels should comply with the requirements of the International Regulations for Preventing Collisions at Sea, 1972 (Collision Regulations)

14.1.2. Where it can be demonstrated to the Merchant Shipping Secretariat that, for a particular vessel, full compliance with the Collision Regulations is impracticable, proposals for an equivalent arrangement may be considered.

14.1.3. A vessel which operates only between sunrise and sunset is not required by the international regulations to carry navigation lights. However, in areas where there is a risk of collision in poor visibility, it is advisable to use navigation lights.

14.1.4. Vessels operating through tunnels should also carry a white spotlight or headlight.

14.1.5. Sound signalling equipment should comply with the Regulations. A vessel of less than 12 metres in length is not obliged, to carry the sound signalling equipment required by the Regulations on the condition that some other means of making an efficient sound signal is provided

14.1.6. The table in section 14.3.12 gives a summary of navigation lights, shapes and sound signalling appliances for vessels. This table is for guidance only and does not cover all possible operations, i.e. diving. Reference should be made to the regulations stated in Section 14 for all operations not covered.

14.2. Navigational Equipment

14.2.1. A vessel should be fitted with an efficient magnetic compass, or other means of determining its heading, as well as means of correcting heading and bearings to true at all times (e.g. a valid deviation card for a magnetic compass):-.

- A properly adjusted standard magnetic compass or other means, independent of the vessels main power supply, to determine the vessel's heading and display the reading at the main steering position.
- In a steel vessel, it should be possible to correct the compass for co-efficients, B, C and D and heeling error.
- The magnetic compass or a repeater should be positioned so as to be clearly readable by the helmsman at the main steering position. For vessels operating in area categories 0, 1, 2, and 3, a compass light should be fitted.
- Means should be provided for taking bearings as nearly as practicable over an arc of the horizon of 360 degrees. (This requirement may be met by the fitting of a pelorus or, in a vessel other than a steel vessel, a hand bearing compass.)

14.2.2. Alternatively, a fluxgate compass with suitable electrical back-up supply may be fitted. Where a fluxgate compass incorporates a capability to measure magnetic deviation by undertaking a calibration routine, and where the deviation figures are recorded within the device, a deviation card is not required

14.2.3. All vessels should be fitted with an echo sounder, or other means, to measure the available depth of water.

14.2.4. A vessel which operates more than 20 miles from land (Area Category 0, 1, 2 or 3) should be provided with

- 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 vessel's

position at all times.

- A distance measuring log; except that this need not be provided where the navigational aid provides reliable distance measurements in the area of operation of the vessel.

14.2.5. A vessel which operates more than 20 miles from land (Area Category 0, 1, 2 or 3) shall be fitted with marine radar system for surface navigation to the satisfaction of the Merchant Shipping Secretariat, with a radar screen mounted at the operating station. The radar and its installation shall be suitable for the intended speed and operating area of the vessel

14.3. Miscellaneous Equipment

14.3.1. Charts and other nautical publications to plan and display the vessel's route for the intended voyage and to plot and monitor positions throughout the voyage should be carried. The charts must be of such a scale and contain sufficient detail to show clearly all relevant navigational marks, known navigational hazards and, where appropriate, information concerning ship's routeing and ship reporting schemes. Nautical publications may be contained within a consolidated publication. However, vessels operating in area Category 5 need not carry publications. An electronic chart plotting system, may be accepted as meeting the chart carriage requirements of this sub-paragraph

14.3.2. A vessel should be provided with an efficient waterproof electric lamp suitable for signalling

14.3.3. In all vessels, a water-resistant torch and a suitable boat hook should be provided.

14.3.4. An emergency response plan should be carried detailing procedures for calling emergency services, ambulance, fire brigade and coast guard etc..

14.3.5. For non-metallic hulls, radar reflectors or transponders should be fitted in order to enhance radar visibility. These should be approved to current IMO performance standards, or other means. On small vessels, where it is not practicable for an efficient radar reflector to be fitted, they should not operate in fog, and if visibility starts to deteriorate they should return to their mooring.

14.3.6. A vessel operating in area category 0, 1, 2 or 3 should be provided with an efficient fixed and/or portable searchlight suitable for use in man-overboard search and recovery operations

14.3.7. Other than a dedicated pilot boat, a vessel operating in area category 0, 1, 2 or 3 should carry a barometer

14.3.8. A sailing monohull vessel operating in Area Category 0 or 1, or carrying 16 or more persons should be provided with an inclinometer

14.3.9. A sailing monohull vessel operating in Area Category 0, 1, 2 and 3 should be provided with an anemometer

14.3.10. A sailing multihull vessel should be provided with an anemometer providing a continuous indication of apparent windspeed, with the display clearly visible at each control position

14.3.11. A sailing vessel should carry appropriate means of clearing rigging for use in the event of dismasting

14.3.12. The table below gives a summary of navigation lights, shapes and sound signalling appliances for vessels. This table is for guidance only

Navigation Lights and Equipment

Overall length	Power vessels when underway (and Sailing when under power see Note d)	Sailing vessels when under sail	At anchor[4]	Not under command[7]	Aground[9]	Sound appliances
Less than 7m	All round white + sidelights[1, 2]	Sidelights[1] + stern light OR Combined lantern at masthead[3] (tricolour) OR White light where the above are not practicable	Required[5, 6]	Not required	Not required	Means to make an efficient sound signal required
7m - 12m	All round white + sidelights[1] OR Masthead (vis 2 miles) + sidelights[1] + stern light OR (if lights have to be offset from centreline) combined lantern sidelights plus either all round white or masthead and stern light	Sidelights[1] + stern light (sidelights may be combined) OR Combined lantern at masthead[3] (tricolour)	Required[6]	Not required	Not required	Means to make an efficient sound signal required
12m - 20m	Masthead (vis 3 miles) + sidelights + stern light	Sidelights + stern light (sidelights may be combined) OR Combined lantern at masthead3 (tricolour)	Required[6]	Required[6]	Required[6, 8]	Whistle and bell required
20m - 24m	Masthead (vis 5 miles) + sidelights + stern light	Sidelights + stern light may show (in addition to other lights) two all-round lights near masthead, the upper red and the lower green.	Required	Required	Required	Whistle and bell required approved by UK nominated bodies

[1]Range of sidelight is 1 mile.
[2]Vessels not exceeding 7 knots maximum speed should show sidelights if practicable.
[3]If not using a tricolour masthead lantern, a sailing vessel may show (in addition to other lights) two all-round lights near masthead, the upper red and the lower green.
[4]By night, all round white light where best seen; by day one black ball (0.6 metres in diameter) in the fore part.
[5]Anchor light is required only when anchored in or near a narrow channel, fairway or anchorage or where other vessels normally navigate.
[6]Size of the daytime shapes and distances apart may be reduced commensurate with size of vessel.
[7]By night, two all round red lights in a vertical line two metres apart and the lowest not less than four metres above the hull (weatherdeck); by day two black balls (0.6 metres in diameters) in a vertical line, 1.5 metres apart.
[8]The distances for the lights may be reduced to one metre apart and two metres above the hull (weatherdeck).
[9]By night two all round red lights in a vertical line 2 metres apart plus anchor light; by day three black balls (0.6 metres diameter) in a vertical line, 1.5 metres apart.

Small Craft Code (upto 24m in Length)

Navigation Lights and Equipment

Notes

a Sidelights, stern light and all round lights have range of 2 miles unless indicated otherwise.

b Range of all round white or anchor or Not Under Command lights is 2 miles in all cases.

c All lights (and whistles and bells when they are required to be carried) must be type approved for the size of vessel on which they are fitted.

d For sailing vessels, attention should be paid to light arrangements when under power i.e. steaming lights in place of masthead light

e For vessels engaged in other activities i.e. towing, pilotage, attention should be paid to requirements for lights and shapes arrangements.

f If a sailing vessel is using its engine as well as sails, then a cone, apex downwards in the fore part, should be displayed in the forepart of the vessel.

g In the case of open boats, vertical heights should be measured from gunwale, and in the case of inflatable boats, or boats fitted with a buoyant collar, from the top of the collar or tubes.

Anchors & Cables

15.1. General

15.1.1. The requirements given in the table in section 15.6are for a vessel of normal form which may be expected to ride-out storms whilst at anchor. The anchors and cables are not designed to hold a vessel off exposed coasts in rough weather nor stop a vessel that is moving.

15.1.2. Provision is to be made for the secure storage of the anchor and its cable

15.1.3. In still water, appropriate mooring arrangements should be provided. Mooring lines of adequate length for all possible moorings (including in an emergency) should be carried. The vessel should be fitted with bollards or cleats of adequate strength

15.2. Anchors

15.2.1. The Tabulated values for anchor masses refer to High Holding Power anchors. Anchors of other designs may be accepted based on the stated holding power

15.2.2. When a fisherman type of anchor is provided, the mass given in the table in section 15.6should be increased by 75% but the diameter of the anchor cable need not be increased.

15.2.3. For vessels with an unusually high windage, due to high freeboard, a large rig, large deckhouses or superstructures, the mass of the anchor and the anchor cable diameter should be increased above that required in the table in section 15.6to correspond to the increased wind loading. The increase in anchor mass and corresponding cable strength is to be to the satisfaction of the Certifying Body.

15.2.4. For boats of unusual or non-conventional boat form (including pontoon barges) the anchor and cable size should be to the satisfaction of the Merchant Shipping Secretariat.

15.2.5. Anchors are to be rigged ready for use. Only where the particular operating patterns dictate may the anchor be left unready, e.g. Pilot boat duties.

15.2.6. The design of the anchor is to be acceptable to the Certifying Body

15.2.7. Stainless steel and aluminium anchors will be separately considered dependent upon the test loads for which the anchor has been designed

15.3. Anchor Cables

15.3.1. The length of anchor cable attached to an anchor should be appropriate to the area of operation but generally should be not less than 4× the boat's mean length or 30 m, whichever is the longer, for each of the main and kedge anchors. (For a definition of mean length, see Note 4 of Table Anchors and cables – for boats over 15 m)

15.3.2. The cable for main anchors and for kedge anchors may be of chain or rope.

15.3.3. The cable for main anchors and for kedge anchors may be of chain or rope. When the anchor cable is of fibre rope or wire, there should be not less than 10m or 20 per cent of the minimum required cable length, whichever is the greater, of chain between the rope and the anchor. Where the anchor cable is wire then proposals to

substitute the chain tail by an anchor and/or chain of enhanced mass will be considered to the satisfaction of the Merchant Shipping Secretariat, with special attention paid to the anchor performance, i.e. catenary

15.3.4. The strength, form and material of the anchor cable and its attachments to the anchor and the vessel should be approved by the Certifying Body.

15.3.5. Anchoring systems incorporating a windlass should have the bitten end of the cable secured to the vessel's structure and capable of being released in an emergency

15.3.6. Anchor steel wire rope is to be fitted with thimbles at both ends

15.4. Tow Line & Emergency Towing

15.4.1. A boat should be provided with a towline of not less than the length and diameter of the spare anchor cable. The towline may be the warp for the second anchor. Where practicable, the towline should be buoyant.

15.4.2. For emergency towing a strong securing point on the foredeck should be provided, this may be the sme point provided for the securing of the anchor.

15.5. Anchor Operations

15.5.1. There should be a strong securing point on the foredeck or equivalent structure and where appropriate a fairlead or roller at the stem head

15.5.2. When an anchor mass is more than 30 kg, an efficient mechanical means should be provided for handling the anchor

15.5.3. Vessels operating in area categories 0,1,2, or 3 should be provided with;
- at least two anchors (one main and one kedge or two main) and cables, subject to Section 15.1 and in accordance with the requirements of the table in section 15.6
- Anchors of equivalent holding power may be proposed and provided, subject to approval by the Certifying Body.

15.5.4. Vessels operating in area categories 4 and 5 should be provided with;
- at least two anchors (one main and one kedge or two main) the masses of which may not be less than 90% of the requirements of the table in section 15.6with corresponding cables and subject to approval by the Certifying Body
- Anchors of equivalent holding power may be proposed and provided, subject to approval by the Certifying Body.

15.6. Table of Requirements for Anchors and Cables

15.6.1. The table below give the requirements for anchors and cable for the size of the boat, the anchor masses stated are for high holding power anchors

Anchors and cables–for boats upto 15m

	Anchor mass		Anchor cable diameter			
Mean length(*See*Note4)(meters	Main Anchor(kg)	Spare Anchor (kg)	Main chain(mm)	Main rope (mm	Spare chain	Spare rope(mm)
6	8	4	6	12	6	10
7	9	4	8	12	6	10
8	10	5	8	12	6	10
9	13	5	8	12	6	10
10	16	6	8	12	6	10
11	19	7	8	12	6	10
12	22	9	8	14	8	12
13	25	10	10	14	8	12
14	28	12	10	14	8	12

Anchors and cables–for boats over15m

Loaded displacement	Anchor main	Anchor spare	Anchor cable diameter
(tonnes)	(kg)	(kg)	(mm)
25	30	30	10
50	40	40	12
75	50	50	12
100	75	75	13,5
125	90	90	13,5
150	100	100	13,5
175	125	125	16
200	130	130	17,5
225	150	150	17,5
250	180	180	17,5
275	225	225	17,5
300	230	230	17,5
350	240	240	17,5
400	245	245	17,5
450	250	250	19
500	255	255	19
550	260	260	19
600	265	265	19
650	270	270	20

Notes

1. Chain cable diameter given is for short link chain. Chain cable should be sized in accordance with EN 24 565:1989 (covering ISO 45651986 and covered by BS 7160:1990 - Anchor chains for small craft), or equivalent.
2. The rope diameter given is for nylon construction. When rope of another construction is proposed, the breaking load should be not less than that of the nylon rope specified in the table.
3. When anchors and cables are manufactured to imperial sizes, the metric equivalent of the anchor mass and the cable diameter should not be less than the table value.
4. For the purposes of this Section, mean length is defined as: (Length + length on waterline)/2

Accommodation Facilities

16.1. General

16.1.1. Accommodation should provide suitable conditions and facilities for those persons on board according to the duration of stay

16.1.2. When a vessel is intended to be at sea for more than 24 hours, an adequate standard of accommodation for all on board should be provided. In considering such accommodation, primary concern should be directed towards ensuring the health and safety aspects of persons, particular attention must the paid the following items, the standards required for each items for each area is listed in the relevant sections

- ventilation
- lighting
- water services
- galley services
- access/escape arrangements.

16.1.3. Where overnight accommodation is provided a bunk or cot should be provided for each person on board. On sailing boats at least 50 per cent of those provided should be fitted with lee boards or lee cloths

16.1.4. Excessive noise and vibration should be limited within accommodation spaces, and as far as practicable in accordance with relevant international standards.

16.1.5. Furniture and heavy items of equipment, such as batteries, cooking appliances etc., should be securely fastened in place to prevent movement. In the case of a sailing vessel, the severe motions should include motions leading to inversion

16.1.6. Stowage lockers containing heavy items are to have lids or doors with secure fastening

16.1.7. Means of escape from accommodation spaces should be free from obstruction, and clearly marked for their purpose unless they are obvious

16.1.8. Enclosed spaces which persons may enter should be effectively ventilated. Due regard should be paid to ISO 10239 Small Craft – Liquefied Petroleum gas (LPG) systems or BS5482- 3 Domestic Butane and Propane gas burning installations in boats, yachts and other vessels, for gas installations, requiring permanently open vents for open flame devices. For other types of fuel burning appliances refer to the manufacturer's recommendations for ventilation

16.1.9. Sufficient handholds and grab-rails should be fitted within the accommodation, for the safety of passengers when moving around the accommodation.

16.2. Passenger Spaces

16.2.1. Passenger spaces shall be provided on not more than two decks including the top of the deckhouse, subject to meeting stability requirements

16.2.2. Passenger spaces do not include:

- Crew accommodation

- Toilets
- Companionways/stairways/means of escape
- Any passageway between bulkheads less than 750mm wide.
- Areas permanently occupied by safety equipment and other vessel related operational equipment.
- Areas designed for the safe operation of the vessel i.e.

  Machinery/navigation/mooring.

  Vehicle carrying spaces.

  Open deck vehicle carrying spaces.

  Access routes to such spaces

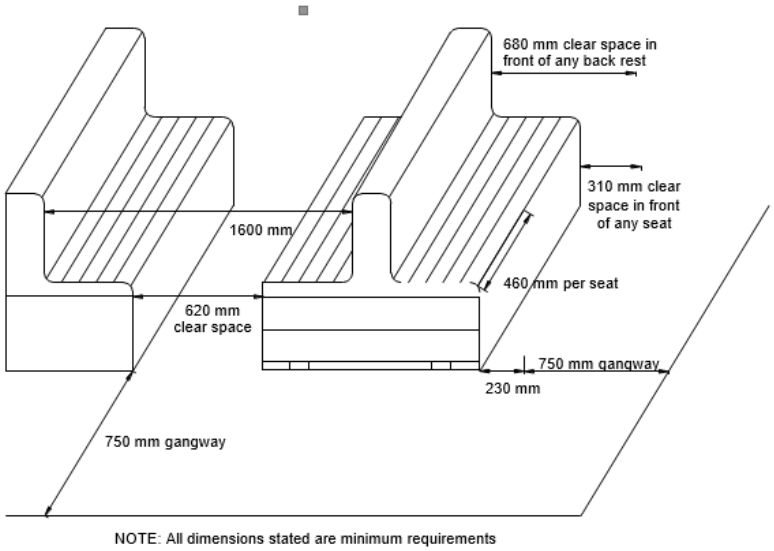
16.2.3. For open deck spaces the clear deck area shall be measured between points within which the Merchant Shipping Secretariat considers the area fit for the safe and proper accommodation of passengers. It should also be considered whether the bow or stern area is a suitable place for passengers to be permitted to occupy

16.2.4. Clear deck area for both open and enclosed spaces means the area which remains after that occupied by all encumbrances, such as hatchways, skylights, companionways, casings, ventilators, navigating space, luggage lockers and lifesaving appliances carried on the open deck or in lockers has been deducted. Tables and seating are included within the clear deck area

16.2.5. The number of passengers allowed for a passenger space;

- Located below the main deck is the clear deck area in square metres divided by 0.85
- Located on the main deck is the clear deck area in square metres divided by 0.6
- Located on tops of the deckhouses is the clear deck area in square metres divided by 0.85

16.2.6. Minimum seat dimensions;



NOTE: All dimensions stated are minimum requirements

- Suitable clear space shall be allowed for access, assembly and escape, with a minimum width of 750mm being provided.
- A length of 460mm measured horizontally along the front of each seat shall be allowed for the accommodation of seated passengers.
- When any space in front of a seat is required for access, the space within 230mm of the front of the seat shall not be taken into account when measuring the width of the access.
- The distance between any part of the back rest of any seat and the back rest of the seat facing it, shall not be less than 1600mm.
- There shall be a clear space of at least 680mm in front of the backrest of any seat measured from the

centre of each seat and a clear space of at least 310mm in front of any part of that seat.

- There shall be a clear space of at least 620mm between any part of the front of a transverse seat, and any part of any other seat which faces it.
- The number of passengers accommodated by bench seating is found by dividing the length in metres of each continuous fixed seat by 0.46, the measurements being taken along the inner edge of the seats. Buoyant apparatus may be used for seating provided the seating dimensions specified above are satisfied.

16.2.7. On craft operating on voyages of 30 minutes or less duration the number of seats provided for passengers could be reduced by 50 %, on all other voyages every passenger must be provided with a seat

16.2.8. Craft operating on overnight voyages must provide sleeping accommodation

16.3. Ventilation

16.3.1. Where air conditioning systems are not fitted, mechanical ventilation should be provided to accommodation spaces which are situated completely below the level of the weather deck, and which carry 9 or more berthed persons below deck. As far as practicable, such ventilation arrangements should be designed to provide at least 6 changes of air per hour when the access openings to the spaces are closed

16.4. Lighting

16.4.1. An electric lighting system should be installed which is capable of supplying adequate light to all enclosed accommodation and working spaces.

16.5. Water Services

16.5.1. An adequate supply of fresh drinking water complying with latest WHO standards should be provided and piped to convenient positions throughout the accommodation spaces

16.5.2. In addition, an emergency (dedicated reserve) supply of drinking water should be carried at the rate of 2 litres per person on board

16.5.3. Hot water supply systems (if any) should be designed, installed and maintained for the pressure and temperature at which they are to operate.

16.6. Galley Services

16.6.1. Where overnight accommodation is provided a galley should be provided for the provision of hot meals

16.6.2. A galley where fitted should be provided with a means for cooking and a sink and have adequate working surface for the preparation of food

16.6.3. Where food is provided in the form of ration packs, a suitable boiler or food warmer will be acceptable

16.6.4. When a cooking appliance is gimballed it should be protected by a crash bar or other means to prevent it being tilted when it is free to swing, and a strap, portable bar or other means should be provided to allow the cook to be secured in position, with both hands free for working, when the vessel is rolling. A means should be provided to lock the gimbal mechanism to prevent movement.

16.6.5. There should be secure storage for food in the vicinity of the galley

16.7. Toilet facilities

16.7.1. For vessels where the duration of the voyage is longer than six hours adequate toilet facilities, separated from the rest of the accommodation, should be provided for persons on board

16.7.2. In general, there should be at least one flushing marine toilet and one wash hand basin for every 12 persons

16.8. Protection of Personnel

16.8.1. A deckhouse used for the accommodation of persons must be constructed of adequate strength to withstand the forces of weather and sea to which it will be subjected in use. Refer to Chapter 2 Procedures, Examination, Certification and Maintenance

16.8.2. A suitable certified carbon monoxide (CO) alarm (e.g. BS EN 50291-2) should be fitted where CO could accumulate and pose a risk to health. Boat users should be aware that CO may not always originate from internal sources or even from your own boat. The occupants of neighbouring boats are at risk when moored near boats emitting high concentrations of CO

16.8.3. To protect persons from falling overboard, and where proper working of the vessel is not impeded, areas where passengers are frequently on deck should be enclosed. Alternatively, guardrails or guard wires to a height of at least 1000mm should be fitted. The distance between the lowest course and the deck should not exceed 230mm and the distance between other courses should not exceed 380mm

16.8.4. Bulwarks, guardrails and guard wires should be supported efficiently by stays or stanchions. When application of such measures would impede the proper working of the vessel, alternative safety measures should be considered, for guidance ISO 15085 refers

16.8.5. In a vessel fitted with a cockpit which opens aft to the sea, additional guardrails should be fitted so that there is no unprotected vertical opening (i.e. between vertical 'members') greater than 500mm in width

16.8.6. When application of such measures would impede the proper working of the vessel, alternative arrangements should be made which provide an equivalent level of safety; for guidance see ISO 15085: Man overboard prevention and recovery.

16.8.7. In a non-decked vessel, a safe location within the vessel is to be provided for all persons on board. If vulnerable passengers may move around open or narrow decks, a risk assessment is recommended to determine whether personal protective equipment (lifejackets, harnesses) should be worn.

16.8.8. Handrails should be provided for access stairways, ladder ways, passageways and for decks without bulwarks or guardrails. This provision should not be used in lieu of guardrails and bulwarks where required by the Code

16.8.9. In an inflatable boat or a rigid inflatable boat, handgrips, toeholds and handrails should be provided as necessary to ensure safety of all persons on board during transit and the worst weather conditions likely to be encountered in the intended area of operation

16.8.10. The surface of a working deck should be non-slip. Acceptable surfaces are: chequered plate, unpainted wood; a non-skid pattern moulded into FRP; non-slip deck paint; or an efficient non-slip covering.

16.8.11. In an inflatable boat or rigid inflatable boat the upper surface of the inflated buoyancy tube is to be provided

with a non-slip finish

16.8.12. Particular attention should be paid to the surface finish of a hatch cover when it is fitted on a working deck and, for sailing vessels, to sloping coach roof sides where these effectively constitute a working deck when the vessel is heeled

16.8.13. Vessels should be provided with safety harnesses as necessary;

- for all persons who may be required to work on deck, with a minimum number of 2
- A sailing vessel should carry a safety harness for each person on board
- Efficient means for securing the life lines of safety harnesses should be provided on exposed decks, and grab rails provided on the sides and ends of a deckhouse.
- Fastening points for the attachment of safety harness life lines should be arranged having regard to the likely need for work on or above deck. In general, securing points should be provided in the following positions:-
    1) close to a companionway; and
    2) on both sides of a cockpit
- When guard rails or wires are not otherwise provided, or do not meet the required standards, jackstays (which may be fixed or portable) secured to strong points, should be provided on each side of the vessel to enable crew members to traverse the length of the weather deck in bad weather
- For sailing vessels operating in area category 0, 1, 2 or 3, jackstays must be provided
- Motor vessels with guardrails of a height less than that required may be accepted for areas where passengers are not normally allowed. These areas should be restricted to crew use only and alternative arrangements provided onboard for their protection
- When a sailing vessel is provided with an open fronted pulpit, jackstays should be carried sufficiently far forward to protect persons working in the vicinity of the pulpit

16.8.14. When appropriate to the working of a vessel provided with a sailing rig, a toe rail of not less than 25mm in height should be fitted around the working deck.

16.8.15. In a non-decked vessel or rigid inflatable, it is the owner's/operator's responsibility to ensure that a safe location aboard the boat is provided for all persons.

16.8.16. An overside boarding ladder or scrambling net which extends from the weather deck to at least 600mm below the operational waterline, or other means to aid the recovery of an unconscious person from the water, should be provided to the satisfaction of the Merchant Shipping Secretariat.

16.8.17. On sailing vessels When the proper working of a sailing vessel may otherwise be impeded;

- bulwarks or two courses of rails or taut wires should be fitted around the working deck, the height of the protection should be not less than 600mm above the deck. Rails or wires should be supported at intervals not exceeding 2.2 metres
- on vessels less than 9 metres in length and for vessels in which the crew do not leave the cockpit, bulwarks or a single rail or taut wire may be fitted around the working deck, the height of the protection being not less than 450mm above the deck but with no vertical opening greater than 560mm
- in a vessel fitted with a headstay, a fixed or drop-nosed bow pulpit should be provided forward of the headstay of at least the same height as the guardrails, except in way of a substantial bowsprit. A drop-nosed pulpit with an opening wider than 250mm should be provided with a means of closure at guardrail height, for use at sea
- when it is desired to move forward of a pulpit to access a bowsprit or to assist with docking operations, it should be permissible to arrange the pulpit with an opening in its forward- most part. In this case, an efficient means of closure of the opening should be fitted, and jackstays

provided

16.9. Medical Stores

16.9.1. All vessels must carry medical stores according to the requirements specified in the UK MCA "Merchant Shipping Notice - MSN 1768 (M+F)", as follows

- Vessels operating in area categories 3,4 and 5 must have on board Category C medical stores – an extract from the MSN is provided in annex ddd for guidance
- Vessels operating in area categories 1 and 2 must have on board Category B medical stores, refer to the UK MSN for guidance, a full copy of the MSN must be carried on board
- Vessels operating in area category 0 must have on board Category A medical stores, refer to the UK MSN for guidance,, a full copy of the MSN must be carried on board

16.10. Prevention of Pollution

16.10.1. A vessel complying with the Code should meet international, national, regional and local requirements for the prevention of marine pollution which are applicable to the area in which the vessel is operating

16.10.2. Responsibility for the vessel to be properly equipped and maintained to meet the requirements prevailing rests with the owner/managing agent

16.10.3. The vessel should comply with local bylaws relating to the discharge of waste water. All rubbish should be disposed of at designated and suitable facilities ashore

16.10.4. The disposal of garbage into the sea is prohibited. Arrangements for the retention of garbage on board and for discharge to shore facilities should be provided. Arrangements should be varied as necessary to comply with special requirements which may be applied by administrations/authorities in the area in which a vessel operates.

16.10.5. Crew and passengers shall be made aware of the garbage disposal requirements by posters and placards and regular trainings shall be carried out in this regard

16.10.6. A vessel with toilet facilities shall be fitted with a holding tank of suitable size to accommodate the total number of persons on board for the duration of the voyage.

16.10.7. Sewage holding tanks fitted should be constructed with a sloping bottom arranged such that the outlet is at the lowest point. Ventilation arrangements should be routed well clear of accommodation and sleeping quarters. Outlets from ventilation should not be near ventilation or machinery inlets and should not pose a danger to other vessels alongside. Tanks should be manufactured from material not susceptible to corrosion in anaerobic decomposition conditions

16.10.8. No sanitation system capable of discharging sewage overside should be fitted in the vessel unless it is capable of being sealed or rendered inoperable.

16.10.9. Sealed sanitation systems should comply with the requirements of BS MA101 Specification for toilet retention and re-circulation systems for the treatment of toilet waste on small craft or equivalent.

16.10.10. Standard pump out connections must be fitted, ISO 8099 which is a one and a half inch pipe thread (in accordance with ISO 228-1) and MARPOL which is a 16mm thick flange having four 18mm diameter holes on a 170mm pitch circle diameter.

16.10.11. An oil-tight tray made of metal or other suitable material should be fitted beneath every engine and gearbox so as to prevent leakage of oil escaping into any part of the vessel or overside. The sides of the tray should be carried as high as practicable. A tray is not needed if oil-tight structural members are fitted fore and aft of the engine. No fixed bilge pump should draw from an oil-tight area.

16.10.12. All oily waste shall be retained on board for proper disposal ashore.

16.10.13. All shore discharge records (Garbage, oil and sewage) shall be supported by discharge certificates obtained from the Marine Environment Protection Authority and shall be retained on board

16.10.14. Antifouling pains used on vessels must conform to the latest international regulations and standards

Annex 1 – Small Craft Code Certificate

Certificate Number

Democratic Socialist Republic of Sri Lanka

SMALL CRAFT CODE SAFETY CERTIFICATE

This certificate shall be supplemented by the Record of Equipment and Survey Report
Issued under the provisions of the Merchant Shipping (Non-Convention Vessel) Regulations No.1 of 2024 and the Merchant Shipping (Vessel Classification and Certification) Regulations No.3 of 2024

.....
Name of Certifying Body

Type of Vessel : *...RIB/Motor/Sail /Motor or Sail Catamaran*.....
Vessel Group : .....

Operational Area Category	0	1	2	3	4	5	6	7	8	9
Assigned										

Nominated Departure point for Area Categories 4 or 5 : .....

Particulars of Vessel

Name of Vessel: Distinctive Numbers:
Registration Number: Port of Registry
IMO Number (If Available) Date of Build*:

* Date on which the Keel was laid or at similar stage of construction or where applicable date on which work for conversion or an alteration or modification of a major character was commenced

This is to certify

1) That the vessel has been surveyed in accordance with the requirements of the Small Craft Code 2025
2) That the survey showed that the condition of the structure, subdivision, structural fire protection, machinery, vessels equipment and systems, lifesaving appliances and equipment, firefighting appliances and equipment, navigational equipment, radio installations and in all other respects, the vessel has complied with the relevant requirements of the code.
3) That the maximum number of persons on board the vessel should not exceed ..... and the maximum number of passengers on board should not exceed.....
4) That an Exemption certificate has/has not been issued

This certificate is valid until : Issued at :

Date of issue Signature of authorized official seal or stamp of certifying body

Annual / Intermediate Survey endorsements

This is to certify that the vessel has been surveyed in accordance to the survey requirements of the code for the type of survey as given Type of Survey Place of Survey Date of Survey Signed Seal or stamp of Certifying Body
This is to certify that the vessel has been surveyed in accordance to the survey requirements of the code for the type of survey as given Type of Survey Place of Survey Date of Survey Signed Seal or stamp of Certifying Body
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Annexures

Annex 2 – Record of Equipment& Survey Report

	DemocraticSocialistRepublicofSriLankaMerchantShippingSecretari at	Certificatio n Number:
	Record of Equipment Small Craft Code	Expiration Date:

1.0 Particulars of vessel

Name of Vessel	Distinctive Numbers:	
Registration Number:	Port of Registry	
IMO Number (If Available)	Date of Build*:	
Builders Name and Address	Yard Number	Hull Material
Vessel Group:	LOA	Breadth
Vessel Type RIB ☐ Motor ☐ Sail ☐ Motor/Sail Catamaran ☐		
Assigned Operational Areas	Nominated Departure Point for Area Category 4 or 5	
Total number of persons on board	Maximum number of Passengers	
This vessel shall be manned with the following personnel: -		

* Date on which the Keel was laid or at similar stage of construction or where applicable date on which work for conversion or an alteration or modification of a major character was commenced

Annexures

2.0 Record of Equipment

Code Ref	Description	Provided
11.4	Total number of Liferafts (Total number of persons accommodated)	
11.2 & 11.12	Total number of Lifebuoys	
11.2 & 11.12	Number of Lifebuoys with Dan-buoy	
11.2 & 11.12	Number of Lifebuoys with Dan-buoy and light	
11.2 & 11.12	Number of Lifebuoys with light	
11.2 & 11.12	Number of Lifebuoys with buoyant line	
11.2 & 11.12	Number of Lifebuoys without attachments	
11.12	Additional Buoyant Line	
11.3	Total number of Life jackets (Type)	
11.3	Number of child Life jackets (Type)	
11.5	Number of thermal protective aids	
11.6	EPIRB	
11.6	SART	
11.11	Tenders (Rescue boat)	
11.10	Number of parachute flares	
11.10	Number of Red hand flares	
11.10	Number of smoke signals (buoyant /hand-held)	
11.10	Line throwing apparatus	
11.12	Portable VHF set	
11.10	General Alarm	
11.12	Lifesaving signals table	
11.8	Training Manual	
11.7	Instructions for onboard maintenance of Life saving equipment	
12.6	Fixed Fire extinguishing system (Type)	
12.6	Number of portable fire extinguishers	
12.6	Fire Pumps (Hand / power driven)	
12.6	Number of Fire hoses with spray nozzles	
12.6	Fire Blanket	
12.65	Fire Buckets with lanyards	
13.1	VHF fixed radio installation	
13.1	MF SSB radio installation with DSC	
13.1	MF/HF Transceiver with DSC	
13.1	Inmarsat Ship Earth Station	
13.1	Navtex receiver	

Annex 3 – Model Stability Information Book

This annex outlines the information requirements that is expected from a stability information book.
The Booklet should include all applicable items for a particular vessel from the sections below, the format should be as set out.

The Stability Information booklet is arranged into sections, sections are arranged such that the most essential matters are brought to the user's attention first
The sections of a Stability Information book are;

- Section 0 – Cover page, contents page and Vessel information
- Section 1 - Operational information
- Section 2 - Technical data and loading conditions
- Section 3 - Reference information including lightship and VCG derivation
- Name and version number of stability software used

SECTION	PAGE/DESCRIPTION	CONTENTS
Section 0	Front Cover	Name of boat Intact Stability Information Booklet Date of issue Version number Name and address of Naval Architect
	Contents	Contents with page numbers
	General Particulars	Boat's name Official number Port of registry (if applicable) Certifying body Number of persons carried Maximum weight of cargo Area of operation Name and address of Owners Class Material of construction Yard number Builder's name and address Fitted out by (if different) Date of build Date of commissioning Dimensions Length overall Length BP Moulded beam Depth Rake of keel Displacements: fully laden, lightship Draughts: fully laden, lightship Minimum freeboard: lightship freeboard Gross and net tonnage
	General Arrangement	Profile {Including definition of FP, AP Plan} midships, base line
	Arrangement of Tanks & Ballast	Plan and profile views showing tank positions and position of any permanent ballast

Annexures

SECTION	PAGE/DESCRIPTION	CONTENTS
Section 1	Stability information	Special notes regarding the stability of the boat Example of static stability curve with details of Area A, Area B, Area C, Point X, Maximum GZ and Initial GM General precautions against capsizing and downflooding Area of operation Stability criteria Weather Reference to location of downflooding openings Statement ref. maximum crane load (kg) and maximum outreach (m) (if applicable) and any other relevant advice ref. crane operation, such as the provision and use of an inclinometer Maximum VCG (KG) curve with appropriate range of displacement and trim Example showing the use of the maximum KG curve Summary of pass/fail margins and stability category for each load condition
Section 2	Freeboard and draught marks	Depth from baseline to top of deck at midships (m) Maximum fully laden draught at midships (m) Minimum freeboard at midships (m) Position of midships (metres aft of foreside of stem at deck level) Diagram showing location and dimensions of draught mark Determination of draughts at AP and FP relative to BL from draughts read at marks Draught marks and hydrostatic datum Drawing identifying draught marks and datum
	Downflooding points	Drawing identifying downflooding openings Table listing each downflooding point, the area of each opening, the angle of immersion in each load case
	Tank Capacities	Arrangement of tanks and ballast Drawing showing tanks and ballast fitted Table listing tank capacities, fluid, location, weight, LCG, VCG, TCG and FSM Details of ballast weight and location Reference to baseline, forward perpendicular, transverse origins and +ve –ve trim
	Loading Conditions	Information to be included for each condition; Weights and centres table, referenced to LCG, VCG, TCG and free surface Include Draught @ AP, Draught @ FP, mean draught, trim, GM solid, Free surface correction GM fluid GZ curve - incl critical downflooding angle GZ data and assessment against criteria Table with DISP, Draft FP, Draft AP, WSA. WPA, LCB, VCB, GZ, LCF, TCF against heel angle 0 to 90 degrees Stability summary, detailing required criteria, achieved criteria, margin and pass/fail Required Loading conditions ; Loading condition - Departure 100% consumables Loading condition - Arrival 10% consumables Other conditions as required for the operation of the craft any other relevant load condition, for instance different load/passenger combinations
	Hydrostatic Data –	Tables of data for :

Annexures

SECTION	PAGE/DESCRIPTION	CONTENTS
	for an appropriate range of drafts and three trims	displacement, wetted area, LCB, LCF, KB, KMT, KML, TPC, MTC Suggested Trims Trim 1 degree forward (or as may be appropriate) Level trim Trim 1 degree aft (or as may be appropriate)
	KN Data - For an appropriate range displacement vs. appropriate range of heel angle	Suggested Trims KN data - Trim 1 degree forward (or as may be appropriate) KN data - Level trim KN data - Trim 1 degree aft (or as may be appropriate) Notes on the use of KN data (refer to sample book for text) Insert hull section drawing illustrating the relative positions of K, M, G, GZ and B
	Free Surface Moments	Notes on the use of free surface moments Include calculation of maximum free surface moment
Section 3	Reference information	lightship and VCG derivation Inclining experiment report Vessel type specific information such as, Crane details and restrictions, maximum specific gravity of spoil for dredgers, towing details and restrictions etc Record of minor modifications Beaufort scale of wind speeds and corresponding pressures Metric/imperial conversion

Annex 4 – Model Incline Test/Stability Test Report

This annex outlines the information requirements that is expected from an incline test and a stability test as performed under this code.
The reports should include all applicable items for a particular vessel from the sections below, the format should be as set out.

Incline Test Report

SECTION	PAGE/DESCRIPTION	CONTENTS
Section 0	Front Cover	Name of boat Official number Port of registry (if applicable) Certifying body Name and address of Owners Material of construction Yard number Builder's name and address Fitted out by (if different) Date of build Name and address of Naval Architect
	Contents	Contents with page numbers
	General Information	Boat Type Area of operation Dimensions Length overall Length BP Moulded beam Depth Location where incline was done Date and time of incline (start/finish) Weather condition Sea condition Air and sea temperatures Specific gravity of sea water Persons present Condition of boat and tanks Incline weights used and pendulum details
Section 1	Report of Incline experiment and deadweight measurement	Draft readings - Forward and aft drafts, mean draught, Trim and Inclined displacement calculation List of weight movements List of pendulum readings Graphical plot of test readings (tangents vs heeling moments) GM calculation Displacement, LCG, KMT, GMT, free surface correction, VCG (KG) in inclined condition Lightship derivation, including Weights and centres Deadweight calculation (if applicable) Table of items to be removed Weights and centres Table of items to be added Weights and centres s
Section 2	Appendix	Trimmed Hydrostatic data used

Annexures

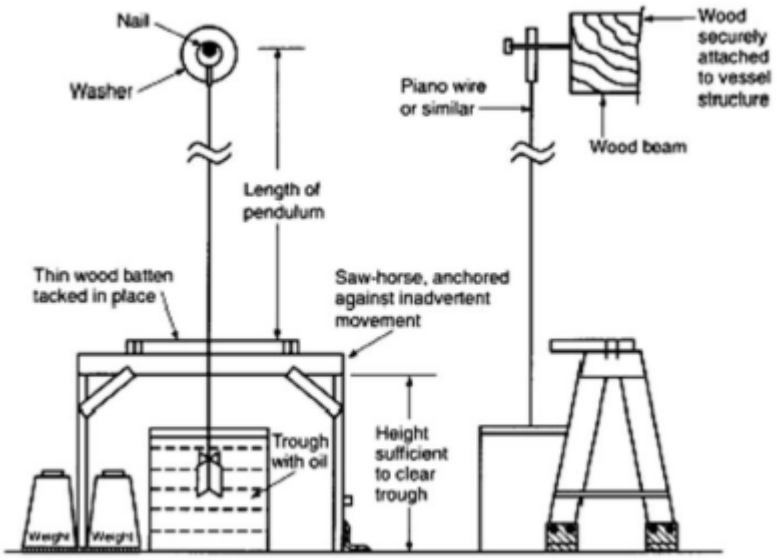
SECTION	PAGE/DESCRIPTION	CONTENTS
		Tank and Capacity Plan Sounding taken Capacities volume and weight LCG; VCG; TCG FSM

Simplified Stability Test/ Heel Test Report

The test must be conducted in calm conditions
Test weight to simulate the loading condition being tested must be distributed to obtain the required operating draft and trim
When using weights instead of persons, the vertical location of the weight should be such as to simulate the normal seated position of passengers
Tanks should be filled to 50 %
Test procedure:

- The heeling moments must be applied first to one side and the heel angle recorded, the vessel must then be brought upright, and angle of heel checked to ensure no movement of weights, next heeling moment applied to the other side and the heel angle recorded, vessel brought upright and the angle of heel to be checked to ensure movement weights.
- The test is completed by repeating the process again to obtain a second set of results, the average heel angle from both tests should be used to asses compliance
- Where there is movement of weights, the test results are to be discarded and any unsecured items must be lashed down and the test repeated.

The freeboard to deck edge must be measured after each application of the heeling moment
The heel angle may be measured using an inclinometer, provided it is calibrated and enables a suitable level of accuracy, instead of pendulums the setup of pendulums is given below



Annexures

SECTION	PAGE/DESCRIPTION	CONTENTS
Section 0	Front Cover	Name of boat Official number Port of registry (if applicable) Certifying body Name and address of Owners Material of construction Yard number Builder's name and address Fitted out by (if different) Date of build Name and address of Naval Architect
	Contents	Contents with page numbers
	General Information	Boat Type Area of operation Dimensions Length overall Length BP Moulded beam Depth Location where test was done Date and time of test (start/finish) Weather condition Sea condition Persons present Condition of boat and tanks Heel weights used and pendulum details (if applicable or the calibration report for the inclinometer)
Section 1	Report of Simplified Stability test	List of weight movements List of pendulum readings Recordings of freeboard to deck edge Graphical plot of test readings (tangents vs heeling moments) Calculation of Heel Angle GM calculation according to section 6.4.5

Annex 5 – Use of ISO "First Of Type" Righting Moment Curve For Stability Assessment

1. Introduction

1.1 Where the stability of a Coded vessel is assessed using the righting moment curve prepared to show compliance of the design with ISO 12217, this curve shall be subject to verification and, if necessary, correction, as set out below.

1.2 ISO 12217 normally requires the stability to be assessed in the Minimum Operating Condition. However, where the Loaded Displacement Mass is more than 15% greater than the former, the stability also has to be assessed in this heavier condition.

1.3 Where data is available for both conditions, the heavier should be used for the purposes of this Code.

2. Stability Verification Test

2.1 The vessel to be Coded shall be subjected to the stability verification test when as close as practicable to the loading condition used for the righting moment curve to be checked, as defined in ISO 12217. The purpose of the test is to verify that the stability of the vessel is adequately described by the righting moment curve of the "First of Type" used for ISO 12217 assessment. Where this is not adequately demonstrated, this curve shall be corrected as described below before reassessment of the stability compliance.

2.2 The test shall be conducted in calm conditions. The vessel shall be heeled to both port and starboard as much as practicable by the application of a heeling moment sufficient to produce a heel angle of firstly at least three degrees in either direction, and secondly at least five degrees, i.e.: two heeling moments and four heel angles in all. The heeling moments and angles of heel shall be recorded as precisely as practicable.

2.3 The heeling moments shall be applied using weights that are part of the loaded condition of the vessel and moved through a known amount. The righting lever deduced for that angle of heel is given by:

$$GZ = \frac{w.h.\cos\Phi}{\Delta}$$

where:

GZ = righting lever (m)
w = mass moved to produce the heel angle (kg)
h = distance parallel to design waterline mass was moved through to produce heeling moment (m)
Φ = angle of heel produced (degrees)
Δ = displacement of vessel as used to derive the GZ curve in question (kg)

2.4 Where the weights used to create the heeling moment have to be moved vertically from their normal location in order to generate the necessary heeling moment, the resulting measured righting moment should be corrected for the change in the vertical centre-of-gravity of the craft. The correction = $GG_1\sin\Phi$, added to the measured GZ when the weights were raised during the heeling test, where GG_1 is the shift in vessel VCG due to the weights moved.

2.5 The First of Type righting moment curve shall be considered acceptable for stability assessment if the average deviation of the four values obtained at 2.3 and corrected according to 2.4 below the righting moment curve is equal to or less than 5%. Where the deviation is above the curve, no limit shall apply.

2.6 Where the average deviation of the four values obtained at 2.3 above from the righting moment curve is more than 5%, the First of Type righting moment curve shall be corrected throughout the range of heel angles by an amount equal to $GG_1 \sin \Phi$, where Φ is any heel angle. The value of GG_1 used for this correction shall be obtained as follows:

$$GG_1 = \{ (\delta_1/\sin\Phi_1) + (\delta_2/\sin\Phi_2) + (\delta_3/\sin\Phi_3) + (\delta_4/\sin\Phi_4) \} / 4$$

where: δ_n = difference in measured GZ from First of Type GZ curve at angle Φ_n, for the four values obtained according to 2.2 and calculated according to 2.3 and 2.4 above.

2.7 Where the righting moment curve is modified in this way, the stability shall then be reassessed using the requirements of chapter 6 of the Code.

3. Maximum Steady Heel Angle for Sailing Vessels

3.1 The Maximum Steady Heel Angle to prevent downflooding in gusts is normally calculated for the Loaded Departure Condition, and may be increased if calculated for a lesser loading condition, such as the Minimum Operating Condition used for many ISO 12217 stability calculations.

3.2 Where the stability of a sailing vessel is assessed using ISO 12217 in the Minimum Operating Condition, the Maximum Steady Heel Angle calculated using this lesser loading condition must therefore be reduced by 10% to allow for this effect, before insertion in the Stability Information and Stability Guidance Booklets.

Annex 6 – Specific Requirements for Passenger vessels and their operation

Access for Persons with Reduced Mobility

1. New vessels should be designed and operated to accommodate the needs of persons of reduced mobility (PRM) as far as is practicable, where possible existing vessels should undergo modifications as required. The guidance in this section is not mandatory for non-steel vessels but should be observed and implemented unless there are specific aspects of the vessel which prevent doing so.
2. Persons of reduced mobility could include, and should not be limited to: wheelchair users, the elderly, passengers travelling with young children, passengers with impaired hearing or vision or physical or mental disability
3. Guidance can be found in UK MCA MGN 306 – Designing and Operating Smaller Passenger Vessels: Guidance on meeting the needs of passengers with reduced mobility

In Service Stability Verifications

1. Lightship Survey Verification ;
   - In each period of five years every vessel shall have a lightship survey, to verify any changes in lightship displacement and longitudinal centre of gravity.
   - Such periods shall commence on the date of issue of either the Certificate or from a previous inclining or lightship survey, whichever date is earliest.
   - The vessel shall be re-inclined whenever, in comparison with the vessel's approved stability information derived from the previous inclining experiment, a deviation from the lightship displacement exceeding 2 per cent or a deviation of the longitudinal centre of gravity exceeding 1 per cent of the vessel's length is found or anticipated.
   - The owner or their representative is responsible for arranging and conducting the tests.
   - The interval between the lightship surveys or tests of any such vessel may be extended for a period of not more than one year if, on the production of relevant information about the vessel, it can be shown that the lightship survey or test is not necessary at the required interval.
2. An approved report of each inclining or lightship survey or test carried out in accordance with this Code and of the calculation therefrom of the lightship condition, shall be placed on board for the use of the master
3. Where elements of a vessel's stability have been found to have changed following any inclining or lightship survey or test carried out in accordance with the requirements of paragraph (2), the master shall be supplied with amended approved stability information
4. Every inclining or lightship survey or tests made for this purpose or for the purpose of this section of the Code shall be carried out in the presence of a Merchant Shipping Secretariat approved surveyor

Public Address Systems

1. Vessels are to be provided with a public address system, operable from at least one point that can be heard by all persons onboard. All vessels carrying more than 100 passengers shall have a public address system operable from at least two well separated points
2. In vessels carrying not more than 60 passengers in which the passengers have access to only one passenger compartment or space, a portable loud hailer may be carried in lieu of the a public address system required above
3. Arrangements and procedures must be in place to silence entertainment systems (such as amplifiers,

musical equipment etc.) and entertainers when the public address system is to be used. The ability to turn off electronic entertainment systems must be available at the point of operation of the public address system. Manual shut off shall be available on vessels with loud hailers

Passenger Emergency Instructions Notices

1. Passenger Emergency Instructions notices shall be displayed in each passenger compartment. The number to be displayed will depend on the layout of the compartments and the service the vessel is engaged in. Notices shall also be provided in waiting rooms and terminals, where practicable. The information provided in a notice shall include
   - The method to be used to inform passengers that an emergency has occurred;
   - The action they will be required to take;
   - How to use the life-saving equipment;
   - How to don a lifejacket; and
   - Where lifejackets are carried.

On-board Procedures

1. Simple procedures should be developed for the operation of the vessel. These should include, but not be limited to
   - testing of equipment, including steering gear, prior to commencing a passage;
   - navigation and handling of the vessel;
   - maintenance routines;
   - bunkering operations;
   - watertight integrity;
   - stability of the vessel; and
   - conduct of passengers and crew while on board

Safety Briefing

1. Before the commencement of any voyage the skipper should ensure that an accurate count of passenger numbers is made and it is the skippers responsibility to ensure that the vessel is not overloaded.
2. Before the commencement of any voyage the skipper should ensure that all persons onboard are briefed on emergency procedures, the location of emergency exits, and, if carried, on the stowage and use of personal safety equipment, such as life-jackets, thermal protective aids and lifebuoys. The nominated first aider should also be introduced.
3. In addition, the skipper should brief at least one other person who will be going on the voyage or trip regarding the following, as applicable:-
   - Location of liferafts and the method of launching;
   - Procedures for the recovery of a person from the water;
   - Location and use of fire-fighting equipment;
   - Procedures and operation of communications equipment;
   - Location of navigation and other light switches;
   - Method of starting, stopping, and controlling the main engine; and
   - . Method of navigating to a suitable place of safety

Safety cards will be considered to be an acceptable way of providing the above information.

Annex 7 – Specific Requirements for Vessel classes and their operation

Sailing Vessel Features

1. Efficient storm sails should be carried which are capable of taking the vessel to windward in heavy weather. Where one of the required storm sails is a foresail, and roller furling gear and associated sails are fitted, a means of setting a separate taut luff storm jib should be provided. Each storm weather jib shall have a means to attach the luff to a stay independent of any luff groove device, which shall be permanently attached to the sail. Such sails may use the taught luff of a furled sail.
2. Storm sails need not be provided for a vessel restricted to Area Categories 4 and 5, which restrict operations to favourable weather and daylight.
3. The condition of spars and rigging should be periodically examined by a competent person. The frequency of examination will depend on the nature of the rig and its use. As a minimum, a detailed spars and standing rigging visual inspection should be carried out at least once during the term of the certificate and a report presented to the Certifying body. More frequent examinations may be considered necessary, at the discretion of the Certifying Body. Chain plates and their attachments to hull structure should be visually examined at least every five years and more frequently if justified by usage.

Vessels Engaged in Commercial Towing

1. General
   - 1.1. The requirements of this Section do not apply to vessels towing in an emergency situation.
   - 1.2. Reference should be made to Section 6 for stability of vessels engaged in towing and to Section 14 - Navigation Lights, Shapes and Sound Signals, for requirements for towing and towed vessels.
   - 1.3. The master of the vessel should have the towing vessel endorsement on his licence, additionally for vessels of 80 GT and over, engaged in towing, or assisting the handling, berthing or un-berthing of vessels or other floating objects over twice their displacement, shall be manned by suitably experienced personnel, competent for the area and type of operation and size and type of the vessel.
   - 1.4. For seagoing tows the owner/managing agent should consider the duration of the tow with regard to safe manning requirements
   - 1.5. The owner/managing agent should ensure that the skipper is aware and has copies onboard the vessel of relevant UK Merchant Shipping Notices (MSN) which give guidance on safety of vessels engaged in towing.
   - 1.6. Particular attention is drawn to the guidance provided currently in UK MGN 199 (M+F) Dangers of Interaction.
   - 1.7. Due regard should be given to other relevant UK Merchant Shipping Marine Guidance Notes (MGNs) which may be issued from time to time, which give guidance on the safety of vessels which tow.

2. Towing arrangements
   - 2.1. The design of towing gear should minimise the overturning moment due to the lead of the towline.
   - 2.2. The towing hook or towline should have a positive means of release which can be relied upon to function correctly under all operating conditions.

2.3. The towing hook (or equivalent fitting) and the supporting structure should be strong enough to withstand loads imposed during towing operations.
2.4. The release mechanism should be controlled from all conning positions and at the hook itself. The local control at the hook should be of the direct mechanical type capable of independent operation.
2.5. Towing arrangements should be appropriate to the task in hand and maintained to ensure that they are in an efficient working condition.

3. Weathertight integrity
3.1. Doorways in superstructures, deckhouses and exposed machinery casings situated on the weather deck and which enclose accesses to spaces below deck should be provided with efficient weathertight doors. Weathertight doors should be secured in the closed position when the vessel is towing and the doors should be marked clearly to this effect.
3.2. Machinery air intakes and machinery space ventilators which must be kept open during towing operations should be served by means of high coaming ventilators as protection from downflooding.
3.3. Generally, air pipes and ventilators should be kept as far inboard as possible and be fitted with automatic means of closure when downflooding to the compartments served would endanger the safety of the vessel.

4. The towed vessel or floating object
4.1. A vessel, pontoon, barge or floating object which is towed to sea from a place in Sri Lanka should be surveyed and issued with an appropriate load line certificate for the towed voyage. Certification for non-self-propelled vessels which make voyages under tow is permitted.

Cargo Carrying

1. General
1.1. When a vessel is engaged in carrying cargo all such cargo should be stowed and secured in a manner which will not adversely affect the safe operation of the vessel.
1.2. Particular attention should be paid to the means for securing the cargo and the strength of securing points, the free drainage of water from cargo stowed on open deck, safe access in way of cargo stows and unobstructed visibility from the wheelhouse.
1.3. Cargo hatchways to dry cargo holds or spaces should be of an efficient weathertight construction.
1.4. In general, a cargo hatch coaming should be not less than 760mm in height. Hatch covers and coamings should be designed to withstand (without permanent deformation) a hydrostatic load of not less than 1.5 tonnes/metre2 overall and associated buckling stress, and be fitted with efficient means to be closed and secured weathertight to the coaming. In any case, the coaming and hatch cover should be sufficiently strong to withstand the hydrostatic loading and/or the loading due to cargo stowed on the hatch cover, whichever loading is limiting.
1.5. Proposals for a cargo hatchway with a reduced coaming height or a flush hatch should be subject to special consideration by the Certifying Body and may be approved when the safety of the vessel is judged to be at least equivalent to para 1.4 above.

2. Packaged Dangerous Goods

2.1. The carriage of dangerous goods is only permitted in accordance with the International Maritime Dangerous Goods Code (IMDG Code)

2.2. A passenger vessel shall not carry dangerous goods except when allowed to do so under the International Maritime Dangerous Goods Code (IMDG Code

2.3. Vessel stores, which are dangerous goods but carried for use during the voyage are exempt from the requirements of this Section however the goods should be appropriately used and stowed.

2.4. General Requirements for carriage;

- Dangerous goods are only to be carried on deck.
- Reference should be made to the Administration for vessels wishing to carry both dangerous goods and passengers.
- The stowage and segregation requirements of the International Maritime Dangerous Goods (IMDG) Code should apply.
- When required, packaged dangerous goods shall be in United Nation's approved packaging.

2.5. The scupper and drainage arrangements are to be directed overboard with no connections to internal spaces.

2.6. Electrical equipment installed in the cargo space should be of the certified safe type for the cargo being carried or be capable of being securely isolated and be isolated during the carriage of packaged dangerous goods.

2.7. Bulkheads forming boundaries containing fuel tank and engine spaces are to be insulated to A-60 standard unless the dangerous goods are stowed three metres from such bulkheads and boundaries.

2.8. Fire Fighting Equipment to be provided;

- There should be an immediate availability of water from the firemain such as an engine driven fire pump and, in addition, from a manual fire pump. The two pumps will be required when carrying Class1 dangerous goods only. Each pump shall be capable of supplying the hoses and nozzles, required in accordance with the Code.
- At least two portable dry powder extinguishers each rated at least at 34B are to be provided and be readily available to the cargo area.

2.9. The crew should undergo training in the carriage of dangerous goods and the IMDG Code, and records kept of the training undertaken.

2.10. Vessel Certification

- Prior to dangerous packaged goods being carried, the vessel should be surveyed and shown to be suitable for the carriage of packaged dangerous goods.
- Upon successful completion of a survey, a Document of Compliance will be issued to the vessel indicating the Class of goods that can be carried with a list of equipment fitted.

2.11. Cargo Documentation

- When packaged dangerous goods are carried, details of the emergency fire fighting equipment and First Aid medical procedures should be provided onboard, with additional equipment if required under the IMDG Code, to ensure that if an emergency occurs, it can be dealt with effectively.
- When carrying packaged dangerous goods, a full manifest of the cargo shall be retained ashore by the Code vessels owner, or designated person, in case of an incident. This person ashore should have a list of contact numbers for the emergency services and relevant manufacturers/suppliers of the dangerous goods. The designated person should be employed by the Code vessel's owner and be aware of the details of the voyage.

2.12. A restricted list of dangerous goods, as contained in the IMDG Code, will be permitted:-

- Class 1 Explosives - when carrying military explosives a qualified military or explosive expert should be present when explosives are being loaded, carried and unloaded;
- Class 2.1 – permitted
- Class 2.2 - permitted
- Class 2.3 - prohibited;
- Class 3 Substances - the size of the container carrying Class 3 products will be limited to 30

litres;
- Class 4 Substances - prohibited;
- Class 5 Substances - prohibited;
- Class 6.1 Substances - packing group III substances only with a limit of 30 litres and 30 Kg;
- Class 6.2 Substances - prohibited;
- Class 7 Substances - prohibited;
- Class 8 Substances - packing group I and II substances prohibited, packing group III substances restricted to 30 litres max; and
- Class 9 Substances - permitted subject to container capacity, 30 litres liquid, and 30 kg weight.

2.13. Although the above table restricts the carriage of certain classes of dangerous goods, when these goods are carried in Limited Quantities as laid down in the IMDG Code, the restrictions do not apply, and the goods may be carried.

2.14. Should an operator want to carry prohibited packaged dangerous goods on a regular basis, then a submission, with a safety assessment, should be submitted to the Merchant Shipping Secretariat via the Certifying Body for consideration. If agreed, the Document of Compliance will be amended accordingly. This may involve the carriage of additional safety equipment. The assessment procedure should be discussed with the Merchant Shipping Secretariat before proceeding.

Informative Note

The title of the dangerous good classes is given below-for in-depth descriptions the IMDG Code should be consulted.

Class1 Explosives
Class2 Gases
Class2.1 Flammable gases
Class 2.2 Non-flammable, non-toxic gases
Class 2.3 Toxic gases
Class3 Flammable Liquids
Class 4 Flammable solids; substances liable to spontaneous combustion; substances which, in contact with water emit flammable gasses
Class4.1 Flammable solids
Class4.2 Substances liable to spontaneous combustion
Class4.3 Substances which, in contact with water, emit flammable gases
Class 5 Oxidizing substances and organic peroxides
Class 5.1 Oxidizing substances
Class5.2 Organic peroxides
Class 6 Toxic and infectious substances
Class 6.1 Toxic substances
Class6.2 Infectious substances
Class7 Radioactive material
Class8 Corrosive Substances
Class9 Miscellaneous dangerous substances and articles

Vessels fitted with a Deck Crane or Other Lifting Device

1.1. Reference should be made to Section 6 for requirements for safety standards for vessel stability during lifting operations.

1.2. Generally, a vessel fitted with a deck crane or other lifting device which will be used when the vessel is at sea should be a decked vessel with a watertight weather deck in accordance with Section 3.3.

1.3. Agreement should be obtained from the Administration for any proposal to fit a deck crane or other lifting device on a vessel which is not a decked vessel.

1.4. The vessel's structure, the crane or other lifting device and the supporting structure should be of sufficient strength to withstand the loads that will be imposed when operating at its maximum overturning moment and maximum vertical reaction.

1.5. Load tests and inspections to verify the safe operation of the crane or other lifting device, its foundation and supporting structures should be carried out to the satisfaction of the Certifying Body. Tests should be conducted in accordance with a recognised standard for the installation. Such tests should be repeated after modifications, including any structural modifications, take place. A visual inspection of the crane or lifting device should be carried out annually.

1.6. Typically, the crane or other lifting device should be subjected to a 25% overload test. (In special circumstances a reduced overload may have to be accepted but in no case should this be less than 10 %.) During the overload test, the hoist, slew and luff performance should be tested at low speed, as appropriate. Tests for a variable load-radius type of crane or other lifting device should correspond to its rated performance (e.g. load radius chart).

1.7. Attention is drawn to the requirements of BS 7121: Part 2:2003 - Code of Practice for Safe Use of Cranes. Inspection, Testing and Examination. Paragraph 17 - Cranes on Water Borne Craft, has particular relevance to vessels certificated in accordance with this Code.

1.8. An inclinometer (pendulum) should be provided onboard for guidance to the crane or lifting device operator when controlling the lifting items of unknown weight.

1.9. A prominent clear notice should be posted on or near the crane or lifting device and contain the following information and instructions:-

- the maximum permitted load and outreach which satisfy the requirements of Section 6, or the safe working load (SWL), whichever is the lesser (operating performance data, i.e. load radius performance chart for a crane or other lifting device of variable load- radius type should be included as appropriate);
- any crane whose safe working load varies with its operating radius should be provided with a means of accurately determining the radius at any time, clearly visible or accessible to the driver of the crane, showing the radius of the load lifting attachments at anytime. Provision should be made to enable the driver to ascertain the safe working load corresponding to that radius;
- details of all openings leading below deck which should be secured weathertight; and
- instructions for all personnel to be above deck before lifting operations commence.

1.10. A lifting system which incorporates counterbalance weight(s) should be specially considered by the Merchant Shipping Secretariat.

1.11. The Certifying Body should be satisfied that the safety of the vessel is not endangered by lifting operations. Means should be provided for the efficient securing of cargo and loose equipment onboard during lifting operations. Instructions on safety procedures to be followed by the skipper should be provided to the satisfaction of the Certifying Body.

Non-Self-Propelled Vessel

1. General

1.1. It is permissible for a Small Craft Certificate to be issued to cover the transit voyages under tow of an unmanned non-self-propelled vessel or floating object of defined rigid form. The valid life of the certificate should be decided by the Certifying Body but in no case should it exceed 5 years.

1.2. It is permissible for a Small Craft Certificate to be issued to cover the safety of a non-self-propelled vessel of defined rigid form which is a working platform for equipment and/or power producing plant. The vessel should be assessed for compliance with the parts of the Code which are

appropriate to its commercial operation.

1.3. A vessel of defined rigid form includes a vessel which comprises an assembly of separate units held together by an efficient engineered joining system appropriate to the mode of operation of the vessel.

1.4. A small non-self-propelled vessel which is not covered by the clauses above should be referred to the Merchant Shipping Secretariat for consideration of safety standards and certification to be applied.

2. Stability

3.1. When the stability standards of Section 11 are not appropriate for assessment of a particular small non-self-propelled vessel, the case should be referred to the Administration for consideration of stability standards to be applied.

3. Freeboard

3.1. Generally, freeboard should be assigned in accordance with the International Load Line Regulations.

3.2. Load line marking should be applied

3.3. An unmanned pontoon barge on which the freeboard deck is penetrated only by small access openings which are closed by gasketed watertight covers should have freeboard determined in accordance with the Load Line Regulations 1998 as if it was a Type "A" ship and omitting any correction for minimum bow height. At the discretion of the Certifying Body, having due regard for safe voyages of the unmanned barge under conditions which should be explicitly recorded on the Small Craft, the freeboard thus determined may be reduced by up to 25%.

3.4. No requirement is made for the provision of draught marks. In order that the towing master can readily recognise change in the condition of the tow, the towed vessel should be marked at the forward end with one or more white bars 2000mm in length and 150mm high (or alternative marking which is clearly visible from the towing vessel) to the satisfaction of the Certifying Body.

Annex 8 – Beachcraft Guidelines

General

1 Variations to the standards recommended by the Code may provide equivalent standards of safety, taking into account specific local conditions which are certain to exist. This Annex is intended to assist in assessing equivalence for small vessels with a very limited area of operation, which may be unable to meet the certain of the recommended standards laid down by the Code. It provides Local Authorities performing licensing for beach/harbour operations, with a checklist of operational safety management practices for their consideration.

2 Variations may be either a direct alternative to a measure specified in the Code or a reduced measure based upon factors that compensate for the reduction.

3 Although not an exhaustive list, factors which may be considered include:

- restricted area of operations [in an area where operating conditions are the least severe that may be expected within the relevant Category of Waters];
- a guaranteed control of the vessel which restricts operations to conditions such that there is a very low risk of an accident;
- the certainty of readily available means of emergency rescue;
- operations wholly within constant sight of the supervising body and means of emergency rescue;
- seasonal operations only, excluding monsoon periods or some lesser period, or favourable weather restrictions;
- vessels operating in close proximity to one another and equipped to provide efficient safety back-up to each other in an emergency;
- provision/wearing of additional (special) individual personal survival equipment/clothing which will protect lives in an emergency;
- enhanced communications between the vessel(s) and constantly attended shore base with readily available emergency rescue craft at the base;
- the nature of the sport or pleasure activity involves very low risk of participants accidentally entering the water or causing the vessel to capsize;
- inherent safety of the vessel by design, test and experience, (not applicable as an equivalent for stability standards or a specified level of life saving equipment);
- the ratio of suitably trained crew to the number of other persons onboard;
- the number of safety craft provided to protect the vessels operating commercially for sport or pleasure;
- enhanced provisions for distress alert and rescue;
- means provided for "dry" rescue from a vessel in emergency situations.

Guidelines for the Safe Operation of Commercially Operated Pleasure Craft Used for Leisure Activities from a Beach or Harbour

1 Where the operator wishes to operate a vessel under alternative arrangements, for the provision of activities involving the towing of persons such as water-skiing, parascending, etc. the following guidelines should be followed.

2 This is not considered an exhaustive list, nor are they relevant to all situations.

- All boats should adopt appropriate safety standards for the relevant Category of Waters.
- If recommended life saving appliances, cannot for practical reasons be carried on the vessel, suitable equivalencies from the section above must be employed.

- All tows should be considered part of the towing vessel and are to be fit for purpose
- Boats are to be capable of accommodating all persons they are intended to support including those contained on board the tow, if applicable.
- Towing craft should have a minimum crew of two at all times – one to drive, and navigate, the other to watch the tow.
- Craft should be fitted with an engine stop cord, to be used at all times.
- Operating procedures, and equipment where applicable, are to be in place for recovery of persons from the water, including measures to avoid injury from the boat and machinery.
- For vessels fitted with conventional propellers, consideration should be given to the fitting of a propeller guard, especially where recovery of persons is commonplace.
- Children under the age of 8 should be accompanied by an adult at all times, including when on a tow.
- Inflatable tows should be capable of supporting 110% of the maximum manufacturers weight limit, with any one separate inflatable compartment punctured or deflated.
- In area category 6 and 7 waters, lifejackets are to be worn at all times. For operations where buoyancy aids may be considered more practical, their use may be accepted based on equivalencies stated in section 1 above.
- Towlines should be approximately 25 to 30 metres long. A method of quick release in the event of an emergency is to be available.
- Parascending lines, harnesses and parachutes are to be inspected daily by the operator, and maintained in accordance with the manufacturers recommendations.
- Operating areas and any associated channels for slow speed transit to and from the shore, should be clearly marked.
- Operating areas, trading dates and daily hours for operation are to be defined.

3 Additionally the operator will:

- hold a nationally recognised qualification for the activity concerned, i.e. water sports instructors certificate.
- hold a Local Authority licence/concession to operate, where applicable.
- maintain visual contact with the vessels at all times, and provide a means of immediate rescue in the event of an accident.
- ensure that vessels and associated equipment are maintained in proper state;
- report and record to the Local Authority, where applicable, all incidents which have, or could have led to injury.
- ensure a procedure is in place for immediate contact with the emergency services in the event of an accident or incident.

Annex 9 – Liquid Petroleum Gas Installation For Domestic Use

1. General Information

1.1 This guidance is based on ISO 10239 and a system constructed to the requirements of this standard or equivalent will be acceptable as long as additionally there is suitable gas detection equipment fitted.

1.2 Possible dangers arising from the use of liquid petroleum gas (LPG) open flame appliances in the marine environment include fire, explosion and asphyxiation due to leakage of gas from the installation.

1.3 Consequently, the siting of gas consuming appliances and storage containers and the provision of adequate ventilation to space containing them is most important.

1.4 It is dangerous to sleep in spaces where gas-consuming open-flame appliances are left burning, because of the risk of carbon monoxide poisoning.

1.5 LPG is heavier than air and if released, may travel some distance whilst seeking the lowest part of a space. Therefore, it is possible for gas to accumulate in relatively inaccessible areas, such as bilges, and diffuse to form an explosive mixture with air, this is also the case with petrol vapours.

1.6 A frequent cause of accidents involving LPG installations is the use of unsuitable fittings and improvised "temporary" repairs.

2. Stowage of Gas Cylinders

2.1 LPG cylinders, regulators and safety devices should be stowed on the open deck (where leakage will not accumulate) or in a compartment that is vapour-tight to the vessels interior and fitted with a vent and drain, so that gas which may leak can disperse overboard.

2.2 The vent and drain should not be less than 19 mm in diameter, run to the outside of the craft and terminate 75 mm or more above the 'at rest' waterline. The drain and locker ventilation should be 500 mm or more from any opening to the vessels interior.

2.3 The cylinders and associated fittings should be positively secured against movement and protected from damage in any foreseeable event.

2.4 Any electrical equipment located in cylinder lockers should be certified safe for use in the potential explosive atmosphere.

3. Cylinders and Attachments

3.1 Each system shall be fitted with a readily accessible, manually operated isolating valve in the supply pressure part of the system.

3.2 In multiple cylinder installations, in addition to each cylinder shutoff valve there should be non-return valves near the stop valves. Where there is a change over device (automatic or manual) it should be provided with non-return valves to isolate any depleted container.

3.3 When more than one container can supply a system, the system should not be used with a container removed unless the unattached pipe is fitted with a suitable gas tight plug arrangement.

3.4 Containers not in use or not being fitted into an installation should have the protecting cap in place over the container valve.

4. Fittings and Pipework

4.1 For rigid pipework systems, the pipes should be made from solid drawn copper alloy or stainless steel tube. Steel tubing or aluminium or any materials having a low melting point should not be used.

4.2 Connection between rigid pipe sections should be made with hard solder (minimum melting point 450ºC), appropriate compression or screwed fittings are recommended for general use for pipework in LPG installations.

4.3 Where a flexible hose is used length should be kept to a minimum, it should be protected from inadvertent damage where appropriate, it should meet the requirement of EN 1763 or equivalent and be installed in a manner that gives access for inspection along its whole length.

4.4 There should be no joints in the pipework in the engine spaces.

5. Appliances

5.1 All unattended appliances should be of the room sealed type.

5.2 Cookers and hobs are not considered to be unattended appliances.

5.3 All gas burners and pilot flames should be fitted with a flame supervision device which will shut off the gas supply to the burner or pilot flame in the event of flame failure.

6. Ventilation

6.1 The ventilation requirements of a space containing a LPG appliance should be assessed against an appropriate standard (e.g. Annex B of ISO 10239) and should take into account gas burning equipment and persons occupying that space.

6.2 Where ventilators required for LPG appliances in intermittent use can be closed, there should be appropriate signs at the appliance warning of the need to have those ventilators open before the appliance is used.

7. Gas Detection

7.1 Suitable means for detecting the leakage of gas should be provided in a compartment containing a gas-consuming appliance or in any adjoining space or compartment into which the gas, of greater density than air, may seep.

7.2 Gas detectors heads should be securely fixed in the lower part of the compartment in the vicinity of the gas-consuming appliance and other space(s) into which gas may seep. In areas where the detector head is susceptible to damage in the lowest part of the compartment (e.g. engine space bilge) the detector head should at least be fitted below the lowest point of ignition.

7.3 A gas detector system of a suitable type should, preferably, be actuated promptly and automatically by the presence of a gas concentration in air of not greater than 0.5 per cent(representing approximately 25 per cent of the lower explosive limit). The detection system should incorporate a visible and audible alarm, which can be heard in the space concerned and the control position with the vessel in operation.

7.4 Gas detection system components (i.e. gas detector head) likely to be in an explosive air/gas atmosphere should not be capable of igniting that atmosphere.

7.5 In all cases, the arrangements should be such that the detection system can be tested frequently whilst the vessel is in service and should include a test of the detector head operation as well as the alarm circuit, in accordance with the manufacturer's instructions.

7.6 The detection equipment should be maintained in accordance with the manufacturer's requirements.

8. Emergency Action

8.1 A suitable notice, detailing the action to be taken when an alarm is given by the gas detection system, should be displayed prominently in the vessel.

The information given should include the following:-

.1 The need to be ever alert for gas leakage; and

.2 When leakage is detected or suspected, all gas-consuming appliances should be shut off at the main supply from the container(s). NO SMOKING should be permitted until it is safe to do so (i.e. the gas leakage has been eliminated and the spaces fully ventilated)

.3 NAKED LIGHTS SHOULD NEVER BE USED AS A MEANS OF LOCATING GAS LEAKS.

9. Owner/Operator Testing

It is strongly recommended that LPG systems are tested for leakage regularly. All connections should be checked by;

.1 routine observation of the bubble leak detector (if fitted),

.2 observation of the pressure gauge for pressure drop with the appliance valves closed and cylinder valve opened then closed (if fitted with gauge on supply pressure side),

.3 visual inspection,

.4 manual leak testing, (without breaking into the system)

.5 testing with soapy water or detergent solution (with appliance-burner valves closed, and cylinder and system valves open). CAUTION - Do not use solutions containing ammonia

If leakage is present, close the cylinder valve and have the system repaired before further use.
WARNING - NEVER USE A NAKED FLAME TO CHECK FOR LEAKS.

Annex 10 – Fire Test Procedure for FRP

Heat source

The heat source for the fire test should be provided by a butane or propane fuelled Bunsen or Tirril burner with a nominal 9,525 mm (3/8 inch) inside diameter tube adjusted to give a pre-mixed air/gas flame of 38,1 mm (1,5 inch) length. The minimum temperature measured in the centre of the flame with a calibrated thermocouple pyrometer must be 843.33ºC (1550ºF).

Specimen

The specimen should be 500 mm × 500 mm. The edges of the specimen should be housed in a steel frame sufficiently to prevent them igniting during the test. The specimen should be cured for at least 7 days at ambient temperature or 1 day at ambient temperature and 16 hours at 40ºc before testing. The lay-up of the panel should be representative of the structure being considered.

Test procedure

The specimen should be oriented vertically in a draft free location. The flame should impinge on the centre of the specimen with the flame normal to its surface. The surface of the specimen affected by the fire risk should be exposed to the flame at a set distance of 19.1 mm (¾ inch) from the end of the burner tube. The flame should not burn through the specimen within 15 minutes.

Annex 11 – Ignitability Test for Combustible Material

1. Test specimens

1.1 One specimen is to be prepared.

1.2 The specimen is to be a minimum of 150 mm × 150 mm and of the thickness which is used on the boats, together with any facing with which it is normally covered.

2. Conditioning of test specimens

2.1 The conditioning atmosphere should have a temperature of 20 ± 20°C and relative humidity of 65 ± 2 per cent.

2.2 The specimen should be laid flat, in the conditioning atmosphere for a period of 24 hours, or for a sufficiently longer period in order to ensure that the mass of the specimen shows no progressive change greater than 0,25 per cent when it is determined at intervals of 2 hours.

3. Atmosphere for testing

3.1 The test is to be conducted in an atmosphere the same as for conditioning the specimen, or within 2 minutes of removal from the conditioning atmosphere.

3.2 Appropriate measures should be taken to prevent draughts in the vicinity of the testing equipment when testing is in progress.

4. Testing procedure

4.1 Source of ignition

The source should be obtained by using a burner consisting of a copper tube having a length of 150mm and inside and outside diameters of 5mm and 6mm respectively connected by a plastic or rubber tubing to a gas tap supplying natural gas. The copper tube is to have no opening for the supply of air.

4.2 Height of flame

Before the test takes place the burner flame is to be adjusted to a height of 32mm.

4.3 Test procedure

4.3.1 Place the specimen horizontally on a metal tripod stand with the upper surface of the specimen facing downwards (i.e. with normally exposed face on underside) such that the height of this surface of the specimen is approximately 8 mm below the top of the burner flame. Apply the burner flame at right angles to the plane of the specimen in the centre of specimen. After one minute the burner flame is to be removed clear of the specimen and the time in seconds to extinction of any flaming is to be recorded.

4.3.2 The test in paragraph 4.3.1 is to be repeated after any flaming or smouldering has ceased and the temperature of the specimen has returned to normal except that the centre of the burner flame is to be positioned at the midpoint of any edge of the specimen. Again the time in seconds to extinction of any flaming after the removal of the burner is to be recorded.

5. Pass criteria

An insulation is deemed to be 'not readily ignitable' when any flaming of the test specimen ceases within 20 seconds of the removal of the burner

Annex 12 – Medical First Aid Kit

FIRST AID KITS

1 Type and Size
First-aid kits shall be of the water-tight cabinet carrying type capable of holding the items specified in paragraph 3.2.

2 Construction and Workmanship
The container shall be of substantial and rugged construction, with the body, handle and all fittings of a corrosion-resistant material or suitably protected against corrosion to the satisfaction of the Administration.

3 Contents
3.1 Items shall be properly labelled to designate the name of contents and method of use. Each package shall be enclosed in a jacket of tough, transparent material, properly sealed, which shall be watertight. Vials for tablets shall not be made of glass.
3.2 The items contained in the first-aid kit shall be as listed in the following Table.

Items	No.
Bandage compress -	5
4"Bandage compress -	8
2"	32
Waterproof adhesive compress-	3
1"Triangular bandage-40"	3
Eye dressing packet, 1/8 oz Ophthalmic ointment, adhesive strips, cotton pads	2
Bandage, gauze, compressed, 2 inches by 6 yards	-
1 - Tourniquet, 1-forceps, 1- scissors, 12 safety pins	1
Wire splint	10
Ammonia inhalants	10
Iodine applicators(½ ml swab type)	5
Aspirin, phenacetin and caffeine compound, 6½gr.tablets,vials of 20	12

3.3 Instructions

Instructions for the use of the contents of the first-aid kit shall be printed in legible type on a durable surface and shall be securely attached to the inside of the cover. The instructions for the use of the contents are as follows:-

Annexures

Directions for the Use of the First-Aid Kit

Item Title	Remarks
Ammonia inhalants.....	Break one and inhale for faintness, fainting, or collapse.
Aspirin, phenacetin, caffeine tablets.....	Chew up and swallow 2 tablets every three hours for headache, colds, minor aches, pains, and fever. Maximum of 8 in twenty- four hours.
Bandagecompress,4"and 2"	Apply as a dressing over wound. DO NOT touch part that comes in contact with wound.
Bandage, gauze, compressed, 2"	For securing splints, dressings, etc.
Bandage, triangular, compressed	Use as arm sling, tourniquet, or for retaining splints or dressings in place.
Burn dressing.....	The petrolatum gauze bandage is applied in at least two layers over the burned surface and an area extending 2" beyond it. The first dressing should be allowed to remain in place, changing only the outer, dry bandage as needed, for at least 10 days unless signs of infection develop after several days, in which case the dressing should be removed and the burn treated as an infected wound. Watch for blueness or coldness of the skin beyond the dressing and loosen the dressing if they appear.
Compress, adhesive, 1"	Apply as dressing over small wounds. DO NOT touch part that comes in contact with wound.
Eye patch	Apply as dressing over inflamed or injured eye.
Forceps	Use to remove splinters or foreign bodies. Do not dig.
Ophthalmic ointment.....	Apply in space formed by pulling lower eyelid down, once daily for inflamed or injured eyes. Do not touch eyeball with tube.
Splint, wire.....	Pad with gauze and mold to member to immobilize broken bones. Hold in place with bandage. Do not attempt to set the bone.
Tincture of iodine, mild.....	Remove protective sleeve, crush tube and apply swab end. DO NOT use in
Tourniquet.....	For control of hemorrhage. Loosen for a few seconds every 15 minutes.

4 Marking

Each approved first-aid kit shall be permanently marked with the following information: name of manufacturer, trade name symbol, model number, or other identification used by the manufacturer and the words “FIRST-AID KIT”.

Annex 13 – Category C Medical Stores (Area Categories 3,4 and 5)

Code Vessels in Area Category 1 & 2 require Category B Stores
Code Vessels in Area Category O require Category A Stores
See MSN 1768 (M+F) for details

Statutory Treatment Requirements	Recommended Medicine and Dosage Strength Representing best practice.	RecommendedQuantityfor10 workers or for life boat/liferaft
Cardio Vascular		
Anti-angina preparations	Glyceryl Trinitrate Spray 400 micrograms / metered 200 dose aerosol	1unit
Gastro intestinal system		
Anti-emetics	Hyoscine hydrobromide 0.3mg tablet sorCinnarizine 15mg	60 60
Anti-diarrhoeals	Loperamide 2mg tablets	30
Analgesics and Anti–spa smodics		
Analgesics, anti-pyretics and anti-inflammatory agents	i) Paracetamol 500mg tablets and ii) Ibuprofen400mgtablets	50 50
Nervous system		
Sea sickness remedies	Hyoscine hydrobromide or Cinnarizine	Use from Gastro intestinal supply
Medicines for externalu se		
Skin Medicines		
-Antiseptic solutions	100 ml solution or pre-impregnatedwipescontaining0.015% w/v chlorhexidine and 0.15%w/v cetrimide	1bottle or 1 pack wipes
-Burn preparations	Proprietary antiseptic cream	1

MEDICAL EQUIPMENT

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Statutory Treatment 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 Bandage7.5cmx 4m	1
Disposable polyethylene gloves	Latex free, vinyl	5prs
Adhesive dressings	Assorted, sterile	20
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	6 2 2
Adhesive sutures or zinc oxide bandages	75mmadhesive suture strips	6
Sterile gauze swabs	Packetcontaining5sterilegauzepads size7.5cms x7.5cms	1
	Recommended Additional Items	
	Scissors stainless steel/or sterile disposable	1pr
	Triangularbandagesabout90cmx1 27cm	4
	Medium safety pins, rust less	6
	Sterile paraffin gauze dressings	10
	Plastic burn bags	1

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

Annex 14 - Recommended Emergency Broadcast Instructions

This Annex gives information relating to the manning and operation of non-convention vessels in commercial use as follows:

The following emergency broadcast instructions, when placed on a placard, will satisfy the requirements section 13.1.4:

1. Make sure your radiotelephone is on.

2. Select 156.8 MHz (channel 16 VHF) or 2182 kHz. (Channel 16 VHF and 2182 kHz on SSB are for emergency and calling purposes only).

3. Press microphone button and, speaking slowly – clearly – calmly, say:
.1 "MAYDAY-MAYDAY-MAYDAY" for situations involving Immediate Danger to Life and Property; or
.2 "PAN-PAN-PAN" for urgent situations where there is No Immediate Danger to Life or Property.

4. Say: "THIS IS (INSERT VESSEL'S NAME), (INSERT VESSEL'S NAME, (INSERT VESSEL'S NAME), (INSERT VESSEL'S CALL SIGN), OVER."

5. Release the microphone button briefly and listen for acknowledgement. If no one answers, repeat steps 3 & 4.

6. If there is no acknowledgement, or if the Coast Guard or another vessel responds, say: "MAYDAY" OR "PAN", (INSERT VESSEL'S NAME)."

7. DESCRIBE YOUR POSITION using latitude and longitude coordinates, LORAN coordinates, or range and bearing from a known point.

8. STATE THE NATURE OF THE DISTRESS.

9. GIVE NUMBER OR PERSONS ABOARD AND THE NATURE OF ANY INJURIES.

10. ESTIMATE THE PRESENT SEAWORTHINESS OF YOUR VESSEL.

11. BRIEFLY DESCRIBE YOUR VESSEL: (INSERT LENGTH, COLOR, HULL TYPE, TRIM, MASTS, POWER, AND ADDITIONAL DISTINGUISHING FEATURES).

12. Say: "I WILL BE LISTENING ON CHANNEL 16/2182."

13. End message by saying: "THIS IS (INSERT VESSEL'S NAME & CALL SIGN)."

14. Where your situation permits stand by the radio to await further communications with the Coast Guard or another vessel. If no answer, repeat, then try another channel

Annex 15 - Estimating guidelines for holding tank capacities

1 These calculations shall be used as guidelines, as capacities are not mandated. The capacity of each Marine Sanitation Device (MSD) should be evaluated in terms of the vessel's size, route, service, and particular circumstances. These capacities consider only "black-water" toilet drains. On the average, each person will produce 0.4gallons of waste per day.

2 Flush Rate -The table below estimates the water used per flush by different toilet systems.

APPROXIMATEFLUSHCAPACITIESFOR VESSELTOILETSDRAININGTO MARINE SANITATIONDEVICES

System Type	Gallons per flush
Conventional(flushometer)	5.0
Recirculating	0.1
Vacuum	0.3
Hand Pump	0.5
Electric Pump	1.0

3 Waste water produced. The table below estimates the gallons of waste water produced per person per day, based on the plumbing type, and the way the boat operates.

GALLONS OF WASTEWATER PERPERSONPER DAY BASED ON PLUMBINGTYPE

Trip Length	User	Conv.	Recirc.	Vacuum	HandPump	Electric
LONG	CrewPax	25.4	0.5	1.9	2.9	5.4
(Note1)		25.4	0.5	1.9	2.9	5.4
MEDIUM	Crew	25.4	0.5	1.9	2.9	5.4
(Note2)	Pax	8.3	0.17	1.9	1.0	1.8
SHORT	Crew	12.7	0.25	0.95	1.95	2.7
(Note3)	Pax	6.35	0.25	0.5	0.7	1.35

Note

1 Crew and passengers aboard 24 hour/day.

2 Crew aboard 24-hour/day; 2 groups of passengers aboard for 4 hours each (2 trips/day), each passenger using facilities once.

3 All crew aboard 12 hour/day; 6 groups of passengers aboard for 2 hours (6 trips per day), one fourth of passengers using facilities once.

Annex 16 – List of Applicable Standards

Standards are for reference information. When referencing the standards for use during construction, or supply of equipment, the latest edition should be used. Equivalent standards may be considered subject to the acceptance of the Merchant Shipping Secretariat.

ISO 11812 Small Craft. Watertight cockpits and quick-draining cockpits
ISO 12215 Small Craft - Hull Construction/Scantlings
ISO 6185-2 Inflatable Boats. Boats with a maximum motor rating of 4.5kW to 15kW inclusive
ISO 6185-3 Inflatable Boats. Boats with a maximum motor rating of 15kW and greater
ISO 12216 Small craft. Windows, portlights, hatches, deadlights and doors. Strength and watertightness requirements.
ISO 10088 Small Craft. Permanently installed fuel systems and fixed fuel tanks
ISO 13591 Small craft. Portable fuel systems for outboard motors
ISO 7840 Small Craft. Fire resistant fuel hoses
ISO 10133 Small Craft. Electrical systems. Extra-low voltage d.c. installations
ISO 13297 Small Craft. Electrical systems. Alternating current installations
ISO 13929 Small craft. Steering gear. Geared link systems
ISO 10592 Small craft. Hydraulic steering systems
ISO 12217-1 Small craft. Stability and buoyancy assessment and categorisation. Non-sailing boats of hull length greater than or equal to 6 metres
ISO 12217-2 Small craft. Stability and buoyancy assessment and categorisation. Sailing boats of hull length greater than or equal to 6 metres
ISO 10239: Small Craft. Liquefied Petroleum Gas (LPG) system
ISO 9094-1 Small Craft. Fire protection Craft with a hull length of up to and including 15m
ISO 9094-2 Small Craft. Fire Protection Craft with a hull length of over 15m and up to 24m
ISO 15085 Small craft - Guardrails, lifelines and handrails
BS 6883 Specification for elastomer insulated cables for fixed wiring in ships. (Suitable for lighting, power, control, instrumentation and propulsion circuits.)
BS EN 28846:1993 Small craft. Electrical devices. Protection against ignition of surrounding flammable gases
BS EN 61779-4:2000 Electrical apparatus for the detection and measurement of flammable gases
BS EN 3 Portable Fire Extinguishers
BS EN 1869 Fire blankets
BS EN 3 Portable Fire Extinguishers
BS EN 1869 Fire blankets
BS 5852-1 Assessment of the ignitability of upholstered furniture
BS 5378 Safety signs and colours
International Code for Application of Fire Test Procedures (FTP Code) - International Maritime Organisation Document
IEC 92-350, Low-voltage shipboard power cables. (General construction and test requirements for shipboard cables with copper conductors intended for low-voltage power systems at voltages up to and including 0.6/1kV.)
The Institution of Electrical Engineers Regulations for the Electrical and Electronic Equipment of Ships with Recommended Practice for their Implementation, 6th Edition 1990 and subsequent supplements.
British Marine Federation Code of Practice for Electrical and Electronic Installations in Boats, 4th Edition