REGISTRATION OF MERCHANT SHIPS
(CARGO VESSELS OPERATING IN THE CARIBBEAN) SAFETY REGULATIONS

STATUTORY INSTRUMENT
No. 119 of 1997

ARRANGEMENT OF REGULATIONS

STATUTORY INSTRUMENT

No. of 1997

Regulations made by the Attorney General in exercise of the powers conferred upon him by Section 24 of the Registration of Merchant Ships Act, 1989 (32 of 1989), Chapter 196 C of the Laws of Belize, Revised Edition 1980-1990, and all other powers thereunto him enabling.

Whereas, it is necessary to ensure that all cargo vessels registered under the Belize flag and engaged on voyages in the Caribbean Trading Area are operated and inspected as to comply with the minimum requirements necesary for the achievement of a regional safety standard set out for small ships trading in the referred area;

NOW, THEREFORE, IT IS HEREBY PROVIDED AS FOLLOWS:-

1.- These Regulations may be cited as the

REGISTRATION OF MERCHANT SHIPS
(CARGO VESSELS OPERATING IN THE CARIBBEAN)
SAFETY REGULATIONS, 1997

CHAPTER 1

PART A: DEFINITIONS AND APPLICATION

1.1 Definitions

For the purpose of these Regulations, unless expressly provided otherwise, the terms used therein have the meanings defined in the following paragraphs. Additional definitions are given in the various chapters.

1.1.1 “Administration” is the Government of the State whose flag the ship is entitled to fly.

1.1.2 “all ships” means cargo ships of any description to which these Regulations apply.

1.1.3 “anniversary date” means the day and the month of each year which corresponds to the date of expiration of the relevant certificate.

1.1.4 “approved” means approved by the Administration.

1.1.5 “barge” means a cargo ship not propelled by mechanical means.

1.1.6 “cargo ship” means any ship which carries not more than twelve passengers.

1.1.7 “Caribbean Trading Area” means an area bounded by a line from a point on the east coast of the United States of America in latitude 35o 00’ north, to a point 5o 00’ south, 33o 00’ west; thence to a point 10o 00’ south, 33o 00’ west’ thence to a point on the coast of Brazil in latitude 10o 00’ south; thence northward along the coast of Continental America to a point in latitude 35o 00’ north, on the east coast of the United States of America.

1.1.8 “1972 Collision Regulations” means the International Regulations for Preventing Collisions at Sea, 1972 as amended.

1.1.9 “existing ship” means a ship which is not considered a new ship.

1.1.10 “fishing vessel” means a vessel used for catching fish, or other living resources of the sea.

1.1.11 “gross tonnage” means the measure of the overall size of a ship determined in accordance with the provisions of the International Convention on Tonnage Measurement of ships, 1969.

1.1.12 “international voyage” means a voyage from a port in a State to another port outside such State.

1.1.13 “1966 Load Line Convention” means the International Convention on Load Lines, 1966 as amended.

1.1.14 “length (L)” in relation to a ship, means 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel, or the length from the forested of the stern to the axis of the rudder stock on the waterline, if that be the greater. In a ship designed with a rake of keel, the waterline on which this length is measured shall be parallel to the designed waterline.

1.1.15 “machinery space” means the space to be taken as extending from the moulded base line to the margin line and between the extreme main transverse watertight bulkheads, bounded by the spaces containing the main and auxiliary propulsion machinery, boilers serving the needs of propulsion, and all permanent coal bunkers. In case of unusual arrangements, the Administration may define the limits of the machinery spaces.

1.1.16 “machinery space of category A” means the space and trunks to such spaces which contain:

a) internal combustion machinery used for main propulsion; or

b) internal combustion machinery used for purposes other that main propulsion where

such machinery has in the aggregate a total output of not less than 375 kW; or

c) any oil-fired boiler or oil fuel unit.

1.1.17 “MARPOL 73/78” means the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 relating thereto as amended.

1.1.18 “moulded depth (D)” means:

a) the vertical distance measured from the top of the keel to the top of the freeboard deck beam at side. In wood and composite ships the distance is measured from the lower edge of the keel rabbet. Where the form at the lower part of the madcap section is of a hollow character, or where thick graboards are fitted, the distance is measured from the point where the line of the flat of the bottom continued inwards cuts the side of the keel.

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

c) where the freeboard deck is stepped and the raised part of the deck extends over the point at which the moulded depth is to be determined, should be measured to a line of reference extending from the lower part of the deck along a line parallel with the raised part.

1.1.19 “new ship” means a ship the keel of which is laid or is at similar stage of construction on 9 February 1997. For the purpose of this definition “similar stage of construction” means the stage of construction of the ship at which:

a) construction is identifiable with a specific ship begins; and

b) assembly of that ship has commenced comprising at least 50 tonnes or one per cent of the estimated mass of all structural material, whichever is less.

1.1.20 “recognised organization” means any organization recognised to perform statutory work on behalf of a flag State Administration in terms of certification and survey functions connected with the issuance of international certificates.

1.1.21.1“Restricted area I” means an area in open seas in which the ship in the course of navigation is not more than 200 miles from a place of refuge, the permissible distance between places of refuge not exceeding 400 miles.

1.1.21.2“Restricted area II” means an area in open seas in which the ship in the course of navigation is not more than 50 miles from a place of refuge, the permissible distance between places of refuge not exceeding 100 miles.

1.1.21.3“Restricted area II” means an area of harbour, roadstead and coastal service where the area limits and weather restrictions requiring compulsory return t a place of refuge are specified.

1.1.22 “1974 SOLAS Convention” means the International Convention for the Safety of Life at

Sea, 1974 as modified by the Protocol of 1978 relating thereto, as amended,

1.1.23 "1978 STCW Convention" means the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended.

1,1,24 "tanker" means a cargo ship constructed or adapted for the carriage in bulk of liquid cargoes of a flammable nature.

1.1.25 "wooden ship of primitive build" means a wooden ship of traditional built not primarily propelled by mechanical means.

1.1.26 "short voyage" means a voyage within the Caribbean Trading Area which does not extend for more than 100 nautical miles from the port of departure.

1.2 Application

1.2.1 Unless otherwise expressly provided, these Regulations apply to cargo ships of less than 500 gross tonnage engaged on international voyages in the Caribbean Trading Area.

1.2.2 These Regulations should not apply to:

.1 military and government ships not used for commercial purposes;
.2 cargo ships of less than 15 m. in length;
.3 pleasure crafts not engaged in trade; and
.4 fishing vessels.

1.2.3 Where the provisions of the 1974 SOLAS Convention, the 1978 STCW Convention, the 1966 Load Line Convention, the 1972 Collision Regulations and MARPOL 73/78 are applicable to cargo ships of less than 500 gross tonnage, said provisions should be applied as if they were part of these Regulations.

1.3 Exemptions

1.3.1 A ship which is not normally engaged on international voyages but which, in exceptional circumstances, is required to undertake a single international voyage may be exempted by the Administration from any of the requirements of this Regulation other than the provisions of this Chapter provided that it complies which such other requirements which are, in the opinion of the Administration, adequate for the voyage which is to be undertaken by the ship.

1.3.2 The Administration may, where it considers that the sheltered nature and conditions of the voyage are such as to render the application of any specific requirements of chapters 2, 3, 4, 5, or 6 unreasonable or unnecessary, exempt from those requirements individual ships or classes of ships which, in the course of their voyages, do not proceed more than 20 miles from the nearest land. Where the ship operates primarily in the waters of another State, the exemption should be acceptable to that State.

1.3.3 The Administration may exempt any ship which embodies features of a novel kind from any of the provisions of chapters 2, 3, 4, and 5, of this Regulation, the application of which might seriously impede research into the development of such features and their incorporation in ships engaged on international voyages. any such ship should, however, comply with such safety requirements which, in the opinion of the Administration, are adequate for the service for which it is intended and are such as to ensure the overall safety of the ship.

1.4 Equivalents

1.4.1 Where this Regulation requires that a particular fitting, material, appliance or apparatus, or type thereof, should be fitted or carried in a ship, or that any particular provision should be made, the Administration may allow any other fitting, material, appliance or apparatus, or type thereof, to be fitted or carried, or any other provision to be made in that ship, where it is satisfied by trial thereof or otherwise that such fitting, material, appliance or apparatus, or type thereof, or provision, is at least as effective as that required by the present regulation.

1.5 Standard

1.5.1 The construction, installation, structural strength, fittings, material, appliances and apparatus, unless expressly provided by this Regulation, should be of a standard acceptable to the Administration.

1.5.2 In addition to the Codes and standards referred to in this Regulation, the other codes and standards recommended by the International Maritime Organization and accepted by the Administration may be applied whenever such codes and standards are considered to be appropriate.

1.6 Alterations and modifications

1.6.1 Alterations and modifications of a major character and outfitting related thereto should meet the requirements prescribed for a new ship to such an extent as the Administration deems reasonable and practicable.

1.6.2 For the purpose of these requirements, the following alterations and modifications should be recognized as being of a major character:

.1 any change that substantially alters the dimensions of a ship; or

.2 any change that substantially increases a ship’s service life.

.3 any change to enable the ship to engage on another service than that for which it was originally designed and constructed, e.g. fishing or supply ship to cargo ship

service.

1.7 Manning

1.7.1 Every ship to which this Regulation applies should be sufficiently and efficiently manned from the point of view of safety of life at sea, in accordance to the Principles of Safe Manning adopted by the International Maritime Organization. When considering matters or manning, no member if the crew should be less than 15 years of age.

1.7.2 The Administration should provide every such ship with an appropriate safe manning document as evidence of the minimum safe manning considered necessary to satisfy the provisions of 1.7.1.

1.8 Ship's plans and instructions

1.8.1 On board all ships, name plates, signs, notices, plans and documents relating to the safety and operation of the ship and its machinery and equipment should be drawn up in the official language of the flag State and in a language understood by the crew.

1.8.2 Ships propelled by mechanical means should carry adequate information including drawings, plans and instruction manual necessary for their safe operation and safety of life at sea.

1.8.3 The owner, master or chief engineer of the ship should be responsible for compliance with the provisions of this Regulation.

PART B: SURVEYS AND CERTIFICATION

1.9 Surveys and certification

1.9.1 The survey of ships, so far as regards the enforcement of the provisions of this Regulation and the granting of exemptions therefrom, should be carried out by officers of the Administration. The Administration may, however, entrust the survey, certification and endorsements of certificates either to surveyors nominated for the purpose or to organisations recognized in accordance to the requirements of the International Maritime Organization.

1.9.2 Where a nominated surveyor or a recognized organisation determines that the condition of the ship or its equipment does not correspond substantially with the particulars of the certificate or is such that the ship is not fit to proceed to sea without danger to the ship, or persons on board, such surveyor or organization should immediately ensure that corrective action is taken and should in due course notify the Administration. Where such corrective action is not taken the certificate should be withdrawn and the Administration should be notified immediately.

1.10 Surveys for the issue and endorsement of a "Certificate of Compliance" for cargo

ships engaged on international voyages in the Caribbean Trading Area.

1.10.1 The structure, machinery, life-saving appliances, radio installations and other equipment referred to in 1.10.2 should be subject to the surveys specified below:

.1 an initial survey before the ship is put in service;

.2 a renewal survey at intervals specified by the Administration not exceeding five years, except where provision 1.13.2, 1.13.5 or 1.13.6 is applicable;

.3 a periodical survey within three months before or after the second anniversary date or within three months before or after the third anniversary date of the Certificate of Compliance which should take place of one of the annual surveys specified in paragraph d);

.4 an annual survey within three months before or after the second anniversary date of the Certificate of Compliance;

.5 a minimum of two inspections of the outside of the ship's bottom should be carried out during any five years period, except where 1.13.5 or 1.13.6 is applicable. Where 1.13.5 or 1.13.6 is applicable, this five year period may be extended to coincide with the extended period of validity of the certificate, In all cases the interval between any two such inspections should not exceed thirty-six months; and

.6 an additional survey, as occasion arises.

The above should include surveys required under the provisions of the 1974 SOLAS Convention where applicable.

1.10.2 The surveys referred to in 1.10.1 should include the following items:

.1 the structure, machinery and equipment, other than those items surveyed with the life-saving appliances and installations;

.2 the safety systems and appliances, life-saving appliances and arrangements except radio installations, the shipborne navigational equipment, means of embarkation for pilots and other equipment to which chapters 2,3,4,5, and 6 apply;

3. the fire control plans, nautical publications, lights, shapes, means of making sound signals and distress signals; and

4. the radio installations of cargo ships, including those used in life-saving appliances.

1.10.3 The initial or renewal survey should include the following:

.1 a complete inspection of the items referred to in 1.10.2.1 to ensure that the arrangements, materials, scantlings and workmanship of the structure, boilers and other pressure vessels, their appurtenances, main and auxiliary machinery including steering gear and associated control systems, electrical installations and other equipment comply with the requirements of this Regulation, are in satisfactory condition and are fit for the service for which the ship is intended and that the required stability information is provided. In the case of tankers or barges carrying liquid cargoes of flammable nature in bulk the survey should also include an inspection of the pump rooms, cargo, bunker and ventilation piping systems and associated safety devices;

.2 an inspection of the outside of the ship's bottom and related items in drydock, to ensure that they are fit for the service for which the ship is intended;

.3 a complete inspection of the items referred to in paragraph 1.10.2.2 to ensure that they comply with the requirements of this Regulation, are in satisfactory condition and are fit for the service for which the ship is intended;

.4 a complete inspection of the items referred to in 1.10.2.3 for the purpose to ensure that they comply with the requirements of this Regulation and the 1972 Collision Regulations; and

.5 a complete inspection of the items referred to in 1.10.2.4 to ensure that they comply with the requirements of this Regulation.

1.10.4 A periodical survey should include an inspection of the equipment referred to in 1.10.2 in the manner prescribed in 1.10.3 to ensure that they remain in satisfactory condition and fit for the service for which the ship is intended.

1.10.5 An annual survey should include a general inspection of the equipment described in paragraph 1.10.3 to ensure that they have been maintained in accordance with 1.11.1 and they remain satisfactory for the service for which the ship is intended.

1.10.6 An additional survey either general or partial, according to the circumstances, should be made after a repair resulting from investigations prescribed in 1.11.3, whenever any important repairs or renewal are made. The survey should be such as to ensure that the necessary repairs or renewal have been effectively made, that the material and workmanship of such repairs or renewal are in all respects satisfactory and that the ship complies in all respects with the provisions of this Regulation and of the 1972 Collision Regulations and of the laws, decrees, orders and regulations promulgated as a result thereof by the Administration.

1.10.7 The periodical and annual surveys referred to in 1.10.1.3 and 1.10.1.4 and the inspections of the ship's bottom in 1.10.1.5 should be endorsed on the Certificate of Compliance.

1.10.8 The results of the survey referred to in 1.10.1.2 should be recorded in the ship's Record of Equipment and Ship Information, a copy of which should be kept on board the ship. A copy of the results of the latest surveys referred to in 1.10.1.2 to 1.10.1.6 should be kept on board the ship.

1.11 Maintenance of conditions

The owner or the master of every ship to which this Regulation applies should ensure that:

.1 the conditions of the ship and its equipment is maintained to conform with the provisions of this Regulation to ensure that the ship in all respects will remain fit to proceed to sea without danger to the ship, persons on board or the environment;

.2 after any survey of the ship under 1.10 has been completed, no significant change should be made in the structural arrangement, machinery, equipment and other items covered by the survey, without permission of the Administration; and

.3 whenever an accident occurs to a ship or a defect is discovered, either or which affects the safety of the ship or the efficiency or completeness of its life-saving appliances or other equipment, a request should made immediately to the Administration responsible for issuing the relevant certificate for a survey as may be required by 1.10, be carried out as soon as practicable.

1.12 Certificates

1.12.1 A "Certificate of Compliance" of the safety requirements for cargo ships engaged on international voyages in the "Caribbean Trading Area" should be issued after an initial or renewal survey of a ship which complies with the relevant requirements of chapters 2, 3, 4, 5, and 6 and any other relevant requirements of this Regulation.

1.12.2 The certificate referred to in 1.12.1 should be supplemented by a Record of Equipment and Ship Information which should be permanently attached thereto.

1.12.3 The certificates referred to in this section should be issued or endorsed either by the Administration or a recognized organization acting on its behalf.

1.12.4 When an exemption is granted by the Administration to a ship under the provisions of this Regulation, a certificate called Exemption Certificate should be issued in addition to the certificates prescribed in this section. The exemption Certificate should be attached to the certificate to which it refers.

1.12.5 Any other condition of issue of a safety certificate, or an exemption certificate, if any, imposed by the Administration or recognized organization should be indicated on the relevant certificate.

1.13 Duration and validity of certificates

1.13.1 A Certificate of Compliance should be issued for a period specified by the Administration which should not exceed five years. An Exemption Certificate should not be for longer than the period of the certificate to which it refers.

1.13.2.1 Notwithstanding the requirements of 1.13.1, when the renewal survey is completed within three months before the expiration date of the existing certificate, the new certificate should be valid from the date of the completion of the renewal survey to a date not exceeding five years from the date of expiring of the existing certificate.

1.13.2.1 When the renewal survey is completed after the expiration date of the existing certificate, the new certificate should be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of expiration of the existing certificate.

1.13.2.3 When the renewal survey is completed more than three months before or after the expiration date of the existing certificate, the new certificate should be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of completion of the renewal survey.

1.13.3 Where a certificate is issued for a period of less than five years, the Administration may extend the validity of the certificate beyond the expiration date to the maximum period specified in 1.13.1, provided that the surveys referred to in 1.10, which are applicable when a certificate is issued for a period of five years are carried out as appropriate.

1.13.4 Where a renewal survey has been completed and a new certificate cannot be issued or placed on board the ship before the expiration date of the existing certificate, the Administration may endorse the existing certificate and such a certificate should be accepted as valid for a further period which should not exceed one month from the expiration date.

1.13.5 Where a ship at the time when a certificate expires is not in a port in which is to be surveyed, the Administration may extend the period of validity of the certificate but this extension should be granted only for the purpose of allowing the ship to complete its voyage to the port in which is to be surveyed and then only in cases where it appears reasonable to do so. No certificate should be extended for a period longer than one month, and provisions should be taken by the Administration for the ship not to be entitled by virtue of such extension to leave that port without having a new certificate. When the renewal survey is completed the new certificate should be valid to a date not exceeding five years from the date of expiration of the existing certificate before the extension was granted.

1.13.6 A certificate issued to a ship engaged on short voyages which has not been extended under the foregoing provisions may be extended by the Administration for a period of grace of up to one month from the date of expiration stated on it. When the renewal survey is completed the new certificate should be valid to a date not exceeding five years from the date of expiration of the certificate existing before the extension was granted.

1.13.7 In special circumstances, as determined by the Administration, a new certificate need not to be dated from the date of expiration of the existing certificate as required by paragraph 1.13.2.2 or 1.13.5 and 1.13.6. In these special circumstances, the new certificate should be valid to a date not exceeding five years from the date of completion of the relevant renewal survey.

1.13.8 Where an annual or periodical survey is completed before the period specified in the relevant regulations, then:

.1 the anniversary date shown on the relevant certificate should be amended by endorsement to a date which should not be more than three months later than the date on which the survey was completed;

.2 the subsequent annual, intermediate or periodical survey required by the relevant regulations should be completed at the intervals prescribed by this Regulation using the new anniversary date; and

.3 the expiration date may remain unchanged provided one or more annual, or periodical surveys, as appropriate, are carried out so that the maximum intervals between the surveys prescribed by the relevant regulations are not exceeded.

1.13.9 A certificate issued under 1.12 should cease to be valid in any of the following cases:

.1 where the relevant survey and inspections are not completed within the periods specified under 1.10;

.2 where the certificate is not endorsed in accordance with the requirements of this Regulation.

1.14 Form of certificates

The certificates and the record of equipment and ship information should be drawn up in the form corresponding to the models approved by the Administration. Where the language of the certificates and records is not in English, the text thereof should include a translation into this language

1.15 Availability of certificates

The certificates issued under 1.12 should be readily available on board for examination at all

times.

CHAPTER 2

CONSTRUCTION -SUBDIVISION AND STABILITY MACHINERY AND ELECTRICAL INSTALLATIONS

PART I - GENERAL

2.1 Application

2.1.1 In addition to the requirements contained elsewhere in this Regulation, ships should be designed, constructed and maintained in compliance with the structural, mechanical and electrical requirements of a classification society which complies with the standards adopted by the International Maritime Organization and which is recognized by the Administration, or with the applicable national standards of the Administration and which provide an equivalent level of safety.

2.1.2 With respect to such ships as the Administration considers unable or unnecessary to meet the requirements of this chapter these requirements should apply for the safety of those ships and persons on board as far as is deemed necessary by the Administration.

2.2 Definitions

For the purposes of this chapter, unless expressly provided otherwise:

2.2.1 “auxiliary means of steering” means the arrangements capable of steering the ship either manually or by power in the event of failure of the main steering gear but not including its tiller, quadrant or components serving the same purpose.

2.2.1 “emergency source of electrical power” means a source of electrical power intended to supply the services in the event of failure of the supply from the main source of electrical power.

2.2.3 “margin line” means a line drawn at least 76 mm below the upper surface of the bulkhead deck at side.

2.2.4 “main source of electrical power” means a source intended to supply electrical power to the main switchboard for distribution to all services necessary for maintaining the ship in normal operational habitable conditions.

2.2.5 “main steering gear” means the machinery, rudder actuators, the steering gear power units, if any, and ancillary equipment and the means of applying torque to the rudder stock (e.g. tiller or quadrant) necessary for effecting movement of the rudder for the purpose of steering the ship under normal service conditions.

2.2.6 “maximum ahead service speed” means the greatest speed which the ship is designed to

maintain service at sea at its deepest seagoing draught.

2.2.7 “maximum astern speed” means the speed which it is estimated the ship can attain at the design maximum astern power at its deepest seagoing draught.

2.2.8 “offshore supply vessel” means a cargo ship propelled by mechanical means:

.1 whose primary use is the transport of stores, materials and equipment to offshore installations and which may also be used for the laying or anchors, towage of offshore installations; and

.2 which is designed with accommodation and bridge erections in the forward part of the vessel and exposed cargo deck in the after part for the handling of cargo at sea.

2.2.9 “superstructure” means the decked structure on the freeboard deck extending from side to side of the ship or with the side plating not being inboard of the shell plating more than 0.04B, where B is the maximum breadth of the ship measured amidships to the moulded line of the frame in a ship with a metal shell and the outer surface of the hull in a ship with a shell of any other material.

2.2.10 “watertight” means capable of preventing the passage of water through the structure in any direction under a head of water for which the surrounding structure is designed.

2.2.11 “weathertight” means that in any sea condition water will not penetrate into the ship.

2.3 General requirements for mechanical and electrical machinery, equipment and installations

All machinery and electrical installations, mechanical equipment and appliances, boilers and other pressure vessels, associated piping systems, fittings and electrical cables and wiring should be of a design and construction adequate for the service for which they are intended and should be so installed and protected as to reduce to a minimum any danger to persons on board, due regard being paid to moving parts, hot surfaces and other hazards. The design should have regard to materials used in construction, and to purposes for which the equipment is intended, the working conditions and the environmental conditions to which it will be subjected..

PART B - CONSTRUCTION AND EQUIPMENT

2.4 Construction

2.4.1 The strength and construction of hull, superstructures, deckhouses, machinery casings, companion ways and any other structure and equipment should be sufficient to withstand all foreseeable conditions or the intended service.

2.4.2 Ships should be fitted with a collision bulkhead in accordance with Section 18 and with watertight bulkheads bounding the machinery spaces. Such bulkheads should be extended up to the freeboard deck. In ships constructed of wood such bulkheads should also be fitted extending to the freeboard deck and should be watertight as far as practicable.

2.4.3 Propeller shafts and shaft logs or stern tubes should not be situated in any space other than machinery spaces containing main propulsion unless they are enclosed in watertight spaces or enclosures inside such spaces acceptable to the Administration. The Administration may exempt from the requirements of this paragraph, ships having constraint of space or engaged on sheltered voyages provided it is demonstrated that any progressive flooding of such space can be easily controlled and that the safety of the ship is not impaired.

2.4.4 Stern glands should be located in spaces which can be easily accessible at all times for inspection and maintenance to the Administration.

2.5 Collision bulkhead

2.5.1 For the purpose of this section “freeboard deck”, “length of ship” and “forward perpendicular” have the meanings as defined in the 1966 Load Line Convention.

2.5.2 A collision bulkhead should be watertight up to the freeboard deck. This bulkhead should, as far as practicable, be located at a distance from the forward perpendicular of not less than 5% and not more than 7% of the length of the ship. Where it can be shown to the satisfaction of the Administration that it is impractical for the collision bulkhead to be located at a distance from the forward perpendicular of not more than 7% of the length of the ship, the Administration may allow relaxation therefrom, subject to the condition that should the space forward of the bulkhead be flooded, the ship at full load condition will not be submerged tot he margin line.

2.5.3 The collision bulkhead may have steps or recesses it provided that they are within the limits prescribed in Section 2.5.2. Pipes piercing the collision bulkhead should be kept to the minimum. Such pipes should be fitted with suitable valves operable from above the freeboard deck and the valve chest shelled be secured at the collision bulkhead inside the forepeak. The Administration may permit the location of such valves on the after side of the collision bulkhead provided that they are readily accessible under all service conditions and the space in which they are located is not a cargo space. All such valves should be of material acceptable to the Administration.

2.5.4 Where a long forward superstructure is fitted, the collision bulkhead should be extended watertight to the deck above the freeboard deck. The extension should, subject to the requirements of 2.5.5, be located within the limits prescribed in 2.5.2. The part of the deck, if any, between the collision bulkhead and its extension should be weathertight.

2.5.5 In every ship provided with a bow door and sloping loading ramp that forms part of the extension of the collision bulkhead above the freeboard deck, the part of the ramp which is more than 2.3m above the freeboard deck may extend forward of the limits specified in 2.5.2. The

ramp should be weathertight over its entire length.

2.5.6 The number of openings in the collision bulkhead above the freeboard deck should be reduced to the minimum compatible with the design and normal operation of the ship. All such openings should be capable of being closed weathertight.

2.5.7 No doors, manholes, ventilation ducts or access opening should be fitted in the collision bulkhead below the freeboard deck.

2.6 Chain locker

2.6.1 In every ship propelled by mechanical means where the chain locker is located abaft the collision bulkhead or extends into the forepeak tank, it should be watertight and provided with efficient means of drainage.

2.6.2 A chain locker should not be used for any purpose other than stowage of anchor chain cables.

2.7 Watertight bulkheads, decks, doors, trunks, etc.

2.7.1 This section does not apply to such ships the hull of which is constructed of wood.

2.7.2 Each watertight subdivision bulkhead, whether transverse or longitudinal, should be constructed in such a manner that it should be capable or supporting, with a proper margin of resistance, the pressure due to the maximum head of water which it might have to sustain in the event of damage to the ship but at least the pressure due to a head of water up to the margin line. The construction of these bulkheads should be to the satisfaction of the Administration or recognised organization.

2.7.3.1 Steps and recesses in bulkheads should be watertight and as strong as the bulkhead at the place where each occurs.

2.7.3.2 Where the frames or beams pass through a watertight deck or bulkhead, such deck or bulkhead should be made structurally watertight to the satisfaction of the Administration.

2.7.4 The number of openings in watertight bulkheads should be reduced to the minimum compatible with the general arrangements and operational needs of the ship. Openings should be fitted with watertight closing appliances to the satisfaction of the Administration. Watertight doors should be of equivalent strength to the adjacent unpierced structure.

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

2.7.6 Testing main compartments by filling them with water is not compulsory. When testing by filling with water is not carried out, a hose test is compulsory. In any case, a thorough inspection of watertight bulkheads should be carried out.

2.7.7 The forepeak, double bottoms, including duct keels, and inner skins should be tested with water to a head corresponding to the requirements of 2.7.2.

2.7.8 Tanks which are intended to hold liquids, and which form part of the subdivision of the ship should be tested for tightness with water to a head corresponding to two-third of the depth from the top of keel to the margin line in way of the tanks provided that in no case should the test head be less than 0.9 above the top of the tank.

2.7.9 The tests referred to in 2.7.7 and 2.7.8 are for the purpose of ensuring that the subdivision structural arrangements are watertight and are not to be regarded as a test of the fitness of any compartment for the storage of oil fuel or for other special purposes for which a test of a superior character may be required depending on the height to which the liquid has access in the tank or its connections

2.8 Means of sounding

2.8.1 In all ships other than barges with no under deck cargoes, means for sounding, to the satisfaction of the Administration, should be provided:

.1 for the bilges of those compartments which are not readily accessible at all times during the voyage; and

.2 For all tanks and cofferdams.

2.8.2 Where sounding pipes are fitted, their upper ends should be extended to a readily accessible position and, where practicable, above the freeboard deck. Their openings should be provided with permanently attached means of closing. Sounding pipes which are not extended above the freeboard deck should be fitted with automatic self-closing devices.

2.9 Anchoring and mooring equipment for ships propelled by mechanical means

2.9.1 Every ship should be provided with at least two anchors of sufficient weight one of which is provided with a chain cable of adequate strength and size and windlass, capstan or winch of suitable size for the cable and other anchor handling equipment to the satisfaction of the Administration.

2.9.2 Windlass, capstan, winches, fairleads, bollards, mooring bits and other anchoring, mooring, towing and hauling equipment should be:

.1 properly designed to meet all foreseeable operational loads and conditions;
.2 correctly seated; and

.3 effectively secured to a part of the ship's structure which is suitable strengthened.

2.10 Special requirements of towing and pushing for tugs

2.10.1 The design of the towing gear should be such as to minimize the overturning moment due to the lead of the towline. It should have a positive means of quick release which can be relied upon to function correctly under all operating conditions.

2.10.2 Where towing hook is provided, the release mechanism should be controlled as far as practicable from the navigation bridge, the after control position (where fitted) and at the hook itself.

2.10.3 When a pushing tug and a barge pushed ahead are rigidly connected in a composite unit, the tug-barge coupling system should be capable of being made without causing damage to the tug or the barge.

2.10.4 Every tug should be provided with at least one axe of sufficient size on each side which should be readily available for cutting the towline free in an event of an emergency.

2.11 Anchoring, mooring and towing for barges

2.11.1 Every barge should be equipped with at least a suitable anchor for holding the barge in an emergency to the satisfaction of the Administration. It should be securely attached to a cable or wire rope and arranged for release in emergency conditions either by persons on the barge or boarding the barge for such purpose. At least a windlass or winch should be provided as appropriate to assist persons carrying out such operation. Suitable boarding facilities should be provided for personnel from the towing tug to board the barge in an emergency.

2.11.2 The towing and mooring arrangements and procedures should be such as to reduce to a minimum any danger to personnel during towing or mooring operation. Such arrangements should be of adequate strength and suitable for the particular type of barge.

2.11.3 The design and arrangement of towing and mooring fittings or equipment of barges should take into account both normal and emergency conditions.

2.11.4 Sufficient spare equipment to completely remake the towing and mooring arrangements of barges should be available.

2.11.5 Secondary or emergency towing arrangements should be fitted on board the barge o as to be easily recoverable by the towing tug in the event of parting of the main towing wire or failure of ancillary equipment,.

2.11.6 In addition to the provisions of this section, barges should comply with the applicable requirements of the safety of towed ships and other floating objects recommended by the International Maritime Organization.

2.12 Accident prevention and crew accommodation

2.12.1 Hinged covers of hatchways, manholes and other similar openings should be protected against accidental closing. In particular, heavy covers on escape hatches should be equipped with counterweights. Escape doors and covers of escape and access hatches should be so constructed as to be capable of being opened from either side of the door or cover.

2.12.2 The dimensions of access hatches should be such that it will allow a person to have a quick and easy escape to a safe place in the event of an emergency. Where practicable, the dimensions of access hatches of cargo and machinery spaces should be such that they will facilitate expeditious rescue operation.

2.12.3 Handrails, grabrails and handholds of sufficient size and strength should be provided where necessary in the opinion of the Administration for persons to hold on when the ship is severely rolling or pitching.

2.12.4 Skylights of machinery spaces or other similar opening which are normally kept open at sea should be provided with adequately spaced protective bars or other arrangements to the satisfaction of the Administration to prevent a person from falling into the space accidentally. Where the size of such an opening is small, the Administration may waive this requirement where satisfied that due to the small size of the opening no protective arrangement is necessary.

2.12.5 Surfaces of all decks should be so prepared or treated as to minimize the possibility of persons slipping. In particular, decks and platforms in machinery spaces, floors of galleys, decks at winches and areas at the foot and head of ladders and in front of door and steps of ladders should be provided with anti-slip surfaces.

2.12.6 Moving parts of machinery which are so exposed as to cause accidents should be properly guarded.

2.12.7 All crew accommodation should be kept in a habitable and sanitary condition.

2.12.8 In addition to complying with the provisions of this section, every ship should comply with any other requirements which, in the opinion of the Administration, are deemed necessary to prevent accidents at sea and to maintain appropriate living and working conditions. Such requirements as set forth by the Administration should be consistent with the ILO Code of Practice, “Accident Prevention on board ships at sea and in port” to the extent reasonable and

practicable.

2.13 Fire risk reduction

In every ship the hull of which is constructed of wood, metal trays should be fitted under the main engines, auxiliary engines and fuel tanks to contain any oil spillage.

PART C.- SUBDIVISION, STABILITY AND BILGE PUMPING ARRANGEMENTS

2.14 General requirements for intact stability and subdivision

2.14.1 Subject to the provisions of 2.14.2, ships of 24 m and above in length should comply with the intact stability requirements for cargo ships specified in the Code on Intact Stability for all type of ships covered by IMO instruments, adopted by the International Maritime Organization by Resolution A.749(18).

2.14.2 Existing ships of 24 m and above in length should, as far as practical and reasonable in the opinion of the Administration, comply with the requirements of this section.

2.14.3 Intact stability for barges carrying only deck cargoes and having no hatchways in the deck except small manholes closed with gasket covers, no machinery installations and no accommodation and service spaces should comply with the stability requirements recommended by the Administration. The Administration should determine the intact stability or subdivision and damage stability requirements as appropriate for barges carrying underdeck cargoes or having machinery installations or service spaces, having regard to the design and arrangements of cargo spaces, machinery, equipment, deck houses or superstructure.

2.14.4 Intact stability for ships of less than 24 m in length should be to the satisfaction of the Administration. In these ships the corrected metacentric height, under all loading conditions, should be no less than 0.5m except in the lightship condition but then it should be positive. These ships should be restricted to area of operation and sea conditions not higher than the following:

LENGTH	AREA OF OPERATION	PROCEED AND BE AT SEA IN
15 to 20 m	Restricted area II	sea state 5
over 20 but less than 24 m	Restricted area I	sea state 6

2.15 Intact stability, subdivision and damage stability requirements for offshore supply vessels

2.15.1 The intact stability, subdivision and damaged stability of offshore supply vessels of

24m and above in length should comply with the applicable requirements of the Guidelines for the Design and Construction of Offshore Supply Vessels, adopted by the International Maritime organization by Resolution A.469(XII) and accepted by the Administration. In addition, the Administration may require such ships to comply with the weather criterion specified in the Code on Intact Stability referred to in 2.14.1.

2.15.2 Existing offshore supply vessels of 24 m and above in length should comply with the requirements of 2.15.1 as far as practicable and reasonable in the opinion of the Administration.

2.15.3 Intact stability, subdivision and damage stability requirements for offshore supply vessels to which the provisions of this section does not apply should be to the satisfaction of the Administration.

2.16 Inclining test

2.16.1 Every ship should undergo an inclining test upon its completion and the actual displacement and position of the centre of gravity should be determined for the lightship condition in accordance to IMO A.749(18).

2.16.2 Where alterations are made to a ship affecting its lightship condition and the position of the centre of gravity, the ship would, where the Administration considers it necessary, be reinclined and the stability information amended.

2.16.3 The Administration may allow the inclining test of a ship to be dispensed with provided basic stability data is available from the inclining test of a sister ship and it is shown to the satisfaction of the Administration that reliable stability information for that ship can be obtained from such basic data.

2.17 Stability information

2.17.1 Stability information approved by the Administration should be supplied to ships of 24 m in length and over to enable the master to assess with ease and certainty the stability of the ship under various operating conditions. Such information should include specific advice to the master warning him of those operating conditions which could adversely affect either stability or the trim of the ship. In particular, the information recommended in the relevant IMO Instruments referred to in 2.14 and 2.15 should be included as appropriate. A copy of the stability information should be submitted to the Administration or recognized organization.

2.17.2 The approved stability information should be kept on board, readily accessible at all times and inspected at the periodical surveys of the ship to ensure that it has been approved.

2.17.3 Where alternations are made to a ship affecting its stability, revised stability calculations should be prepared and submitted to the recognized organization or to the Administration for approval. Where the Administration or recognized organization decides that the stability

information must be revised, the new information should be supplied to the master and the superseded information removed from the ship.

2.18 Bilge pumping arrangements

2.18.1 In every ship an efficient bilge pumping arrangement should be provided which under all practical conditions should be capable or pumping from and draining any watertight compartment which is neither a permanent oil tank nor a permanent water tank. In the spaces not serviced by installed piping ready access for portable pumps should be demonstrated. Where the Administration is satisfied that the safety of the ship is not impaired the bilge pumping arrangements may be dispensed with in any particular compartment.

2.18.2 The arrangement of the bilge and ballast pumping system should be such as to prevent the possibility of water passing from the sea and from water ballast spaces into the cargo and machinery spaces, or from one compartment to another.

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

2.18.4.1 Every ship should be provided with at least two power bilge pumps.

2.18.4.2 In a ship propelled by mechanical means fitted with single main propulsion machinery, one of the two required bilge pumps may be driven by that machinery. In every ship fitted with twin independently operated main propulsion machinery, each such set of machinery may drive one of the required bilge pumps. In every case the propeller shaft should be able to be readily disconnected or a controllable pitch propeller fitted.

2.18.5 The total capacity of the required bilge pumps should be not less than 125% of the total capacity of the required main fire pumps referred to in 3.3

2.18.6 Sanitary, ballast, fire and general service pumps provided with suitable connections for bilge suction may be accepted as independent power bilge pumps.

2.18.7 The Administration may permit a bilge ejector in combination with an independently driven high pressure seawater pump to be installed or a portable mechanical pump to be used as substitute for one of the bilge pumps required by 2.18.4.1.

2.18.8 Bilge pipes should not be led through fuel oil, ballast or double tanks, unless pipes are of heavy gauge steel construction.

PART D.- LOADLINE REQUIREMENTS FOR SHIPS OF LESS THAN 24M IN LENGTH

2.19 Openings and penetration

2.19.1 All opening and penetrations in watertight or weathertight structures should be fitted with efficient means of closure that are of equivalent strength to the structure in which they are located and such that they will maintain its watertight integrity.

2.19.2 Through-hull penetrations should be kept to a minimum consistent with the operational needs of the ship and where fitted means should be provided for positively shutting off these penetrations.

2.19.3 Pipe connections that penetrate the main hull should be fitted with watertight valves or cocks that are readily accessible and easily operable in an emergency. These fittings should be connected direct to the main hull or to a short stub pipe or box that is efficiently attached to the hull.

2.19.4 Access opening in a weathertight superstructure, deckhouses or deck should be fitted with weathertight doors or hatches that are open outward and that are generally hinged on the forward or outboard sides.

2.19.5 Windows, portlights and skylights should be fitted with shatter proof safety glass or adequate strength. On existing ships the glass fitted may be accepted by the Administration where it is satisfied with its conditions and installation. Fixtures through which downflooding into the main hull can occur should be provided with weathertight covers. Such covers should preferably be permanently attached but where this is not practical they should be provided with means of securing that can be quickly affected in adverse weather conditions .

2.19.6 Air pipes and ventilators through which is downflooding into the main hull can occur should be fitted with permanently attached weathertight means of closure.

2.19.7 Pipes that penetrate watertight bulkheads should have watertight valves of adequate construction located on the bulkhead. Such valves should be remote controlled from above the main deck or should be fitted each side and readily accessible in an emergency situation.

2.19.8 Electric cables, steering cables or similar systems that penetrate watertight or weathertight structures should be fitted with equivalent weathertight or watertight glands, and where located below the watertight deck should be as high as possible above the waterline.

2.19.9 The arrangements specified in 2.19.1 to 2.19.8 should be complied with to the satisfaction of the Administration.

2.20 Coamings on exterior openings and freeing ports

2.20.1 Exterior opening through which downflooding into the main hull can occur should be fitted with coamings of equivalent strength to the structure in which they are located.

2.20.2 The coamings should be constructed as high as practicable and their height, generally, should be not less that the following:

	Restricted area I service (in mm)	Restricted area II service (in mm)	Restricted area III service (in mm)
Door sill and companion ways on the main deck	380	230	230
Hatches	450	380	300
Ventilator	760	500	300

No side scuttle should be fitted in a position that its lower edge is below a line drawn parallel to the freeboard deck at side and having its lowest point at a distance from the waterline passing through the centre of the ring of the freeboard mark equal to 500 mm for ships operating in restricted area I, 300mm in restricted area II and 150mm in restricted area III.

2.20.3 The minimum area of freeing ports in bulwarks on the upper decks should be at least 10% of the area of each continuous portion of the bulwark.

2.21 Hatchway covers

2.21.1 Hatchway covers should be of a strength and stiffness to the satisfaction of the Administration in reference to the provisions of Annex I to the 1966 Load Line Convention.

2.21.2 The means of securing and maintaining weathertightness should be to the satisfaction of the Administration. The arrangements should ensure that the tightness can be maintained in any sea conditions, and for this purpose tests for tightness should be required at the initial survey, and may be required at periodical surveys and at annual inspections or at more frequent intervals.

2.22 Freeboard

2.22.1 A ship to which this part applies should have a freeboard mark placed amidships on each side of the ship.

2.22.2.1 The assigned freeboard should not be less than that determined by the following table:

Length of the ship	15 m	20 m	24 m
Freeboard	340 mm	375 mm	400 mm

2.22.2.2 Where the moulded depth D exceeds 1/15, the freeboard derived from the table referred to in 2.22.2.1 should be increased by the value obtained from the following formula:

$$\left(D - \frac{L}{15}\right) \frac{L}{0.48} \text{ (mm)}$$

2.22.3.1 The minimum bow height, defined as the vertical distance at the forward perpendicular between the waterline corresponding to the assigned freeboard and the designed trim and the top of the exposed deck at side, should not be less than that obtained from the following formula:

$$56\,L\left(1 - \frac{L}{500}\right) \text{ (mm)}$$

However the minimum bow height of the protected freeboard, determined similarly to the bow height but to the top of the bulwark rail or visor, should not be less than 0.1L and should extend from the stern to a point at least 0.1L aft of the forward perpendicular

2.22.3.2 The minimum stern height defined as the vertical distance at the after perpendicular between the waterline corresponding to the assigned freeboard and the maximum designed trim by the stern should not be less than half of the bow height as given in 2.22.3.1. Where the required stern height is obtained by sheer or superstructure, the extension should not be less than 0.05L.

2.22.3.3 Ships operating in restricted area III and operation solely on harbour and roadstead service may reduce the bow height to not less than 0.5m and the stern should not be less than minimum madcap height.

2.22.4 The deck line is a horizontal line 200mm in length and 20mm in breadth. It should be permanently marked amidships on each side of the ship to the satisfaction of the Administration, and its upper edge should normally pass through the point where the continuation outwards of the upper surface of the freeboard deck intersects the outer surface of the shell.

2.22.5 The freeboard mark should consist of a ring 200mm in outside diameter and 20mm wide

which is intersected by a horizontal line 300mm in length and 20mm in breadth, the upper edge of which passes through the centre of the ring. The centre of the ring should be placed amidships and at a distance equal to the assigned freeboard measured vertically below the upper edge of the deck line. The mark should be permanently marked on the sides of the ship to the satisfaction of the Administration.

2.22.6 The mark of the authority by whom the load lines are assigned may be indicated alongside the load line ring above the horizontal line which passes through the centre of the ring, or above the below it. This mark should consist of not more than four initials to identify the authority's name, each measuring approximately 115mm in height and 75mm in width.

2.23 Bulwarks, guard rails and hand rails

2.23.1 Bulwarks, guard rails, wires or chains should be fitted around weather decks at a height of at least 1m. These arrangements should be permanent and where rails, wires or chains are fitted they should be in three courses.

2.23.2 Stanchions should be spaced not more than 1.5m apart and the clearance below the lowest course should not exceed 280 mm with the courses above being approximately evenly spaced. Where children are carried the fitting of suitable mesh in way of the open courses is recommended.

2.23.3 The height of these protection arrangements may be reduced and portable sections may be accepted by the recognized organization where it is shown that the ship's operating functions require this.

2.23.4 Bulwarks should be provided with efficient freeing ports located as close to the deck as possible with their own total area being about 4% of the bulwark area. Where there are only small volumes of space enclosed by the bulwark the freeing port area may be reduced based on the volume of water that could become trapped.

2.23.4 Deckhouses and other structures, stairways, ladders and corridor bulkheads should be fitted with adequate storm rails and hand rails.

PART E.- MACHINERY INSTALLATIONS

2.24 General machinery requirements

2.24.1 All boilers and other pressure vessels, all parts of machinery, all system, hydraulic, pneumatic and other systems and their associated fittings which are under internal pressure should be subjected to an approved pressure test before being put into service for the first time.

2.24.2 Adequate provisions should be made to facilitate cleaning, inspection and maintenance of machinery installations including boilers and other pressure vessels.

2.24.3 Where risk from overspeeding of machinery exists, means should be provided to ensures that the safe speed is not exceeded.

2.24.4 Where main or auxiliary machinery including pressure vessels or any parts of such machinery are subject to internal pressure and may be subject to dangerous overpressure, means should be provided where practicable to protect against such excessive pressure.

2.24.5 All gearing and every shaft and coupling used for transmission of power to machinery essential for the propulsion and safety of the ship or for the safety of persons on board should be so designed and constructed that they will withstand the maximum working stresses to which they may be subject in all service conditions, and due consideration should be given to the type of engines by which they are driven or of which they form part.

2.24.6 Machinery should be provided with, as deemed necessary by the Administration, automatic shut off arrangements or alarms in the case of failures such as lubricating oil supply failure which could lead rapidly to complete breakdown, damage or explosion. The Administration may permit provisions for overriding automatic shut off devices.

2.25 Controls

2.25.1 Main internal combustion propulsion machinery and applicable auxiliary machinery should be provided with automatic shut arrangement in the case of failures such as lubricating oil supply failure which could lead rapidly to complete breakdown, serious damage or explosion. The Administration may permit provisions for overriding automatic shut off devices.

2.26 Steam boilers

2.26.1 Every steam boiler and every oil-fired steam generator should be provided with not less than two safety valves of adequate capacity. However, having regards to the output or any other features of any boiler or oil-fired steam generator, the Administration may permit only one safety valve to be fitted if it is satisfied that adequate protection against overpressure is thereby provided.

2.26.2 Each oil-fired boiler which intended to operate without manual supervision should have safety arrangements which shut off the fuel supply and give an alarm in the case of low water level, air supply or flame failure.

2.26.3 Every steam generating system which provides services essential for the safety of the ship, or which could be rendered dangerous by the failure of its feed water supply, should be provided with not less than two separate feed water systems from and including the feed pumps, noting that a single penetration of the steam drum is acceptable. Unless the pump is designed to prevent overpressure, means should be provided which will prevent overpressure in any part of the systems.

2.26.4 Boilers should be provided with means to supervise and control the quality of the feed water. Suitable arrangements should be provided to preclude, as far as practicable, the entry of

oil or other contaminants which may adversely affect the boiler.

2.26.5 Every boiler essential for the safety of the ship and designed to contain water at a specified level should be provided with at least two means for indicating its water level, at least one of which should be direct reading gauge glass.

2.27 Steam pipe systems

2.27.1 Every steam pipe and every fitting connected thereto through which steam may pass should be so designed, constructed and installed as to withstand the maximum working stresses to which it may be subjected.

2.27.2 Means should be provided for draining every steam pipe where otherwise dangerous water hammer action might occur.

2.27.3 Where a steam pipe or fitting may receive steam from any source at a higher pressure than that for which it is designed a suitable pressure reducing valve, pressure relief valve and pressure gauge should be fitted.

2.28 Air pressure systems

2.28.1 In every ship means should be provided to prevent overpressure in any part of compressed air systems and wherever water jackets or casings of air compressors and coolers might be subjected to dangerous overpressure due to leakage into them from air pressure parts. Suitable pressure relief arrangements should be provided for all systems.

2.28.2 The main starting air arrangement for main propulsion internal combustion engines should be adequately protected against the effects of backfiring and internal explosion in the starting air pipes.

2.28.3 All discharges pipes from starting air compressors should lead directly to the starting air receivers, and all stating air pipes from the air receivers to main or auxiliary engines should be entirely separate from the compressor discharge pipe system.

2.28.4 Provision should be made to reduce, to the minimum, the entry of oil into the air pressure systems and to drain these systems.

2.29 Ventilating systems

2.29.1 Machinery spaces of category A should be adequately ventilated so as to ensure that when machinery or boiler therein are operating at full power in all weather conditions including heavy weather, an adequate supply of air is maintained to the spaces for the safety and comfort of personnel and the operation of the machinery.

2.29.2 In addition to complying with the requirements of Section 2.29.1, the ventilation of machinery spaces should be sufficient under all normal conditions to prevent accumulation of oil vapour.

2.30 Protection against noise

Measures should be taken to reduce machinery noise in machinery spaces to acceptable levels as determined by the Administration. Where the noise cannot be sufficiently reduced, the source of excessive noise should be suitable insulated or isolated or a refuge from noise should be provided if the space is required to be manned. Where necessary, ear protectors should be provided for personnel required to enter such spaces.

PART F.- ELECTRICAL INSTALLATIONS

2.31 General electrical requirements

2.31.1 Electrical installations should be such that:

.1 all electrical services necessary for maintaining the ship in normal operational and habitable conditions will be assured without recourse to the emergency source of electrical power;

.2 electrical services essential for safety will be assured under emergency conditions; and

.3 the safety of personnel and ship from electrical hazards will be assured.

2.31.2 Electrical installations should be such that uniformity in the implementation and application of the provisions of this part will be ensured.

2.32 Precautions against shock, fire and other hazards of electrical origin

2.32.1.1 Exposed metal parts of electrical machines or equipment which are not intended to be live but which are liable under fault conditions to become live should be earthed unless the machines or equipment are:

.1 supplied at a voltage not exceeding 50V direct current or 50V root means square between conductors; auto-transformers should not be used for the purpose of achieving this voltage; or

.2 supplied at a voltage not exceeding 250V by safety isolating transforms supplying only one consuming device; or

.3 constructed in accordance with the principle of double insulation.

2.32.1.2 The Administration may require additional precautions for portable electrical equipment for use in confined or exceptionally damp spaces where particular risks due to conductivity may exist.

2.32.1.3 All electrical apparatus should be so constructed and so installed as not to cause injury when handled or touched in the normal manner.

2.32.2 Main and emergency switchboards should be so arranged as to give easy access as may be needed to apparatus and equipment without danger to personnel. The switchboards should be suitably guarded as deemed necessary by the Administration. Exposed live parts having voltages to earth exceeding a voltage to be specified by the Administration should not be installed on the front of such switchboards. Where necessary, non-conducting mats or gratings should be provided at the front and rear of the switchboard.

2.32.3.1 The hull return system of distribution should not be used for any purpose in a tanker or a barge carrying liquid cargoes of flammable nature in bulk..

2.32.3.2 The requirement of 2.32.3.1 does not preclude under the conditions approved by the Administration for the use of:

.1 impressed current cathodic protective systems;
.2 limited and locally earthed system (e.g. engine starting esteem);
.3 limited and locally earthed welding systems. Where the Administration is satisfied that the equipotential of the structure is assured in a satisfactory manner, welding systems with hull return may be installed without the restriction imposed by 2.32.3.1; and
.4 insulation level monitoring devices provided the circulation current does not exceed 30mA under the most unfavorable conditions.

2.32.3.3 Where the hull return system is used, all final subcircuits, i.e. all circuits fitted after the last protective device, should be two-wire and special precaution should be taken to the satisfaction of the Administration.

2.32.4.1 Earthed distribution system should not be used in a tanker or barge carrying liquid cargoes of flammable nature in bulk.

2.32.4.2 When a distribution system, whether primary or secondary, for power, heating of lighting, with no connexion to earth is used, a device capable of continuously monitoring the insulation level to earth and of giving an audible or visual indication of abnormally low insulation values should be provided.

2.32.5.1 Except as permitted by the Administration in exceptional circumstances, all metal

sheaths and amour of cables should be electrically continuos and should be earthed.

2.32.5.2 In every ship other than ships propelled by mechanical means constructed before the coming into force of this Regulation, cables and wiring external to equipment should be at least of a flame retardant type and should be so installed as not to impair their original flame retarding properties. Where necessary for particular applications, the Administration may permit the use of special types of cables such as radio frequency cables, which do not comply with the foregoing.

2.32.5.3 Cables and wiring serving essential or emergency power, lighting, internal communications or signals should so far as practicable be routed clear or galleys, laundries, machinery spaces of category A and their casings and other high fire risk areas. Cables connecting fire pumps to the emergency switchboard should be of fire resistant type where they pass through the high fire risk areas. Where practicable all such cables should be run in such a manner as to preclude them being rendered unserviceable by heating of the bulkhead that may be caused by a fire in an adjacent space.

2.32.5.4 Where cables which are installed in hazardous areas introduce the risk of fire or explosion in the event of an electrical fault in such areas, special precaution against such risks should be taken to the satisfaction of the Administration.

2.32.5.5 Cables and wiring should be installed and supported in such a manner as to avoid chafing or other damage.

2.32.5.6 Terminations and joints in all conductors should be so made as to retain the original electrical, mechanical, flame retarding and where necessary, fire resisting properties of the cables.

2.32.6.1 Each separate circuit should be protected against short circuit and against overload, except where the Administration may exceptionally otherwise permit.

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

2.32.7 Lighting fittings should be so arranged as to prevent temperature rises which could damage the cables and wiring, and to prevent surrounding material from becoming excessively hot.

2.32.8 All lighting and power circuits terminating in a bunker or cargo space should be provided with a multiple pole switch outside the space for disconnecting such circuits.

2.32.9.1 Accumulator batteries should be suitable housed, and compartments used primarily for their accommodation should be properly constructed and efficiently ventilated.

2.32.9.2 Electrical or other equipment which may constitute a source of ignition of flammable material should not be permitted in those compartments except as permitted in paragraph 2.32.10.

2.32.9.3 Accumulator batteries except for batteries used in self-contained battery operated lights should not be located in sleeping quarters. The Administration may permit relaxation from this requirement where hermetically sealed batteries are installed.

2.32.10 No electrical equipment should be installed in any space where flammable mixtures are liable to collect including those on board tankers or barges carrying liquid cargoes or flammable nature in bulk or in compartments assigned principally to accumulator batteries, in paint lockers, acetylene stores or similar spaces, unless the Administration is satisfied that such equipment is:

.1 essential for operational purposes;

.2 of a type which will not ignite the mixture concerned;

.3 appropriate to the space concerned; and

.4 appropriately certified for safe usage in the dusts, vapours of gases likely to be encountered.

2.32.11 Lightning conductors should be fitted to all mast or topmasts constructed of non-conducting materials. In ships constructed of no-conductive materials, the lightning conductors should be connected by suitable conductors to copper plate fixed to the ship's hull well below the waterline.

2.33 Main source of electrical power

2.33.1 A main source of electrical power of sufficient capacity to supply all those services referred to in 2.31.1.1 should be provided. This main source of electrical power should consist of a generator driven by an internal combustion engine, which may be the main propulsion machinery of the ship in the case of the ship propelled by mechanical means.

2.33.2 A main electrical lighting system which should provide illumination throughout those parts of the ship normally accessible to, and used by, crew or persons on board should be supplied from the main source of electrical power.

2.33.3 The arrangement of the main electric lighting system should be such that a fire or other casualty in spaces containing the main source of electrical power, associated transforming equipment and main switchboard will not render the emergency electric lighting system required by this Section inoperative.

2.33.4 The arrangement of the emergency electric system should be such that a fire or other casualty in spaces containing the emergency source of electrical power, associated transforming equipment and emergency switchboard will not render the main electrical lighting system

required by this section is inoperative.

2.34 Emergency sources of electrical power

2.34.1 A self-contained emergency source of electrical power should be provided.

2.34.2 The emergency source of electrical power, associated transforming equipment, if any, and emergency switchboard should be located above the uppermost continuous deck and should be readily accessible from the open deck. They should not be located forward of the collision bulkhead, except where permitted by the Administration in exceptional circumstances.

2.34.3 The location of the emergency source of electrical power, associated transforming equipment, if any, and emergency switchboard in relation to the main source of power, associated transforming equipment, if any and main switchboard should be such as to ensure to the satisfaction of the Administration that a fire or other casualty in the space containing the main source of electrical power, associated transforming equipment, if any and main switchboard, or in any machinery space of category A will not interfere with the supply, control and distribution of the emergency source of electrical power.

2.34.4 Provided that suitable measures are taken for safeguarding independent emergency operation under all circumstances, the emergency generator may be used, exceptionally, and for short periods, to supply non-emergency circuits.

2.34.5 The electrical power available should be sufficient to supply all those services that are essential for safety in an emergency, due regard being paid to such services as may have to be operated simultaneously. The emergency source of electrical power should be capable, having regard to starting currents and the transitory nature of certain loads, of supplying simultaneously at least the following services for a period specified hereinafter, if they depend upon an electrical source for their operation:

.1 for a period of three hours, means for illumination required by 4.10.1.2.2;

.2 for a period of eighteen hours, emergency lighting:

- .1 in all service and accommodation alleys, stairways and exists;
- .2 in spaces containing propulsion machinery used for navigation, if any, and main source of electrical power and their control positions;
- .3 in all control stations, machinery control rooms, and at each main and emergency switchboard;
- .4 at all stowage positions for fireman's outfits;
- .5 at the steering gear, if any; and
- .6 at the emergency fire pump and its control position;

.3 for a period of eighteen hours:

- .1 the navigation lights and other lights required by the 1972 Collision

regulations; and

.2 the VHF, MF and MF/HF radio installations required by chapter 5 of this Regulations or chapter IV of the 1974 SOLAS Convention; and

.4 for a period of eighteen hours:

.1 all internal communication equipment as required in an emergency;
.2 the fire detection and fire alarms systems; and
.3 operation of emergency fire pumps, if electrically operated.

In a ship propelled by mechanical means regularly engaged on voyages of short duration, the Administration, where satisfied that an adequate standard of safety would be attained, may accept a lesser period than the eighteen hour period specified in 2.34.5.2 and 2.34.5.3, but in no case less than three hours.

2.34.6 The emergency source of electrical power may be either:

.1 an accumulator battery capable of carrying the emergency electrical load without recharging or excessive voltage drop; or

.2 a generator driven by a suitable prime mover with an independent fuel supply and starting to the satisfaction of the Administration.

2.34.7 Where the emergency source of power is an accumulator battery, it should be automatically connected to the emergency switchboard upon failure of the main source of electrical power. Where automatic connection to the emergency switchboard is not practical, manual connection may be acceptable to the satisfaction of the Administration.

2.34.8 Where the emergency source of power is a generator, it should be automatically connected to the emergency switchboard within 45 s of the loss of the main source of electrical power. It should be driven by a prime mover with an independent fuel supply having a flashpoint not less than 43o C. Automatic starting of the emergency generator will not be required where a transitional source of power to the satisfaction of the Administration is provided.

2.34.9 For ships of less than 24m in length engaged on voyages of not more than 20 miles from the nearest land, the Administration may waive any of the requirements of this section which are found to be impracticable.

PART G - MACHINERY AND ELECTRICAL INSTALLATIONS FOR SHIPS PROPELLED BY MECHANICAL MEANS.

2.35 General

2.35.1 The requirements of this part are additional to the requirements of part E and F.

2.35.2.1 Means should be provided whereby normal operations of propulsion machinery can be sustained or restored even though one of the essential auxiliaries becomes inoperative. Special consideration should be given to the malfunctioning of:

.1 an electrical power generator which serves as main source of electrical power;
.2 the sources of lubricating oil pressure;
.3 the sources of water pressure;
.4 an air compressor and receiver for starting or control purposes; and
.5 the hydraulic, pneumatic or electrical means for controlling main propulsion machinery including controllable pitch propellers.

However the Administration, having regard to overall safety considerations, may accept a partial reduction in propulsion capability during normal operations.

2.35.2.2 Special consideration should be given to the design, construction and installation of propulsion machinery systems so that any mode of their vibrations should not cause undue stresses in this machinery in the normal operation ranges.

2.36 Means of going astern

2.36.1 Sufficient power for going astern should be provided to secure proper control of the ship in all normal circumstances.

2.36.2 The ability of the machinery to reverse the direction of thrust of the propeller in sufficient time and so to bring the ship to rest within a reasonable distance from maximum ahead service speed should be demonstrated by and recorded for every new ship as far as practicable and reasonable.

2.36.3 In new ships, the stopping times, ship headings and distances recorded on trails, together with the results of trials to determine the ability of ships having multiple propellers to navigate and manoeuvre with one or more propellers inoperative should be available on board for the use of the master or designated personnel.

2.36.4 Where the ship is provided with supplementary means of manoeuvring or stopping, these should be demonstrated and recorded as referred to in 2.36.2 and 2.36.3..

2.37 Remote control

2.37.1 Where remote control of propulsion machinery from the navigation bridge is provided and the machinery spaces are intended to be manned they should comply with the following:

.1 the speed, direction of thrust and, if applicable, the pitch of the propeller should be fully controllable from the navigation bridge under all sailing conditions, including manoeuvring;

.2 the remote control should be performed, for each independent propeller, by a control device so designated and constructed that its operation does not require particular attention to the operational details of the machinery. Where multiple propellers are designed to operate simultaneously, they may be controlled by one control device;

.3 the main propulsion machinery should be provided with an emergency stopping device on the navigation bridge and should be independent of the navigation bridge control system;

.4 propulsion machinery orders from the navigation bridge should be indicated in the main machinery control room at the manoeuvring platform as appropriate;

.5 remote control of the propulsion machinery should be possible only from one location at a time, at such locations interconnected control positions are permitted. At each location there should be an indicator showing which location is in control of the propulsion machinery. The transfer of control between the navigation bridge and machinery spaces should be possible only in the main machinery space or the main machinery control room. This system should include means to prevent the propelling thrust from altering significantly when transferring control from one location or another;

.6 it should be possible to control the propulsion machinery locally, even in the case of failure in any part of the remote control system;

.7 the design of the remote control system should be such that in case of its failure an alarm will be given. Unless the Administration considers it impracticable the present speed and direction of the thrust of the propeller should be maintained until local control is in operation;

.8 indicators should be fitted on the navigation bridge for:

.1 main engine speed or propeller speed and direction or rotation, as deemed necessary by the Administration, in the case of fixed pitch propellers; or

.2 propeller speed and pitch position in the case of controllable pitch propellers;

.3 an alarm should be provided on the navigation bridge and in the machinery space to indicate low starting air pressure which should be set at a level to permit further main engine starting operation. Where the remote control systems of propulsion machinery is designed for automatic starting, the number of automatic consecutive attempts which fail to produce a start should be limited in order to safeguard sufficient starting air pressure for starting locally.

2.37.2 In lieu of complying fully with all the requirements of 2.37.1, ships constructed before the coming into force of this Regulation may comply at least with 2.37.1.1, .3, .6 and .8.

2.37.3 In all ships where the main propulsion and associated machinery, including main electrical supply, are provided with the various degrees of automatic or remote control and under continuous manual supervision from a control room, the arrangements and control should be so designed, equipped and installed that the machinery operation will be as safe and effective as if it were under direct supervision. Particular consideration should be given to protect such spaces against fire and flooding.

2.38 Steering gear

2.38.1 Every ship should be provided with a main steering gear.

2.38.2 Subject to the provisions of 2.38.5, every ship should be provided with an auxiliary means of steering the ship in the event of failure of the main steering gear.

2.38.3 The main steering gear should be of adequate and sufficient to steer the ship at the maximum ahead service speed. The main steering gear and rudder stock should be so designed that they are not damaged at maximum astern speed.

2.38.4 The auxiliary means of steering should be of adequate strength and sufficient to steer the ship at navigable speed and capable of being brought speedily into action in an emergency.

2.38.5 Where power-operated main steering gear units and connexions are fitted in duplicate, and each unit complies with the provisions of 2.38.4, no auxiliary steering gear need to be required, provided that the duplicate units and connexions operating together comply with the requirements of 2.38.3.

2.38.6 The main steering power unit should be arranged to re-start either by manual or automatic means when electrical power supply is restored after failure.

2.38.7 In the event of failure of electrical power supply to main steering gear control or power unit, an alarm should be given in the navigation bridge.

2.38.8 The position of the rudder, if power-operated, should be indicated at the navigation bridge. The rudder angle indicator should be independent of the steering gear control system.

2.38.9 Where a non-conventional rudder I installed, the Administration should give special consideration to the steering system, so as to ensure that an acceptable degree of reliability and effectiveness which is based on the provisions of this section is provided.

2.39 Communication between the bridge and machinery space

2.39.1.1 Ships should be provided with at least two independent means for communicating orders from the navigation bridge to the position in the machinery space or control room from which the main propulsion engines are normally controlled. One of the means should be an engine room telegraph. The arrangement of these means should be to the satisfaction of the Administration.

2.39.1.2 The engine room telegraph referred to in 2.39.1.1 may be dispensed with if the propulsion engine is directly controlled from the navigation bridge under normal operating conditions.

2.39.2 In lieu of meeting the requirements of 2.39.1.1, ships of less than 24 m in length may be provided with only one means for communicating orders referred to in 3.39.1.1, where the Administration is satisfied that, due to close proximity of the navigation bridge and position of local control of main propulsion machinery, means of communicating orders is not necessary.

2.39.3 Appropriate means of communication should be provided to any position, other than the navigation bridge, from which the engine may be controlled.

2.40 Engineer's alarm

In every new ship, an engineer's alarm should be provided to be operated from the engine control room or at the manoeuvring platform as appropriate and clearly audible in the engineer's accommodation. The Administration may dispense with this requirement if satisfied that, due to close proximity of the engine control room or the manoeuvring platform and the engineer's accommodation, no engineer's alarm is necessary.

PART H.- ADDITIONAL REQUIREMENT FOR SHIPS WITH PERIODICALLY UNATTENDED MACHINERY SPACES.

2.41 General

2.41.1 The requirements of this part are additional to the applicable requirements of this chapter and apply to periodically unattended machinery spaces specified herein.

2.41.2 The arrangements provided should be such as to ensure that the safety of the ship in all sailing conditions, including manoeuvring, is equivalent to that of a ship having manned machinery spaces.

2.41.3 Measures should be taken to the satisfaction of the Administration to ensure that the equipment is functioning in a reliable manner and that satisfactory arrangements are made for regular inspections and routine tests to ensure continuous reliable operation.

2.41.4 Such ships should be provided with documentary evidence to the satisfaction of the

Administration of their fitness to operate with periodically unattended machinery spaces.

2.42 Applicable requirements

2.42.1 Ships having periodically unattended machinery spaces should, as far as practicable and reasonable in the opinion of the Administration, comply with the applicable requirements of chapter II-I, part E of the 1974 SOLAS Convention for such machinery spaces.

2.42.2 In lieu of meeting the requirements of 2.42.1, ships of less than 24m in length having periodically unattended machinery spaces may comply with the applicable requirements of 2.41.2, 2.41.3 and 2.41.4 and other requirements which, in the opinion of the Administration, are necessary for safe operation of such machinery spaces.

CHAPTER 3
CONSTRUCTION – FIRE PROTECTION
FIRE DETECTION AND FIRE EXTINCTION

PART A.- GENERAL

3.1 Application

3.1.1 Unless provided otherwise, this chapter should apply to new ships propelled by mechanical means except special purpose ships.

3.1.2 Existing ships should as far as practicable and reasonable in the opinion of the Administration, comply with the provisions of this chapter not later than 9 February 1999.

3.1.3 Where, prior to 9 February 1999, an existing ship cannot comply with the provisions of this chapter the ship should not proceed more than 20 miles from the nearest land during the course of a voyage.

3.1.4 The Administration may exempt a ship from the provisions of 3.1.3 where such exemption is acceptable the States to be visited by the ship.

3.2 Definitions

For the purposes of this chapter:

3.2.1 “accommodation spaces” means those spaces used for public spaces, corridors, lavatories, cabins, offices, hospitals, cinemas, games and hobbies rooms, pantries containing no cooking appliances and similar spaces.

3.2.2 “bulkhead deck” means the uppermost deck to which the transverse watertight bulkheads are carried.

3.2.3 “control stations” means those spaces in which the ship’s radio or main navigating equipment or the emergency source of power is located or where the fire detection or fire control equipment is centralized.

3.2.4 “low flame spread” means that the surface thus described will adequately restrict the spread of flame, this being determined to the satisfaction of the Administration or recognized organization by an established test procedure.

3.2.5 “non-combustible material” means a material which neither burns nor gives off flammable vapours in sufficient quantity for self-ignition when heated to approximately 750oC this being determined to the satisfaction of the Administration or recognized organization by an established test procedure. Any other material is a combustible material.

3.2.6 “oil fuel unit” is the equipment used for the preparation of oil fuel for delivery to an oil-fired boiler, or equipment used for the preparation for delivery of heated oil to an internal combustion engine, and includes any oil pressure pumps, filters and heaters dealing with oil at a pressure of more than 0.18 N/mm2.

3.2.7 “public spaces” means those portions of the accommodation spaces which are used for halls, dining rooms, lounges and similar permanently enclosed spaces.

3.3.8 “service spaces” means those spaces used for galleys, pantries containing cooking appliances, lockers and store-rooms, workshops other than those forming part of the machinery spaces, and similar spaces and trunks to such spaces.

3.2.9 “steel or other equivalent material” means any non-combustible material which, by itself or due to insulation provided, has structural and integrity properties equivalent to steel at the end of the applicable exposure to the standard fire test (e.g. aluminum alloy with appropriate insulation).

3.3 Fire pumps

3.3.1.1 Every ship should be provided with at least one independent power-operated fire pump capable of delivering a jet of water as required by 3.4.3.

3.3.1.2 In ships of 150 gross tonnage propelled by mechanical means such pump should be operated by means other than the main propulsion machinery of the ship.

3.3.1.3 In ships of less than 150 gross tonnage propelled by mechanical means such pump may be driven by main propulsion machinery provided that the propeller shaft can be readily disconnected or that a controllable pitch propeller is fitted.

3.3.2 The main fire pump (or pumps operating together) should be capable of delivering for fire fighting purposes, under the conditions and at the pressure specified in 3.4.2, a quantity of water of Cd2 m3 / h, where:

.1 C = 5 for ships required to be provided with more than one main fire pump and C = 2.5 for ships required to be provided with only one main fire pump; and

.2 d = 1 + 0.066 / (L (B + D)) to the nearest 0.25, where:

L = length of the ship in metres on the summer load waterline from the foreside of the stern to the afterside of the rudder post. Where there is no rudder post, the length is measured from the foreside of the stern to the axis of the rudder stock. For ships with cruise sterns, the length on the designed summer load waterline is the length from the foreside of the stern to the axis of the rudder stock if that be greater;

B = greatest moulded breadth of the ship in metres; and

D = moulded depth of the ship in metres measured to the bulkhead deck amidships,

provided that in any such ship the total capacity of the fire pumps for fire-fighting purposes need not to exceed 180 m3 / h.

3.3.3 Where two main fire pumps are required, the capacity of one of the two such pumps should not be less than 40% of their total capacity.

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

3.3.5 Every fire pump should be arranged to draw water directly from sea and discharge into a fixed fire main, if any. However, in ships with high suction lifts, booster pumps and storage tanks may be installed, provided such arrangement satisfies all the requirements of this section.

3.3.6 Centrifugal pumps or other pumps connected to the fire main through which back flow could occur should be fitted with non-return valves.

3.3.7.1 In ships propelled by mechanical means, if a fire in any one compartment could put all the fire pumps out of action, there should be provided in a position outside such spaces an independently driven emergency fire pump which should comply with the requirements of paragraph 3.3.1.1.

3.3.7.2 The emergency fire pump should be capable of producing at least a jet of water of not less than 6 m from one hydrant and hose through a nozzle complying with the requirements of

paragraph 3.5.11.1

3.3.7.3 In lieu of meeting the requirements of 3.3.7.1, in such ships of less than 150 gross tonnage operating in Restricted area III, fire buckets may be permitted in lieu of the required pump.

The number of fire buckets so provided should be additional to the fire buckets required in 3.9.2 and not less than two.

3.3.8 Where the fire pumps are capable of developing a pressure exceeding the design pressure of the fire mains, water service pipes, hydrants and hoses, relief valves should be fitted. Such valves should be so places and adjusted as to prevent excessive pressure in the fire main system.

3.3.9 The pumps required for the provision of water for other fire extinguishing systems required by this chapter, their sources of power and their controls should be installed outside the space or spaces protected by such systems and should be so arranged that a fire in the space or spaces protected will not put any such system out of action.

3.3.10.1 Where fire in any one compartment can put all the fire pumps out of action, should be an alternate means to extinguish the fire. This alternate means may be an emergency power-operated fire pump.

3.3.10.2 An emergency power-operated fire pump should be an independently driven self-contained pump either with its own prime mover and fuel supply fitted in an accessible position outside the compartment which may be an emergency generator of sufficient capacity and which is positioned in a sage place outside the engine room and above the freeboard deck.

3.3.10.3 The emergency fire pump, sea suction and other valves should be operable from outside the compartment containing the main fire pump and in a position not likely to be cut off by fire in that compartment.

3.4 Fire main, water service pipes and fire hydrants

3.4.1 In every ship where more than one hydrant is required to provide a jet of water required by Section 3.3 a fire main should be provided. A ship should be built and maintained within the applicable rules of a classification society or any other internationally recognized standard for the type of service of the ship.

3.4.2.1 In a ship where one or more main fire pumps are provided, the diameter of the main and of the water service pipes connecting the hydrants thereto should be sufficient for the effective distribution of the maximum discharge required by section 3.3 from:

.1 one main fire pump where only one such pump is required; or
.2 two main fire pumps simultaneously where two such pumps are required.

provided that in any ship, the diameters of the fire main and water service pipes need not be greater than is necessary for the discharge of 140m3/h of water.

3.4.2.2 Where only one hydrant is required, the minimum pressure at the hydrant should be 0.21 N / mm2 (2.1 kg / cm2). Where more than one hydrants are required, the main fire pump should be capable, when discharging the maximum amount referred to in 3.4.2.1 through adjacent fire hydrants with nozzles of the sizes specified in 3.5, of maintaining at all hydrants the minimum pressures 0.21 N / mm2 (2.1 kg / cm2). In any case, the maximum pressure at any hydrant should not exceed that at which the effective control of a fire hose can be demonstrated.

3.4..3 In every ship, the number and position of hydrants should be such that at least one jet of water from a single length of hose can reach any part of the ship normally accessible to the crew while the ship is being navigated and any part of any cargo space when empty, any ro-ro cargo space or any special category space in which later case, at least two jets of water not emanating from the same hydrant should reach any part of such space, each from single length of hose. Furthermore, such hydrants should be positioned near the accesses of the protected spaces.

3.4.4.1 Material readily rendered ineffective by heat should not be used for fire main and hydrants unless adequately protected. The pipes and hydrants should be so placed that the fire hoses may be easily coupled to them.

3.4.4.2 In ships where deck cargo may be carried, the position of the hydrants should be such that they are always accessible and the pipes should be arranged as far as practicable to avoid risk of damage by such cargo.

3.4.4.3 A valve should be fitted to serve each fire hose so that any fire hose may be removed while the fire pumps are at work.

3.4.4.4 The fire mains should be provided with isolating valves located so as to permit optimum utilization in the event of physical damage to any part of the main.

3.4.4.5 Fire mains should have no connections other than those required for fire-fighting except for the purposes of washing the deck and anchor chains or operating the chain locker bilge ejector.

3.5 Fire hoses and nozzles

3.5.1 Every ship should be provided with a minimum of two (2) fire hoses.

3.5.2 Where hydrants are required in any machinery spaces, each hydrant should be provided with a fire hose. Where practicable fire hoses should be connected to the hydrants in such machinery spaces.

3.5.3 Notwithstanding the requirements of 3.5.1 and 3.5.2, the Administration may increase the

required number of fire hoses as to ensure that hoses in sufficient number are available and accessible at all times, having regard to the type of ship and the nature of trade in which the ship is engaged.

3.5.4 A single length of fire hose should not exceed 18m.

3.5.5 Fire hoses should be oil-resistant and of approved material.

3.5.6 Fire hoses of unlined canvas should have a diameter of not less than 64mm. Hoses of at least 45mm internal diameter having a throughput comparable to that of 64mm internal diameter unlined canvas at corresponding pressure may be used. Fire hoses of an internal diameter not less than 32mm may be accepted in ships of less than 150 gross tonnage and in the accommodation spaces of all ships.

3.5.7 Unless one fire hose and nozzle is provided for each hydrant, there should be complete interchangeability of fire hose couplings.

3.5.8 Fire hoses provided in compliance with these requirements should not be used for any purpose other than fire fighting or testing of the fire appliances.

3.5.9 Every fire hose should be provided with an approved nozzle and the necessary couplings.

3.5.10 In tankers and machinery spaces of category A of all ships to which this chapter applies, the nozzles provided for fire hoses should be of dual purpose (combined jet and spray) types.

3.5.11 Nozzles should comply with the following requirements:

.1 For the purpose of this chapter, standard nozzle sizes should be 12mm, 16mm, 16mm, 19mm or as near thereto as possible. Larger diameter nozzles may be permitted at the discretion of the Administration.

.2 For accommodation and services spaces, a nozzle size greater than 12mm need not be used.

.3 For machinery spaces and exterior location, the nozzle size should be such as to obtain the maximum discharge possible from the required jets at the pressure specified in 3.4.2 from the smallest pump, provided that a nozzle size greater than 19mm need not to be used.

3.6 Fire extinguishers

3.6.1 Fire extinguishers should be of approved types and designs.

3.6.2 The capacity of required portable fluid fire extinguishers should be not more than 13.5 and not less than 9 l. Other extinguishers should have a fire extinguishing capability at

least equivalent to that of 9 l fluid fire extinguisher.

3.6.3 The capacity of required portable carbon dioxide fire extinguishers should not be less than 3 kg.

3.6.4 The capacity of required portable dry powder fire extinguishers should not be less than 4.5 kg.

3.6.5 All required portable fire extinguishers should not exceed 23 kg. in weight in a fully charged condition and should be at least as portable as 13.5 litre fluid fire extinguisher.

3.6.6 A spare charge should be provided for every portable fire extinguisher provided in compliance with this Regulation, except that for each such fire extinguisher which is of a type that cannot readily be recharged while the ship is at sea an additional fire extinguisher of the same type, or its equivalent, should be provided in lieu of the spare charge.

3.6.7 Fire extinguishers containing an extinguishing medium which, in the opinion of the Administration, either by itself or under expected conditions of use gives off toxic gases in such quantities as to endanger persons should not be used.

3.6.8 Fire extinguishers should be periodically examined and subjected to such tests as follows:

.1 The condition of charges of extinguishers other than carbon dioxide extinguishers, should be checked annually. If on checking there is any indication of deterioration, the charges should be renewed and, in any case, at least every four years. A record of the annual check should be fixed to each fire extinguisher.

.2 Carbon dioxide extinguishers and gas propellant cartridges of other extinguishers should be examined externally for corrosion and for loss of content annually. They should be recharged or renewed if loss of gas by weight exceeds 10% of the original charge as stamped on the bottles or cartridge, or have corroded excessively externally.

.3 All portable fire extinguishers, other than carbon dioxide extinguishers, should be tested by hydraulic pressure once every four years and the date of such test legibly marked on the extinguisher.

.4 New carbon dioxide extinguishers which do not require to be recharged, should be tested by hydraulic pressure 10 and 20 years after manufacture and thereafter every five years.

.5 Carbon dioxide extinguishers which require recharging should be pressure tested before being recharged if four years have elapsed since the last hydraulic test was carried out.

3.6.9 One of the portable fire extinguisher intended for use in any space should be stowed near an entrance to that space.

3.6.10 Halon fire extinguishers should not be used.

3.6.11 Each fire extinguisher should as far as practicable be clearly marked on the front with a label of durable material with at least the following information in English:

.1 name of manufacturer;
.2 type of fire for which the extinguisher is suitable;
.3 type and quantity of extinguishing medium;
.4 approval details;
.5 operating instructions;
.6 intervals for recharging;
.7 temperature range over which the extinguisher will operate satisfactorily; and
.8 test pressure.

In addition, the year of manufacture, test pressure and any serial number should be stamped on the outside of the container.

3.7 Fire buckets

3.7.1 Fire buckets should be of material which is not readily flammable. They should be painted red, clearly marked with the word “FIRE” and provided with lanyards of sufficient length, having regard to the size of the ship.

3.7.2 The capacity of each of the fire buckets referred to in this part should be at least 9 L.

3.7.3 Fire buckets provided in compliance to this part should not be used for any purpose other than extinguishing fires.

3.8 Fixed fire-extinguishing systems and fixed fire detection and fire alarms systems

3.8.1 Subject to the provisions of 3.8.2, fixed fire-extinguishing systems and fixed fire detection and fire alarm systems required by this chapter should comply, as far as practicable and reasonable, with the relevant requirements for these systems specified in the regulations of the 1974 SOLAS Convention.

3.8.2 Fixed halogenated hydrocarbon fire-extinguishing systems should not be used in ships.

3.9 Portable fire extinguishers in accommodation spaces, service spaces and control stations

3.9.1 In every ship there should be provided a sufficient number of approved portable fire extinguishers to ensure that at least one extinguisher will be readily available for use in any part of accommodation spaces, service space and control stations. The minimum number of fire extinguishers to be provided in such ships should be in accordance with the following table:

Tonnage	minimum number
150 gross tonnage and above	3
less than 150 gross tonnage	2

The arrangement of such fire extinguishers should be to the satisfaction of the Administration.

3.9.2 In addition to complying with the requirements of 3.9.1, every ship of less than 150 gross tonnage should be provided with at least 3 fire buckets.

3.9.3 In every ship, where in the opinion of the Administration electrical installations fitted in accommodation, service and control stations constitute hazard of fire or explosion, at least one of the required fire extinguishers should be suitable for extinguishing electrical fires.

3.10 Fire-extinguishing appliances and systems in machinery spaces

3.10.1 In every ship, spaces containing main or auxiliary oil-fired boilers or fuel oil units, should be provided with the following fixed fire-extinguishing systems in accordance with chapter II-2 of the 1974 SOLAS Convention in force.

.1 a gas system complying with the provisions of 3.5.
.2 a high expansion foam system complying with the provisions of 3.9; or
.3 a pressure water-spraying system complying with the provisions of 310.

In each case, where the engine and boiler rooms are not entirely separate, or where fuel oil can drain from the boiler room into the engine room, the combined boiler and engine rooms shoal be considered as one compartment.

3.10.2 In addition to the requirements of 3.10.1, every ship with the spaces referred to should be provided with the following numbers of portable fire extinguishers:

3.10.2.1 There should be at least one portable extinguisher suitable for extinguishing oil fires for each burner. However, the total capacity of such extinguishers should not be less than 18 L or equivalent and need not to exceed 45 L or equivalent in each boiler room.

3.10.2.2 There should be at least two portable extinguishers suitable for extinguishing oil fires in each space in which part of fuel units is situated.
3.10.2.3 In each firing space there should be a receptacle containing not less than 0.15 m2 of sand, sawdust impregnated with soda or other approved dry material to the satisfaction of the Administration, Alternatively, an approved portable extinguisher may be substituted.

3.10.3 In every ship, for the protection of any space containing internal combustion type machinery having a total power output of 750 kW and above there should be provided for the following:

.1 one of the fixed fire-extinguishing system referred to in 3.10.1; and
.2 at least one portable extinguisher suitable for extinguishing oil fires for each 750 kW of engine power output or part thereof, but the total number of such fire extinguishers so supplied should be not less than two and not exceed six.

3.10.4 In every ship to which this chapter applies which does not comply with the requirements of paragraph 3.10.3, there should be provided in any space containing internal combustion type machinery having the aggregate a total power output of less than 750 kW , either:

.1 at least one portable fire extinguishing oil fires for each 75 kW or part thereof of such machinery , but the total number of such extinguishers so supplied should be not less than two and need not to exceed seven; or

.2 at least two portable fire extinguishers suitable for extinguishing oil fires together with one non-portable foam fire extinguisher of at least 45 litres capacity or at least 15 kg capacity or equivalent.

3.10.5 In every ship, there should be provided in machinery spaces containing electrical installations, one or mote fire extinguishers suitable for extinguishing electrical fire as deemed necessary by the Administration having regard to the fire hazards of electrical origin. One or more of the fire extinguishers required by this section may be used as the fire extinguishers required by this paragraph.

3.10.6 Where, in the opinion of the Administration a fire hazard exists in any machinery space for which no specific provision for fire-extinguishing appliances are prescribed in 3.10.1 to 3.10.4, there should be provided in, or adjacent to, that space a number of approved portable fire extinguishers or other means of fire extinction to the satisfaction of the Administration.

3.10.7 In each firing space of every such ship, fitted with auxiliary oil-fired boilers, a receptacle should be provided which should contain at least 0.28 m3 of sand or other dry material suitable for quenching oil fires. Scoops should be provided for distributing the contents of the receptacle.

3.11 Fireman's outfit

3.11.1 Every ship of 150 gross tonnage and above propelled by mechanical means should be provided with at least one firm's outfit.

3.11.2 A fireman's outfit should consists of :

.1 personal equipment comprising:

.1 protective clothing of material to protect the skin from the heat radiating from the fire and from burns and scalding by steam. The outer surface of protective clothing should be water-resistant;

.2 boots and gloves of rubber or other electrically non-conducting material;

.3 a rigid helmet providing effective protection against impact;

.4 an electric safety lamp (hand lantern) of an approved type with a minimum burning period of three hours; and

.5 an axe to the satisfaction of the Administration.

.2 breathing apparatus of an approved type which may be either:

.1 a smoke helmet or smoke mask which should be provided with a suitable air pump and length of air hose sufficient to reach from the open deck, well clear of hatch or doorway, to any part of the holds or machinery spaces. Where in order to comply with this paragraph, an air hose exceeding 36m in length would be necessary, a self-contained breathing apparatus should be substituted or provided, in addition, as determined by the Administration; or

.2 a self-contained compressed-air breathing apparatus, the volume of air contained in the cylinders of which should be at least 1,200 L, or other self-contained breathing apparatus which should be capable of functioning for at least 30 min. A number of spare charges, suitable for use with the apparatus provided, should be available on board to the satisfaction of the Administration.

3.11.3 For each breathing apparatus a fireproof lifeline of sufficient length and strength should be provided capable of being attached by means of a snaphook to the harness of the apparatus or to a separate belt in order to prevent the breathing apparatus becoming detached when the lifeline is operated.

3.11.4 The Administration may require additional sets of personal equipment and breathing apparatus, having due regard to the size and type of the ship.

3.11.5 The fireman's outfits or sets of personal equipment should be so stored as to be easily accessible and ready for use and where more than one fireman's outfit or more than one set of personnel equipment is carried, they should be stored in widely separated positions.

3.12 Fireman's axe

Every ship should be provided with at least one fireman's axe in an easily accessible location outside the machinery, accommodation and service spaces.

3.13 Fire control plan

3.13.1 In ships of 24m in length and over having machinery spaces of category A, there should be provided a permanently exhibited fire control plan or equivalent to the satisfaction of the Administration.

3.13.2 In all such ships, fire control plans should be kept up to date. Description in such plans should be in English and in the language of the crew, if another.

3.13.3 In addition, instructions concerning the maintenance and operation of all the equipment and installations on board for fighting and containment of fire should be kept under one cover and readily available in an accessible position.

3.14 Acceptance of substitutes

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

PART B.- FIRE SAFETY MEASURES

3.15 Structure

3.15.1 The hull, superstructure, structural bulkheads, decks and deckhouses of ships propelled by mechanical means should be constructed of steel or other equivalent material. Material other than steel should be insulated to the same fire retardant properties as steel.

3.15.2 In lieu of complying with the requirements of 3.15.1, the hull structure, structural bulkheads, deck and deckhouses of ships propelled by mechanical means (other than tankers) or as specified by the Administration may be constructed of materials other than steel.

3.16 Constructional fire safety measures

3.16.1.1 Subject to the provisions of 3.16.1.2 and 3.16.1.3, the fire safety requirements of bulkheads, decks, doors and stairways should, as far as practicable and reasonable in the opinion of the Administration, comply with the applicable requirements of the 1974 SOLAS Convention for such bulkheads, doors and stairways.

3.16.1.2 The bulkheads and decks separating the machinery spaces of category A from control stations, corridors, accommodation spaces, stairways, service spaces and cargo spaces should be so constructed as to be capable of preventing the spread of fire to the unexposed side.

3.16.1.3 Interior stairways below the weather deck should be of steel or other material having acceptable fire resisting properties.

3.16..2 Insulation materials in accommodation spaces, services spaces (except domestic refrigeration compartments), control stations and machinery spaces should be non-combustible. Vapour barriers and adhesive used in conjunction with insulation, as well as insulation of pipes fittings, for cold service systems, need not to be no-combustible materials, but they should be kept to the minimum quantity practicable and their exposed surfaces should have qualities or resistance to the propagation of flame to the satisfaction of the Administration.

3.16.3.1 All exposed surfaces in corridors and stairway enclosures and surfaces including decks in concealed or inaccessible spaces in accommodation spaces, service spaces and control stations should have low flame-spread characteristics. Exposed surfaces of ceilings in accommodation spaces, service spaces and control stations should have low flame-spread characteristics.

3.16.3.2 Paints, varnishes and other finishes used on exposed interior surfaces should not offer an undue fire hazard in the judgement of the Administration and should not be capable of producing excessive quantities of smoke.

3.16.3.3 Primary deck coverings, where applied within accommodation spaces, service spaces and control stations, should be of approved materials which will not readily ignite or give rise to toxic or explosive hazards at elevated temperature. In existing ships, the Administration may, in lieu of applying the requirements fully, apply such requirements only to deck coverings within accommodation spaces on decks forming the crown of machinery spaces and cargo spaces.

3.16.4.1 Stairways and ladders should be so arranged as to provide, from accommodation spaces, service spaces, control stations, machinery spaces and other spaces in which the crew is normally employed, ready means of escape to the open deck and thence to the survival craft.

3.16.4.2 Two means of escape should be provided from every machinery space of category A which should be as widely separated as possible. Vertical escapes should be by means of steel ladders or other means acceptable to the Administration as suitable alternatives. Where the size of such machinery space makes it impracticable, one of these means of escape may be dispensed with provided that the means available is to the satisfaction of the Administration.

3.16.4.3 From machinery spaces other than those of category A, escape routes should be provided to the satisfaction of the Administration having regard to the nature and location of the space and whether persons are normally employed in the space.

3.16.4.4 No dead-end corridors having length of more than 7m should be accepted. A

dead-end corridor is a corridor or pare of a corridor from which there is only one escape route.

3.16.4.5 The width and continuity of the means of escape should be to the satisfaction of the Administration.

3.16.5 The following provisions should apply to machinery spaces of category A and, where the Administration considers it desirable, to the other machinery spaces;

.1 means should be provided for opening and closure of skylights, opening and closure of windows in machinery space boundaries, closure of opening in funnels which normally allow exhaust ventilation, and closure of ventilator damper,

.2 means should be provided for permitting the release of smoke.

.3 means should be provided for stopping forced and induced draught fans, fuel oil transfer pumps, fuel oil unit pumps and similar fuel pumps.

.4 the means required in 3.16.5.1, .2, and .3 should be located outside the space concerned where they will not be cut off in the event of fire in the space they serve.

.5 the number of skylights, doors, ventilators for natural ventilation, opening in funnels to permit exhaust ventilation and other openings to machinery spaces should be reduced to a minimum consistent with the needs of ventilation and the proper and safe working of the ship.

.6 skylights should not contain glass panels. However, skylights containing wire-reinforced glass or toughened safety glass panels may be permitted provided that they are fitted with external shutters of steel or other equivalent material permanently attached. Suitable control arrangements should be made to permit the release of smoke from the space to be protected in the event of fire.

.7 windows should not be fitted in machinery space boundaries. This does not preclude the use of glass in control rooms within the machinery space.

.8 doors fitted in machinery space boundaries should as far as practicable be equivalent in resisting fire to the divisions forming such boundaries. Where such doors are not weathertight or watertight doors, they should be self-closing.

3.16.6.1 Ventilation systems of each of the following groups of spaces should be entirely separated from each other:

.1 machinery spaces;
.2 galleys;
.3 cargo spaces; and

.4 accommodation spaces and control station.

The arrangement of each ventilation system should be such that fire in one space should not readily spread to the other spaces.

3.16.6.2 Power ventilation of accommodation spaces, service spaces, control stations and machinery spaces should be capable of being stopped from an easily accessible position located outside the space being served. This position should not be readily cut off in the event of a fire in the space served. The means provided for stopping the power ventilation o f machinery spaces should be entirely separated from the means provided for stopping ventilation of other spaces.

3.16.6.3 The main inlets and outlets of all ventilation systems should be capable of being closed from outside the spaces being ventilated.

3.16.7 A fixed fire detection and fire alarm systems of an approved type should be installed in periodically unattended machinery spaces.

3.17 Ventilation of tanks, cofferdams, etc.

3.17.1 Subject to the provisions of 2.24 and 2.25, all tanks carrying cargo, cofferdams and other enclosed spaces in all ships should be provided with effective means for ventilation and access to the satisfaction of the Administration, having regard to the intended services.

3.17.2 In tankers and barges carrying flammable liquid cargo in bulk, other than crude oil or petroleum products of low flashpoint, there should be provided for ventilation of cargo tanks a venting system consisting of one or more pressure vacuum valves at the outlets to the atmosphere or air pipes the open ends of which are fitted with removable wire mesh diaphragms of incorrodible material. Such venting systems should be to the satisfaction of the Administration.

3.18 Miscellaneous

3.18.1 Where bulkheads, decks ceiling or lining are penetrated for the passage of electric cables, pipes, trunk, etc., or for the fitting of ventilation terminals, lighting fixtures and similar devices, or for girders, beams or other structural members, arrangements should be made to ensure that the fire integrity is not impaired.

3.18.2 Where the Administration may permit the conveying of oil and combustible liquid through accommodation and service spaces, the pipes conveying oil or combustible liquids should:

.1 be of a material approved by the Administration, having regard to the fire risk;
.2 not be concealed; and
.3 carry only low pressure liquids and not normally be used at sea.

3.18.3 Materials readily rendered ineffective by heat should not be used for overboard scuppers, sanitary discharges and other outlets which are close to the waterline and where the failure of the material in the event of fire would give rise to danger of flooding.

3.18.4 In spaces where penetration of oil products is possible, the surface of insulation should be impervious to oil or oil vapour.

3.19 Arrangement for oil fuel, lubricating oil and other flammable oils

3.19.1 The following limitations should apply to the use of oil as fuel:

.1 Except as otherwise permitted by this paragraph, no oil fuel with a flashpoint of less than 60oC should be used.

.2 in emergency generators oil fuel with a flashpoint of not less than 43oC should be used.

.3 subject to such additional precautions as it may consider necessary and on condition that the ambient temperature of the space in which such oil fuel is stored or used should not be allowed to rise to within 10oC below the flashpoint of the oil fuel, the Administration may permit the general use of oil fuel having a flashpoint of less than 60oC but not less than 43oC.

.4 in cargo ships, the use of fuel having a lower flashpoint than otherwise specified in this paragraph, for example, crude oil, may be permitted provided that such fuel is not stored in any machinery space and subject to the approval of the complete installation by the Administration.

The flashpoint of oils should be determined by an approved closed cup method.

3.19.2 In a ship in which oil fuel is used, the arrangements for the storage distribution and utilization of the oil fuel should be such as to ensure the safety of the ship and persons on board and should at least comply with the following provisions:

.1 as far as practicable, parts of the oil fuel systems containing heated oil under pressure exceeding 0.18 N/mm2 should not be placed in a concealed position such that defects and leakage cannot readily be observed. The machinery spaces in way of such parts of the oil fuel systems should be adequately illuminated.

.2 as far as practicable, oil fuel tanks should be part of the ship's structure and should be located outside machinery spaces of category A. Where oil fuel tanks, other than double bottom tanks, are necessarily located adjacent to, or with in, machinery spaces of category A, at least one of their vertical sides should be contiguous to the machinery space boundaries, and should preferably have a

common boundary with the double bottom tanks, where fitted, and the area of the tank boundary common with the machinery spaces should be kept to the minimum. Where such tanks are situated within the boundaries of machinery spaces of category A, they should not contain oil fuel having a flashpoint of less than 60oC. In general, the use of free-standing oil fuel tanks should be avoided. Where permitted, they should be provided with an oiltight spill tray of suitable size having a drain pipe leading to a safe place to the satisfaction of the Administration.

.3 every oil fuel pipe, which, if damaged, would allow to escape from the storage, settling or daily service tank situated above the double bottom should be fitted with a cock or valve constructed of similar material to that of the tank, directly on the tank capable of being closed from a safe position outside the space concerned in the event of a fire occurring in the space in which such tanks are situated. Such tanks of not more than 250 L capacity need not to comply with this paragraph.

.4 safe and efficient means of ascertaining the amount of oil fuel contained in any oil fuel tank should be provided. Sounding pipes should not terminate in any space where the risk of ignition of spillage from the sounding pipe might arise. In particular, they should not terminate in accommodation spaces. Other means of ascertaining the amount of oil contained in any oil fuel tank may be permitted, provided that the failure of such means or overfilling of the tanks will permit release of fuel. The Administration may permit the use of oil level gauges with flat glasses and self-closing valves between the gauge glasses and the oil tanks. Cylindrical gauge glasses may also be permitted in free standing oil fuel tanks provided that they are suitably protected and fitted with self-closing valves to the satisfaction of the Administration.

.5 provision should be made to prevent overpressure in any oil tank or in any part of the oil fuel system including the filling pipes. Relief valves and air or over-flow pipes should discharge to a position which in the opinion of the Administration is safe. The open ends of air pipes should be fitted with wire mesh.

.6 the ventilation of machinery spaces should be sufficient under all normal conditions to prevent accumulation of oil vapour.

3.19.3 The arrangements for storage, distribution and utilization of oil used in pressure lubricating systems should be such as to ensure the safety of the ship and persons on board, and such arrangements in machinery spaces of category A and whenever practicable in other machinery spaces should at least comply with the provisions of 3.19.2.1, .3, .4, and .5, except that this does not preclude the use of sight flow glasses in lubricating systems provided that they are shown by test to have a suitable degree of fire resistance.

3.19.4 The arrangements for storage, distribution and utilization of other flammable oils

employed under pressure in power transmission systems, control and activation systems and heating systems should be such as to ensure the safety of the ship and persons on board. In locations where means of ignition are present, such arrangements should at least comply with the provisions of 3.19.2.

3.19.5 No oil fuel tank or lubricating oil tank or any other flammable oil tank should be situated where spillage of leakage therefrom can constitute a hazard by falling on heating surfaces. Precautions should be taken to prevent any oil that may escape under pressure or oil-leakage from any pump, filter, piping system or heat exchanger from coming into contact with heated surfaces or enter into machinery air intakes. Where necessary, a suitable spill tray or gutter screen or other suitable arrangement should be provided to allow oil to drain to a safe place in the event of spillage or leakage of oil from such an oil tank, machinery, equipment or system. The number of joints in piping systems should be kept to a minimum practicable.

3.19.6 Pipes, fittings and valves handling fuel oil, lubricating oil and other flammable oils should be of the steel or other approved material, except that restricted use of flexible pipes should be permissible in positions where the Administration is satisfied that they are necessary. Such flexible pipes and end attachments should be of approved fire-resisting materials of adequate strength and should be constructed to the satisfaction of the Administration.

3.19.7 Oil fuel, lubricating oil or other liquid substances flammable or harmful to the marine environment should not be carried in forepeak tanks..

(8) Any oil or other substances flammable or harmful to the marine environment should not be carried in other tanks or spaces which are not specially approved by the Administration for such purposes.

3.20 Carriage of oxygen and acetylene cylinders

3.20.1 Where more than one cylinder of oxygen and more than one cylinder of acetylene are carried simultaneously, such cylinders should be arranged in accordance with the following:

.1 permanent piping systems for oxygen and acetylene are acceptable provided that they are designed having due regard to standards and codes of practice to the satisfaction of the Administration.

.2 Where two or more clinkers of each gas are intended to be carried in enclosed spaces, separate dedicated storage rooms should be provided for each gas.

.3 Storage rooms should be constructed of steel, and be well ventilated and accessible from the open deck.

.4 Provision should be made for the expeditious removal of cylinders from the storage rooms in the event of fire.

.5 "NO SMOKING" signs should be displayed at the gas cylinder storage rooms.

.6 Where cylinders are stowed in open locations, means should be provided to:

.1 protect cylinders and associated piping from physical damage;
.2 minimize exposure to hydrocarbon; and
.3 ensure suitable drainage.

.7 In all cases, cylinders and associated pipings should be located at a safe distance away from the ship's sides to avoid leakage of gases due to damage to the cylinders in the case of an accident to the ship's side.

3.20.2 Fire-extinguisher arrangements for the protection of areas or spaces where such cylinders are stored should be to the satisfaction of the Administration.

3.21 - Carriage of dangerous stores for ship's use

3.21.1 Stowage of explosive associated with every ship should be in accordance with the requirements for explosives storages specified in chapter 7 of the Code of Safety for Special Purpose Ships, adopted by the International Maritime Organization by Resolution A.534(13) as amended.

3.21.2 Subject to the provisions of 3.22, liquids which give off dangerous vapours and flammable gases and cylinders containing flammable or other dangerous gases should be stored in a well ventilated space or on deck and protected against sources of dangerous heat. All pipes and fitting associated with the gas cylinder should be adequately protected against damage. Where storage rooms are necessary, separate storage room meeting the requirements of 3.20.1.3, .4, .5 and .7 should be provided for each type of cylinder.

3.21.3 Propane gas systems should meet the standards required by the Administration, should be initially installed, then subsequently inspected and serviced annually, by a person that is properly qualified in accordance with the requirements of the Administration. The amount of propane gas that is carried should be kept to the minimum compatible with the operational requirements of the ship.

3.21.4 Substances which are liable to spontaneous heating or combustion should not be carried unless adequate precautions have been taken to prevent the outbreak of fire.

3.22 Cooking areas

3.22.1 In the case of a small cooking area that is common with the accommodation, the structural fire protection required will be dependent on the fire hazard of the appliances fitted and should be to the satisfaction of the Administration.

3.22.2 Cooking appliances such as deep-fat fryers or other types of appliances that could provide a high fire hazard in a seagoing environment should not be fitted.

3.22.3 There should be suitable fire retardant barriers built around the cooking and heating appliances where they are adjacent to combustible materials and structures.

3.22.4 Where a cooking range Reuters an exhaust hood and duct, this should be fitted with a grease trap.

3.22.5 Combustible materials that are not needed in the cooking area should not be stored in the area.

3.23 Fire protection arrangement in cargo spaces

Any ship engaged in the carriage of dangerous goods should be provided in any cargo space with a fixed gas fire-extinguishing system complying with the relevant regulations of the 1974 SOLAS Convention or with a fire-extinguishing system which in the opinion of the Administration gives equivalent protection for the cargoes carried.

3.24. Special requirements for ships carrying dangerous goods

3.24.1 Ships intended for the carriage of dangerous goods should comply with the special requirements specified in Regulation 54 of chapter II-2 of the 1974 SOLAS Convention, except when carrying dangerous goods in limited quantities as defined in the IMDG Code.

3.24.2 Every ship should be provided with an appropriate document as evidence of compliance of construction and equipment with the requirements of this section.

PART C - FIRE SAFETY MEASURES FOR SHIPS CARRYING CRUDE OIL OR PETROLEUM PRODUCTS OF LOW FLASHPOINT AND DANGEROUS GOODS IN BULK

3.25 Safety of ships carrying crude oil and petroleum products of low flashpoint.

3.25.1 The requirements of regulations 56 to 63 of chapter II-2 of the 1974 SOLAS Convention should apply to new tankers and barges of any tonnage carrying crude oil or petroleum products of low flashpoint in bulk as appropriate.

3.25.2 Existing tankers should, as far as practicable and reasonable in the opinion of the Administration, comply with the requirements of 3.25.1

3.26 Carriage of dangerous goods in barges.

3.26.1 The requirements of regulations 1 to 7 of chapter VII of the 1974 SOLAS Convention should apply to the dangerous goods, classified as such in regulation 2 of that chapter, which are carried in packaged form or in solid form in bulk in barges, as appropriate.

CHAPTER 4
LIFE-SAVING APPLIANCES, ETC.

4.1 Application

4.1.1 Unless expressly provided otherwise, this chapter should apply to new ships.

4.1.2 Existing ships should, as far as practicable and reasonable in the opinion of the Administration, comply with the provisions of this chapter by 9 February 1998.

4.1.3 Where, prior to 9 February 1998, an existing ship cannot comply with the provisions of this chapter the ship should not proceed more than 20 miles from the nearest land during the course of a voyage.

4.1.4 The Administration may exempt a ship from the provisions of 4.1.3 where such exemptions acceptable to the States to be visited by the ship.

4.2 Definitions

For the purposes of this chapter, unless expressly provided otherwise:

“embarkation ladder” means the ladder provided at survival craft embarkation stations to permit safe access to survival craft after launching.

“free-fall launching” means the method of launching a survival craft whereby the craft with its complement of persons and equipment on board is released and allowed to fall into the sea without any restraining apparatus.

“launching appliance or arrangement” is a means of transferring a survival craft or rescue boat from its position safely to the water.

“survival craft” is a craft capable of sustaining the lives of persons in distress from the time of abandoning the ship.

“rescue boat” is a boat designed to rescue persons in distress and to marshal survival craft.

“International Life-Saving Appliance (LSA) Code” means the International Code for Requirements of Life-Saving Appliances adopted by the Maritime Safety Committee of the International Maritime Organization.

4.3 General requirement for life-saving appliances

4.3.1 Life-saving appliances required by this chapter should comply with the technical specifications of the LSA Code. Where detailed specifications are not included in the LSA Code then the life-saving appliances should be to the satisfaction of the Administration.

4.3.2 In the case of ships engaged on voyages of such a nature and duration that in the opinion of the Administration, the application of the technical specifications referred to in 4.3.1 are unreasonable or impractical, the Administration may approve alternative specifications that are considered equally effective under the circumstances.

4.4 Number and capacity of survival craft

4.4.1 Every ship to which this chapter applies should carry:

.1 a lifeboat on each side or one capable or being launched on either side or freefall launched over the stern of the ship of such aggregate capacity as will accommodate the total number of persons the ship is certified to carry; and

.2 a liferaft or liferafts capable of being launched on either side of the ship and of such aggregate capacity as will accommodate the total number of persons on board. Where the liferaft or liferafts cannot be readily transferred for launching on either side of the ship, the total capacity available on each side shall be sufficient to accommodate the total number of persons on board.

"Capable of being launched on either side of the ship" and "can be readily transferred" should be interpreted as stowed in a position providing for easy side-to-side transfer at a single open deck level.

4.4.2 Where the administration is satisfied that, owing to the size or configuration of the ship, compliance with the requirements of 4.4.1 is unreasonable or impracticable, cargo ships other than tankers may, in lieu of complying with the requirements of 4.4.1, carry on each side of the ship survival craft capable of being launched on either side of the ship and of such aggregate capacity a will accommodate the total number of persons the ship is certified to carry. However, one or more of such survival craft of such aggregate capacity as will accommodate at least the total number of persons the ships is certify to carry, should be capable of being readily transferred from their stowage positions to both sides or form one side to the other side of the ship at open deck level for launching.

4.4.3 Every ship of 24 m in length and over to which this chapter applies should, in addition to complying with the requirements of 4.3.1 to 4.3.2 as appropriate, carry at least one rescue boat unless at least one the required survival craft is a lifeboat complying with the requirements for a rescue boat.

4.4.4 Each lifeboat and rescue boat should be served by its own launching appliance.

4.4.5 Ships operating solely in restricted area III may replace the liferafts required by 4.4.1 or 4.4.2 with buoyant apparatus or lifebouys sufficient for 100% of the total number of persons the ship is allowed to carry.

4.4.6 In the event of any one survival craft being lost or rendered unserviceable, there should be sufficient survival craft available for use to accommodate the total number of persons on board.

4.5. Marking of survival craft and rescue boats

Each survival craft and rescue boat should be marked in accordance with the requirements of paragraphs 4.2.6.3, 4.3.6 and 4.4.9 of the LSA Code as applicable.

4.6 Security of lifeboat and rescue boat equipment

All items or lifeboat or rescue boat equipment, with the exception of boat-hooks which should be kept free for fending off purposes, should be secured within the lifeboat or rescue boat by lashings, storage in lockers or compartments, storage in brackets or similar mounting arrangements or other suitable means. The equipment should be secured in such a manner as not to interfere with any abandonment procedures or with any launching or recovery procedures (in case of rescue boat). All items of lifeboat or rescue boat equipment should be as small and of as little mass as possible and should be packed in a suitable and compact form.

4.7 Servicing of inflatable liferafts, inflatable lifejackets and inflatable rescue boats

4.7.1 Every inflatable liferaft and inflatable lifejacket should be serviced:

.1 at intervals not exceeding twelve months; however, in cases where it appears proper and reasonable, the Administration may extend this period up to a maximum of seventeen months;

.2 at an approved service station which is competent to service them, maintains proper servicing facilities and uses only properly trained personnel.

4.7.2 All repairs and maintenance of inflated rescue boats should be carried out in accordance with the manufacturer's instructions. Emergency repairs may be carried out on board the ship; however, permanent repairs should be effected at an approved servicing station.

4.8 Servicing of hydrostatic release units

Hydrostatic release units should be serviced:

.1 at intervals not exceeding twelve months; however, in cases where it appears proper and reasonable, the Administration may extend this period up to a maximum of seventeen months;

.2 at an approved service station which is competent to service them, maintains proper servicing facilities and uses only properly trained personnel;

4.9 Survival craft launching stations and stowage of survival craft and rescue boats

4.9.1 Launching stations should be in such positions as to ensure safe launching having particular regard to clearance from the propeller and steeply overhanging portion of the hull so that, as far as possible, survival craft can be launched down the straight side of the ship. Where positioned forward, they should be located abaft the collision bulkhead in a sheltered position and, in this respect, the Administration should give special consideration to the strength of the launching appliance.

4.9.2 Each survival craft should be stowed:

.1 so that neither the survival craft nor its stowage arrangements will interfere with the operation of any other survival craft or rescue boat at any other launching station.

.2 as near the water surface as is safe and practicable and, in the case of a survival craft other than a liferaft intended for throw overboard launching, in such a position that the survival craft in the embarkation positions is not less than 2m above the waterline with the ship in fully loaded condition under unfavorable conditions of trim and listed up to 20o either way, or to the angle at which the ship's weatherdeck edge becomes submerged, whichever is less;

.3 in a state of continuous readiness so that two persons can carry out preparations or embarkation and launching in less than five minutes.

.4 fully equipped as required by this chapter; and

.5 as far as practicable, in secure and sheltered positions close to accommodation and service spaces and protected from damage by fire or explosion.

4.9.3 Lifeboats for lowering down the ship's side should be stowed as far forward of the propeller as practicable.

4.9.4 Lifeboats should be stowed attached to launching appliances.

4.9.5 Every liferafts should be stowed with its painter permanently attached to the ship and with a float-free arrangement so that the liferaft floats free and, if inflatable, inflates automatically when the ship sinks.

4.9.6 In addition to meeting the requirements of 4.9.5, liferafts should be so stowed as to permit manual release from their securing arrangements;

4.9.7 Davit launched liferafts should be stowed within reach of the lifting hooks, unless some means of transfer is provided which is not rendered inoperable within the limits of trim and list prescribed in 4.9.2.2.

4.9.8 Rescue boats should be stowed:

.1 in a state of continuous readiness for launching in not more than 5 min.

.2 in a position suitable for launching and recovery;

.3 so that neither the rescue boat nor its stowage arrangements will interfere with the operation of any survival craft at any other launching station; and

.4 if it is also a lifeboat, in compliance with the requirements of 4.9.2, 4.9.3 and 4.9.4.

4.10 Embarkation and launching arrangements

4.10.1 Survival craft embarkation arrangements should be so designed that lifeboats can be boarded and launched directly from the stowed position and davit-launched liferafts can be boarded and launched from a position immediately adjacent the stowed position or from a position to which the liferaft is transferred prior to launching in compliance with the requirements of 4.9.7

4.10.1.2 Suitable arrangements should be made to the satisfaction of the Administration for embarkation into survival craft which should include:

.1 one more embarkation ladders or other approved means to afford access to the survival craft when it is waterborne;

.2 means for illuminating the stowage position of survival craft and their launching appliances during preparation for and the process of launching, and also for illuminating the water into which the survival craft are launched until the process of launching is completed, the power for which is to be supplied from the emergency source required by 2.3.4;

.3 arrangements for warning all persons on board that the ship is about to be abandoned; and

.4 means for preventing the discharge of water into the survival craft.

4.10.2.1 Rescue boat embarkation and launching arrangements should be such that the rescue boat can be boarded and launched in the shortest possible time.

4.10.2.2 Where the rescue boat is one of the ship’s survival craft, the embarkation arrangements and launching station should comply with the relevant requirements for survival craft of this section.

4.10.2.3 Rescue boats should be of sufficient strength and rigidity to enable it to be lowered and recovered with its full compliment of persons and equipment.

4.11 Lifejackets

4.11.1 In every ship to which this chapter applies lifejackets should be provided for every person on board the ship and, in addition, lifejackets should be carried for persons on watch or duty and for use at remotely located survival craft stations in unlocked and clearly marked dry stowage positions in accordance with the following table:

Number of persons the ship Is certified to carry	minimum number of additional lifejackets
more than 16 persons	not less than 25% of the total number of persons the ships is certified to carry
4 persons and above but not more than than 16 persons	not more than 4
less than 4 persons	2

4.11.2 Lifejackets should be so placed as to be readily accessible and their position should be plainly indicated. Where due to the particular arrangements of the ship, the lifejackets provided in compliance with the requirements of 4.11.1 may become inaccessible alternative provisions should be made to the satisfaction of the Administration which may include an increase in the number of lifejackets to be carried .

4.11.3 Each lifejacket should be fitted with a whistle firmly secured by a cord and a light and fitted with retro-reflective material.

4.12 Lifebuoys

4.12.1 Ships to which this chapter applies should carry not less than the number of lifebuoys determined according to the following table:

Length of the ship in metres	minimum number of lifebuoys

Under 24	4
24 and under 50	6
50 and over	8

4.12.2 At least half of the number of lifebuoys referred to in 4.12.1 should be fitted with self-igniting lights which in tankers should be of an electric battery type.

4.12.3 In ships of 50m in length and over at least two of the lifebuoys provided with self-igniting lights in accordance with 4.12.2 should also be provided with self-activating smoke signals. Each of these lifebuoys should be capable of quick release from the place at which the ship is normally navigated where practicable or be of the throw over type.

4.12.4 At least one lifebuoy on each side of the ship should be fitted with a buoyant lifeline of at least 30m in length.

4.12.5 Lifebuoys should be:

.1 so distributed as to be readily available on both sides of the ship and as far as practicable on all open decks extending to the ship's sides; at least one lifebuoy should be placed in the vicinity of the stern;

.2 so stowed as to be capable of being rapidly cast loose, and not permanently secured in any way; and

.3 marked in block capitals of the Roman alphabet with the name and port of registry of the ship on which it is carried.

4.13 Distress signals

Every ship to which this chapter applies should be provided, with not less than 6 rocket parachute flares. They should be stowed on or near the place at which the ship is normally navigated. They should be so placed as to be readily accessible and their position should be plainly indicated.

4.14 Radio life-saving appliances

4.14.1 Subject to 4.14.2, every ship of 300 gross tonnage and upwards but less than 500 gross tonnage and ships of less than 300 gross tonnage operating on unrestricted service or within restricted area I, should comply with the requirements of regulation 6 of chapter III of the 1974

SOLAS Convention for ships of 300 gross tonnage and upwards but less than 500 gross tonnage.

4.14.2 Ships of less than 300 gross tonnage operating within restricted area II or III should carry at least one two-way VHF telephone apparatus.

4.15 General emergency alarm system

Every ship should be provided with a general emergency alarm system capable of sounding the general emergency alarm signal consisting of seven or more short blasts followed by one long blast on the ship's whistle or sire. The system should be capable of operation from the navigation bridge or control station as appropriate and should be audible throughout all accommodation and normal working spaces.

4.16 Emergency instructions

4.46.1 Clear instructions to be followed in the event of an emergency should be provided and exhibited in conspicuous places throughout the ship including the navigation bridge, machinery spaces and accommodation spaces.

4.16.2 The emergency instructions should specify details of the general emergency alarm prescribed in 4.15 and action to be taken by crew or other persons on board when the alarm is sounded. Instructions on the signal for fire on board and the order to abandon ship should be specified.

4.16.3 The attention of the passengers or industrial personnel should be drawn to the emergency instructions required in 4.16.1 before the ship departs on a voyage.

4.17 Emergency training and drills

4.17.1 In all ships training in the procedures specified in accordance with 4.16 should be carried out at least once per month. The Administration may accept other equivalent procedures or training arrangements for specific ships.

4.17.2 Training drills should be as far as practicable be conducted as if there were an actual emergency.

4.17.3 Each lifeboat should be launched with its assigned operating crew aboard and manoeuvred in the water at least once every three months during an abandon ship drill.

4.17.4 As far as reasonable and practicable, rescue boats other than lifeboats which are also rescue boats, should be launched each month with their assigned crew aboard and manoeuvred in the water. In all cases this requirement should be complied with at least once every three months.

4.17.5 On board training in the use of the ship's lifesaving appliances, including survival craft equipment should be given as soon as possible but not later than two weeks after a crew member

or person joins the ship.

4.17.6 The dates when training in the procedures specified in 4.16 are held should be recorded in the Official Log Book.

CHAPTER 5

RADIOCOMMUNICATIONS

PART A.- SAFETY RADIO REQUIREMENTS

5.1 Application

5.1.1 This chapter applies to all ships of less than 300 gross tonnage. All ships of 300 gross tonnage and over to which this Regulation applies should comply with the provisions of chapter IV of the 1974 SOLAS Convention.

5.1.2 No provision in this chapter should prevent the use by a ship or survival craft in distress of any means at its disposal to attract attention to make known its position and to obtain help.

5.1.3 Ships to which this chapter applies should comply with the applicable requirements of chapter IV of the 1974 SOLAS Convention as appropriate for ships operating in sea areas A1, A2 and A3 to the extent required by the Administration.

5.1.4 In determining the extent to which ships will comply as required by 5.1.3, the Administration should take into account the following functional requirements of which the ship, while at sea, should be capable of:

.1 transmitting distress alerts by at least two separate and independent means, each using a different radio communication service;

.2 receiving shore to ship distress alerts;

.3 transmitting and receiving ship to ship distress alerts;

.4 transmitting and receiving search and rescue coordinating communications;

.5 transmitting and receiving on scene communications;

.6 transmitting and receiving maritime safety information;

.7 transmitting and receiving general radio communications to and from shore-based radio systems; and

.8 transmitting and receiving bridge to bridge communications.

5.1.5 In lieu of complying with requirements of 5.1.3, existing ships may, until 1 February 1999 comply with the requirements of 5.2 to 5.12.

5.2 Terms and definitions

For the purposes of this chapter, the following terms should have the meanings defined below. All other terms which are used in this chapter and which are also in the Radio Regulations should have the same meanings as defined in those Regulations.

5.2.1 "Radio Regulations" means the Radio Regulations annexed to, or regarded as being annexed to, the most recent International Telecommunication Convention which may be in force at any time

5.2.2 "Radiotelephone auto alarm" means an automatic alarm receiving apparatus which responds to the radiotelephone alarm signal and has been approved.

5.2.3 "Radiotelephone operator" means a person holding an appropriate certificate complying with the provisions of the Radio Regulations.

5.2.4 "Radiotelephone station" and "radiotelephone installation" should be considered as relating to the medium frequency band, unless expressly provided otherwise.

5.3 Radiotelephone station

5.3.1 All ships of less than 300 gross tonnage unless exempted under 5.5., should be fitted with a radiotelephone station complying with the requirements of 5.8 and 5.9.

5.3.2 Existing ships should comply with the provisions of 5.3.1 by 1 February 1998.

5.4 VHF radiotelephone installation.

All ships of less than 300 gross tonnage should be fitted with a VHF radiotelephone installation complying with the provisions of 5.10.

5.5 Exemption from the requirement of Section 5.3

5.5.1 The Administration may grant to individual ships exemptions of a partial or conditional nature, or complete exemption from the requirements of 5.3

5.5.2 The exemptions permitted under 5.5.1 should be granted only to a ship engaged on a voyage where the maximum distance of the ship from a place of refuge, the length of the voyage, the absence of general navigation hazards, and other conditions affecting safety are such as to render the full application of 5.3 unreasonable or unnecessary.

5.6 Radio watches

5.6.1 Every ship fitted with VHF radiotelephone installation in accordance with 5.4 should at sea maintain a continuos listening watch on the navigation bridge.

.1 on 156.8 (Channel 16) when practicable; or
.2 for such periods and channels as may be required within an area under the jurisdiction of the Administration of a coastal state.

5.6.2 Each ship which is fitted with a radiotelephone station in accordance with 5.3 should, for safety purposes while at sea, maintain continuous watch on the radiotelephone distress frequency watch receiver, using a loudspeaker, a filtered loudspeaker or radio-telephone auto alarm. Where the radiotelephone station is equipped in accordance with regulation 9.1.2 of chapter IV of the 1974 SOLAS Convention, a continuous watch need not to be kept.

5.6.3 Each ship referred to in 5.6.2 should carry a qualified radiotelephone operator (who may be the master, or the Mate)

5.7 Radio Logs

5.7.1 The radio log required by the Radio Regulations for a ship which is fitted with a radiotelephone station in accordance with 5.3 should be kept at the place where listening watch is maintained. Every qualified operator, and every master, officer or crew member carrying out a listening watch in accordance with 5.6.2 should enter in the log. with his name, the details of all incidents connected with the radio service which occur during his watch which may appear to be of importance to safety of life at sea and the details required by the Radio Regulations.

5.7.2 Radio logs should be available for inspection by the officers authorized by the Administration to make such inspection.

5.7.3 The entries required by 5.7.1 may be kept in the deck log.

PART B - TECHNICAL REQUIREMENTS

5.8 Radiotelephone stations

5.8.1 The radiotelephone station should be in the upper part of the ship and so located that it is sheltered to the greatest possible extent from noise which might impair the correct reception of message and signals. The ship's call sign should be clearly displayed on the radio telephone.

5.8.2 There should be efficient communication between the radiotelephone station and the navigation bridge.

5.8.3 A reliable clock should be securely mounted in such a position that the entire dial can be

easily observed from the radiotelephone operating position.

Where a source of energy consists of a battery or batteries, the radiotelephone station should be provided with a means of assessing the charge condition.

5.8.5 A card of instructions giving a clear summary of the radiotelephone distress procedure should be displayed in full view of the radiotelephone operating position.

5.9 Radiotelephone installations

5.9.1 The radiotelephone installation should include transmitting and receiving equipment (referred to hereinafter as the transmitted, the receiver and the radiotelephone distress frequency watch receiver respectively) and appropriate sources of energy required by 5.11.

5.9.2 The transmitter should be capable of transmitting on the radiotelephone distress frequency and on at least one other frequency in the bands between 1.605kHz and 3.800 kHz using the classes of emission assigned by the Radio Regulations for these frequencies. In normal operation a single sideband transmission with full carrier should have a depth of modulation of at least 70% at peak intensity. Modulation of a single sideband transmission with reduced or suppressed carried should be such that the intermodulation products should not exceed the values given in the Radio Regulations.

5.9.3 The transmitter should produce a power in the antenna of at least 60 w for single sideband full carrier emissions. In any case the transmitter should have a minimum range of at least 75 miles.

5.9.4 The transmitter should be fitted with a device for generating the radiotelephone alarm by automatic means so designed to prevent actuation by mistake. The device should be capable of being taken out of operation at any time in order to permit the immediate transmission of a distress message. Arrangements should be mad to check periodically the proper functioning of the device on frequencies other than the radiotelephone distress frequency using a suitable artificial antenna.

5.9.5 The device required by 5.9.4 should comply with the following requirements:

.1 the tolerance of the frequency of each tone should be $\pm$ 1.5 % ;

.2 the tolerance on the duration of each tone should be $\pm$ 50 milli-seconds;

.3 the interval between successive tones should not exceed $\pm$ 50 milli-seconds;

.4 the ratio of the amplitude of the stronger tone to that of the weaker should be within the range 1 to 1.2.

5.9.6 The receiver required by 5.9.1 should be capable of receiving the radiotelephone distress frequency and at least one other frequency available for maritime radiotelephone stations in the bands between 1,605 kHz and 3,800 kHz, using the classes of emission assigned by the Radio Regulations for such frequencies. In addition, the receiver should permit the reception of such other frequencies, using the classes of emission assigned by the Radio Regulations, as are used for the transmission by radiotelephony of meteorological message and such other communications relating to the safety of navigation as may be considered necessary by the Administration. The receiver should have sufficient sensitivity to produce signals by means of a loudspeaker when the receiver input is as low as 50 microvolts.

5.9.7 The radiotelephone distress frequency watch receiver should be preset to the distress frequency. It should be provided with a filtering unit device to silence the loudspeaker in the absence of a radiotelephone alarm signal. The device should be capable of being easily switched in and out and may be used when, in the opinion of the master, conditions are such that maintenance of the listening watch would interfere with the safe navigation of the ship.

5.9.8 To permit rapid change-over from transmission to reception when manual switching is used, the control for the switching device should, where practicable, be located on the microphone or the telephone handset.

5.9.9 While at sea, there should be available at all times a main source of energy sufficient to operate the installation over the normal range required by 5.9.3. Where batteries are provided they should under circumstances have sufficient capacity to operate the transmitter and receiver for at least 6h continuously under normal working conditions.

5.9.10 While at sea, any battery provided should be kept charged so as to meet the requirements of paragraph 5.9.1

5.9.11 An antenna should be provided and installed and, if suspended between supports liable to whipping, should be protected against breakage. In addition, a spare antenna should be carried on board completely assembled for immediate replacement and where this is not practicable, sufficient antenna wire and insulators to enable a spare to be erected. The necessary tools to erect an antenna should be provided.

5.10 VHF radiotelephone installations

5.10.1 The VHF radiotelephone installation should be a permanent installation situated in the upper part of the ship comprising a transmitter, receiver and the source of energy capable of actuating them at their rated power levels, and an antenna suitable for efficiently radiating and receiving signals at the operating frequencies. The vessel's call sign should be clearly displayed on the radiotelephone.

5.10.2 The VHF radiotelephone installation should conform to the requirements laid down in the Radio Regulations for equipment used in the Maritime Mobile VHF International

Radiotelephone Service and should be capable of operation on those channels specified by the Radio Regulations and as may be required by the Administration.

5.10.3 The transmitter radio frequency carrier power output should not be more than the maximum allowed in the Radio Regulations with a reduction capability to one watt. The antenna should, as far as is practicable, have an unobstructed view in all directions.

5.10.4 Control of the VHF channels required for navigations safety should be immediately available in the wheelhouse convenient to the conning position and, where necessary, facilities should also be available to permit radiocommunications from the wings of the wheelhouse.

5.10.5 A card of instructions giving a clear summary of the VHF radiotelephone distress procedure should be displayed in full view of the VHF radiotelephone operating position.

5.11 Source of energy

5.11.1.1 While the ship is at sea, there should be available at all times a main source of energy sufficient to operate:

.1 the radiotelephone installation within the rated power required by 5.9; and

.2 the VHF radiotelephone installation to the rated output.

5.11.1.2 A reserve source of energy should be provided in a position as high as practicable which under all circumstances should have sufficient capacity to operate the transmitter and receiver for at least 6 h continuously under normal working conditions.

5.11.1.3 Where the reserve source of energy supplies several of the radio installations mentioned in 5.11.2, its capacity should be sufficient to operate the transmitter and receive of these installations continuously and simultaneously for at least six hours unless one switch gear permits the selective operation of the radio installations.

5.11.1.4 The reserve source of energy may also be used as the main source of energy, provided that the manner of installation and use is such that these requirements are met at all times when the ship is at sea.

5.11.2 The reserve source of energy should be used to supply only:

.1 the radiotelephone installations; and

.2 the VHF installation.

5.11.3 Notwithstanding the provisions of 5.11.2, the Administration may authorize the use of the reserve source of energy for the number of low-power emergency circuits which are wholly

confined to the upper part of the ship such as emergency lighting on the embarkation station for survival craft, on condition that the additional loads can be readily disconnected, and that the source of energy is of sufficient capacity to carry them.

5.11.4 While the ship is at sea, any battery provided should be kept charged so as to meet the requirements of 5.11.1 and in any case should be capable of being brought to a fully charged state within a period of 16 h.

5.12 Radiotelephone auto alarm

The radiotelephone auto alarm, where provided, should comply with the following minimum requirements:

.1 the frequency of maximum response of the tuned circuits, and other tone selecting device, should be subject to a tolerance of $\pm$ 1.5 % of the maximum response for frequency of maximum response;

.2 in the absence of noise and interference, the automatic receiving equipment should be capable of operating from the alarm signal in a period of not less than 4 s and not more than 6 s .

.3 the automatic receiving equipment should respond to the alarm signal under conditions of intermittent interference caused by atmospherics and powerful signals other than the alarm signals, preferably without any manual adjustment being requires during any period of watch maintained by the equipment;

.4 the automatic receiving equipment should not be actuated by atmospherics or by strong signals other than the alarm signal;

.5 the automatic receiving equipment should be effective beyond the range at which speech transmission is satisfactory;

.6 the automatic receiving equipment should be capable of withstanding vibration, humidity changes of temperature and vibrations in power supply voltage equivalent to the severe conditions experienced on board ships at sea, and should continue to operate under such conditions; and

.7 the automatic receiving equipment should, as far as practicable, give warning of faults that would prevent the apparatus from performing its normal functions during watch hours.

5.13 EPIRB's

5.13.1 Every ship of less than 300 gross tonnage should, by 1 February 1999, carry at least one

satellite emergency position indicating radio beacon (satellite EPIRB) which should be capable of transmitting a distress alert through the polar orbit satellite service operating on the 406mhz band or, through the geostationary satellite service operation in the 1.6 Ghz band.

5.13.2 In lieu of meeting the requirements of 5.13.1, such ships engaged on voyages solely within sea area A1 as defined in chapter IV of the 1974 SOLAS Convention may carry at least one VHF emergency position indicating radio beacon (VHF EPIRB) which should be capable of transmitting a distress alert using digital selective calling (DSC) on VHF channel 70 and providing for locating by means of a radar transponder operating in the 9ghz band.

5.13.3 The satellite EPIRB and VHF EPIRB referred to in 5.13.1 and 5.13.2 should be:

.1 installed in an easily accessible position;

.2 ready to be manually released and capable of being carried by one person into survival craft;

.3 capable of floating free if the ship sinks and of being automatically activated when afloat; and

.4 capable of being activated manually.

5.14 Periodic inspection and testing of emergency position-indicating radio beacons

Survival craft emergency position-indicating radio beacons (EPIRB's) provided in accordance with the applicable requirements of 5.13 should at intervals not exceeding 12 months be inspected, tested and, where necessary, have their source of energy replaced. However, in cases where it appears proper and reasonable, the Administration or recognized organization may extend this period up to a maximum of seventeen months.

CHAPTER 6
SAFETY OF NAVIGATION

6.1 Application

6.1.1 This chapter applies to ships covered by this Regulation .

6.1.2 The regulations of chapter V of the 1974 SOLAS Convention apply, as appropriate, to all ships to which this Regulation applies, in particular:

.1	regulation 2	Danger messages
.2	regulation 3	Information required in danger messages

.3	regulation 8	Ships routing
.4	regulation 8-1	Ships reporting systems
.5	regulation 9	Misuse of distress signals
.6	regulation 10	Distress messages: Obligation and procedures
.7	regulation 10-1	Master's discretion for safe navigation
.8	regulation 11	Signalling lamps
.9	regulation 13	Safe manning document
.10	regulation 15(c)	Search and rescue
.11	regulation 16	Life-saving signals
.12	regulation 17	Pilot transfer arrangement
.13	regulation 19	Use of automatic pilot (if fitted)
.14	regulation 19-1	Operation of steering gear
.15	regulation 19-2	Steering gear testing and drills
.16	regulation 20	Nautical publications
.17	regulation 21	International Code of signals
.18	regulation 22	Navigational bridge visibility for ships of not less than 45m in length.

6.2 Routing

Ships should comply with the traffic separation schemes adopted by the International Maritime Organization in accordance with the rule 10 of the 1972 Collision Regulations.

6.3 Signalling lamps

Ships of less than 150 gross tonnage should have on board an efficient lamp, approved by the Administration, which should not be solely dependant on the ship's main source of electrical power and can be used for signalling in emergencies.

6.4 Shipborne navigational equipment:

6.4.1 Ships should be fitted with standard and steering magnetic compasses, as required by regulations 12(b) and (c) of chapter V of the 1974 SOLAS Convention.

6.4.2 Each magnetic compass referred to in 6.4.1 should be properly adjusted and its table or curve of residual deviations, ascertained at least annually, should be available at all times.

6.5 Code flags

All ships to which this Regulation apply should carry code flags BC and GHNQ

MADE by the Attorney General this day of , 1997

(DEAN O. BARROW)
Attorney General