

(iv) Where the Administration would require a rudder stock with a diameter in way of the tiller exceeding 9 inches (or 22.86 centimetres) there shall be provided an alternative steering station located to the satisfaction of the Administration. The remote steering control systems from the principal and alternative steering stations shall be so arranged to the satisfaction of the Administration that failure of either system would not result in inability to steer the ship by means of the other system.

(v) Means satisfactory to the Administration shall be provided to enable orders to be transmitted from the bridge to the alternative steering station.

(c) Cargo Ships only

(i) The auxiliary steering gear shall be operated by power in any case in which the Administration would require a rudder stock of over 14 inches (or 35.56 centimetres) diameter in way of the tiller.

(ii) Where power operated steering gear units and connections are fitted in duplicate to the satisfaction of the Administration, and each unit complies with sub-paragraph (iii) of paragraph (a) of this Regulation, no auxiliary steering gear need be required, provided that the duplicate units and connections operating together comply with sub-paragraph (ii) of paragraph (a) of this Regulation.

Regulation 30

Electric and Electrohydraulic Steering Gear

(a) Passenger Ships and Cargo Ships

Indicators for running indication of the motors of electric and electrohydraulic steering gear shall be installed in a suitable location to the satisfaction of the Administration.

(b) All Passenger Ships (irrespective of tonnage) and Cargo Ships of 5,000 Tons Gross Tonnage and upwards

(i) Electric and electrohydraulic steering gear shall be served by two circuits fed from the main switchboard. One of the circuits may pass through the emergency switchboard, if provided. Each circuit shall have adequate capacity for supplying all the motors which are normally connected to it and which operate simultaneously. If transfer arrangements are provided in the steering gear room to permit either circuit to supply any motor or combination of motors, the capacity of each circuit shall be adequate for the most severe load condition. The circuits shall be separated throughout their length as widely as is practicable.

(ii) Short circuit protection only shall be provided for these circuits and motors.

(c) Cargo Ships of less than 5,000 Tons Gross Tonnage

(i) Cargo ships in which electrical power is the sole source of power for both main and auxiliary steering gear shall comply with sub-paragraphs (i) and (ii) of paragraph (b) of this Regulation, except that if the auxiliary steering gear is powered by a motor primarily intended for other services, paragraph (b) (ii) may be waived, provided that the Administration is satisfied with the protection arrangements.

(ii) Short circuit protection only shall be provided for motors and power circuits of electrically or electrohydraulically operated main steering gear.

Regulation 31

Oil Fuel used in Passenger Ships

No internal combustion engine shall be used for any fixed installation in a passenger ship if its fuel has a flash point of 110°F. (or 43°C.) or less.

Regulation 32

Location of Emergency Installations in Passenger Ships

The emergency source of electrical power, emergency fire pumps, emergency bilge pumps, batteries of carbon dioxide bottles for fire extinguishing purposes and other emergency installations which are essential for the safety of the ship shall not be installed in a passenger ship forward of the collision bulkhead.

Regulation 33

Communication between Bridge and Engine Room

Ships shall be fitted with two means of communicating orders from the bridge to the engine room. One means shall be an engine room telegraph.

PART D.—FIRE PROTECTION

(In Part D, Regulations 34 to 52 apply to passenger ships carrying more than 36 passengers; Regulations 35 and 53 apply to passenger ships carrying not more than 36 passengers; Regulations 35 and 54 apply to cargo ships of 4,000 tons gross tonnage and upwards.)

Regulation 34

General

(a) The purpose of this Part is to require the fullest practicable degree of protection from fire by regulation of the details of arrangement and construction. The three basic principles underlying these regulations are:

- (i) separation of the accommodation spaces from the remainder of the ship by thermal and structural boundaries;
- (ii) containment, extinction, or detection of any fire in the space of origin;
- (iii) protection of means of escape.

(b) The hull, superstructure and deck houses shall be divided into main vertical zones by "A" Class bulkheads (as described in paragraph (c) of Regulation 35 of this Chapter) and further divided by similar bulkheads forming the boundaries protecting spaces which provide vertical access and the boundaries separating the accommodation spaces from the machinery, cargo and service spaces and others. In addition, and supplementary to the patrol systems, alarm systems and fire extinguishing apparatus required by Part E of this Chapter, either of the following methods of protection, or a combination of these methods to the satisfaction of the Administration, shall be adopted in accommodation and service spaces with a view to preventing the spread of incipient fires from the spaces of their origin:—

Method I.—The construction of internal divisional bulkheading of "B" Class divisions (as defined in paragraph (d) of Regulation 35 of this Chapter) generally without the installation of a detection or sprinkler system in the accommodation and service spaces; or

Method II.—The fitting of an automatic sprinkler and fire alarm system for the detection and extinction of fire in all spaces in which a fire might be expected to originate, generally with no restriction on the type of internal divisional bulkheading in spaces so protected; or

Method III.—A system of subdivision within each main vertical zone using "A" and "B" Class divisions distributed according to the importance, size and nature of the various compartments, with an automatic fire detection system in all spaces in which a fire might be expected to originate, and with restricted use of combustible and highly inflammable materials and furnishings; but generally without the installation of a sprinkler system.

Where appropriate, the headings or sub-headings of the Regulations of this Part of this Chapter indicate under which Method or Methods the Regulation is a requirement.

Regulation 35

Definitions

Wherever the phrases defined below occur throughout this Part of this Chapter, they shall be interpreted in accordance with the following definitions:—

- (a) *Incombustible Material* means a material which neither burns nor gives off inflammable vapours in sufficient quantity to ignite at a pilot flame when heated to approximately 1,382°F. (or 750°C.). Any other material is a "Combustible Material".
- (b) A *Standard Fire Test* is one in which specimens of the relevant bulkheads or decks, having a surface of approximately 50 square feet (or 4.65 square metres) and height of 8 feet (or 2.44 metres) resembling as closely as possible the intended construction and including where appropriate at least one joint, are exposed in a test furnace to a series of time temperature relationships, approximately as follows:—

at the end of the first 5 minutes	—	1,000°F. (or 538°C.)
" " " " "	10	" 1,300°F. (or 704°C.)
" " " " "	30	" 1,550°F. (or 843°C.)
" " " " "	60	" 1,700°F. (or 927°C.)

- (c) "A" Class or *Fire-resisting Divisions* are those divisions formed by bulkheads and decks which comply with the following:—

- (i) they shall be constructed of steel or other equivalent material;
- (ii) they shall be suitably stiffened;
- (iii) they shall be so constructed as to be capable of preventing the passage of smoke and flame up to the end of the one-hour standard fire test;
- (iv) they shall have an insulating value to the satisfaction of the Administration, having regard to the nature of the adjacent spaces. In general, where such bulkheads and decks are required to form fire-resisting divisions between spaces either of which contains adjacent woodwork, wood lining, or other combustible material, they shall be so insulated that, if either face is exposed to the standard fire test for one hour, the average temperature on the unexposed face will not increase at any time during the test by more than 250°F. (or 139°C.) above the initial temperature nor shall the temperature at any point on the face, including any joint, rise more than 325°F. (or 180°C.) above the initial temperature. Reduced amounts of insulation or none at all may be provided where in the opinion of the Administration a reduced fire hazard is present. The Administration may require a test of an assembled prototype bulkhead or deck to ensure that it

meets the above requirements for integrity and temperature rise.

(d) "*B*" *Class or Fire-retarding Divisions* are those divisions formed by bulkheads which are so constructed that they will be capable of preventing the passage of flame up to the end of the first one-half hour of the standard fire test. In addition they shall have an insulating value to the satisfaction of the Administration, having regard to the nature of the adjacent spaces. In general, where such bulkheads are required to form fire-retarding divisions between spaces, they shall be of such material that, if either face is exposed for the first one-half hour period of the standard fire test, the average temperature on the unexposed face will not increase at any time during the test by more than 250°F. (or 139°C.) above the initial temperature, nor shall the temperature at any point on the face including any joint rise more than 405°F. (or 225°C.) above the initial temperature. For panels which are of incombustible materials it will only be necessary to comply with the above temperature rise limitation during the first 15-minute period of the standard fire test, but the test shall be continued to the end of the one-half hour to test the panel's integrity in the usual manner. All materials entering into the construction and erection of incombustible "*B*" Class divisions shall themselves be of incombustible material. Reduced amounts of insulation or none at all may be provided where in the opinion of the Administration a reduced fire hazard is present. The Administration may require a test of an assembled prototype bulkhead to ensure that it meets the above requirements for integrity and temperature rise.

(e) *Main Vertical Zones* are those sections into which the hull, superstructure, and deck houses are divided by "*A*" Class divisions, the mean length of which on any one deck does not, in general, exceed 131 feet (or 40 metres).

(f) *Control Stations* are those spaces in which radio, main navigating or central fire-recording equipment or the emergency generator is located.

(g) *Accommodation Spaces* are those used for public spaces, corridors, lavatories, cabins, offices, crew quarters, barber shops, isolated pantries and lockers and similar spaces.

- (h) *Public Spaces* are those portions of the accommodation which are used for halls, dining rooms, lounges and similar permanently enclosed spaces.
- (i) *Service Spaces* are those used for galleys, main pantries, stores (except isolated pantries and lockers), mail and specie rooms and similar spaces and trunks to such spaces.
- (j) *Cargo Spaces* are all spaces used for cargo (including cargo oil tanks) and trunks to such spaces.
- (k) *Machinery Spaces* include all spaces used for propelling, auxiliary or refrigerating machinery, boilers, pumps, workshops, generators, ventilation and air conditioning machinery, oil filling stations and similar spaces and trunks to such spaces.
- (l) *Steel or Other Equivalent Material*.—Where the words "steel or other equivalent material" occur, "equivalent material" means any material which, by itself or due to insulation provided, has structural and integrity properties equivalent to steel at the end of the applicable fire exposure (e.g., aluminium with appropriate insulation).
- (m) *Low flame spread* means that the surface thus described will adequately restrict the spread of flame having regard to the risk of fire in the spaces concerned, this being determined to the satisfaction of the Administration by a suitably established test procedure.

Regulation 36

Structure (Methods I, II and III)

(a) Method I

The hull, superstructure, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material.

(b) Method II

(i) The hull, superstructure, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material.

(ii) Where fire protection in accordance with Method II is employed, the superstructure may be constructed of, for example, aluminium alloy, provided that:—

- (1) the temperature rise of the metallic cores of the "*A*" Class divisions, when exposed to the standard fire test, shall have regard to the mechanical properties of the material;
- (2) an automatic sprinkler system complying with paragraph (g) of Regulation 59 of this Chapter is installed;

- (3) adequate provision is made to ensure that in the event of fire, arrangements for stowage, launching and embarkation into survival craft remain as effective as if the superstructure were constructed of steel;
- (4) crowns and casings of boiler and machinery spaces are of steel construction adequately insulated, and the openings therein, if any, are suitably arranged and protected to prevent spread of fire.

(c) Method III

- (i) The hull, superstructure, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material.
- (ii) Where fire protection in accordance with Method III is employed, the superstructure may be constructed of, for example, aluminium alloy, provided that:—

- (1) the temperature rise of the metallic cores of the "A" Class divisions, when exposed to the standard fire test, shall have regard to the mechanical properties of the material;
- (2) the Administration shall be satisfied that the amount of combustible materials used in the relevant part of the ship is suitably reduced. Ceilings (*i.e.*, linings of deck heads) shall be incombustible;
- (3) adequate provision is made to ensure that in the event of fire, arrangements for stowage, launching and embarkation into survival craft remain as effective as if the superstructure were constructed of steel;
- (4) crowns and casings of boiler and machinery spaces are of steel construction adequately insulated, and the openings therein, if any, are suitably arranged and protected to prevent spread of fire.

Regulation 37

Main Vertical Zones (Methods I, II and III)

(a) The hull, superstructure and deckhouses shall be subdivided into main vertical zones. Steps and recesses shall be kept to a minimum, but where they are necessary, they shall be of "A" Class divisions.

(b) As far as practicable, the bulkheads forming the boundaries of the main vertical zones above the bulkhead deck shall be in line with watertight subdivision bulkheads situated immediately below the bulkhead deck.

(c) Such bulkheads shall extend from deck to deck and to the shell or other boundaries.

(d) On ships designed for special purposes, such as automobile or railroad car ferries, where installation of such bulkheads would defeat the purpose for which the ship is intended, equivalent means for controlling and limiting a fire shall be substituted and specifically approved by the Administration.

Regulation 38

Openings in "A" Class Divisions (Methods I, II and III)

(a) Where "A" Class divisions are pierced for the passage of electric cables, pipes, trunks, ducts, &c. for girders, beams or other structures, arrangements shall be made to ensure that the fire resistance is not impaired.

(b) Dampers are to be fitted in ventilation trunks and ducts passing through main vertical zone bulkheads, and shall be fitted with suitable local control capable of being operated from both sides of the bulkhead. The operating positions shall be readily accessible and marked in red. Indicators shall be fitted to show whether the dampers are open or shut.

(c) Except for tonnage openings and for hatches between cargo, store, and baggage spaces, and between such spaces and the weather decks, all openings shall be provided with permanently attached means of closing which shall be at least as effective for resisting fires as the divisions in which they are fitted. Where "A" Class divisions are pierced by tonnage openings the means of closure shall be by steel plates.

(d) The construction of all doors and door frames in "A" Class divisions, with the means of securing them when closed, shall provide resistance to fire as well as to the passage of smoke and flame as far as practicable equivalent to that of the bulkheads in which the doors are situated. Watertight doors need not be insulated.

(e) It shall be possible for each door to be opened from either side of the bulkhead by one person only. Fire doors in main vertical zone bulkheads other than watertight doors shall be of the self-closing type with simple and easy means of release from the open position. These doors shall be of approved types and designs, and the self-closing mechanism shall be capable of closing the door against an inclination of $3\frac{1}{2}$ degrees opposing closure.

Regulation 39

Bulkheads within Main Vertical Zones (Methods I and III)

(a) Method I

(i) Within the accommodation spaces, all enclosure bulkheads, other than those required to be of "A" Class divisions, shall be constructed of "B" Class divisions of incombustible materials, which may, however, be faced with combustible materials in accordance with Regulation 48 of this

Chapter. All doorways and similar openings shall have a method of closure consistent with the type of bulkhead in which they are situated.

(ii) All corridor bulkheads shall extend from deck to deck. Ventilation openings may be permitted in the doors in "B" Class bulkheads, preferably in the lower portion. All other enclosure bulkheads shall extend from deck to deck vertically, and to the shell or other boundaries transversely, unless incombustible ceilings or linings such as will ensure fire integrity are fitted, in which case the bulkheads may terminate at the ceilings or linings.

(b) Method III

(i) Within the accommodation spaces, enclosure bulkheads other than those required to be of "A" Class divisions shall be constructed of "B" Class divisions, and shall be of incombustible materials which may, however, be faced with combustible materials in accordance with Regulation 48 of this Chapter. These bulkheads shall form a continuous network of fire-retarding bulkheads within which the area of any one compartment shall not in general exceed 1,300 square feet (or 120 square metres) with a maximum of 1,600 square feet (or 150 square metres); they shall extend from deck to deck. All doorways and similar openings shall have a method of closure consistent with the type of bulkhead in which they are situated.

(ii) Each public space larger than 1,600 square feet (or 150 square metres) shall be surrounded by "B" Class divisions of incombustible materials.

(iii) The insulation of "A" Class and "B" Class divisions, except those constituting the separation of the main vertical zones, the control stations, the stairway enclosures, and the corridors, may be omitted when the divisions constitute the outside part of the ship or when the adjoining compartment does not contain fire hazard.

(iv) All corridor bulkheads shall be of "B" Class divisions and shall extend from deck to deck. Ceilings, if fitted, shall be of incombustible materials. Ventilation openings may be permitted in doors, preferably in the lower portion. All other partition bulkheads shall also extend from deck to deck vertically and to the shell or other boundaries transversely, unless incombustible ceilings or linings are fitted, in which case the bulkheads may terminate at the ceilings or linings.

(v) "B" Class divisions other than those required to be of the incombustible type shall have incombustible cores or be of an assembled type having internal layers of sheet asbestos or similar incombustible material. The Administration may, however, approve other materials without incombustible cores, provided that equivalent fire-retarding properties are ensured.

Regulation 40

Separation of Accommodation Spaces from Machinery, Cargo and Service Spaces (Methods I, II and III)

The boundary bulkheads and decks separating accommodation spaces from machinery, cargo and service spaces shall be constructed as "A" Class divisions, and these bulkheads and decks shall have an insulation value to the satisfaction of the Administration having regard to the nature of the adjacent spaces.

Regulation 41

Deck Coverings (Methods I, II and III)

Primary deck coverings within accommodation spaces, control stations, stairways and corridors shall be of approved material which will not readily ignite.

Regulation 42

Protection of Stairways in Accommodation and Service Spaces (Methods I, II and III)

(a) Methods I and III

(i) All stairways shall be of steel frame construction, except where the Administration sanctions the use of other equivalent material, and shall be within enclosures formed of "A" Class divisions, with positive means of closure at all openings from the lowest accommodation deck at least to a level which is directly accessible to the open deck, except that:—

(1) a stairway connecting only two decks need not be enclosed, provided the integrity of the deck is maintained by proper bulkheads or doors at one level;

(2) stairways may be fitted in the open in a public space, provided they lie wholly within such public space.

(ii) Stairway enclosures shall have direct communication with the corridors and be of sufficient area to prevent congestion having in view the number of persons likely to use them in an emergency, and shall contain as little accommodation or other enclosed space in which a fire may originate as practicable.

(iii) Stairway enclosure bulkheads shall have an insulation value to the satisfaction of the Administration, having regard to the nature of the adjacent spaces. The means for closure at openings in stairway enclosures shall be at least as effective for resisting fire as the bulkheads in which they are fitted. Doors other than watertight doors shall be of the self-closing type, as required for the main vertical zone bulkheads, in accordance with Regulation 38 of this Chapter.

(b) *Method II*

(i) Main stairways shall be of steel frame construction, except where the Administration sanctions the use of other suitable materials which, together with such supplementary fire protection and/or extinction arrangements as would, in the opinion of the Administration, be equivalent to such construction, and shall be within enclosures formed of "A" Class divisions with positive means of closure at all openings from the lowest accommodation deck at least to a level which is directly accessible to the open deck except that:—

(1) a stairway connecting only two decks need not be enclosed, provided the integrity of the deck is maintained by proper bulkheads or doors at one level;

(2) stairways may be fitted in the open in a public space, provided they lie wholly within such public space.

(ii) Stairway enclosures shall have direct communication with the corridors and be of sufficient area to prevent congestion having in view the number of persons likely to use them in an emergency, and shall contain as little accommodation or other enclosed space in which a fire may originate as practicable.

(iii) Stairway enclosure bulkheads shall have an insulation value to the satisfaction of the Administration having regard to the nature of the adjacent spaces. The means for closure at openings in stairway enclosures shall be at least as effective for resisting fire as the bulkheads in which they are fitted. Doors other than watertight doors shall be of the self-closing type as required for the main vertical zone bulkheads, in accordance with Regulation 38 of this Chapter.

(iv) Auxiliary stairways, namely those which do not form part of the means of escape required by Regulation 68 of this Chapter and which connect only two decks, shall be of steel frame construction, except where the Administration sanctions the use of other suitable material in special cases, but need not be within enclosures, provided the integrity of the deck is maintained by the fitting of sprinklers at the auxiliary stairways.

Regulation 43

Protection of Lifts (Passenger and Service), Vertical Trunks for Light and Air, &c., in Accommodation and Service Spaces (Methods I, II and III)

(a) Passenger and service lift trunks, vertical trunks for light and air to passenger spaces, &c., shall be of "A" Class divisions. Doors shall be of steel or other equivalent material and when closed shall provide fire-resistance at least as effective as the trunks in which they are fitted.

(b) Lift trunks shall be so fitted as to prevent the passage of smoke and flame from one between deck to another and shall be provided with means of closing so as to permit of draught and smoke control. The insulation of lift trunks which are within stairway enclosures shall not be compulsory.

(c) Where a trunk for light and air communicates with more than one between deck space, and, in the opinion of the Administration, smoke and flame are likely to be conducted from one between deck to another, smoke shutters, suitably placed, shall be fitted so that each space can be isolated in case of fire.

(d) Any other trunks (e.g., for electric cables) shall be so constructed as not to afford passage for fire from one between deck or compartment to another.

Regulation 44

Protection of Control Stations (Methods I, II and III)

Control stations shall be separated from the remainder of the ship by "A" Class bulkheads and decks.

Regulation 45

Protection of Store Rooms, &c. (Methods I, II and III)

The boundary bulkheads of baggage rooms, mail rooms, store rooms, paint and lamp lockers, galleys and similar spaces shall be of "A" Class divisions. Spaces containing highly inflammable stores shall be so situated as to minimise the danger to passengers or crew in the event of fire.

Regulation 46

Windows and Sidescuttles (Methods I, II and III)

(a) All windows and sidescuttles in bulkheads separating accommodation spaces and weather shall be constructed with frames of steel or other suitable material. The glass shall be retained by a metal glazing bead.

(b) All windows and sidescuttles in bulkheads within accommodation spaces shall be constructed so as to preserve the integrity requirements of the type of bulkhead in which they are fitted.

(c) In spaces containing (1) main propulsion machinery, or (2) oil-fired boilers, or (3) auxiliary internal combustion type machinery of total horse-power of 1,000 or over, the following measures shall be taken:—

- (i) skylights shall be capable of being closed from outside the space;
- (ii) skylights containing glass panels shall be fitted with external shutters of steel or other equivalent material permanently attached;
- (iii) any window permitted by the Administration in casings of such spaces shall be of the non-opening type, and shall be fitted with an external shutter of steel or other equivalent material permanently attached;
- (iv) in the windows and skylights referred to in sub-paragraphs (i), (ii) and (iii) of this paragraph, wire reinforced glass shall be used.

Regulation 47

Ventilation Systems (Methods I, II and III)

(a) The main inlets and outlets of all ventilation systems shall be capable of being closed from outside the space in the event of a fire. In general, the ventilation fans shall be so disposed that the ducts reaching the various spaces remain within the main vertical zone.

(b) All power ventilation, except cargo and machinery space ventilation and any alternative system which may be required under paragraph (d) of this Regulation, shall be fitted with master controls so that all fans may be stopped from either of two separate positions which shall be situated as far apart as practicable. Two master controls shall be provided for the power ventilation serving machinery spaces, one of which shall be operable from a position outside the machinery space.

(c) Efficient insulation shall be provided for exhaust ducts from galley ranges where the ducts pass through accommodation spaces.

(d) Such measures as are practicable shall be taken in respect of control stations situated below deck and outside machinery spaces in order to ensure that ventilation, visibility and freedom from smoke are maintained, so that in the event of fire the machinery and equipment contained therein may be supervised and continue to function effectively. Alternative and entirely separate means of air supply shall be provided for these control stations; air inlets to the two sources of supply shall be so disposed that the risk of both

inlets drawing in smoke simultaneously is minimised. At the discretion of the Administration, such requirements need not apply to spaces situated on, and opening on to, an open deck, or where local closing arrangements would be equally effective.

Regulation 48

Details of Construction (Methods I and III)

(a) Method I

Except in cargo spaces, mail rooms, baggage rooms, or refrigerated compartments of service spaces, all linings, grounds, ceilings and insulations shall be of incombustible materials. The total volume of combustible facings, mouldings, decorations and veneers in any accommodation or public space shall not exceed a volume equivalent to one-tenth inch (or 2.54 millimetres) veneer on the combined area of the walls and ceiling. All exposed surfaces in corridors or stairway enclosures and in concealed or inaccessible spaces shall have low flame spread characteristics.

(b) Method III

The use of combustible materials of all kinds such as untreated wood, veneers, ceilings, curtains, carpets, &c. shall be reduced in so far as it is reasonable and practicable. In large public spaces, the grounds and supports to the linings and ceilings shall be of steel or equivalent material. All exposed surfaces in corridors or stairway enclosures and in concealed or inaccessible spaces shall have low flame spread characteristics.

Regulation 49

Miscellaneous Items (Methods I, II and III)

Requirements applicable to all parts of the ship

(a) Paints, varnishes and similar preparations having a nitro-cellulose or other highly inflammable base shall not be used.

(b) Pipes penetrating "A" or "B" Class divisions shall be of a material approved by the Administration having regard to the temperature such divisions are required to withstand. Pipes conveying oil or combustible liquids shall be of a material approved by the Administration having regard to the fire risk. Materials readily rendered ineffective by heat shall not be used for overhead scuppers, sanitary discharges, and other outlets which are close to the water line and where the failure of the material in the event of fire would give rise to danger of flooding.

Requirements applicable to accommodation and service spaces

(c) (i) Air spaces enclosed behind ceilings, panellings or linings shall be suitably divided by close-fitting draught stops not more than 45 feet (or 13.73 metres) apart.

(ii) In the vertical direction, such spaces, including those behind linings of stairways, trunks, &c., shall be closed at each deck.

(d) The construction of ceiling and bulkheading shall be such that it will be possible, without impairing the efficiency of the fire protection, for the fire patrols to detect any smoke originating in concealed and inaccessible places, except where in the opinion of the Administration there is no risk of fire originating in such places.

(e) The concealed surfaces of all bulkheads, linings, panellings, stairways, wood grounds, &c., in accommodation spaces shall have low flame spread characteristics.

(f) Electric radiators, if used, must be fixed in position and so constructed as to reduce fire risks to a minimum. No such radiators shall be fitted with an element so exposed that clothing, curtains, or other similar materials can be scorched or set on fire by heat from the element.

Regulation 50*Cinematograph Film (Methods I, II and III)*

Cellulose-based film shall not be used in cinematograph installations on board ship.

Regulation 51*Automatic Sprinkler and Fire Alarm and Detection Systems (Method II)*

In ships in which Method II is adopted, an automatic sprinkler and fire alarm system of an approved type and complying with the requirements of Regulation 59 of this Chapter shall be installed and so arranged as to protect all enclosed spaces appropriated to the use or service of passengers or crew, except spaces which afford no substantial fire risk.

Regulation 52*Automatic Fire Alarm and Fire Detection Systems (Method III)*

In ships in which Method III is adopted, a fire-detecting system of an approved type shall be installed and so arranged as to detect the presence of fire in all enclosed spaces appropriated to the use or service of passengers

or crew (except spaces which afford no substantial fire hazard) and automatically to indicate at one or more points or stations where it can be most quickly observed by officers and crew, the presence or indication of fire and also its location.

Regulation 53*Passenger Ships carrying not more than 36 Passengers*

(a) In addition to being subject to the provisions of Regulation 35 of this Chapter, ships carrying not more than 36 passengers shall comply with Regulations 36, 37, 38, 40, 41, 43 (a), 44, 45, 46, 49 (a), (b) and (f) and 50 of this Chapter. Where insulated "A" Class divisions are required under the aforementioned Regulations, the Administration may agree to a reduction of the amount of insulation below that envisaged by sub-paragraph (c) (iv) of Regulation 35 of this Chapter.

(b) In addition to compliance with the Regulations referred to in paragraph (a), the following provisions shall apply:—

- (i) all stairways and means of escape in accommodation and service spaces shall be of steel or other suitable material;
- (ii) power ventilation of machinery spaces shall be capable of being stopped from an easily accessible position outside the machinery spaces;
- (iii) except where all enclosure bulkheads in accommodation spaces conform with the requirements of Regulations 39 (a) and 48 (a) of this Chapter, such ships shall be provided with an automatic fire detection system conforming with Regulation 52 of this Chapter and in accommodation spaces, the corridor bulkheads shall be of steel or be constructed of "B" Class panels.

Regulation 54*Cargo Ships of 4,000 tons Gross Tonnage and Upwards*

(a) The hull, superstructure, structural bulkheads, decks and deck houses shall be constructed of steel, except where the Administration may sanction the use of other suitable material in special cases, having in mind the risk of fire.

(b) In accommodation spaces, the corridor bulkheads shall be of steel or be constructed of "B" Class panels.

(c) Deck coverings within accommodation spaces on the decks forming the crown of machinery and cargo spaces shall be of a type which will not readily ignite.

(d) Interior stairways below the weather deck shall be of steel or other suitable material. Crew lift trunks within accommodation shall be of steel or equivalent material.

(e) Bulkheads of galleys, paint stores, lamprooms, boatswain's stores when adjacent to accommodation spaces and emergency generator rooms if any, shall be of steel or equivalent material.

(f) In accommodation and machinery spaces, paints, varnishes and similar preparations having a nitro-cellulose or other highly inflammable base shall not be used.

(g) Pipes conveying oil or combustible liquids shall be of a material approved by the Administration having regard to the fire risk. Materials readily rendered ineffective by heat shall not be used for overboard scuppers, sanitary discharges, and other outlets which are close to the water line and where the failure of the material in the event of fire would give rise to danger of flooding.

(h) Electric radiators, if used, must be fixed in position and so constructed as to reduce fire risks to a minimum. No such radiators shall be fitted with an element so exposed that clothing, curtains or other similar materials can be scorched or set on fire by heat from the element.

(i) Cellulose-based film shall not be used in cinematograph installations on board ship.

(j) Power ventilation of machinery spaces shall be capable of being stopped from an easily accessible position outside the machinery spaces.

PART E.—FIRE DETECTION AND EXTINCTION IN PASSENGER SHIPS AND CARGO SHIPS

(Part E applies to passenger ships and cargo ships except that Regulations 59 and 64 apply only to passenger ships and Regulation 65 applies only to cargo ships.)

NOTE.—Regulations 56 to 63 inclusive set forth the conditions with which the appliances mentioned in Regulations 64 and 65 are required to comply.

Regulation 55

Definitions

In this Part of this Chapter, unless expressly provided otherwise:—

- (a) The *length of the ship* is the length measured between perpendiculars.
- (b) *Required* means required by this Part of this Chapter.

Regulation 56

Pumps, Water Service Pipes, Hydrants and Hoses

(a) Total Capacity of Fire Pumps

(i) In a passenger ship, the required fire pumps shall be capable of delivering for fire fighting purposes a quantity of water, at the appropriate pressure prescribed below, not less than two-thirds of the quantity required to be dealt with by the bilge pumps when employed for bilge pumping.

(ii) In a cargo ship, the required fire pumps, other than the emergency pump (if any), shall be capable of delivering for firefighting purposes a quantity of water, at the appropriate pressure prescribed, not less than four-thirds of the quantity required under Regulation 18 of this Chapter to be dealt with by each of the independent bilge pumps in a passenger ship of the same dimensions, when employed on bilge pumping. In place of the definitions covering L, B and D referred to in paragraph (i) of Regulation 18 of this Chapter, the following shall apply:—

L=length between perpendiculars.

B=greatest moulded breadth.

D=depth to bulkhead deck amidships.

Provided that in no cargo ship need the total required capacity of the fire pumps exceed 180 tons per hour.

(b) Fire Pumps

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

(ii) Each of the required fire pumps (other than any emergency pump required by Regulation 65 of this Chapter) shall have a capacity not less than 80 per cent. of the total required capacity divided by the number of required fire pumps—and shall in any event be capable of delivering at least the two required jets of water. These fire pumps shall be capable of supplying the fire main system under the required conditions.

Where more pumps than required are installed their capacity shall be to the satisfaction of the Administration.

(iii) Relief valves shall be provided in conjunction with all fire pumps if the pumps are capable of developing a pressure exceeding the design pressure of the water service pipes, hydrants and hoses. These valves shall be so placed and adjusted as to prevent excessive pressure in any part of the fire main system.

(c) Pressure in the Fire Main

(i) The diameter of the fire main and water service pipes shall be sufficient for the effective distribution of the maximum required discharge from two fire pumps operating simultaneously, except that in the case of cargo ships the diameter need only be sufficient for the discharge of 140 tons per hour.

(ii) With the two pumps simultaneously delivering through nozzles specified in paragraph (g) of this Regulation, the quantity of water specified in sub-paragraph (i) of this paragraph, through any adjacent hydrants, the following minimum pressures shall be maintained at all hydrants:—

Passenger ships

4,000 tons gross tonnage and upwards	45 pounds per square inch (or 3·2 kilogrammes per square centimetre)
1,000 tons gross tonnage and upwards, but under 4,000 tons gross tonnage	40 pounds per square inch (or 2·8 kilogrammes per square centimetre)
Under 1,000 tons gross tonnage	To the satisfaction of the Administration

Cargo ships

6,000 tons gross tonnage and upwards	40 pounds per square inch (or 2·8 kilogrammes per square centimetre)
1,000 tons gross tonnage and upwards, but under 6,000 tons gross tonnage	37 pounds per square inch (or 2·6 kilogrammes per square centimetre)
Under 1,000 tons gross tonnage	To the satisfaction of the Administration

(d) Number and Position of Hydrants

The number and position of the hydrants shall be such that at least two jets of water not emanating from the same hydrant, one of which shall be from a single length of hose, may reach any part of the ship normally accessible to the passengers or crew while the ship is being navigated.

(e) Pipes and Hydrants

(i) Materials readily rendered ineffective by heat shall not be used for fire mains unless adequately protected. The pipes and hydrants shall be so placed that the fire hoses may be easily coupled to them. In ships where deck cargo may be carried, the positions of the hydrants shall be such that they are always readily accessible and the pipes shall be arranged as far as practicable to avoid risk of damage by such cargo. Unless there is provided one hose and nozzle for each hydrant in the ship there shall be complete interchangeability of hose couplings and nozzles.

(ii) Cocks or valves shall be fitted in such positions on the pipes that any of the fire hoses may be removed while the fire pumps are at work.

(f) Fire Hoses

Fire hoses shall be of material approved by the Administration and sufficient in length to project a jet of water to any of the spaces in which they may be required to be used. Their maximum length shall be to the satisfaction of the Administration. Each hose shall be provided with a nozzle and the necessary couplings. Hoses specified in these Regulations as "fire hoses" shall together with any necessary fittings and tools be kept ready for use in conspicuous positions near the water service hydrants or connections.

(g) Nozzles

(i) For the purposes of this Part, standard nozzle sizes shall be $\frac{1}{2}$ inch (or 12 millimetres), $\frac{3}{4}$ inch (or 16 millimetres) and $\frac{5}{8}$ inch (or 20 millimetres), or as near thereto as possible. Larger diameter nozzles may be permitted subject to compliance with sub-paragraph (b) (ii) of this Regulation.

(ii) For accommodation and service spaces, a nozzle size greater than $\frac{1}{2}$ inch (or 12 millimetres) need not be used.

(iii) For machinery spaces and exterior locations, the nozzle size shall be such as to obtain the maximum discharge possible from two jets at the pressure mentioned in paragraph (c) of this Regulation from the smallest pump.

(h) International Shore Connection

The international shore connection required by paragraph (d) of Regulation 64 and paragraph (d) of Regulation 65 of this Chapter to be installed in the ship shall be in accordance with the following specification and the appended sketch.

Outside diameter: 7 inches (or 178 millimetres).

Inner diameter: $2\frac{1}{2}$ inches (or 64 millimetres).

Bolt circle diameter: $5\frac{1}{2}$ inches (or 132 millimetres).

Holes: 4 holes of $\frac{1}{2}$ inch (or 19 millimetres) diameter equidistantly placed, slotted to the flange periphery.

Flange thickness: $\frac{1}{16}$ inch (or 14·5 millimetres) minimum.

Bolts: 4, each of $\frac{1}{2}$ inch (or 16 millimetres) diameter, 2 inches (or 50 millimetres) in length.

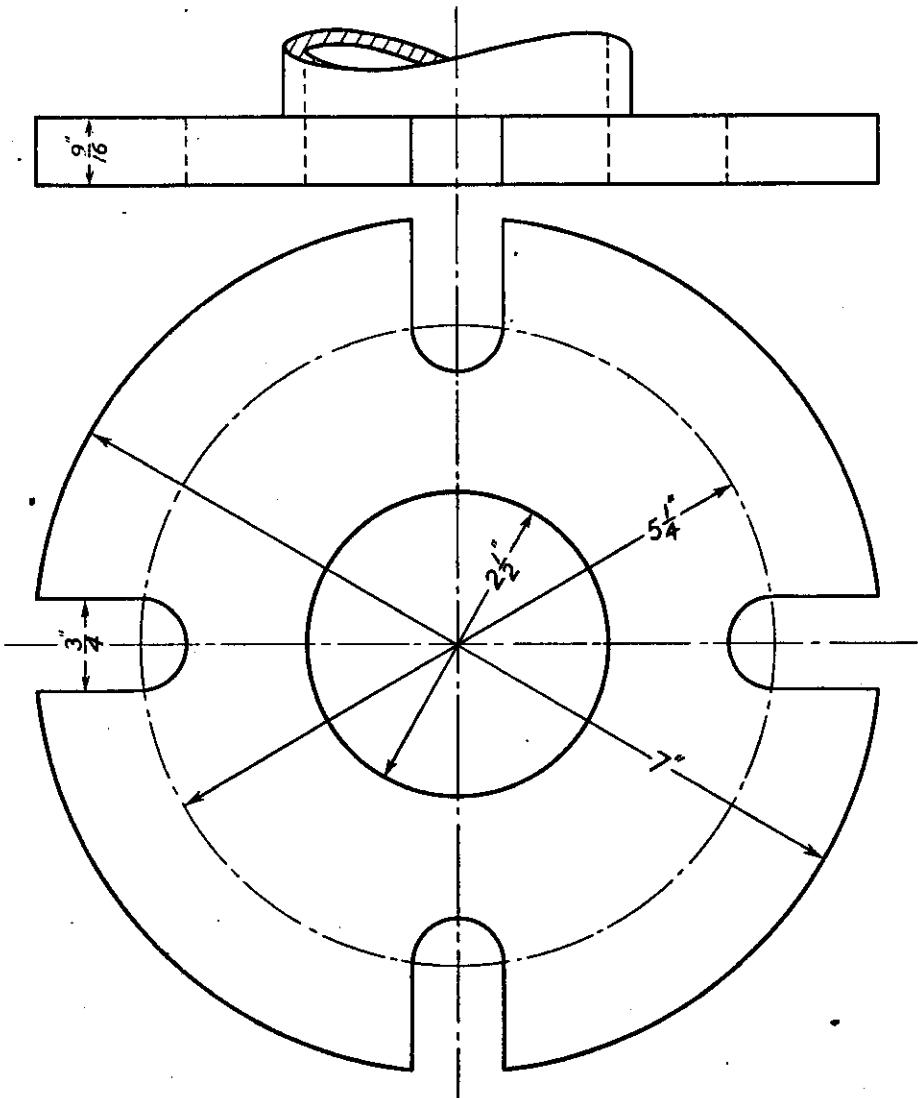
Flange surface: flat face.

Material: any suited to 150 pounds per square inch (or 10·5 kilogrammes per square centimetre) service.

Gasket: any suited to 150 pounds per square inch (or 10·5 kilogrammes per square centimetre) service.

The connection shall be constructed of material suitable for 150 pounds per square inch (or 10·5 kilogrammes per square centimetre) service. The flange shall have a flat face on one side, and to the other shall have permanently attached thereto a coupling that will fit the ship's hydrants and hose. The connection shall be kept aboard the ship together with a gasket of any material suitable for 150 pounds per square inch (or 10·5 kilogrammes per square centimetre) service, together with four $\frac{1}{2}$ inch (or 16 millimetres) bolts, 2 inches (or 50 millimetres) in length and eight washers.

International Shore Connection (Ship)



Regulation 57

Fire Extinguishers (Portable and Non-Portable)

- (a) All fire extinguishers shall be of approved types and designs.
 - (i) The capacity of required portable fluid extinguishers shall be not more than 3 gallons (or 13½ litres) and not less than 2 gallons (or 9 litres). Other extinguishers shall not be in excess of the equivalent portability of the 3 gallon (or 13½ litres) fluid extinguisher and shall not be less than the fire extinguishing equivalent of a 2 gallon (or 9 litres) fluid extinguisher.
 - (ii) The Administration shall determine the equivalents of fire extinguishers.
- (b) Spare charges shall be provided in accordance with requirements to be specified by the Administration.
- (c) Fire extinguishers containing an extinguishing medium which either itself or when in use gives off gases harmful to persons shall not be permitted. For radio rooms and switchboards extinguishers containing not more than 1 quart (1.136 litres) of carbon tetrachloride or similar media may be permitted at the discretion of the Administration subject to such extinguishers being additional to any required by this Part of this Chapter.
- (d) Fire extinguishers shall be periodically examined and subjected to such tests as the Administration may require.
- (e) One of the portable fire extinguishers intended for use in any space shall be stowed near the entrance to that space.

Regulation 58

Fire smothering Gas or Steam for Machinery and Cargo Spaces

- (a) Where provision is made for the injection of gas or steam into machinery or cargo spaces for fire extinguishing purposes, the necessary pipes for conveying the gas or steam shall be provided with control valves or cocks which shall be so placed that they will be easily accessible and not readily cut off from use by an outbreak of fire. These control valves or cocks shall be so marked as to indicate clearly the compartments to which the pipes are led. Suitable provision shall be made to prevent inadvertent admission of the gas or steam to any compartment. Where cargo spaces fitted with smothering for fire protection are used as passenger spaces the smothering connection shall be blanked during service as a passenger space.

- (b) The piping shall be arranged so as to provide effective distribution of fire smothering gas or steam. Where steam is used in large holds there shall

be at least two pipes, one of which shall be fitted in the forward part and one in the after part; the pipes shall be led well down in the space as remote as possible from the shell.

(c) (i) When carbon dioxide is used as the extinguishing medium in cargo spaces, the quantity of gas available shall be sufficient to give a minimum volume of free gas equal to 30 per cent. of the gross volume of the largest cargo compartment in the ship which is capable of being sealed.

(ii) When carbon dioxide is used as an extinguishing medium for spaces containing boilers or internal combustion type machinery, the quantity of gas carried shall be sufficient to give a minimum quantity of free gas equal to the larger of the following quantities, either

(1) 40 per cent. of the gross volume of the largest space, the volume to include the casing up to the level at which the horizontal area of the casing is 40 per cent. or less of that of the space concerned; or

(2) 35 per cent. of the entire volume of the largest space including the casing;

provided that the above mentioned percentages may be reduced to 35 per cent. and 30 per cent. respectively for cargo ships of less than 2,000 tons gross tonnage; provided also that if two or more spaces containing boilers or internal combustion type machinery are not entirely separate they shall be considered as forming one compartment.

(iii) When carbon dioxide is used as an extinguishing medium both for cargo spaces and for spaces containing boilers or internal combustion type machinery the quantity of gas need not be more than the maximum required either for the largest cargo compartment or machinery space.

(iv) For the purpose of this paragraph the volume of gas shall be calculated at 9 cubic feet to the pound (or 0.56 cubic metres to the kilogramme).

(v) When carbon dioxide is used as the extinguishing medium for spaces containing boilers or internal combustion type machinery the fixed piping system shall be such that 85 per cent. of the gas can be discharged into the space within 2 minutes.

(d) Where a generator producing inert gas is used to provide smothering gas in a fixed fire smothering installation for cargo spaces, it shall be capable of producing hourly a volume of free gas at least equal to 25 per cent. of the gross volume of the largest compartment protected in this way for a period of 72 hours.

(e) When steam is used as the extinguishing medium in cargo spaces the boiler or boilers available for supplying steam shall have an evaporation of at least 1 pound of steam per hour for each 12 cubic feet (or 1 kilogramme for each 0.75 cubic metres) of the gross volume of the largest cargo compartment in the ship. Moreover the Administration shall be satisfied that steam will

be available immediately and will not be dependent on the lighting of boilers and that it can be supplied continuously until the end of the voyage in the required quantity in addition to any steam necessary for the normal requirements of the ship including propulsion and that provision is made for extra feed water necessary to meet this requirement.

(f) Means shall be provided for giving audible warning of the release of fire smothering gas into any working space.

Regulation 59

Automatic Sprinkler Systems in Passenger Ships

(a) Any automatic water sprinkler system for fire protection required in accordance with Regulation 51 of this Chapter shall be ready for immediate use at any time, and no action on the part of the crew shall be necessary to set it in operation. Where such a system is fitted, it shall be kept charged at the necessary pressure and shall have provision for a continuous supply of water.

(b) The system shall be subdivided into a number of sections to be decided by the Administration, and automatic alarms shall be provided to indicate at one or more suitable points or stations the occurrence or indication of fire, and its location.

(c) The pump or pumps to provide the discharge from sprinkler heads shall be so connected as to be brought into action automatically by a pressure drop in the system. There shall be a connection from the ship's fire main provided with a lockable screw down valve and a non-return valve.

(d) Each pump shall be capable of maintaining a sufficient supply of water at the appropriate pressure, at the sprinkler heads, while such number of sprinkler heads as will be decided by the Administration are in operation.

(e) There shall be not less than two sources of power supply for the sea water pumps, air compressors and automatic alarms. Where the sources of power are electrical, these shall be a main generator and an emergency source of power. One supply shall be taken from the main switchboard, by separate feeders reserved solely for that purpose. Such feeders shall be run to a change-over switch situated near to the sprinkler unit and the switch shall normally be kept closed to the feeder from the emergency switchboard. The change-over switch shall be clearly labelled and no other switch shall be permitted in these feeders.

(f) Sprinkler heads shall be required to operate at temperatures that will be decided by the Administration. Suitable means for the periodic testing of all automatic arrangements shall be provided.

(g) Where Method II of fire protection is employed in a passenger ship the superstructure of which is constructed in aluminium alloy, the whole unit including the sprinkler pump, tank and air compressor shall be situated to the satisfaction of the Administration in a position reasonably remote from the boiler and machinery spaces. If the feeders from the emergency generator to the sprinkler unit pass through any space constituting a fire risk the cables shall be of a fireproof type.

Regulation 60

Fixed Froth Fire Extinguishing System

(a) Any required fixed froth fire extinguishing system shall be able to discharge a quantity of froth sufficient to cover to a depth of 6 inches (or 15 centimetres) the largest area over which oil fuel is liable to spread.

(b) Such a system shall be controlled from an easily accessible position or positions, outside the space to be protected, which will not be readily cut off by an outbreak of fire.

Regulation 61

Fire Detection Systems

(a) All required fire detection systems shall be capable of automatically indicating the presence or indication of fire and also its location. Indicators shall be centralised either on the bridge or in other control stations which are provided with a direct communication with the bridge. The Administration may permit the indicators to be distributed among several stations.

(b) In passenger ships electrical equipment used in the operation of required fire detection systems shall have two separate sources of power, one of which shall be an emergency source.

(c) The alarm system shall operate both audible and visible signals at the main stations referred to in paragraph (a) of this Regulation. Detection systems for cargo spaces need not have audible alarms.

Regulation 62

Fixed Pressure Water-spraying Systems for Engine Rooms and Boiler Rooms

(a) Fixed pressure water-spraying systems for boiler rooms with oil fired boilers and engine rooms with internal combustion type machinery shall be provided with spraying nozzles of an approved type.

(b) The number and arrangement of the nozzles shall be to the satisfaction of the Administration and be such as to ensure an effective distribution of water in the spaces to be protected. Nozzles shall be fitted above bilges, tank tops and other areas over which oil fuel is liable to spread and also above other main fire hazards in the boiler and engine rooms.

(c) The system may be divided into sections, the distribution manifolds of which shall be operated from easily accessible positions outside the spaces to be protected and which will not be readily cut off by an outbreak of fire.

(d) The system shall be kept charged at the necessary pressure and the pump supplying the water for the system shall be put automatically into action by a pressure drop in the system.

(e) The pump shall be capable of simultaneously supplying at the necessary pressure all sections of the system in any one compartment to be protected. The pump and its controls shall be installed outside the space or spaces to be protected. It shall not be possible for a fire in the space or spaces protected by the water-spraying system to put the system out of action.

(f) Special precautions shall be taken to prevent the nozzles from becoming clogged by impurities in the water or corrosion of piping, nozzles, valves and pump.

Regulation 63

Fireman's Outfit

(a) A fireman's outfit shall consist of a breathing apparatus, a lifeline, a safety lamp and an axe, as described in this Regulation.

(b) A breathing apparatus shall be of an approved type and may be either:

(i) A smoke helmet or smoke mask which shall be provided with a suitable air pump and a 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. If, in order to comply with this sub-paragraph, an air hose exceeding 120 feet (or 36 metres) in length would be necessary, a self-contained breathing apparatus shall be substituted or provided in addition as determined by the Administration.

(ii) A self-contained breathing apparatus which shall be capable of functioning for a period of time to be determined by the Administration.

(c) Each breathing apparatus shall have attached to its belt or harness, by means of a snap hook, a fireproof lifeline of sufficient length and strength.

(d) A safety lamp (hand lantern) shall be of an approved type. Such safety lamps shall be electric, and shall have a minimum burning period of three hours.

(e) The axe shall be to the satisfaction of the Administration.

Regulation 64

Requirements for Passenger Ships

(a) Patrols and Detection

(i) An efficient patrol system shall be maintained in all passenger ships so that any outbreak of fire may be promptly detected. Manual fire alarms shall be fitted throughout the passenger and crew accommodation to enable the fire patrol to give an alarm immediately to the bridge or fire control station.

(ii) An approved fire alarm or fire detecting system shall be provided which will automatically indicate at one or more suitable points or stations, where it can be most quickly observed by officers and crew, the presence or indication of fire and its location in any part of the ship which, in the opinion of the Administration, is not accessible to the patrol system, except where it is shown to the satisfaction of the Administration that the ship is engaged on voyages of such short duration that it would be unreasonable to apply this requirement.

(b) Fire Pumps and Water Service Pipes

A passenger ship shall be provided with fire pumps, water service pipes, hydrants and hoses complying with Regulation 56 of this Chapter and with the following requirements:—

(i) A passenger ship of 4,000 tons gross tonnage and upwards shall be provided with at least three independently driven fire pumps and every passenger ship of less than 4,000 tons gross tonnage with at least two such fire pumps.

(ii) In a passenger ship of 1,000 tons gross tonnage and upwards, the arrangement of sea connections, pumps and sources of power for operating them shall be such as to ensure that a fire in any one compartment will not put all the fire pumps out of action.

(iii) In a passenger ship of less than 1,000 tons gross tonnage the arrangements shall be to the satisfaction of the Administration.

(c) Fire Hydrants, Hoses and Nozzles

(i) A passenger ship shall be provided with such number of fire hoses as the Administration may deem sufficient. There shall be at least one fire hose for each of the hydrants required by paragraph (d) of Regulation 56 of this Chapter and these hoses shall be used only for the purposes of extinguishing fires or testing the fire extinguishing apparatus at fire drills and surveys.

(ii) In accommodation, service and machinery spaces, the number and position of hydrants shall be such that the requirements of paragraph (d) of Regulation 56 of this Chapter may be complied with when all watertight doors and all doors in main vertical zone bulkheads are closed.

(iii) In a passenger ship the arrangements shall be such that at least two jets of water can reach any part of any cargo space when empty.

(iv) All hydrants in the machinery spaces of passenger ships with oil-fired boilers or internal combustion type propelling machinery shall be fitted with hoses having in addition to the nozzles required in paragraph (f) of Regulation 56 of this Chapter nozzles suitable for spraying water on oil, or alternatively dual purpose nozzles.

(d) International Shore Connection

(i) A passenger ship of 1,000 tons gross tonnage and upwards shall be provided with at least one international shore connection, complying with Regulation 56 of this Chapter.

(ii) Facilities shall be available enabling such a connection to be used on either side of the ship.

(e) Portable Fire Extinguishers in Accommodation and Service Spaces

A passenger ship shall be provided in accommodation and service spaces with such approved portable fire extinguishers as the Administration may deem to be appropriate and sufficient.

(f) Fixed Fire Smothering Arrangements in Cargo Spaces

(i) The cargo spaces of passenger ships of 1,000 tons gross tonnage and upwards shall be protected by a fixed fire smothering gas system complying with Regulation 58 of this Chapter.

(ii) Where it is shown to the satisfaction of the Administration that a passenger ship is engaged on voyages of such short duration that it would be unreasonable to apply the requirements of sub-paragraph (i) of this paragraph and also in passenger ships of less than 1,000 tons gross tonnage, the arrangements in cargo spaces shall be to the satisfaction of the Administration.

(g) Fire Extinguishing Appliances in Boiler Rooms, &c.

Where main or auxiliary oil-fired boilers are situated, or in spaces containing oil fuel units or settling tanks, a passenger ship shall be provided with the following arrangements:

(i) There shall be any one of the following fixed fire extinguishing installations:—

(1) A pressure water spraying system complying with Regulation 62 of this Chapter;

(2) A fire smothering gas installation complying with Regulation 58 of this Chapter;

(3) A fixed froth installation complying with Regulation 60 of this Chapter. (The Administration may require fixed or mobile arrangements by pressure water or froth spraying to fight fire above the floor plates.)

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

(ii) There shall be at least two approved portable extinguishers discharging froth or other approved medium suitable for extinguishing oil fires, in each firing space in each boiler room and each space in which a part of the oil fuel installation is situated.

There shall be not less than one approved froth type extinguisher of at least 30 gallons (or 136 litres) capacity or equivalent in each boiler room. These extinguishers shall be provided with hoses on reels suitable for reaching any part of the boiler room and spaces containing any part of the oil fuel installations.

(iii) In each firing space there shall be a receptacle containing sand, sawdust impregnated with soda or other approved dry material, in such quantity as may be required by the Administration. Alternatively an approved portable extinguisher may be substituted therefor.

(h) Fire Fighting Appliances in Spaces containing Internal Combustion Type Machinery

Where internal combustion type engines are used, either (1) for main propulsion or (2) for auxiliary purposes associated with a total power not less than 1,000 b.h.p., a passenger ship shall be provided with the following arrangements:—

(i) There shall be one of the fixed arrangements required by subparagraph (g) (i) of this Regulation.

(ii) There shall be in each engine space one approved froth type extinguisher of not less than 10 gallons (or 45 litres) capacity or equivalent and also one approved portable froth type extinguisher for each 1,000 b.h.p. of the engines or part thereof; but the total number of portable extinguishers so supplied shall be not less than two and need not exceed six.

(i) Fire Fighting Arrangements in Spaces containing Steam Turbines and not requiring any Fixed Installation

The Administration shall give special consideration to the fire-extinguishing arrangements to be provided in spaces containing steam turbines which are separated from boiler rooms by watertight bulkheads.

(j) Fireman's Outfits

A passenger ship shall carry at least two fireman's outfits each complying with the requirements of Regulation 63 of this Chapter. Where the ship exceeds 10,000 tons gross tonnage at least three outfits shall be carried and where it exceeds 20,000 tons gross tonnage at least four outfits shall be carried. These outfits shall be kept in widely separated places ready for use.

Regulation 65*Requirements for Cargo Ships**(a) Application*

Where by virtue of minimum gross tonnage limits smaller cargo ships to which the present Regulations apply are not covered by specific requirements the arrangements for fire detection and extinction shall be to the satisfaction of the Administration.

(b) Fire Pumps and Water Service Pipes

A cargo ship shall be provided with fire pumps, water service pipes, hydrants and hoses complying with Regulation 56 of this Chapter and with the following requirements:—

(i) A cargo ship of 1,000 tons gross tonnage and upwards shall be provided with two independently driven power pumps.

(ii) In a cargo ship of 1,000 tons gross tonnage and upwards if a fire in any one compartment could put all the pumps out of action, there must be an alternative means of providing water for fire fighting. In a cargo ship of 2,000 tons gross tonnage and upwards this alternative means shall be a fixed emergency pump independently driven. This emergency pump shall be capable of supplying two jets of water to the satisfaction of the Administration.

(c) Fire Hydrants, Hoses and Nozzles

(i) In cargo ships of 1,000 tons gross tonnage and upwards the number of fire hoses to be provided, each complete with couplings and nozzles, shall be one for each 100 feet length of the ship and one spare, but in no case less

than five in all. This number does not include any hoses required in any engine or boiler room. The Administration may increase the number of the hoses required so as to ensure that hoses in sufficient number are available and accessible at all times, having regard to the type of the ship and the nature of the trade on which the ship is employed.

(ii) In accommodation, service and machinery spaces, the number and position of hydrants shall be such as to comply with the requirements of paragraph (d) of Regulation 56 of this Chapter.

(iii) In a cargo ship the arrangements shall be such that at least two jets of water can reach any part of any cargo space when empty.

(iv) All hydrants in the machinery spaces of cargo ships with oil fired boilers or internal combustion type propelling machinery shall be fitted with hoses having in addition to the nozzles required in paragraph (f) of Regulation 56 of this Chapter nozzles suitable for spraying water on oil, or alternatively dual purpose nozzles.

(d) International Shore Connection

(i) A cargo ship of 1,000 tons gross tonnage and upwards shall be provided with at least one international shore connection, complying with Regulation 56 of this Chapter.

(ii) Facilities shall be available enabling such a connection to be used on either side of the ship.

(e) Portable Fire Extinguishers in Accommodation and Service Spaces

A cargo ship shall be provided in accommodation and service spaces with such approved portable fire extinguishers as the Administration may deem to be appropriate and sufficient; in any case, their number shall not be less than five for ships of 1,000 tons gross tonnage and upwards.

(f) Fixed Fire Smothering Arrangements in Cargo Spaces

(i) Cargo spaces of ships of 2,000 tons gross tonnage and upwards shall be protected by a fixed fire smothering system complying with Regulation 58 of this Chapter. The Administration may allow the use of steam in lieu of smothering gas if the arrangements comply with paragraph (e) of Regulation 58 of this Chapter.

(ii) In tankers, installations discharging froth internally or externally to the tanks may be accepted as a suitable alternative to smothering gas or steam. The details of such installations shall be to the satisfaction of the Administration.

(iii) The Administration may exempt from the requirements of sub-paragraphs (i) and (ii) of this paragraph the cargo holds of any ship (other than the tanks of a tanker)—

(1) if they are provided with steel hatch covers and effective means of closing all ventilators and other openings leading to the holds;

(2) if the ship is constructed and intended solely for carrying such cargoes as ore, coal or grain;

(3) where it is shown to the satisfaction of the Administration that the ship is engaged on voyages of such short duration that it would be unreasonable to apply the requirement.

(iv) Every cargo ship in addition to complying with the requirements of this Regulation shall, while carrying explosives of such nature or in such quantity as are not permitted to be carried in passenger ships under Regulation 8 of Chapter VII of these Regulations comply with the following requirements:—

(1) Steam shall not be used for fire smothering purposes in any compartment containing explosives. For the purposes of this sub-paragraph, "compartment" means all spaces contained between two adjacent permanent bulkheads and includes the lower hold and all cargo spaces above it. The whole of any shelter deck space not subdivided by steel bulkheads the openings of which can be closed by steel closing plates shall, for the purposes of this sub-paragraph, be considered as a compartment. Where steel bulkheads with openings closed by steel closing plates are fitted, the enclosed spaces in the shelter deck may be considered as part of the compartment or compartments below.

(2) In addition, in each compartment containing explosives and in adjacent cargo compartments, there shall be provided a smoke or fire detection system in each cargo space.

(g) Fire Extinguishing Appliances in Boiler Rooms, &c.

Where main or auxiliary oil fired boilers are situated, or in spaces containing oil fuel units or settling tanks, a cargo ship of 1,000 tons gross tonnage and upwards shall be provided with the following arrangements:—

(i) There shall be any one of the following fixed fire extinguishing installations:—

(1) A pressure water spraying system complying with Regulation 62 of this Chapter;

(2) A fire smothering gas installation complying with Regulation 58 of this Chapter;

(3) A fixed froth installation complying with Regulation 60 of this Chapter. (The Administration may require fixed or mobile arrangements by pressure water or froth spraying to fight fire above the floor plates.)

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

(ii) There shall be at least two approved portable extinguishers discharging froth or other approved medium suitable for extinguishing oil fires in each firing space in each boiler room and each space in which a part of the oil fuel installation is situated. In addition, there shall be at least one extinguisher of the same description with a capacity of 2 gallons (or 9 litres) for each burner, provided that the total capacity of the additional extinguisher or extinguishers need not exceed 10 gallons (or 45 litres) for any one boiler room.

(iii) In each firing space there shall be a receptacle containing sand, sawdust impregnated with soda, or other approved dry material in such quantity as may be required by the Administration. Alternatively an approved portable extinguisher may be substituted therefor.

(h) Fire Fighting Appliances in Spaces containing Internal Combustion Type Machinery

Where internal combustion type engines are used, either (1) for main propulsion machinery, or (2) for auxiliary purposes associated with a total power not less than 1,000 b.h.p., a cargo ship of 1,000 tons gross tonnage and upwards shall be provided with the following arrangements:—

(i) There shall be one of the fixed arrangements required by subparagraph (g) (i) of this Regulation.

(ii) There shall be in each engine space one approved froth type extinguisher of not less than 10 gallons (or 45 litres) capacity or equivalent and also one approved portable froth extinguisher for each 1,000 b.h.p. of the engines or part thereof; but the total number of portable extinguishers so supplied shall be not less than two and need not exceed six.

(i) Fire Fighting Arrangements in Spaces containing Steam Turbines and not requiring any Fixed Installation

The Administration shall give special consideration to the fire extinguishing arrangements to be provided in spaces containing steam turbines which are separated from boiler rooms by watertight bulkheads.

(j) Fireman's Outfit

A cargo ship shall carry at least one fireman's outfit complying with the requirements of Regulation 63 of this Chapter.

Regulation 66

Ready Availability of Fire Fighting Appliances

Fire extinguishing appliances in new and existing passenger ships and cargo ships shall be kept in good order and available for immediate use at all times during the voyage.

Regulation 67

Acceptance of Substitutes

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

PART F.—GENERAL FIRE PRECAUTIONS

(Part F applies to passenger ships and cargo ships)

Regulation 68

Means of Escape

(a) Passenger Ships

(i) In and from all passenger and crew spaces and spaces in which crew are normally employed, other than machinery spaces, stairways and ladderways shall be arranged so as to provide ready means of escape to the lifeboat embarkation deck. In particular the following precautions shall be complied with:—

(1) below the bulkhead deck, two means of escape, at least one of which shall be independent of watertight doors, shall be provided for each watertight compartment or similarly restricted space or group of spaces. One of these means of escape may be dispensed with by the Administration, due regard being paid to the nature and the location of spaces concerned, and to the number of persons who normally might be quartered or employed there;

(2) above the bulkhead deck, there shall be at least two practical means of escape from each main vertical zone or similarly restricted space or group of spaces at least one of which shall give access to a stairway forming a vertical escape;

(3) at least one of the means of escape shall be by means of a readily accessible enclosed stairway, which shall provide as far as practicable continuous fire shelter from the level of its origin to the lifeboat embarkation deck. The width, number and continuity of the stairways shall be to the satisfaction of the Administration.

(ii) In machinery spaces, two means of escape, one of which may be a watertight door, shall be provided from each engine room, shaft tunnel and boiler room. In machinery spaces, where no watertight door is available, the two means of escape shall be formed by two sets of steel ladders as widely separated as possible leading to doors in the casing similarly separated and from which access is provided to the embarkation deck. In the case of ships of less than 2,000 tons gross tonnage, the Administration may dispense with this requirement, due regard being paid to the width and the disposition of the casing.

(b) Cargo Ships

(i) In and from all crew and passenger spaces and spaces in which crew are normally employed, other than machinery spaces, stairways and ladders shall be arranged so as to provide ready means of escape to the lifeboat embarkation deck.

(ii) In machinery spaces, the requirements of sub-paragraph (a) (ii) of this Regulation shall apply.

Regulation 69

Means for Stopping Machinery and for Shutting Off Oil Fuel Suction Pipes

(a) Means shall be provided for stopping ventilating fans serving machinery and cargo spaces and for closing all doorways, ventilators, annular spaces around funnels and other openings to such spaces. These means shall be capable of being operated from outside such spaces in case of fire.

(b) Machinery driving forced and induced draught fans, oil fuel transfer pumps, oil fuel unit pumps and other similar fuel pumps shall be fitted with remote controls situated outside the space concerned so that they may be stopped in the event of a fire arising in the space in which they are located.

(c) Every oil fuel suction pipe from a storage, settling or daily service tank situated above the double bottom shall be fitted with a cock or valve capable of being closed from outside the space concerned in the event of a fire arising in the space in which such tanks are situated. In the special case of deep tanks situated in any shaft or pipe tunnel, valves on the tanks shall be fitted but control in event of fire may be effected by means of an additional valve on the pipe line or lines outside the tunnel or tunnels.

Regulation 70

Fire Control Plans

In any passenger ship, and, as far as applicable in any cargo ship, there shall be permanently exhibited for the guidance of the ship's officers general arrangement plans showing clearly for each deck the control stations, the various fire sections enclosed by fire-resisting bulkheads, the sections enclosed by fire-retarding bulkheads (if any), together with particulars of the fire alarm, detecting systems, the sprinkler installation (if any), the fire extinguishing appliances, means of access to different compartments, decks,

&c., and the ventilating system including particulars of the master fan controls, the positions of dampers and identification numbers of the ventilating fans serving each section. Alternatively, at the discretion of the Administration, the aforementioned details may be set out in a booklet, a copy of which shall be supplied to each officer, and one copy at all times shall be available on board in an accessible position. Plans and booklets shall be kept up-to-date, any alterations being recorded thereon as soon as practicable.

CHAPTER III.—LIFE-SAVING APPLIANCES, &c.

Regulation 1

Application

(a) This Chapter, except where it is otherwise expressly provided, applies as follows to new ships engaged on international voyages:—

Part A—Passenger ships and cargo ships.

Part B—Passenger ships.

Part C—Cargo ships.

(b) In the case of existing ships engaged on international voyages and which do not already comply with the provisions of this Chapter relating to new ships, the arrangements in each ship shall be considered by the Administration with a view to securing, so far as this is practicable and reasonable, and as early as possible, substantial compliance with the requirements of this Chapter. The proviso to sub-paragraph (b)(i) of Regulation 27 of this Chapter may, however, be applied to existing ships only if:—

- (i) the provisions of Regulations 4, 8, 14, 18 and 19, and paragraphs (a) and (b) of Regulation 27 of this Chapter are complied with;
- (ii) the liferafts carried in accordance with the provisions of paragraph (b) of Regulation 27 comply with the requirements of either Regulation 15 or Regulation 16, and of Regulation 17 of this Chapter; and
- (iii) the total number of persons on board shall not be increased as the result of the provision of liferafts.

PART A.—GENERAL

(Part A applies to both passenger ships and cargo ships)

Regulation 2

Definitions

(a) For the purposes of this Chapter the expression "short international voyage" means an international voyage in the course of which a ship is not more than 200 miles from a port or place in which the passengers and crew could be placed in safety, and which does not exceed 600 miles in length between the last port of call in the country in which the voyage begins and the final port of destination.

(b) For the purposes of this Chapter, the expression "liferaft" means a liferaft complying with either Regulation 15 or Regulation 16 of this Chapter.

(c) For the purposes of this Chapter, the expression "approved launching device" means a device approved by the Administration, capable of launching from the embarkation position a liferaft fully loaded with the number of persons it is permitted to carry and with its equipment.

(d) For the purposes of this Chapter, the expression "certificated lifeboat-man" means any member of the crew who holds a certificate of efficiency issued under the provisions of Regulation 32 of this Chapter.

(e) For the purposes of this Chapter, the expression "buoyant apparatus" means flotation equipment (other than lifeboats, liferafts, lifebuoys and life-jackets) designed to support a specified number of persons who are in the water and of such construction that it retains its shape and properties.

Regulation 3

Exemptions

(a) The Administration, if it considers that the sheltered nature and conditions of the voyage are such as to render the application of the full requirements of this Chapter unreasonable or unnecessary, may to that extent exempt from the requirements of this Chapter individual ships or classes of ships which, in the course of their voyage, do not go more than 20 miles from the nearest land.

(b) In the case of passenger ships engaged on international voyages which are employed in the carriage of large numbers of unberthed passengers in special trades, such, for example, as the pilgrim trade, the Administration, if satisfied that it is impracticable to enforce compliance with the requirements of this Chapter, may exempt such ships from those requirements on the following conditions:—

- (i) that the fullest provision which the circumstances of the trade will permit shall be made in the matter of lifeboats and other life-saving appliances and fire protection;
- (ii) that all such boats and appliances shall be readily available within the meaning of Regulation 4 of this Chapter;
- (iii) that a lifejacket shall be provided for every person on board;
- (iv) that steps shall be taken to formulate general rules which shall be applicable to the particular circumstances of these trades. Such rules shall be formulated in concert with such other Contracting Governments, if any, as may be directly interested in the carriage of such passengers in such trades.

Notwithstanding any provisions of the present Convention the Simla Rules, 1931, shall continue in force as between the Parties to those Rules until the rules formulated under sub-paragraph (b) (iv) of this Regulation come into force.

Regulation 4

Ready Availability of Lifeboats, Liferafts and Buoyant Apparatus

(a) The general principle governing the provision of lifeboats, liferafts and buoyant apparatus in a ship to which this Chapter applies is that they shall be readily available in case of emergency.

(b) To be readily available, the lifeboats, liferafts and buoyant apparatus shall comply with the following conditions:—

- (i) they shall be capable of being put into the water safely and rapidly even under unfavourable conditions of trim and of 15 degrees of list;
- (ii) it shall be possible to effect embarkation into the lifeboats and liferafts rapidly and in good order;
- (iii) the arrangement of each lifeboat, liferaft and article of buoyant apparatus shall be such that it will not interfere with the operation of other boats, liferafts and buoyant apparatus.

(c) All the life-saving appliances shall be kept in working order and available for immediate use before the ship leaves port and at all times during the voyage.

Regulation 5

Construction of Lifeboats

(a) All lifeboats shall be properly constructed and shall be of such form and proportions that they shall have ample stability in a seaway, and sufficient freeboard when loaded with their full complement of persons and equipment. All lifeboats shall be capable of maintaining positive stability when open to the sea and loaded with their full complement of persons and equipment.

(b) (i) All lifeboats shall have rigid sides and internal buoyancy only. The Administration may approve lifeboats with a rigid shelter, provided that it may be readily opened from both inside and outside, and does not impede rapid embarkation and disembarkation or the launching and handling of the lifeboat.

(ii) Motor lifeboats may be fitted to the satisfaction of the Administration with means for preventing the entry of water at the fore end.

(iii) All lifeboats shall be not less than 24 feet (or 7.3 metres) in length except where owing to the size of the ship, or for other reasons, the Administration considers the carriage of such lifeboats unreasonable or impracticable. In no ship shall the lifeboats be less than 16 feet (or 4.9 metres) in length.

(c) No lifeboat may be approved the weight of which when fully laden with persons and equipment exceeds 20 tons (or 20,300 kilogrammes) or which has a carrying capacity calculated in accordance with Regulation 7 of this Chapter of more than 150 persons.

(d) All lifeboats permitted to carry more than 60 persons but not more than 100 persons shall be either motor lifeboats complying with the requirements of Regulation 9 of this Chapter or be lifeboats fitted with an approved means of mechanical propulsion complying with Regulation 10 of this Chapter. All lifeboats permitted to carry more than 100 persons shall be motor lifeboats complying with the requirements of Regulation 9 of this Chapter.

(e) All lifeboats shall be of sufficient strength to enable them to be safely lowered into the water when loaded with their full complement of persons and equipment. All lifeboats shall be of such strength that they will not suffer residual deflection if subjected to an overload of 25 per cent.

(f) All lifeboats shall have a mean sheer at least equal to 4 per cent. of their length. The sheer shall be approximately parabolic in form.

(g) In lifeboats permitted to carry 100 or more persons the volume of the buoyancy shall be increased to the satisfaction of the Administration.

(h) All lifeboats shall have inherent buoyancy, or shall be fitted with watertight air cases or other equivalent non-corrodible buoyant material which shall not be adversely affected by oil or oil products, sufficient to float the boat and its equipment when the boat is flooded and open to the sea. An additional volume of watertight air cases or other equivalent non-corrodible buoyant material, which shall not be adversely affected by oil or oil products, equal to at least one-tenth of the cubic capacity of the boat shall also be provided. The Administration may permit the watertight air cases to be filled with a non-corrodible buoyant material which shall not be adversely affected by oil or oil products.

(i) All thwarts and side-seats shall be fitted as low in the lifeboat as practicable.

(j) The block coefficient of the cubic capacity as determined in accordance with Regulation 6 of this Chapter of all lifeboats, except wooden lifeboats made of planks, shall be not less than 0.64.

Regulation 6

Cubic Capacity of Lifeboats

(a) The cubic capacity of a lifeboat shall be determined by Stirling's (Simpson's) Rule or by any other method giving the same degree of accuracy. The capacity of a square-sterned lifeboat shall be calculated as if the lifeboat had a pointed stern.

(b) For example, the capacity in cubic feet (or cubic metres) of a lifeboat, calculated by the aid of Stirling's Rule, may be considered as given by the following formula:—

$$\text{Capacity} = \frac{L}{12} (4A + 2B + 4C)$$

L being the length of the lifeboat in feet (or metres) from the inside of the planking or plating at the stem to the corresponding point at the stern post: in the case of a lifeboat with a square stern, the length is measured to the inside of the transom.

A , B , C denote respectively the areas of the cross-sections at the quarter-length forward, amidships, and the quarter-length aft, which correspond to the three points obtained by dividing L into four equal parts. (The areas corresponding to the two ends of the lifeboat are considered negligible.)

The areas A , B , C shall be deemed to be given in square feet (or square metres) by the successive application of the following formula to each of the three cross-sections—

$$\text{Area} = \frac{h}{12} (a + 4b + 2c + 4d + e)$$

h being the depth measured in feet (or in metres) inside the planking or plating from the keel to the level of the gunwale, or, in certain cases, to a lower level as determined hereafter.

a , b , c , d , e denote the horizontal breadths of the lifeboat measured in feet (or in metres) at the upper and lower points of the depth and at the three points obtained by dividing h into four equal parts (a and e being the breadths at the extreme point, and c at the middle point of h).

(c) If the sheer of the gunwale, measured at the two points situated at a quarter of the length of the lifeboat from the ends, exceeds 1 per cent. of the length of the lifeboat the depth employed in calculating the area of the cross-sections A or C shall be deemed to be the depth amidships plus 1 per cent. of the length of the lifeboat.

(d) If the depth of the lifeboat amidships exceeds 45 per cent. of the breadth, the depth employed in calculating the area of the amidship cross-section B shall be deemed to be equal to 45 per cent. of the breadth, and the depth employed in calculating the areas of the quarter-length sections A and C is obtained by increasing this last figure by an amount equal to 1 per cent. of the length of the lifeboat, provided that in no case shall the depths employed in the calculation exceed the actual depths at these points.

(e) If the depth of the lifeboat is greater than 4 feet (or 122 centimetres) the number of persons given by the application of this Rule shall be reduced in proportion to the ratio of 4 feet (or 122 centimetres) to the actual depth, until the lifeboat has been satisfactorily tested afloat with that number of persons on board, all wearing lifejackets.

(f) The Administration shall impose, by suitable formulae, a limit for the number of persons allowed in lifeboats with very fine ends and in lifeboats very full in form.

(g) The Administration may assign to a lifeboat constructed of wooden planks capacity equal to the product of the length, the breadth and the depth multiplied by 0.6 if it is evident that this formula does not give a greater capacity than that obtained by the above method. The dimensions shall then be measured in the following manner:—

Length.—From the intersection of the outside of the planking with the stem to the corresponding point at the stern post or, in the case of a square-sterned boat, to the after side of the transom.

Breadth.—From the outside of the planking at the point where the breadth of the boat is greatest.

Depth.—Amidships inside the planking from the keel to the level of the gunwale, but the depth used in calculating the cubic capacity may not in any case exceed 45 per cent. of the breadth.

In all cases the shipowner has the right to require that the cubic capacity of the lifeboat shall be determined by exact measurement.

(h) The cubic capacity of a motor lifeboat or a lifeboat fitted with other propelling gear shall be obtained from the gross capacity by deducting a volume equal to that occupied by the motor and its accessories or the gearbox of the other propelling gear, and, when carried, the radiotelegraph installation and searchlight with their accessories.

Regulation 7

Carrying Capacity of Lifeboats

The number of persons which a lifeboat shall be permitted to accommodate shall be equal to the greatest whole number obtained by dividing the capacity in cubic feet by:—

In the case of a lifeboat of 24 feet (or 7.3 metres) in length or over

10 (or where the capacity is measured in cubic metres, 0.283);

in the case of lifeboats of 16 feet (or 4.9 metres) in length

14 (or where the capacity is measured in cubic metres, 0.396); and

in the case of lifeboats of 16 feet (or 4.9 metres) in length or over but under 24 feet (or 4.9 metres) ...

a number between 14 and 10 (or where the capacity is measured in cubic metres, between 0.396 and 0.283), to be obtained by interpolation;

provided that the number shall in no case exceed the number of adult persons wearing lifejackets which can be seated without in any way interfering with the use of oars or the operation of other propulsion equipment.

Regulation 8

Number of Motor Lifeboats to be carried

(a) In every passenger ship there shall be carried on each side of the ship at least one motor lifeboat complying with the requirements of Regulation 9 of this Chapter.

Provided that in passenger ships in which the total number of persons which the ship is certified to carry, together with the crew, does not exceed 30, only one such motor lifeboat shall be required.

(b) In every cargo ship of 1,600 tons gross tonnage and upwards, except tankers, ships employed as whale factory ships, ships employed as fish processing or cannery factory ships, and ships engaged in the carriage of persons in the whaling, fish processing or cannery industries, there shall be carried at least one motor lifeboat complying with the requirements of Regulation 9 of this Chapter.

(c) In every tanker of 1,600 tons gross tonnage and upwards, in every ship employed as a whale factory ship, in every ship employed as a fish processing or cannery factory ship and in every ship engaged in the carriage of persons employed in the whaling, fish processing or cannery industries, there shall be carried on each side at least one motor lifeboat complying with the requirements of Regulation 9 of this Chapter.

Regulation 9

Specification of Motor Lifeboats

(a) A motor lifeboat shall comply with the following conditions:—

(i) It shall be fitted with a compression ignition engine and kept so as to be at all times ready for use; it shall be capable of being readily started in all conditions; sufficient fuel for 24 hours continuous operation at the speed specified in sub-paragraph (a) (iii) of this Regulation shall be provided.

(ii) The engine and its accessories shall be suitably enclosed to ensure operation under adverse weather conditions, and the engine casing shall be fire-resisting. Provision shall be made for going astern.

(iii) The speed ahead in smooth water when loaded with its full complement of persons and equipment shall be:—

(1) In the case of motor lifeboats required by Regulation 8 of this Chapter to be carried in passenger ships, tankers, ships

employed as whale factory ships, ships employed as fish processing or canning factory ships and ships engaged in the carriage of persons employed in the whaling, fish processing or canning industries, at least six knots.

(2) In the case of any other motor lifeboat, at least four knots.

(b) The volume of the internal buoyancy appliances of a motor lifeboat shall be increased above that required by Regulation 5 of this Chapter by the amount, if any, by which the volume of the internal buoyancy appliances required to support the engine and its accessories, and, if fitted, the searchlight and radiotelegraph installation and their accessories, exceeds the volume of the internal buoyancy appliances required, at the rate of one cubic foot per person, to support the additional persons which the lifeboat could accommodate if the motor and its accessories, and, if fitted, the searchlight and radiotelegraph installation and their accessories, were removed.

Regulation 10

Specification of Mechanically Propelled Lifeboats other than Motor Lifeboats

A mechanically propelled lifeboat, other than a motor lifeboat, shall comply with the following conditions:—

- (a) The propelling gear shall be of an approved type and shall have sufficient power to enable the lifeboat to be readily cleared from the ship's side when launched and to be able to hold course under adverse weather conditions. If the gear is manually operated it shall be capable of being worked by persons untrained in its use and shall be capable of being operated when the lifeboat is flooded.
- (b) A device shall be fitted by means of which the helmsman can cause the lifeboat to go astern at any time when the propelling gear is in operation.
- (c) The volume of the internal buoyancy of a mechanically propelled lifeboat, other than a motor lifeboat, shall be increased to compensate for the weight of the propelling gear.

Regulation 11

Equipment of Lifeboats

(a) The normal equipment of every lifeboat shall consist of:—

- (i) a single banked complement of buoyant oars, two spare buoyant oars, and a buoyant steering oar; one set and a half of thole pins or crutches, attached to the lifeboat by lanyard or chain; a boat hook;

- (ii) two plugs for each plug hole (plugs are not required when proper automatic valves are fitted) attached to the lifeboat by lanyards or chains; a baler, and two buckets of approved material;
- (iii) a rudder attached to the lifeboat and a tiller;
- (iv) two hatchets, one at each end of the lifeboat;
- (v) a lamp, with oil sufficient for 12 hours; two boxes of suitable matches in a watertight container;
- (vi) a mast or masts, with galvanised wire stays together with sails (coloured orange);
- (vii) an efficient compass in binnacle, to be luminised or fitted with suitable means of illumination;
- (viii) a lifeline becketted round the outside of the lifeboat;
- (ix) a sea-anchor of approved size;
- (x) two painters of sufficient length. One shall be secured to the forward end of the lifeboat with strop and toggle so that it can be released, and the other shall be firmly secured to the stem of the lifeboat and be ready for use;
- (xi) a vessel containing one gallon (or four and half litres) of vegetable, fish or animal oil. The vessel shall be so constructed that the oil can be easily distributed on the water, and so arranged that it can be attached to the sea-anchor;
- (xii) a food ration, determined by the Administration, for each person the lifeboat is certified to carry. These rations shall be kept in airtight receptacles which are to be stowed in a watertight container;
- (xiii) watertight receptacles containing six pints (or three litres) of fresh water for each person the lifeboat is certified to carry, or watertight receptacles containing four pints (or two litres) of fresh water for each person together with an approved de-salting apparatus capable of providing two pints (or one litre) of drinking water per person; a rustproof dipper with lanyard; a rustproof graduated drinking vessel;
- (xiv) four parachute signals of approved type capable of giving a bright red light at a high altitude; six hand flares of an approved type giving a bright red light;
- (xv) two buoyant smoke signals of an approved type (for day-time use) capable of giving off a volume of orange-coloured smoke;
- (xvi) approved means to enable persons to cling to the boat should it be upturned, in the form of bilge keels or keel rails, together with grab lines secured from gunwale to gunwale under the keel, or other approved arrangements;
- (xvii) an approved first aid outfit in a watertight case;

- (xviii) a waterproof electric torch suitable for signalling in the Morse Code together with one spare set of batteries and one spare bulb in a waterproof container;
- (xix) a daylight-signalling mirror of an approved type;
- (xx) a jack-knife fitted with a tin opener to be kept attached to the boat with a lanyard;
- (xxi) two light buoyant heaving lines;
- (xxii) a manual pump of an approved type;
- (xxiii) a suitable locker for stowage of small items of equipment;
- (xxiv) one whistle or equivalent sound signal;
- (xxv) one set of fishing tackle;
- (xxvi) one approved cover of a highly visible colour capable of protecting the occupants against injury by exposure; and
- (xxvii) one copy of the illustrated table of life-saving signals referred to in Regulation 16 of Chapter V.

(b) In the case of ships engaged on voyages of such duration that in the opinion of the Administration the items specified in sub-paragraphs (vi), (xii), (xiii), (xx) and (xxv) of paragraph (a) of this Regulation are unnecessary, the Administration may allow them to be dispensed with.

(c) Notwithstanding the provisions of paragraph (a) of this Regulation, motor lifeboats or other approved mechanically propelled lifeboats need not carry a mast or sails or more than half the complement of oars, but they shall carry two boat hooks.

(d) All lifeboats shall be fitted with suitable means to enable persons in the water to climb into the lifeboat.

(e) Every motor lifeboat shall carry portable fire-extinguishing equipment of an approved type capable of discharging froth or other suitable substance for extinguishing oil fires.

Regulation 12

Security of Lifeboat Equipment

All items of lifeboat equipment, with the exception of the boat hook which shall be kept free for fending off purposes, shall be suitably secured within the lifeboat. The lashing shall be carried out in such a manner as to ensure the security of the equipment and so as not to interfere with the lifting hooks or to prevent ready embarkation. All items of lifeboat equipment shall be as small and light in weight as possible and shall be packed in suitable and compact form.

Regulation 13

Portable Radio Apparatus

(a) An approved portable radio apparatus for survival craft complying with the requirements set out in Regulation 13 of Chapter IV shall be carried in all ships except those on which there is carried on each side of the ship a motor lifeboat fitted with a radiotelegraph installation complying with the provisions of Regulation 14 of this Chapter and of Regulation 12 of Chapter IV. All this equipment shall be kept together in the chartroom or other suitable place ready to be moved to one or other of the lifeboats in the event of an emergency. However, in tankers of 3,000 tons gross tonnage and upwards in which lifeboats are fitted amidships and aft this equipment shall be kept in a suitable place in the vicinity of those lifeboats which are furthest away from the ship's main transmitter.

(b) In the case of ships engaged on voyages of such duration that in the opinion of the Administration portable radio apparatus for survival craft is unnecessary, the Administration may allow such equipment to be dispensed with.

Regulation 14

Radio Apparatus and Searchlights in Motor Lifeboats

(a) (i) Where the total number of persons on board a passenger ship engaged on international voyages which are not short international voyages, a ship employed as a whale factory ship, a ship employed as a fish processing or canning factory ship or a ship engaged in the carriage of persons employed in the whaling, fish processing or canning industries, is more than 199 but less than 1,500, a radiotelegraph apparatus complying with the requirements set out in this Regulation and in Regulation 12 of Chapter IV shall be fitted in at least one of the motor lifeboats required under Regulation 8 of this Chapter to be carried in that ship.

(ii) Where the total number of persons on board such a ship is 1,500 or more, such a radiotelegraph apparatus shall be fitted in every motor lifeboat required under Regulation 8 of this Chapter to be carried in that ship.

(b) The radio apparatus shall be installed in a cabin large enough to accommodate both the equipment and the person using it.

(c) The arrangements shall be such that the efficient operation of the transmitter and receiver shall not be interfered with by the engine while it is running, whether a battery is on charge or not.

(d) The radio battery shall not be used to supply power to any engine starting motor or ignition system.

(e) The motor lifeboat engine shall be fitted with a dynamo for recharging the radio battery, and for other services.

(f) A searchlight shall be fitted in each motor lifeboat required to be carried under paragraph (a) of Regulation 8 of this Chapter in passenger ships and under paragraph (c) of that Regulation in ships employed as whale factory ships, fish processing or cannery ships and ships engaged in the carriage of persons employed in the whaling, fish processing or cannery industries.

(g) The searchlight shall include a lamp of at least 80 watts, an efficient reflector and a source of power which will give effective illumination of a light-coloured object having a width of about 60 feet (or 18 metres) at a distance of 200 yards (or 180 metres) for a total period of six hours and shall be capable of working for at least three hours continuously.

Regulation 15

Requirements for Inflatable Liferafts

(a) Every inflatable liferaft shall be so constructed that, when fully inflated and floating with the cover uppermost, it shall be stable in a seaway.

(b) The liferaft shall be so constructed that if it is dropped into the water from a height of 60 feet (or 18 metres) neither the liferaft nor its equipment will be damaged.

(c) The construction of the liferaft shall include a cover which shall automatically be set in place when the liferaft is inflated. This cover shall be capable of protecting the occupants against injury from exposure, and means shall be provided for collecting rain. The top of the cover shall be fitted with a lamp which derives its luminosity from a sea-activated cell and a similar lamp shall also be fitted inside the liferaft. The cover of the liferaft shall be of a highly visible colour.

(d) The liferaft shall be fitted with a painter and shall have a line securely becketed round the outside. A lifeline shall also be fitted around the inside of the liferaft.

(e) The liferaft shall be capable of being readily righted by one person if it inflates in an inverted position.

(f) The liferaft shall be fitted at each opening with efficient means to enable persons in the water to climb on board.

(g) The liferaft shall be contained in a valise or other container so constructed as to be capable of withstanding hard wear under conditions met with at sea. The liferaft in its valise or other container shall be inherently buoyant.

(h) The buoyancy of the liferaft shall be so arranged as to ensure by a division into an even number of separate compartments, half of which shall be capable of supporting out of the water the number of persons which the liferaft is permitted to accommodate, or by some other equally efficient means, that there is a reasonable margin of buoyancy if the raft is damaged or partially fails to inflate.

(i) The total weight of the liferaft, its valise or other container and its equipment shall not exceed 400 lb. (or 180 kilogrammes).

(j) The number of persons which an inflatable liferaft shall be permitted to accommodate shall be equal to:—

(i) the greatest whole number obtained by dividing by 3·4 the volume, measured in cubic feet (or by 96 the volume, measured in cubic decimetres) of the main buoyancy tubes (which for this purpose shall include neither the arches nor the thwart or thwarts if fitted) when inflated, or

(ii) the greatest whole number obtained by dividing by 4 the area, measured in square feet (or by 3,720 the area measured in square centimetres) of the floor (which for this purpose may include the thwart or thwarts if fitted) of the liferaft when inflated whichever number shall be the less.

(k) The floor of the liferaft shall be waterproof and shall be capable of being sufficiently insulated against cold.

(l) The liferaft shall be inflated by a gas which is not injurious to the occupants and the inflation shall take place automatically either on the pulling of a line or by some other equally simple and efficient method. Means shall be provided whereby the topping-up pump or bellows required by Regulation 17 of this Chapter may be used to maintain pressure.

(m) The liferaft shall be of approved material and construction, and shall be so constructed as to be capable of withstanding exposure for 30 days afloat in all sea conditions.

(n) No liferaft shall be approved which has a carrying capacity calculated in accordance with paragraph (j) of this Regulation of less than six persons. The maximum number of persons calculated in accordance with that paragraph for which an inflatable liferaft may be approved shall be at the discretion of the Administration, but shall in no case exceed 25.

(o) The liferaft shall be capable of operating throughout a temperature range of 150°F. to minus 22°F. (or 66°C. to minus 30°C.).

(p) The liferaft shall be so stowed as to be readily available in case of emergency.

(q) The liferaft shall be fitted with arrangements enabling it to be readily towed.

Regulation 16

Requirements for Rigid Liferafts

(a) Every rigid liferaft shall be so constructed that if it is dropped into the water from its stowed position neither the liferaft nor its equipment will be damaged.

(b) The deck area of the liferaft shall be situated within that part of the liferaft which affords protection to its occupants. The area of that deck shall be at least 4 square feet (or 3,720 square centimetres) for every person the liferaft is permitted to carry. The nature of the deck shall be such as to prevent so far as practicable the ingress of water and it shall effectively support the occupants out of the water.

(c) The liferaft shall be fitted with a cover or equivalent arrangement of a highly visible colour, which shall be capable of protecting the occupants against injury from exposure whichever way up the liferaft is floating.

(d) The equipment of the liferaft shall be so stowed as to be readily available whichever way up the liferaft is floating.

(e) The total weight of a liferaft and its equipment carried in passenger ships shall not exceed 400 lb. (or 180 kilogrammes). Liferafts carried in cargo ships may exceed 400 lb. (or 180 kilogrammes) in weight if they are capable of being launched from both sides of the ship or if there are provided means for putting them into the water mechanically.

(f) The liferaft must at all times be effective and stable when floating either way up.

(g) The liferaft shall have at least 3·4 cubic feet (or 96 cubic decimetres) of air cases or equivalent buoyancy for each person it is permitted to carry which must be placed as near as possible to the sides of the raft.

(h) The liferaft shall have a painter attached and a lifeline securely becketed round the outside. A lifeline shall also be fitted around the inside of the raft.

(i) The liferaft shall be fitted at each opening with efficient means to enable persons in the water to climb on board.

(j) The liferaft shall be so constructed as not to be affected by oil or oil products.

(k) A buoyant light of the electric battery type shall be attached to the liferaft by a lanyard.

(l) The liferaft shall be fitted with arrangements enabling it to be readily towed.

(m) Liferafts shall be so stowed as to float free in the event of the ship sinking.

Regulation 17

Equipment of Inflatable and Rigid Liferafts

(a) The normal equipment of every liferaft shall consist of:—

- One buoyant rescue quoit, attached to at least 100 feet (or 30 metres) of buoyant line.

- For liferafts which are permitted to accommodate not more than 12 persons; one knife and one baler; for liferafts which are permitted to accommodate 13 persons or more; two knives and two balers.
- Two sponges.
- Two sea-anchors, one permanently attached to the liferaft and one spare.
- Two paddles.
- One repair outfit capable of repairing punctures in buoyancy compartments.
- One topping-up pump or bellows, unless the liferaft complies with Regulation 16 of this Chapter.
- Three tin-openers.
- One approved first-aid outfit in a waterproof case.
- One rustproof graduated drinking vessel.
- One waterproof electric torch suitable for signalling in the Morse Code, together with one spare set of batteries and one spare bulb in a waterproof container.
- One daylight signalling mirror and one signalling whistle.
- Two parachute distress signals of an approved type, capable of giving a bright red light at a high altitude.
- Six hand flares of an approved type, capable of giving a bright red light.
- One set of fishing tackle.
- A food ration, determined by the Administration, for each person the liferaft is permitted to accommodate.
- Watertight receptacles containing three pints (or one and a half litres) of fresh water for each person the liferaft is permitted to accommodate, of which one pint (or half a litre) per person may be replaced by a suitable de-salting apparatus capable of producing an equal amount of fresh water.
- Six anti-seasickness tablets for each person the liferaft is deemed fit to accommodate.
- Instructions on how to survive in the liferaft; and
- One copy of the illustrated table of life-saving signals referred to in Regulation 16 of Chapter V.

(b) In the case of passenger ships engaged on short international voyages of such duration that in the opinion of the Administration all the items specified in paragraph (a) are unnecessary, the Administration may allow one or more items, not being less than one-sixth of the number of the liferafts

carried in any such ship, to be provided with the equipment specified in sub-paragraphs (i) to (vii) inclusive, (xi) and (xix) of paragraph (a) of this Regulation, and with one-half of the equipment specified in sub-paragraphs (xiii) and (xiv) of the said paragraph and the remainder of the liferafts carried to be provided with the equipment specified in sub-paragraphs (i) to (vii) inclusive and (xix) of the said paragraph.

Regulation 18

Training in the use of Liferafts

The Administration shall so far as is practicable and reasonable take steps with a view to ensuring that crews of ships in which liferafts are carried are trained in their launching and use.

Regulation 19

Embarkation into Lifeboats and Liferafts

(a) Suitable arrangements shall be made for embarkation into the lifeboats, which shall include:—

- (i) a ladder at each set of davits to afford access to the lifeboats when waterborne, except that in passenger ships, ships employed as whale factory ships, ships employed as fish processing or canning factory ships and ships engaged in the carriage of persons employed in the whaling, fish processing or canning industries, the Administration may permit such ladders to be replaced by approved devices provided that there shall not be less than one ladder on each side of the ship;
- (ii) means for illuminating the lifeboats and their launching gear during preparation for and the process of launching, and also for illuminating the water into which the lifeboats are launched until the process of launching is completed;
- (iii) arrangements for warning the passengers and crew that the ship is about to be abandoned; and
- (iv) means for preventing any discharge of water into the lifeboats.

(b) Suitable arrangements shall also be made for embarkation into the liferafts, which shall include:—

- (i) sufficient ladders to facilitate embarkation into the liferafts when waterborne except that in passenger ships, ships employed as whale factory ships, ships employed as fish processing or canning factory ships, and ships engaged in the carriage of persons employed in the whaling, fish processing or fish canning industries, the

Administration may permit the replacement of some or all of such ladders by approved devices;

- (ii) where there are carried liferafts for which approved launching devices are provided, means for illuminating those liferafts and launching devices during the preparation for and the process of launching, and also for illuminating the water into which those liferafts are launched until the process of launching is completed;
- (iii) means for illuminating the stowage position of liferafts for which approved launching devices are not provided;
- (iv) arrangements for warning the passengers and crew that the ship is about to be abandoned; and
- (v) means for preventing any discharge of water into the liferafts at fixed launching positions, including those under approved launching devices.

Regulation 20

Marking of Lifeboats, Liferafts and Buoyant Apparatus

(a) The dimensions of a lifeboat and the number of persons which it is permitted to carry shall be marked on it in clear permanent characters. The name and port of registry of the ship to which the lifeboat belongs shall be painted on each side of the bow.

(b) Buoyant apparatus shall be marked with the number of persons in the same manner.

(c) The number of persons shall be marked in the same manner on inflatable liferafts and also on the valise or container in which the inflatable liferaft is contained. Every inflatable liferaft shall also bear a serial number and the manufacturer's name so that the owner of the liferaft can be ascertained.

(d) Every rigid liferaft shall be marked with the name and port of registry of the ship in which it is carried, and with the number of persons it is permitted to carry.

(e) No lifeboat, liferaft or buoyant apparatus shall be marked for a greater number of persons than that obtained in the manner specified in this Chapter.

Regulation 21

Specification of a Lifebuoy

(a) A lifebuoy shall satisfy the following requirements:—

- (i) it shall be of solid cork or any other equivalent material;
- (ii) it shall be capable of supporting in fresh water for 24 hours at least 12 kg. (or 14.5 kilogrammes) of iron;

- (iii) it shall not be adversely affected by oil or oil products;
- (iv) it shall be of a highly visible colour;
- (v) it shall be marked in block letters with the name and port of registry of the ship in which it is carried.

(b) Lifebuoys filled with rushes, cork shavings or granulated cork, or any other loose granulated material, or whose buoyancy depends upon air compartments which require to be inflated, are prohibited.

(c) Lifebuoys made of plastic or other synthetic compounds shall be capable of retaining their buoyant properties and durability in contact with sea water or oil products, or under variations of temperature or climatic changes prevailing in open sea voyages.

(d) Lifebuoys shall be fitted with beackets securely seized. At least one lifebuoy on each side of the ship shall be fitted with a buoyant lifeline of at least 15 fathoms (or 27.5 metres) in length.

(e) In passenger ships not less than one-half of the total number of lifebuoys, and in no case less than six, and in cargo ships at least one-half of the total number of lifebuoys, shall be provided with efficient self-igniting lights.

(f) The self-igniting lights required by paragraph (e) of this Regulation shall be such that they cannot be extinguished by water. They shall be capable of burning for not less than 45 minutes and shall have a luminosity of not less than 3.5 lumens. They shall be kept near the lifebuoys to which they belong, with the necessary means of attachment. Self-igniting lights used in tankers shall be of an approved electric battery type.

(g) All lifebuoys shall be so placed as to be readily accessible to the persons on board, and at least two of the lifebuoys provided with self-igniting lights in accordance with paragraph (e) of this Regulation shall also be provided with an efficient self-activating smoke signal capable of producing smoke of a highly visible colour for at least 15 minutes, and shall be capable of quick release from the navigating bridge.

(h) Lifebuoys shall always be capable of being rapidly cast loose and shall not be permanently secured in any way.

Regulation 22

Lifejackets

(a) Ships shall carry for every person on board a lifejacket of an approved type and, in addition, unless these lifejackets can be adapted for use by children, a sufficient number of lifejackets suitable for children.

- (b) In addition to the lifejackets required by paragraph (a) there shall be carried on passenger ships lifejackets for 5 per cent. of the total number of persons on board. These lifejackets shall be stowed in a conspicuous place on deck.
- (c) A lifejacket shall not be approved unless it satisfies the following requirements:—
 - (i) It shall be constructed with proper workmanship and materials.
 - (ii) It shall be capable of supporting in fresh water for 24 hours 16.5 pounds (or 7.5 kilograms) of iron.
 - (iii) It shall be so constructed as to eliminate so far as possible all risk of its being put on incorrectly, except that it shall be capable of being worn inside out.
 - (iv) It shall provide support to the head so that the face of an unconscious person is held above the water with the body inclined backwards from its vertical position.
 - (v) It shall be capable of turning the body, on entering the water, to a safe floating position with the body inclined backwards from its vertical position.
 - (vi) It shall not be adversely affected by oil or oil products.
 - (vii) It shall be of a highly visible colour.
 - (viii) It shall be fitted with an approved whistle, firmly secured by a cord.
- (d) A lifejacket, the buoyancy of which depends on inflation, may be permitted for use by the crews of all ships except passenger ships and tankers provided that:—
 - (i) It has two separate air compartments, together capable of supporting in fresh water for 24 hours 33 pounds (or 15 kilograms) of iron, and each capable of so supporting 16.5 pounds (7.5 kilograms) of iron;
 - (ii) It is capable of being inflated both mechanically and by mouth; and
 - (iii) It complies with the requirements of sub-paragraphs (i), (iii), (iv), (v), (vi), (vii) and (viii) of paragraph (c) even if one air compartment is not inflated.
- (e) Lifejackets shall be so placed as to be readily accessible and their position shall be plainly indicated.

Regulation 23

Line-throwing Appliances

(a) Ships shall carry a line-throwing appliance of an approved type.

(b) The appliance shall be capable of carrying a line not less than 250 yards (or 230 metres) with reasonable accuracy, and shall include not less than four projectiles and four lines.

Regulation 24***Ships' Distress Signals***

Ships shall be provided, to the satisfaction of the Administration, with means of making effective distress signals by day and by night, including at least twelve parachute signals capable of giving a bright red light at a high altitude.

Regulation 25***Muster List and Emergency Procedure***

(a) Special duties to be undertaken in the event of an emergency shall be allotted to each member of the crew.

(b) The muster list shall show all the special duties and shall indicate, in particular, the station to which each member must go, and the duties that he has to perform.

(c) Before the vessel sails, the muster list shall be drawn up. Copies shall be posted in several parts of the ship, and in particular in the crew's quarters.

(d) The muster list shall show the duties assigned to the different members of the crew in connection with:—

(i) the closing of the watertight doors, valves and closing mechanisms of scuppers, ash-shoots, and fire doors;

(ii) the equipping of the lifeboats (including the portable radio apparatus for survival craft) and the other life-saving appliances;

(iii) the launching of the lifeboats;

(iv) the general preparation of the other life-saving appliances;

(v) the muster of the passengers; and

(vi) the extinction of fire.

(e) The muster list shall show the several duties assigned to the members of the stewards' department in relation to the passengers in case of emergency. These duties shall include:—

(i) warning the passengers;

(ii) seeing that they are suitably clad and have put on their lifejackets in a proper manner;

(iii) assembling the passengers at muster stations;

(iv) keeping order in the passages and on the stairways, and, generally, controlling the movements of the passengers; and

(v) ensuring that a supply of blankets is taken to the lifeboats.

(f) The muster list shall specify definite signals for calling all the crew to their boat, liferaft and fire stations, and shall give full particulars of these

signals. These signals shall be made on the whistle or siren and, except on passenger ships on short international voyages and on cargo ships of less than 150 feet in length, they shall be supplemented by other signals which shall be electrically operated. All these signals shall be operable from the bridge.

Regulation 26***Practice Musters and Drills***

(a) (i) In passenger ships, musters of the crew for boat drill and fire drill shall take place weekly when practicable and there shall be such a muster when a passenger ship leaves the final port of departure on an international voyage which is not a short international voyage.

(ii) In cargo ships, a muster of the crew for boat drill and fire drill shall take place at intervals of not more than one month, provided that a muster of the crew for boat drill and fire drill shall take place within 24 hours of leaving a port if more than 25 per cent. of the crew have been replaced at that port.

(iii) On the occasion of the monthly muster in cargo ships the boats' equipment shall be examined to ensure that it is complete.

(iv) The date upon which musters are held shall be recorded in such log book as may be prescribed by the Administration; and, if in any week (for passenger ships) or month (for cargo ships) no muster or a part muster only is held, an entry shall be made stating the circumstances and extent of the muster held. A report of the examination of the boats' equipment on cargo ships shall be entered in the log book, which shall also record the occasions on which the lifeboats are swung out and lowered in compliance with paragraph (c) of this Regulation.

(b) In passenger ships, except those engaged on short international voyages, a muster of the passengers shall be held within twenty-four hours after leaving port.

(c) Different groups of lifeboats shall be used in turn at successive boat drills and every lifeboat shall be swung out and, if practicable and reasonable, lowered at least once every four months. The musters and inspections shall be so arranged that the crew thoroughly understand and are practised in the duties they have to perform, including instructions in the handling and operation of liferafts where these are carried.

(d) The emergency signal for summoning passengers to muster stations shall be a succession of seven or more short blasts followed by one long blast on the whistle or siren. This shall be supplemented in passenger ships, except those engaged on short international voyages, by other signals, which shall be electrically operated, throughout the ship operable from the bridge. The meaning of all signals affecting passengers, with precise instructions on

what they are to do in an emergency, shall be clearly stated in appropriate languages on cards posted in their cabins and in conspicuous places in other passenger quarters.

PART B.—PASSENGER SHIPS ONLY

Regulation 27

Lifeboats, Liferafts and Buoyant Apparatus

(a) Passenger ships shall carry two boats attached to davits—one on each side of the ship—for use in an emergency. These boats shall be of an approved type and shall be not more than 28 feet (or 8½ metres) in length. They may be counted for the purposes of paragraphs (b) and (c) of this Regulation, provided that they comply fully with the requirements for lifeboats of this Chapter, and for the purposes of Regulation 8 provided that in addition they comply fully with the requirements of Regulation 9 and where appropriate Regulation 14. They shall be kept ready for immediate use while the ship is at sea. In ships in which the requirements of paragraph (h) of Regulation 29 are met by means of appliances fitted to the sides of the lifeboats, such appliances shall not be required to be fitted to the two boats provided to meet the requirements of this Regulation.

(b) Passenger ships engaged on international voyages which are not short international voyages shall carry:—

(i) lifeboats on each side of such aggregate capacity as will accommodate half the total number of persons on board.

Provided that the Administration may permit the substitution of lifeboats by liferafts of the same total capacity so however that there shall never be less than sufficient lifeboats on each side of the ship to accommodate 37½ per cent. of all on board.

(ii) Liferafts of sufficient aggregate capacity to accommodate 25 per cent. of the total number of persons on board, together with buoyant apparatus for 3 per cent. of that number.

Provided that ships which have a factor of subdivision of 0·33 or less shall be permitted to carry, in lieu of liferafts for 25 per cent. of all on board and buoyant apparatus for 3 per cent. of all on board, buoyant apparatus for 25 per cent. of that number.

(c) (i) A passenger ship engaged on short international voyages shall be provided with sets of davits in accordance with its length as specified in Column A of the Table in Regulation 28 of this Chapter. Each set of davits shall have a lifeboat attached to it and these lifeboats shall provide at least the minimum capacity required by Column C of the Table or the capacity required to provide accommodation for all on board if this is less.

Provided that when in the opinion of the Administration it is impracticable or unreasonable to place on a ship engaged on short international voyages the number of sets of davits required by Column A of the Table in Regulation 28, the Administration may authorise, under exceptional conditions, a smaller number of davits, except that this number shall never be less than the minimum number fixed by Column B of the Table, and that the total capacity of the lifeboats on the ship will be at least equal to the minimum capacity required by Column C or the capacity required to provide for all persons on board if this is less.

(ii) If the lifeboats so provided are not sufficient to accommodate all on board, additional lifeboats under davits or liferafts shall be provided so that the accommodation provided in the lifeboats and the liferafts in the ship shall be sufficient for all on board.

(iii) Notwithstanding the provisions of sub-paragraph (c) (ii) in any ship engaged on short international voyages the number of persons carried shall not exceed the total capacity of the lifeboats provided in accordance with sub-paragraphs (c) (i) and (c) (ii) of this Regulation unless the Administration considers that this is necessitated by the volume of traffic and then only if the ship complies with the provisions of paragraph (d) of Regulation 1 of Chapter II.

(iv) Where under the provisions of sub-paragraph (c) (iii) the Administration has permitted the carriage of persons in excess of the lifeboat capacity and is satisfied that it is impracticable in that ship to stow the liferafts carried in accordance with sub-paragraph (c) (ii) it may permit a reduction in the number of lifeboats.

Provided that:

(1) the number of lifeboats shall, in the case of ships of 190 feet (or 58 metres) in length and over, never be less than four, two of which shall be carried on each side of the ship, and in the case of ships of less than 190 feet (or 58 metres) in length, shall never be less than two, one of which shall be carried on each side of the ship; and

(2) the number of lifeboats and liferafts shall always be sufficient to accommodate the total number of persons on board.

(v) Every passenger ship engaged on short international voyages shall carry in addition to the lifeboats and liferafts required by the provisions of this paragraph, liferafts sufficient to accommodate 10 per cent. of the total number of persons for whom there is accommodation in the lifeboats carried in that ship.

(vi) Every passenger ship engaged on short international voyages shall also carry buoyant apparatus for at least 5 per cent. of the total number of persons on board.

(vii) The Administration may permit individual ships or classes of ships with short international voyage certificates to proceed on voyages in excess of 600 miles but not exceeding 1,200 miles if such ships comply with the provisions of paragraph (d) of Regulation 1 of Chapter II, if they carry lifeboats which provide for 75 per cent. of the persons on board and otherwise comply with the provisions of this paragraph.

Regulation 28

Table relating to Davits and Lifeboat Capacity for Ships on Short International Voyages

The following table fixes according to the length of the ship—

- (A) the minimum number of sets of davits to be provided on a ship engaged on short international voyages to each of which must be attached a lifeboat in accordance with Regulation 27 of this Chapter;
- (B) the smaller number of sets of davits which may be authorised exceptionally on a ship engaged on short international voyages under Regulation 27; and
- (C) the minimum lifeboat capacity required for a ship engaged on short international voyages.

Registered Length of Ship	Feet	Metres	(A) Minimum Number of Sets of Davits	(B) Smaller Number of Sets of Davits authorised exceptionally	(C) Minimum Capacity of Lifeboats	
					Cubic Feet	Cubic Metres
100 and under 120	31 and under	37	2	2	400	11
120	140	37	2	2	650	18
140	160	43	2	2	900	26
160	175	49	3	3	1,150	33
175	190	53	3	3	1,350	38
190	205	58	4	4	1,550	44
205	220	63	4	4	1,750	50
220	230	67	5	4	1,850	52
230	245	70	5	4	2,150	61
245	255	75	6	5	2,400	68
255	270	78	6	5	2,700	76
270	285	82	7	5	3,000	85
285	300	87	7	5	3,300	94
300	315	91	8	6	3,600	102
315	330	96	8	6	3,900	110
330	350	101	9	7	4,300	122
350	370	107	9	7	4,750	135
370	390	113	10	7	5,150	146
390	410	119	10	7	5,550	157
410	435	125	12	9	6,050	171
435	460	133	14	9	6,550	185
460	490	140	14	10	7,150	202
490	520	149	14	10	7,800	221
520	550	159	16	12	8,400	238

Note on (C).—Where the length of the ship is under 100 feet (or 31 metres) or over 550 feet (or 168 metres) the minimum number of sets of davits and the cubic capacity of the lifeboats shall be prescribed by the Administration.

Regulation 29

Stowage and Handling of Lifeboats, Liferafts and Buoyant Apparatus

(a) Lifeboats and liferafts shall be stowed to the satisfaction of the Administration in such a way that:—

- (i) they can all be launched in the shortest possible time and in not more than 30 minutes;
- (ii) they will not impede in any way the prompt handling of any of the other lifeboats, liferafts or buoyant apparatus or the marshalling of the persons on board at the launching stations, or their embarkation;
- (iii) the lifeboats, and the liferafts for which approved launching devices are required to be carried, shall be capable of being put into the water loaded with their full complement of persons and equipment even in unfavourable conditions of trim and of 15 degrees of list either way; and
- (iv) the liferafts for which approved launching devices are not required to be carried, and the buoyant apparatus, shall be capable of being put into the water even in unfavourable conditions of trim and of 15 degrees of list either way.

(b) Every lifeboat shall be attached to a separate set of davits.

(c) Lifeboats may only be stowed on more than one deck if proper measures are taken to prevent lifeboats on a lower deck being fouled by those stowed on a deck above.

(d) Lifeboats, and liferafts for which approved launching devices are required to be carried shall not be placed in the bow of the ship. They shall be stowed in such positions as to ensure safe launching having particular regard to clearance from the propeller and steeply overhanging portions of the hull aft.

(e) Davits shall be of approved design and shall be suitably placed to the satisfaction of the Administration. They shall be so disposed on one or more decks that the lifeboats placed under them can be safely lowered without interference from the operation of any other davits.

(f) Davits shall be as follows:—

- (i) luffing or gravity type for operating lifeboats weighing not more than 2½ tons (or 2,300 kilogrammes) in their turning out condition;
- (ii) gravity type for operating lifeboats weighing more than 2½ tons (or 2,300 kilogrammes) in their turning out condition.

(g) Davits, falls, blocks and all other gear shall be of such strength that the lifeboats can be turned out manned by a launching crew and then safely lowered with the full complement of persons and equipment, with the ship listed to 15 degrees either way and with a 10 degrees trim.

(h) Skates or other suitable means shall be provided to facilitate launching the lifeboats against a list of 15 degrees.

(i) Means shall be provided for bringing the lifeboats against the ship's side and there holding them so that persons may be safely embarked.

(j) Lifeboats, together with the emergency boats required by Regulation 27 of this Chapter, shall be served by wire rope falls, together with winches of an approved type which, in the case of the emergency boats, shall be capable of quick recovery of those boats. Exceptionally, the Administration may allow manila rope falls or falls of another approved material with or without winches (except that the emergency boats shall be required to be served by winches which are capable of quick recovery of those boats) where they are satisfied that manila rope falls or falls of another approved material are adequate.

(k) At least two lifelines shall be fitted to the davit span, and the falls and lifelines shall be long enough to reach the water with the ship at its lightest sea-going draught and listed to 15 degrees either way. Lower fall blocks shall be fitted with a suitable ring or long link for attaching to the sling hooks unless an approved type of disengaging gear is fitted.

(l) Where mechanically-powered appliances are fitted for the recovery of the lifeboats, efficient hand gear shall also be provided. Where davits are recovered by action of the falls by power, safety devices shall be fitted which will automatically cut off the power before the davits come against the stops in order to avoid overstressing the wire rope falls or davits.

(m) Lifeboats attached to davits shall have the falls ready for service and arrangements shall be made for speedily, but not necessarily simultaneously, detaching the lifeboats from the falls. The point of attachment of the lifeboats to the falls shall be at such height above the gunwale as to ensure stability when lowering the lifeboats.

(n) (i) In passenger ships engaged on international voyages which are not short international voyages in which there are carried lifeboats and liferafts in accordance with sub-paragraph (b) (i) of Regulation 27 of this Chapter, there shall be provided approved launching devices sufficient in number in the opinion of the Administration to enable that number of liferafts which, together with the lifeboats, is required in accordance with that sub-paragraph to provide accommodation for all on board, to be put into the water loaded

with the number of persons they are permitted to accommodate, in not more than thirty minutes in calm conditions. Approved launching devices so provided shall, so far as practicable, be distributed equally on each side of the ship and there shall never be less than one such device on each side. No such devices need, however, be provided for the additional liferafts required to be carried by sub-paragraph (b) (ii) of Regulation 27 of this Chapter for 25 per cent. of all on board, but every liferaft carried in accordance with that sub-paragraph shall, where an approved launching device is provided in the ship, be of a type which is capable of being launched from such a device.

(ii) In passenger ships engaged on short international voyages, the number of approved launching devices to be provided shall be at the discretion of the Administration. The number of liferafts allocated to each such device carried shall not be more than the number which, in the opinion of the Administration, can be put into the water fully loaded with the number of persons they are permitted to carry by that device in not more than 30 minutes in calm conditions.

Regulation 30

Lighting for Decks, Lifeboats, Liferafts, &c.

(a) Provision shall be made for an electric or equivalent system of lighting sufficient for all the requirements of safety in the different parts of a passenger ship, and particularly for decks on which the lifeboats and liferafts are stowed. The self-contained emergency source of electrical power required by Regulation 25 of Chapter II shall be capable of supplying where necessary this lighting system and also the lighting required by sub-paragraphs (a) (ii), (b) (ii) and (b) (iii) of Regulation 19 of this Chapter.

(b) The exit from every main compartment occupied by passengers or crew shall be continuously lighted by an emergency lamp. The power for these emergency lamps shall be so arranged that they will be supplied from the emergency source of power referred to in paragraph (a) of this Regulation in the event of failure of the main generating plant.

Regulation 31

Manning of Lifeboats and Liferafts

(a) A deck officer or certificated lifeboatman shall be placed in charge of each lifeboat and a second-in-command shall also be nominated. The person in charge shall have a list of the lifeboat's crew, and shall see that the men placed under his orders are acquainted with their several duties.

(b) A man capable of working the motor shall be assigned to each motor lifeboat.

(c) A man capable of working the radio and searchlight installations shall be assigned to each lifeboat carrying this equipment.

(d) A man practised in the handling and operation of liferafts shall be assigned to each liferaft carried, except where in ships engaged on short international voyages the Administration is satisfied that this is not practicable.

Regulation 32

Certificated Lifeboatmen

(a) In passenger ships there shall be, for every lifeboat carried in order to comply with this Chapter, a number of lifeboatmen at least equal to that specified in the following table:—

<i>Prescribed Complement of Lifeboat</i>	<i>The Minimum Number of Certificated Lifeboatmen shall be</i>
Less than 41 persons ...	2
From 41 to 61 persons ...	3
From 62 to 85 persons ...	4
Above 85 persons ...	5

(b) The allocation of the certificated lifeboatmen to each lifeboat remains within the discretion of the master.

(c) Certificates of efficiency shall be issued under the authority of the Administration. In order to obtain such a certificate an applicant shall prove that he has been trained in all the operations connected with launching lifeboats and other life-saving appliances and in the use of oars and propelling gear; that he is acquainted with the practical handling of lifeboats and of other life-saving equipment, and further, that he is capable of understanding and answering the orders relative to all kinds of life-saving appliances.

Regulation 33

Buoyant Apparatus

(a) No type of buoyant apparatus shall be approved unless it satisfies the following conditions:—

- It shall be of such size and strength that it can be thrown from the place where it is stowed into the water without being damaged.
- It shall not exceed 400 lbs. in weight (or 180 kilogrammes) unless suitable means to the satisfaction of the Administration are provided to enable it to be launched without lifting by hand.
- It shall be of approved material and construction.
- It shall be effective and stable when floating either way up.
- The air cases or equivalent buoyancy shall be placed as near as possible to the sides of the apparatus, and such buoyancy shall not be dependent upon inflation.

(vi) It shall be fitted with a painter and have a line securely becketed round the outside.

(b) The number of persons for which buoyant apparatus is certified shall be the number,

- ascertained by dividing the number of pounds of iron which it is capable of supporting in fresh water by 32 (or the number of kilogrammes divided by 14.5), or
- equal to the number of feet (equivalent to 30.5 centimetres) in the perimeter,
whichever is the less.

Regulation 34

Number of Lifebuoys to be Provided

The minimum number of lifebuoys with which passenger ships are provided shall be fixed by the following table:—

<i>Length of Ship in Feet</i>	<i>Minimum Number of Buoys</i>
Under 200	Under 61
200 and under 400	61 and under 122
400 and under 600	122 and under 183
600 and under 800	183 and under 244
800 and over	244 and over

PART C.—CARGO SHIPS ONLY

Regulation 35

Number and Capacity of Lifeboats and Liferafts

(a) (i) Every cargo ship, except tankers of 1,600 tons gross tonnage and upwards, ships employed as whale factory ships, fish processing or cannery factory ships, and ships engaged in the carriage of persons employed in the whaling, fish processing or cannery industries, shall carry lifeboats on each side of the ship of such aggregate capacity as will accommodate all persons on board, and in addition shall carry liferafts sufficient to accommodate half that number.

Provided that, in the case of such cargo ships engaged on international voyages between near neighbouring countries, the Administration, if it is satisfied that the conditions of the voyage are such as to render the compulsory carriage of liferafts unreasonable or unnecessary, may to that extent exempt individual ships or classes of ships from this requirement.

(ii) Every tanker of 1,600 tons gross tonnage and upwards shall carry lifeboats on each side of the ship of such aggregate capacity as will accommodate all persons on board.

(b) (i) Every ship employed as a whale factory ship, every ship employed as a fish processing or canning factory ship and every ship engaged in the carriage of persons employed in the whaling, fish processing or canning industries shall carry—

(1) Lifeboats on each side of such aggregate capacity as will accommodate half the total number of persons on board.

Provided that the Administration may permit the substitution of lifeboats by liferafts of the same total capacity so however that there shall never be less than sufficient lifeboats on each side of the ship to accommodate 37½ per cent. of all on board.

(2) Liferafts of sufficient aggregate capacity to accommodate half the total number of persons on board.

Provided that, if in ships employed as fish processing or canning factory ships, it is impracticable to carry lifeboats which comply fully with the requirements of this Chapter, the Administration may permit instead the carriage of other boats, which shall however provide not less than the accommodation required by this Regulation and shall have at least the buoyancy and equipment required by this Chapter for lifeboats.

(ii) Every ship employed as a whale factory ship, every ship employed as a fish processing or canning factory ship and every ship engaged in the carriage of persons employed in the whaling, fish processing or canning industries shall carry two boats—one on each side—for use in an emergency. These boats shall be of an approved type and shall be not more than 28 feet (or 8½ metres) in length. They may be counted for the purposes of this paragraph provided that they comply fully with the requirements for lifeboats of this Chapter and for the purposes of Regulation 8 provided that in addition they comply with the requirements of Regulation 9, and, where appropriate, Regulation 14. They shall be kept ready for immediate use while the ship is at sea. In ships in which the requirements of paragraph (g) of Regulation 36 are met by means of appliances fitted to the sides of the lifeboats, such appliances shall not be required to be fitted to the two boats provided to meet the requirements of this Regulation.

(c) Every tanker of 3,000 tons gross tonnage and upwards shall carry not less than four lifeboats. Two lifeboats shall be carried aft and two amidships, except that in tankers which have no amidships superstructure all lifeboats shall be carried aft.

Provided that, if in the case of tankers with no amidships superstructure it is impracticable to carry four lifeboats aft, the Administration may permit

instead the carriage aft of one lifeboat on each side of the ship. In such a case:—

- (i) each such lifeboat shall not exceed 26 feet (or 8 metres) in length;
- (ii) each such lifeboat shall be stowed as far forward as practicable, but at least so far forward that the after end of the lifeboat is one-and-a-half times the length of the lifeboat forward of the propeller;
- (iii) each lifeboat shall be stowed as near the sea level as is safe and practicable; and
- (iv) there shall be carried in addition liferafts sufficient to accommodate at least one-half of the total number of persons on board.

Regulation 36

Davits and Launching Arrangements

(a) In cargo ships lifeboats and liferafts shall be stowed to the satisfaction of the Administration.

(b) Every lifeboat shall be attached to a separate set of davits.

(c) Lifeboats, and liferafts for which approved launching devices are required to be carried, shall not be placed in the bow of the ship. They shall be stowed in such positions as to ensure safe launching, having particular regard to clearance from the propeller and steeply overhanging portions of the hull aft, with the object of ensuring so far as practicable that they are capable of being launched down the straight side of the ship.

(d) Davits shall be of approved design and shall be suitably placed to the satisfaction of the Administration.

(e) In tankers of 1,600 tons gross tonnage and upwards, ships employed as whale factory ships, ships employed as fish processing or canning factory ships and ships engaged in the carriage of persons employed in the whaling, fish processing or canning industries, all davits shall be of the gravity type. In other ships, davits shall be as follows:—

(i) luffing or gravity type for operating lifeboats weighing not more than 2½ tons (or 2,300 kilogrammes) in their turning out condition;

(ii) gravity type for operating lifeboats weighing more than 2½ tons (or 2,300 kilogrammes) in their turning out condition.

(f) Davits, falls, blocks and all other gear shall be of such strength that the lifeboats can be turned out manned by a launching crew and then safely lowered with the full complement of persons and equipment, with the ship listed to 15 degrees either way, and with a 10 degrees trim.

(g) Skates or other suitable means shall be provided to facilitate launching the lifeboats against a list of 15 degrees.

(h) Means shall be provided for bringing the lifeboats against the ship's side and there holding them so that persons may be safely embarked.

(i) Lifeboats, together with the emergency boats required by sub-paragraph (b) (ii) of Regulation 35 of this Chapter, shall be served by wire rope falls, together with winches of an approved type which, in the case of the emergency boats, shall be capable of quick recovery of those boats. Exceptionally, the Administration may allow manila rope falls or falls of another approved material with or without winches (except that the emergency boats shall be required to be served by winches which are capable of quick recovery of those boats) where they are satisfied that manila rope falls or falls of another approved material are adequate.

(j) At least two lifelines shall be fitted to the davit spans, and the falls and lifelines shall be long enough to reach the water with the ship at its lightest sea-going draught and listed to 15 degrees either way. Lower fall blocks shall be fitted with a suitable ring or long link for attaching to the sling hooks unless an approved type of disengaging gear is fitted.

(k) Where mechanically powered appliances are fitted for the recovery of the lifeboats, efficient hand gear shall also be provided. Where davits are recovered by action of the falls by power, safety devices shall be fitted which will automatically cut off the power before the davits come against the stops in order to avoid overstressing the wire rope falls or davits.

(l) Lifeboats shall have the falls ready for service, and arrangements shall be made for speedily, but not necessarily simultaneously, detaching the lifeboats from the falls. The point of attachment of the lifeboats to the falls shall be at such height above the gunwale as to ensure stability when lowering the lifeboats.

(m) In ships employed as whale factory ships, ships employed as fish processing or canning factory ships and ships engaged in the carriage of persons employed in the whaling, fish processing or canning industries, in which there are carried lifeboats and liferafts in accordance with sub-paragraph (i) (2) of paragraph (b) of Regulation 35 no approved launching devices need be provided for the liferafts, but there shall be provided such devices sufficient in number, in the opinion of the Administration, to enable the liferafts carried in accordance with sub-paragraph (i) (1) of that paragraph to be put into the water loaded with the number of persons they are permitted to accommodate, in not more than 30 minutes in calm conditions. Approved launching devices so provided shall, so far as practicable, be distributed equally on each side of the ship. Every liferaft carried on ships in which an approved launching device is required to be provided shall be of a type which is capable of being launched by such a device.

Regulation 37

Number of Lifebuoys to be Provided

At least eight lifebuoys of a type which satisfies the requirements of Regulation 21 of this Chapter shall be carried.

Regulation 38

Emergency Lighting

The lighting required by sub-paragraphs (a) (ii), (b) (ii) and (b) (iii) of Regulation 19 of this Chapter shall be capable of being supplied for at least three hours by the emergency source of power required by Regulation 26 of Chapter II. In cargo ships of 1,600 tons gross tonnage and upwards the Administration shall ensure that the lighting of the alleyways, stairways and exits is such that the access of all persons on board to the launching stations and stowage positions of lifeboats and liferafts is not impeded.

CHAPTER IV.—RADIOTELEGRAPHY AND RADIOTELEPHONY

PART A.—APPLICATION AND DEFINITIONS

Regulation 1

Application

(a) Unless expressly provided otherwise, this Chapter applies to all ships to which the present Regulations apply.

(b) This Chapter does not apply to ships to which the present Regulations would otherwise apply while such ships are being navigated within the Great Lakes of North America and their connecting and tributary waters as far east as the lower exit of the St. Lambert Lock at Montreal in the Province of Quebec, Canada.*

(c) No provision in this Chapter shall prevent the use by a ship or survival craft in distress of any means at its disposal to attract attention, make known its position and obtain help.

Regulation 2

Terms and Definitions

For the purpose of this Chapter the following terms shall have the meanings defined below. All other terms which are used in this Chapter and which are also defined in the Radio Regulations shall have the same meanings as defined in those Regulations:

(a) "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.

(b) "Radiotelegraph auto alarm" means an automatic alarm receiving apparatus which responds to the radiotelegraph alarm signal and has been approved.

(c) "Radio officer" means a person holding at least a first or second class radiotelegraph operator's certificate complying with the provisions of the Radio Regulations, who is employed in the radiotelegraph station of a ship which is provided with such a station in compliance with the provisions of Regulation 3 or Regulation 4 of this Chapter.

* Such ships are subject to special requirements relative to radio for safety purposes, the present requirements being contained in the United States-Canadian agreement of 1952, entitled: "Promotion of Safety on the Great Lakes by Means of Radio."

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

(e) "Existing installation" means:—

(i) an installation wholly installed on board a ship before the date on which the present Convention comes into force, irrespective of the date on which acceptance by the respective Administration takes effect; and

(ii) an installation part of which was installed on board a ship before the date of coming into force of the present Convention and the rest of which consists either of parts installed in replacement of identical parts, or parts which comply with the requirements of this Chapter.

(f) "New installation" means any installation which is not an existing installation.

Regulation 3

Radiotelegraph Station

Passenger ships irrespective of size and cargo ships of 1,600 tons gross tonnage and upwards, unless exempted under Regulation 5 of this Chapter, shall be fitted with a radiotelegraph station complying with the provisions of Regulations 8 and 9 of this Chapter.

Regulation 4

Radiotelephone Station

Cargo ships of 300 tons gross tonnage and upwards but less than 1,600 tons gross tonnage, unless fitted with a radiotelegraph station complying with the provisions of Regulations 8 and 9 of this Chapter shall, provided they are not exempted under Regulation 5 of this Chapter, be fitted with a radiotelephone station complying with the provisions of Regulations 14 and 15 of this Chapter.

Regulation 5

Exemptions from Regulations 3 and 4

(a) The Contracting Governments consider it highly desirable not to deviate from the application of Regulations 3 and 4 of this Chapter; nevertheless the Administration may grant to individual passenger or cargo ships exemptions of a partial and/or conditional nature, or complete exemption from the requirements of Regulation 3 or Regulation 4 of this Chapter.

(b) The exemptions permitted under paragraph (a) of this Regulation shall be granted only to a ship engaged on a voyage where the maximum distance of the ship from the shore, the length of the voyage, the absence of general navigational hazards, and other conditions affecting safety are such as to render the full application of Regulation 3 or Regulation 4 of this Chapter unreasonable or unnecessary. When deciding whether or not to grant exemptions to individual ships, Administrations shall have regard to the effect that exemptions may have upon the general efficiency of the distress service for the safety of all ships. Administrations should bear in mind the desirability of requiring ships which are exempted from the requirement of Regulation 3 of this Chapter to be fitted with a radiotelephone station which complies with the provisions of Regulations 14 and 15 of this Chapter as a condition of exemption.

(c) Each Administration shall submit to the Organization as soon as possible after the first of January in each year a report showing all exemptions granted under paragraphs (a) and (b) of this Regulation during the previous calendar year and giving the reasons for granting such exemptions.

PART B.—WATCHES

Regulation 6

Watches—Radiotelegraph

(a) Each ship which in accordance with Regulation 3 or Regulation 4 of this Chapter is fitted with a radiotelegraph station shall, while at sea, carry at least one radio officer and, if not fitted with a radiotelegraph auto alarm, shall, subject to the provisions of paragraph (d) of this Regulation, listen continuously on the radiotelegraph distress frequency by means of a radio officer using headphones or a loud-speaker.

(b) Each passenger ship which in accordance with Regulation 3 of this Chapter is fitted with a radiotelegraph station, if fitted with a radiotelegraph auto alarm, shall, subject to the provisions of paragraph (d) of this Regulation, and while at sea, listen on the radiotelegraph distress frequency by means of a radio officer using headphones or a loud-speaker, as follows:—

- (i) if carrying or certificated to carry 250 passengers or less, at least 8 hours listening a day in the aggregate;
- (ii) if carrying or certificated to carry more than 250 passengers and engaged on a voyage exceeding 16 hours duration between two consecutive ports, at least 16 hours listening a day in the aggregate. In this case the ship shall carry at least two radio officers;
- (iii) if carrying or certificated to carry more than 250 passengers and engaged on a voyage of less than 16 hours duration between two consecutive ports, at least 8 hours listening a day in the aggregate.

(c) (i) Each cargo ship which in accordance with Regulation 3 of this Chapter is fitted with a radiotelegraph station, if fitted with a radiotelegraph auto alarm, shall, subject to the provisions of paragraph (d) of this Regulation, and while at sea, listen on the radiotelegraph distress frequency by means of a radio officer using headphones or a loud-speaker, for at least 8 hours a day in the aggregate. However, Administrations may on cargo ships of 1,600 tons gross tonnage and upwards but less than 3,500 tons gross tonnage permit the hours of listening to be limited to not less than 2 hours a day in the aggregate for a period of three years from the date of coming into force of the present Convention.

(ii) Each cargo ship of 300 tons gross tonnage and upwards but less than 1,600 tons gross tonnage which is fitted with a radiotelegraph station as a consequence of Regulation 4 of this Chapter, if fitted with a radiotelegraph auto alarm shall, subject to the provisions of paragraph (d) of this Regulation, and while at sea, listen on the radiotelegraph distress frequency by means of a radio officer using headphones or a loud-speaker, during such periods as may be determined by the Administration. Administrations shall, however, have regard to the desirability of requiring, whenever practicable, a listening watch of at least 8 hours a day in the aggregate.

(d) During the period when a radio officer is required by this Regulation to listen on the radiotelegraph distress frequency the radio officer may discontinue such listening during the time when he is handling traffic on other frequencies, or performing other essential radio duties, but only if it is impracticable to listen by split headphones or loud-speaker. The listening watch shall always be maintained by a radio officer using headphones or loud-speaker during the silence periods provided for by the Radio Regulations.

(e) In all ships fitted with a radiotelegraph auto alarm this radiotelegraph auto alarm shall, while the ship is at sea, be in operation whenever there is no listening being kept under paragraphs (b), (c) or (d) of this Regulation and, whenever practicable, during direction-finding operations.

(f) The listening periods provided for by this Regulation, including those which are determined by the Administration, should be maintained preferably during periods prescribed for the radiotelegraph service by the Radio Regulations.

Regulation 7

Watches—Radiotelephone

(a) Each ship which is fitted with a radiotelephone station in accordance with Regulation 4 of this Chapter shall, for safety purposes, carry at least one radiotelephone operator (who may be the master, an officer or a member of the crew holding only a certificate for radiotelephony) and shall, subject to the provisions of paragraph (b) of this Regulation, while at sea, maintain

continuous listening watch on the radiotelephone distress frequency, in the place on board from which the ship is usually navigated, using a loud-speaker or other appropriate means.

(b) Listening may be discontinued

- (i) when the receiving equipment is being used for traffic on another frequency and a second receiver is not available; or
- (ii) 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.

Listening watch should, however, as far as possible be maintained during the silence periods provided for in the Radio Regulations.

PART C.—TECHNICAL REQUIREMENTS

Regulation 8

Radiotelegraph Stations

(a) The radiotelegraph station shall be so located that no harmful interference from extraneous mechanical or other noise will be caused to the proper reception of radio signals. The station shall be placed as high in the ship as is practicable, so that the greatest possible degree of safety may be secured.

(b) The radiotelegraph operating room shall be of sufficient size and of adequate ventilation to enable the main and reserve radiotelegraph installations to be operated efficiently, and shall not be used for any purpose which will interfere with the operation of the radiotelegraph station.

(c) The sleeping accommodation of at least one radio officer shall be situated as near as practicable to the radiotelegraph operating room. In new ships, this sleeping accommodation shall not be within the radiotelegraph operating room.

(d) There shall be provided between the radiotelegraph operating room and the bridge and one other place, if any, from which the ship is navigated, an efficient two-way system for calling and voice communication which shall be independent of the main communication system on the ship.

(e) The radiotelegraph installation shall be installed in such a position that it will be protected against the harmful effects of water or extremes of temperature. It shall be readily accessible both for immediate use in case of distress and for repair.

(f) A reliable clock with a dial not less than five inches (or 12.5 centimetres) in diameter and a concentric seconds hand, the face of which is marked to indicate the silence periods prescribed for the radiotelegraph service by the Radio Regulations, shall be provided. It shall be securely mounted in the radiotelegraph operating room in such a position that the entire dial can be easily and accurately observed by the radio officer from the radiotelegraph operating position and from the position for testing the radiotelegraph auto alarm receiver.

(g) A reliable emergency light shall be provided in the radiotelegraph operating room, consisting of an electric lamp permanently arranged so as to provide satisfactory illumination of the operating controls of the main and reserve radiotelegraph installations and of the clock required by paragraph (f) of this Regulation. In new installations, this lamp shall, if supplied from the reserve source of energy required by sub-paragraph (iii) of paragraph (a) of Regulation 9 of this Chapter, be controlled by two-way switches placed near the main entrance to the radiotelegraph operating room and at the radiotelegraph operating position, unless the layout of the radiotelegraph operating room does not warrant it. These switches shall be clearly labelled to indicate their purpose.

(h) Either an electric inspection lamp, operated from the reserve source of energy required by sub-paragraph (iii) of paragraph (a) of Regulation 9 of this Chapter and provided with a flexible lead of adequate length, or a flashlight shall be provided and kept in the radiotelegraph operating room.

(i) The radiotelegraph station shall be provided with such spare parts, tools and testing equipment as will enable the radiotelegraph installation to be maintained in efficient working condition while at sea. The testing equipment shall include an instrument or instruments for measuring A.C. volts, D.C. volts and ohms.

(j) If a separate emergency radiotelegraph operating room is provided the requirements of paragraphs (d), (e), (f), (g) and (h) of this Regulation shall apply to it.

Regulation 9

Radiotelegraph Installations

(a) Except as otherwise expressly provided in this Regulation—

- (i) The radiotelegraph station shall include a main installation and a reserve installation, electrically separate and electrically independent of each other.
- (ii) The main installation shall include a main transmitter, main receiver and main source of energy.
- (iii) The reserve installation shall include a reserve transmitter, reserve receiver and reserve source of energy.
- (iv) A main and a reserve aerial shall be provided and installed, provided that the Administration may except any ship from the provision of a reserve aerial if it is satisfied that the fitting of such an aerial is impracticable or unreasonable, but in such case a suitable spare aerial completely assembled for immediate installation shall be carried. In addition, sufficient aerial wire and insulators shall in all cases be provided to enable a suitable aerial to be erected.

The main aerial, if suspended between supports liable to whipping, shall be suitably protected against breakage.

(b) In installations on cargo ships (except those on cargo ships of 1,600 tons gross tonnage and upwards installed on or after 19 November, 1952).

if the main transmitter complies with all the requirements for the reserve transmitter, the latter is not obligatory.

(c) (i) The main and reserve transmitters shall be capable of being quickly connected with and tuned to the main aerial, and the reserve aerial if one is fitted.

(ii) The main and reserve receivers shall be capable of being quickly connected with any aerial with which they are required to be used.

(d) All parts of the reserve installation shall be placed as high in the ship as is practicable, so that the greatest possible degree of safety may be secured.

(e) The main and reserve transmitters shall be capable of transmitting on the radiotelegraph distress frequency using a class of emission assigned by the Radio Regulations for that frequency. In addition, the main transmitter shall be capable of transmitting on at least two of the frequencies, and of using a class of emission, which, in accordance with the Radio Regulations, may be used for the transmission of safety messages in the bands between 405 kc/s and 535 kc/s. The reserve transmitter may consist of a ship's emergency transmitter, as defined in, and limited in use by, the Radio Regulations.

(f) The main and reserve transmitters shall, if modulated emission is prescribed by the Radio Regulations, have a depth of modulation of not less than 70 per cent. and a note frequency between 450 and 1,350 cycles per second.

(g) The main and reserve transmitters shall, when connected to the main aerial, have a minimum normal range as specified below, that is to say, they must be capable of transmitting clearly perceptible signals from ship to ship by day and under normal conditions and circumstances over the specified ranges*. (Clearly perceptible signals will normally be received if the R.M.S. value of the field strength at the receiver is at least 50 microvolts per metre.)

* In the absence of a direct measurement of the field strength the following data may be used as a guide for approximately determining the normal range:

Normal range in miles	Metre-amperes†	Total aerial power (watts)‡
200	128	200
175	102	125
150	76	71
125	58	41
100	45	25
75	34	14

† This figure represents the product of the maximum height of the aerial above the deepest load water line in metres and the aerial current in amperes (R.M.S. value).

(Footnote continued on page 298)

	Minimum normal range in miles	
	Main transmitter	Reserve transmitter
All passenger ships, and cargo ships of 1,600 tons gross tonnage and upwards ...	150	100
Cargo ships below 1,600 tons gross tonnage ...	100	75

(h) (i) The main and reserve receivers shall be capable of receiving the radiotelegraph distress frequency and the class of emission assigned by the Radio Regulations for that frequency.

(ii) In addition, the main receiver shall permit the reception of such of the frequencies and classes of emission used for the transmission of time signals, meteorological messages and such other communications relating to safety of navigation as may be considered necessary by the Administration.

(iii) For a period not exceeding five years from the date of coming into force of the present Convention, the radiotelegraph auto alarm receiver may be used as the reserve receiver if capable of effectively producing signals in headphones or a loud-speaker with which it is connected for this purpose. When so used, it shall be connected to the reserve source of energy.

(i) The main receiver shall have sufficient sensitivity to produce signals in headphones or by means of a loud-speaker when the receiver input is as low as 50 microvolts. The reserve receiver shall, except in cases where a radiotelegraph auto alarm receiver is used for this purpose, have sufficient sensitivity to produce such signals when the receiver input is as low as 100 microvolts.

(j) There shall be available at all times, while the ship is at sea, a supply of electrical energy sufficient to operate the main installation over the normal range required by paragraph (g) of this Regulation as well as for the purpose of charging any batteries forming part of the radiotelegraph station. The voltage of the supply for the main installation shall, in the case of new ships, be maintained within ± 10 per cent. of the rated voltage. In the case of

The values given in the second column of the table correspond to an average value of the ratio

$$\frac{\text{effective aerial height}}{\text{maximum aerial height}} = 0.47$$

This ratio varies with local conditions of the aerial and may vary between about 0.3 and 0.7

‡ The values given in the third column of the table correspond to an average value of the ratio

$$\frac{\text{radiated aerial power}}{\text{total aerial power}} = 0.08$$

This ratio varies considerably according to the values of effective aerial height and aerial resistance.

existing ships, it shall be maintained as near the rated voltage as possible and, if practicable, within ± 10 per cent.

(k) The reserve installation shall be provided with a source of energy independent of the propelling power of the ship and of the ship's electrical system. The Administration may delay the application of the requirement for a reserve source of energy for a period not exceeding three years from the date of coming into force of the present Convention, in the case of existing installations on those cargo ships of 500 tons gross tonnage and upwards but less than 1,600 tons gross tonnage which were excepted, prior to the date of the coming into force of the present Convention, from the requirement to be provided with a reserve source of energy.

(l) The reserve source of energy shall preferably consist of accumulator batteries, which may be charged from the ship's electrical system, and shall under all circumstances be capable of being put into operation rapidly and of operating the reserve transmitter and receiver for at least six hours continuously under normal working conditions besides any of the additional loads mentioned in paragraphs (m) and (n) of this Regulation*.

(m) The reserve source of energy shall be used to supply the reserve installation and the automatic alarm signal keying device specified in paragraph (r) of this Regulation if it is electrically operated.

The reserve source of energy may also be used to supply:—

- (i) the radiotelegraph auto alarm;
- (ii) the emergency light specified in paragraph (g) of Regulation 8 of this Chapter;
- (iii) the direction-finder;
- (iv) any device, prescribed by the Radio Regulations, to permit change-over from transmission to reception and vice versa.

Subject to the provisions of paragraph (n) of this Regulation, the reserve source of energy shall not be used other than for the purposes specified in this paragraph.

(n) Notwithstanding the provisions of paragraph (m) of this Regulation, the Administration may authorise the use in cargo ships of the reserve source of energy for a small number of low-power emergency circuits which are wholly confined to the upper part of the ship, such as emergency lighting on the boat deck, on condition that these can be readily disconnected if necessary, and that the source of energy is of sufficient capacity to carry the additional load or loads.

* For the purpose of determining the electrical load to be supplied by the reserve source of energy, the following formula is recommended as a guide:

$\frac{1}{2}$ of the transmitter current consumption with the key down (mark)

$\frac{1}{2}$ of the transmitter current consumption with the key up (space)

+ current consumption of receiver and additional circuits connected to the reserve source of energy.

(o) The reserve source of energy and its switchboard shall be as high as practicable in the ship and readily accessible to the radio officer. The switchboard shall, wherever possible, be situated in a radio room; if it is not, it shall be capable of being illuminated.

(p) While the ship is at sea, accumulator batteries, whether forming part of the main installation or reserve installation, shall be brought up to the normal fully-charged condition daily.

(q) All steps shall be taken to eliminate so far as is possible the causes of, and to suppress, radio interference from electrical and other apparatus on board. If necessary, steps shall be taken to ensure that the aerials attached to broadcast receivers do not cause interference to the efficient or correct working of the radiotelegraph installation. Particular attention shall be paid to this requirement in the design of new ships.

(r) In addition to a means for manually transmitting the radiotelegraph alarm signal, an automatic radiotelegraph alarm signal keying device shall be provided, capable of keying the main and the reserve transmitters so as to transmit the radiotelegraph alarm signal. The device shall be capable of being taken out of operation at any time in order to permit immediate manual operation of the transmitter. If electrically operated, this keying device shall be capable of operation from the reserve source of energy.

(s) At sea, the reserve transmitter, if not used for communications, shall be tested daily using a suitable artificial aerial, and at least once during each voyage using the reserve aerial if installed. The reserve source of energy shall also be tested daily.

(t) All equipments forming part of the radiotelegraph installation shall be reliable, and shall be so constructed that they are readily accessible for maintenance purposes.

(u) Notwithstanding the provision of Regulation 4 of this Chapter, the Administration may, in the case of cargo ships below 1,600 tons gross tonnage, relax the full requirements of Regulation 8 of this Chapter and the present Regulation, provided that the standard of the radiotelegraph station shall in no case fall below the equivalent of that prescribed under Regulation 14 and Regulation 15 of this Chapter for radiotelephone stations, so far as applicable. In particular, in the case of cargo ships of 300 tons gross tonnage and upwards but less than 500 tons gross tonnage, the Administration need not require:—

- (i) a reserve receiver;
- (ii) a reserve source of energy in existing installations;
- (iii) protection of the main aerial against breakage by whipping;
- (iv) the means of communication between the radiotelegraph station and the bridge to be independent of the main communication system;
- (v) the range of the transmitter to be greater than 75 miles.

Regulation 10*Radiotelegraph Auto Alarms*

(a) Any radiotelegraph auto alarm installed after the date of coming into force of the present Convention shall comply with the following minimum requirements:—

- (i) In the absence of interference of any kind it shall be capable of being actuated, without manual adjustment, by any radiotelegraph alarm signal transmitted on the radiotelegraph distress frequency by any coast station, ship's emergency or survival craft transmitter operating in accordance with the Radio Regulations, provided that the strength of the signal at the receiver input is greater than 100 microvolts and less than 1 volt.
- (ii) In the absence of interference of any kind, it shall be actuated by either three or four consecutive dashes when the dashes vary in length from 3·5 to as near 6 seconds as possible and the spaces vary in length between 1·5 seconds and the lowest practicable value, preferably not greater than 10 milliseconds.
- (iii) It shall not be actuated by atmospherics or by any signal other than the radiotelegraph alarm signal, provided that the received signals do not in fact constitute a signal falling within the tolerance limits indicated in (ii).
- (iv) The selectivity of the radiotelegraph auto alarm shall be such as to provide a practically uniform sensitivity over a band extending not less than 4 kc/s and not more than 8 kc/s on each side of the radiotelegraph distress frequency and to provide outside this band a sensitivity which decreases as rapidly as possible in conformity with the best engineering practice.
- (v) If practicable, the radiotelegraph auto alarm shall, in the presence of atmospherics or interfering signals, automatically adjust itself so that within a reasonably short time it approaches the condition in which it can most readily distinguish the radiotelegraph alarm signal.
- (vi) When actuated by a radiotelegraph alarm signal, or in the event of failure of the apparatus, the radiotelegraph auto alarm shall cause a continuous audible warning to be given in the radiotelegraph operating room, in the radio officer's sleeping accommodation and on the bridge. If practicable, warning shall also be given in the case of failure of any part of the whole alarm receiving system. Only one switch for stopping the warning shall be provided and this shall be situated in the radiotelegraph operating room.
- (vii) For the purpose of regularly testing the radiotelegraph auto alarm, the apparatus shall include a generator pre-tuned to the radiotelegraph distress frequency and a keying device by means of

which a radiotelegraph alarm signal of the minimum strength indicated in (i) is produced. A means shall also be provided for attaching headphones for the purpose of listening to signals received on the radiotelegraph auto alarm.

- (viii) The radiotelegraph auto alarm shall be capable of withstanding vibration, humidity and changes of temperature, equivalent to severe conditions experienced on board ships at sea, and shall continue to operate under such conditions.

(b) Before a new type of radiotelegraph auto alarm is approved, the Administration concerned shall be satisfied, by practical tests made under operating conditions equivalent to those obtaining in practice, that the apparatus complies with paragraph (a) of this Regulation.

(c) In ships fitted with a radiotelegraph auto alarm, its efficiency shall be tested by a radio officer at least once every 24 hours while at sea. If it is not in working order, the radio officer shall report that fact to the master or officer on watch on the bridge.

(d) A radio officer shall periodically check the proper functioning of the radiotelegraph auto alarm receiver, with its normal aerial connected, by listening to signals and by comparing them with similar signals received on the radiotelegraph distress frequency on the main installation.

(e) As far as practicable, the radiotelegraph auto alarm, when connected to an aerial, shall not affect the accuracy of the direction-finder.

(f) Radiotelegraph auto alarms which do not comply with the requirements of paragraph (a) of this Regulation shall be replaced by radiotelegraph auto alarms which do so comply within four years from the date of coming into force of the present Convention.

Regulation 11*Direction-Finders*

(a) The direction-finding apparatus required by Regulation 12 of Chapter V shall be efficient and capable of receiving signals with the minimum of receiver noise and of taking bearings from which the true bearing and direction may be determined.

(b) It shall be capable of receiving signals on the radiotelegraph frequencies assigned by the Radio Regulations for the purposes of distress and direction-finding and for maritime radio beacons.

(c) In the absence of interference the direction-finding apparatus shall have a sensitivity sufficient to permit accurate bearings being taken on a signal having a field strength as low as 50 microvolts per metre.

(d) As far as is practicable, the direction-finding apparatus shall be so located that as little interference as possible from mechanical or other noise will be caused to the efficient determination of bearings.

(e) As far as is practicable, the direction-finding aerial system shall be erected in such a manner that the efficient determination of bearings will be hindered as little as possible by the close proximity of other aerials, derricks, wire halyards or other large metal objects.

(f) An efficient two-way means of calling and voice communication shall be provided between the direction-finder and the bridge.

(g) All direction-finders shall be calibrated to the satisfaction of the Administration on first installation. The calibration shall be verified by check bearings or by a further calibration whenever any changes are made in the position of any aerials or of any structures on deck which might affect appreciably the accuracy of the direction-finder. The calibration particulars shall be checked at yearly intervals, or as near thereto as possible. A record shall be kept of the calibrations and of any checks made of their accuracy.

Regulation 12

Radiotelegraph Installation for Fitting in Motor Lifeboats

(a) The radiotelegraph installation required by Regulation 14 of Chapter III shall include a transmitter, a receiver and a source of energy. It shall be so designed that it can be used in an emergency by an unskilled person.

(b) The transmitter shall be capable of transmitting on the radiotelegraph distress frequency using a class of emission assigned by the Radio Regulations for that frequency. The transmitter shall also be capable of transmitting on the frequency, and of using a class of emission, assigned by the Radio Regulations for use by survival craft in the bands between 4,000 kc/s and 27,500 kc/s.

(c) The transmitter shall, if modulated emission is prescribed by the Radio Regulations, have a depth of modulation of not less than 70 per cent. and a note frequency between 450 and 1,350 cycles per second.

(d) In addition to a key for manual transmissions, the transmitter shall be fitted with an automatic keying device for the transmission of the radiotelegraph alarm and distress signals.

(e) On the radiotelegraph distress frequency the transmitter shall have a minimum normal range (as specified in paragraph (g) of Regulation 9 of this Chapter) of 25 miles using the fixed aerial.*

* In the absence of a measurement of the field strength, it may be assumed that this range will be obtained if the product of the height of the aerial above the water line and the aerial current (R.M.S. value) is 10 metre-amperes.

(f) The receiver shall be capable of receiving the radiotelegraph distress frequency and the classes of emission assigned by the Radio Regulations for that frequency.

(g) The source of energy shall consist of an accumulator battery with sufficient capacity to supply the transmitter for four hours continuously under normal working conditions. If the battery is of a type that requires charging, means shall be available for charging it from the ship's power supply. In addition there shall be a means for charging it after the lifeboat has been launched.

(h) When the power for the radiotelegraph installation and the searchlight required by Regulation 14 of Chapter III are drawn from the same battery, it shall have sufficient capacity to provide for the additional load of the searchlight.

(i) A fixed-type aerial shall be provided together with means for supporting it at the maximum practicable height. In addition an aerial supported by a kite or balloon shall be provided if practicable.

(j) At sea a radio officer shall at weekly intervals test the transmitter using a suitable artificial aerial, and shall bring the battery up to full charge if it is of a type which requires charging.

Regulation 13

Portable Radio Apparatus for Survival Craft

(a) The apparatus required by Regulation 13 of Chapter III shall include a transmitter, a receiver, an aerial and a source of energy. It shall be so designed that it can be used in an emergency by an unskilled person.

(b) The apparatus shall be readily portable, watertight, capable of floating in sea water and capable of being dropped into the sea without damage. New equipment shall be as light-weight and compact as practicable and shall preferably be capable of use in both lifeboats and liferafts.

(c) The transmitter shall be capable of transmitting on the radiotelegraph distress frequency using a class of emission assigned by the Radio Regulations for that frequency, and, in the bands between 4,000 kc/s and 27,500 kc/s, of transmitting on the radiotelegraph frequency, and of using a class of emission, assigned by the Radio Regulations for survival craft. However, the Administration may permit the transmitter to be capable of transmitting on the radiotelephone distress frequency, and of using the class of emission, assigned by the Radio Regulations for that frequency, as an alternative or in addition to transmission on the radiotelegraph frequency assigned by the Radio Regulations for survival craft in the bands between 4,000 kc/s and 27,500 kc/s.

(d) The transmitter shall, if modulated emission is prescribed by the Radio Regulations, have a depth of modulation of not less than 70 per cent. and in the case of radiotelegraph emission have a note frequency between 450 and 1,350 cycles per second.

(e) In addition to a key for manual transmissions, the transmitter shall be fitted with an automatic keying device for the transmission of the radiotelegraph alarm and distress signals. If the transmitter is capable of transmitting on the radiotelephone distress frequency, it shall be fitted with an automatic device, complying with the requirements of paragraph (e) of Regulation 15 of this Chapter, for transmitting the radiotelephone alarm signal.

(f) The receiver shall be capable of receiving the radiotelegraph distress frequency and the classes of emission assigned by the Radio Regulations for that frequency. If the transmitter is capable of transmitting on the radiotelephone distress frequency the receiver shall also be capable of receiving that frequency and the class of emission assigned by the Radio Regulations for that frequency.

(g) The aerial shall be either self-supporting or capable of being supported by the mast of a lifeboat at the maximum practicable height. In addition it is desirable that an aerial supported by a kite or balloon shall be provided if practicable.

(h) The transmitter shall supply an adequate radio frequency power* to the aerial required by paragraph (a) of this Regulation and shall preferably derive its supply from a hand generator. If operated from a battery, the battery shall comply with conditions laid down by the Administration to ensure that it is of a durable type and is of adequate capacity.

(i) At sea a radio officer or a radiotelephone operator, as appropriate, shall at weekly intervals test the transmitter, using a suitable artificial aerial, and shall bring the battery up to full charge if it is of a type which requires charging.

(j) For the purpose of this Regulation, new equipment means equipment supplied to a ship after the date of coming into force of the present Convention.

Regulation 14

Radiotelephone Stations

(a) The radiotelephone station shall 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 messages and signals.

(b) There shall be efficient communication between the radiotelephone station and the bridge.

* It may be assumed that the purposes of this Regulation will be satisfied by the following performance.

At least 10 watts input to the anode of the final stage or a radio-frequency output of at least 2.0 watts (A2 emission) at 500 kc/s into an artificial aerial having an effective resistance of 15 ohms and 100×10^{-12} farads capacitance in series. The depth of modulation shall be at least 70 per cent.

(c) A reliable clock shall be securely mounted in such a position that the entire dial can be easily observed from the radiotelephone operating position.

(d) A reliable emergency light shall be provided, independent of the system which supplies the normal lighting of the radiotelephone installation, and permanently arranged so as to be capable of providing adequate illumination of the operating controls of the radiotelephone installation, of the clock required by paragraph (c) of this Regulation and of the card of instructions required by paragraph (f).

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

(f) A card of instructions giving a clear summary of the radiotelephone distress procedure shall be displayed in full view of the radiotelephone operating position.

Regulation 15

Radiotelephone Installations

(a) The radiotelephone installation shall include a transmitter, a receiver and a source of energy.

(b) The transmitter shall be capable of transmitting on the radiotelephone distress frequency and on at least one other frequency in the bands between 1,605 kc/s and 2,850 kc/s, using the class of emission assigned by the Radio Regulations for these frequencies. In normal operation the transmitter shall have a depth of modulation of at least 70 per cent. at peak intensity.

(c) (i) In the case of cargo ships of 500 tons gross tonnage and upwards but less than 1,600 tons gross tonnage the transmitter shall have a minimum normal range of 150 miles, i.e., it shall be capable of transmitting clearly perceptible signals from ship to ship by day and under normal conditions and circumstances over this range*. (Clearly perceptible signals will normally be received if the R.M.S. value of the field strength produced at the receiver by the unmodulated carrier is at least 25 microvolts per metre):

(ii) In the case of cargo ships of 300 tons gross tonnage and upwards but less than 500 tons gross tonnage—

for existing installations the transmitter shall have a minimum normal range of at least 75 miles;
for new installations the transmitter shall produce a power in the aerial of at least 15 watts (unmodulated carrier).

(d) The transmitter shall be fitted with a device for generating the radiotelephone alarm signal by automatic means. The device shall be capable of being taken out of operation at any time in order to permit the immediate transmission of a distress message. The Administration may delay the

* In the absence of field strength measurements, it may be assumed that this range will be obtained by a power in the aerial of 15 watts unmodulated carrier) with an aerial efficiency of 27 per cent.

application of the requirement for the device in the case of existing installations for a period not exceeding three years from the date of coming into force of the present Convention.

(e) The device required by paragraph (d) of this Regulation shall comply with the following requirements:—

- (i) The tolerance of the frequency of each tone shall be ± 1.5 per cent.;
- (ii) The tolerance on the duration of each tone shall be ± 50 milliseconds;
- (iii) The interval between successive tones shall not exceed 50 milliseconds;
- (iv) The ratio of the amplitude of the stronger tone to that of the weaker shall be within the range 1 to 1.2.

(f) The receiver required by paragraph (a) of this Regulation shall 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 kc/s and 2,850 kc/s, using the class of emission assigned by the Radio Regulations for these frequencies. In addition the receiver shall permit the reception of such other frequencies, using the class of emission assigned by the Radio Regulations, as are used for the transmission by radiotelephony of meteorological messages and such other communications relating to the safety of navigation as may be considered necessary by the Administration. The receiver shall have sufficient sensitivity to produce signals by means of a loudspeaker when the receiver input is as low as 50 microvolts.

(g) The receiver used for maintaining watch on the radiotelephone distress frequency shall be preset to this frequency, or so arranged that setting to the frequency may be carried out in a rapid and precise manner and that, when set to this frequency, the receiver shall not easily be detuned accidentally. The Administration may delay the application of the requirements of this paragraph in the case of existing installations for a period not exceeding three years from the date of coming into force of the present Convention.

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

(i) While the ship is at sea, there shall be available at all times a main source of energy sufficient to operate the installation over the normal range required by paragraph (c) of this Regulation. If batteries are provided they shall under all circumstances have sufficient capacity to operate the transmitter and receiver for at least six hours continuously under normal working conditions.* In installations in cargo ships of 500 tons gross tonnage and

* For the purpose of determining the electrical load to be supplied by batteries required to have six hours reserve capacity, the following formula is recommended as a guide:

† of the current consumption necessary for speech transmission

+ current consumption of receiver

+ current consumption of all additional loads to which the batteries may supply energy in time of distress or emergency.

upwards but less than 1,600 tons gross tonnage made on or after 19 November 1952, a reserve source of energy shall be provided in the upper part of the ship unless the main source of energy is so situated.

(j) The reserve source of energy, if provided, may be used only to supply

- (i) the radiotelephone installation;
- (ii) the emergency light required by paragraph (d) of Regulation 14 of this Chapter; and
- (iii) the device required by paragraph (d) of this Regulation, for generating the radiotelephone alarm signal.

(k) Notwithstanding the provisions of paragraph (j) of this Regulation, the Administration may authorise the use of the reserve source of energy, if provided, for a direction-finder, if fitted, and for a number of low-power emergency circuits which are wholly confined to the upper part of the ship, such as emergency lighting on the boat deck, on condition that the additional loads can be readily disconnected, and that the source of energy is of sufficient capacity to carry them.

(l) While at sea, any battery provided shall be kept charged so as to meet the requirements of paragraph (i) of this Regulation.

(m) An aerial shall be provided and installed and, if suspended between supports liable to whipping, shall in the case of ships of 500 tons gross tonnage and upwards but less than 1,600 tons gross tonnage be protected against breakage. In addition, there shall be a spare aerial completely assembled for immediate replacement or, where this is not practicable, sufficient aerial wire and insulators to enable a spare aerial to be erected. The necessary tools to erect an aerial shall also be provided.

PART D.—RADIO LOGS

Regulation 16

Radio Logs

(a) The radio log (diary of the radio service) required by the Radio Regulations for a ship which is fitted with a radiotelegraph station in accordance with Regulation 3 or Regulation 4 of this Chapter shall be kept in the radiotelegraph operating room during the voyage. Every radio officer shall enter in the log his name, the times at which he goes on and off watch, and 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. In addition, there shall be entered in the log:—

- (i) the times required by the Radio Regulations;

- (ii) details of the maintenance, including a record of the charging, of the batteries, in such form as may be prescribed by the Administration;
- (iii) a daily statement that the requirement of paragraph (p) of Regulation 9 of this Chapter has been fulfilled;
- (iv) details of the tests of the reserve transmitter and reserve source of energy made under paragraph (s) of Regulation 9 of this Chapter;
- (v) in ships fitted with a radiotelegraph auto alarm details of tests made under paragraph (c) of Regulation 10 of this Chapter;
- (vi) details of the maintenance of the batteries, including a record of the charging (if applicable) required by paragraph (i) of Regulation 12 of this Chapter, and details of the tests required by that paragraph in respect of the transmitters fitted in motor lifeboats;
- (vii) details of the maintenance of the batteries, including a record of the charging (if applicable) required by paragraph (i) of Regulation 13 of this Chapter, and details of the tests required by that paragraph in respect of portable radio apparatus for survival craft.

(b) The radio log (diary of the radio service) required by the Radio Regulations for a ship which is fitted with a radiotelephone station in accordance with Regulation 4 of this Chapter shall 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 Regulation 7 of this Chapter, shall 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. In addition, there shall be entered in the log:—

- (i) the details required by the Radio Regulations;
- (ii) the time at which listening watch begins when the ship leaves port, and the time at which it ends when the ship reaches port;
- (iii) the time at which listening watch is for any reason discontinued, together with the reason, and the time at which listening watch is resumed;
- (iv) details of the maintenance of the batteries (if provided), including a record of the charging required by paragraph (i) of Regulation 15 of this Chapter;
- (v) details of the maintenance of the batteries, including a record of the charging (if applicable) required by paragraph (i) of Regulation 13 of this Chapter, and details of the tests required by that paragraph in respect of portable radio apparatus for survival craft.

(c) Radio logs shall be available for inspection by the officers authorised by the Administration to make such inspection.

CHAPTER V.—SAFETY OF NAVIGATION

Regulation 1

Application

This Chapter, unless otherwise expressly provided in this Chapter, applies to all ships on all voyages, except ships of war and ships solely navigating the Great Lakes of North America and their connecting and tributary waters as far east as the lower exit of the St. Lambert Lock at Montreal in the Province of Quebec, Canada.

Regulation 2

Danger Messages

(a) The master of every ship which meets with dangerous ice, a dangerous derelict, or any other direct danger to navigation, or a tropical storm, or encounters sub-freezing air temperatures associated with gale force winds causing severe ice accretion on superstructures, or winds of force 10 or above on the Beaufort scale for which no storm warning has been received, is bound to communicate the information by all the means at his disposal to ships in the vicinity, and also to the competent authorities at the first point on the coast with which he can communicate. The form in which the information is sent is not obligatory. It may be transmitted either in plain language (preferably English) or by means of the International Code of Signals. It should be broadcast to all ships in the vicinity and sent to the first point on the coast to which communication can be made, with a request that it be transmitted to the appropriate authorities.

(b) Each Contracting Government will take all steps necessary to ensure that when intelligence of any of the dangers specified in paragraph (a) is received, it will be promptly brought to the knowledge of those concerned and communicated to other interested Governments.

(c) The transmission of messages respecting the dangers specified is free of cost to the ships concerned.

(d) All radio messages issued under paragraph (a) of this Regulation shall be preceded by the Safety Signal, using the procedure as prescribed by the Radio Regulations as defined in Regulation 2 of Chapter IV.

Regulation 3

Information required in Danger Messages

The following information is required in danger messages:—

- (a) **Ice, Derelicts and other Direct Dangers to Navigation.**
 - (i) The kind of ice, derelict or danger observed;
 - (ii) the position of the ice, derelict or danger when last observed;

(iii) the time and date (Greenwich Mean Time) when danger last observed.

(b) Tropical Storms (Hurricanes in the West Indies, Typhoons in the China Sea, Cyclones in Indian waters, and storms of a similar nature in other regions).

(i) A statement that a tropical storm has been encountered. This obligation should be interpreted in a broad spirit, and information transmitted whenever the master has good reason to believe that a tropical storm is developing or exists in his neighbourhood.

(ii) Time, date (Greenwich Mean Time) and position of ship when the observation was taken.

(iii) As much of the following information as is practicable should be included in the message:—

—barometric pressure, preferably corrected (stating millibars, inches, or millimetres, and whether corrected or uncorrected);

—barometric tendency (the change in barometric pressure during the past three hours);

—true wind direction;

—wind force (Beaufort scale);

—state of the sea (smooth, moderate, rough, high);

—swell (slight, moderate, heavy) and the true direction from which it comes. Period or length of swell (short, average, long) would also be of value;

—true course and speed of ship.

(c) Subsequent Observations. When a master has reported a tropical or other dangerous storm, it is desirable, but not obligatory, that further observations be made and transmitted hourly, if practicable, but in any case at intervals of not more than three hours, so long as the ship remains under the influence of the storm.

(d) Winds of force 10 or above on the Beaufort scale for which no storm warning has been received.

This is intended to deal with storms other than the tropical storms referred to in paragraph (b); when such a storm is encountered, the message should contain similar information to that listed under paragraph (b) but excluding the details concerning sea and swell.

(e) Sub-freezing air temperatures associated with gale force winds causing severe ice accretion on superstructures.

(i) Time and Date (Greenwich Mean Time).

(ii) Air temperature.

(iii) Sea temperature (if practicable).

(iv) Wind force and direction.

Examples

Ice

TTT Ice. Large berg sighted in 4605 N., 4410 W., at 0800 GMT. May 15.

Derelicts

TTT Derelict. Observed derelict almost submerged in 4006 N., 1243 W., at 1630 GMT. April 21.

Danger to Navigation

TTT Navigation. Alpha lightship not on station. 1800 GMT. January 3.

Tropical Storm

TTT Storm. 0030 GMT. August 18. 2204 N., 11354 E. Barometer corrected 994 millibars, tendency down 6 millibars. Wind NW., force 9, heavy squalls. Heavy easterly swell. Course 067, 5 knots.

TTT Storm. Appearances indicate approach of hurricane. 1300 GMT. September 14. 2200 N., 7236 W. Barometer corrected 29.64 inches, tendency down .015 inches. Wind NE., force 8, frequent rain squalls. Course 035, 9 knots.

TTT Storm. Conditions indicate intense cyclone has formed. 0200 GMT. May 4. 1620 N., 9203 E. Barometer uncorrected 753 millimetres, tendency down 5 millimetres. Wind S. by W., force 5. Course 300, 8 knots.

TTT Storm. Typhoon to southeast. 0300 GMT. June 12. 1812 N., 12605 E. Barometer falling rapidly. Wind increasing from N.

TTT Storm. Wind force 11, no storm warning received. 0300 GMT. May 4. 4830 N., 30 W. Barometer corrected 983 millibars, tendency down 4 millibars. Wind SW., force 11 veering. Course 260, 6 knots.

Icing

TTT experiencing severe icing. 1400 GMT. March 2. 69 N., 10 W. Air temperature 18. Sea temperature 29. Wind NE., force 8.

Regulation 4

Meteorological Services

(a) The Contracting Governments undertake to encourage the collection of meteorological data by ships at sea and to arrange for their examination, dissemination and exchange in the manner most suitable for the purpose of aiding navigation. Administrations shall encourage the use of instruments of a high degree of accuracy, and shall facilitate the checking of such instruments upon request.

(b) In particular, the Contracting Governments undertake to co-operate in carrying out, as far as practicable, the following meteorological arrangements:—

(i) To warn ships of gales, storms and tropical storms, both by the issue of radio messages and by the display of appropriate signals at coastal points.

(ii) To issue daily, by radio, weather bulletins suitable for shipping, containing data of existing weather, waves and ice, forecasts and,

when practicable, sufficient additional information to enable simple weather charts to be prepared at sea and also to encourage the transmission of suitable facsimile weather charts.

- (iii) To prepare and issue such publications as may be necessary for the efficient conduct of meteorological work at sea and to arrange, if practicable, for the publication and making available of daily weather charts for the information of departing ships.
- (iv) To arrange for selected ships to be equipped with tested instruments (such as a barometer, a barograph, a psychrometer, and suitable apparatus for measuring sea temperature) for use in this service, and to take meteorological observations at main standard times for surface synoptic observations (at least four times daily, whenever circumstances permit) and to encourage other ships to take observations in a modified form, particularly when in areas where shipping is sparse; these ships to transmit their observations by radio for the benefit of the various official meteorological services, repeating the information for the benefit of ships in the vicinity. When in the vicinity of a tropical storm, or of a suspected tropical storm, ships should be encouraged to take and transmit their observations at more frequent intervals whenever practicable, bearing in mind navigational preoccupations of ships' officers during storm conditions.
- (v) To arrange for the reception and transmission by coast radio stations of weather messages from and to ships. Ships which are unable to communicate direct with shore shall be encouraged to relay their weather messages through ocean weather ships or through other ships which are in contact with shore.
- (vi) To encourage all masters to inform ships in the vicinity and also shore stations whenever they experience a wind speed of 50 knots or more (force 10 on the Beaufort scale).
- (vii) To endeavour to obtain a uniform procedure in regard to the international meteorological services already specified, and, as far as is practicable, to conform to the Technical Regulations and recommendations made by the World Meteorological Organization, to which the Contracting Governments may refer for study and advice any meteorological question which may arise in carrying out the present Convention.
- (c) The information provided for in this Regulation shall be furnished in form for transmission and transmitted in the order of priority prescribed by

the Radio Regulations, and during transmission "to all stations" of meteorological information, forecasts and warnings, all ship stations must conform to the provisions of the Radio Regulations.

(d) Forecasts, warnings, synoptic and other meteorological reports intended for ships shall be issued and disseminated by the national service in the best position to serve various zones and areas, in accordance with mutual arrangements made by the Contracting Governments concerned.

Regulation 5

Ice Patrol Service

(a) The Contracting Governments undertake to continue an ice patrol and a service for study and observation of ice conditions in the North Atlantic. During the whole of the ice season the south-eastern, southern and south-western limits of the regions of icebergs in the vicinity of the Grand Banks of Newfoundland shall be guarded for the purpose of informing passing ships of the extent of this dangerous region; for the study of ice conditions in general; and for the purpose of affording assistance to ships and crews requiring aid within the limits of operation of the patrol ships. During the rest of the year the study and observation of ice conditions shall be maintained as advisable.

(b) Ships and aircraft used for the ice patrol service and the study and observation of ice conditions may be assigned other duties by the managing Government, provided that such other duties do not interfere with their primary purpose or increase the cost of this service.

Regulation 6

Ice Patrol. Management and Cost

(a) The Government of the United States of America agrees to continue the management of the ice patrol service and the study and observation of ice conditions, including the dissemination of information received therefrom. The Contracting Governments specially interested in these services undertake to contribute to the expense of maintaining and operating these services; each contribution to be based upon the total gross tonnage of the vessels of each contributing Government passing through the regions of icebergs guarded by the Ice Patrol; in particular, each Contracting Government specially interested undertakes to contribute annually to the expense of maintaining and operating these services a sum determined by the ratio which the total gross tonnage of that Contracting Government's vessels passing during the ice season through the regions of icebergs guarded by the Ice Patrol bears to the combined total gross tonnage of the vessels of all contributing Governments passing during the ice season through the regions of icebergs guarded by the Ice Patrol. Non-contracting Governments specially interested may contribute to the expense of maintaining and operating these services on the same basis. The managing Government will furnish annually to each contributing Government

a statement of the total cost of maintaining and operating the Ice Patrol and of the proportionate share of each contributing Government.

(b) Each of the contributing Governments has the right to alter or discontinue its contribution, and other interested Governments may undertake to contribute to the expense. The contributing Government which avails itself of this right will continue responsible for its current contribution up to the 1 September following the date of giving notice of intention to alter or discontinue its contribution. To take advantage of the said right it must give notice to the managing Government at least six months before the said 1 September.

(c) If, at any time, the United States Government should desire to discontinue these services, or if one of the contributing Governments should express a wish to relinquish responsibility for its pecuniary contribution, or to have its contribution altered, or another Contracting Government should desire to undertake to contribute to the expense, the contributing Governments shall settle the question in accordance with their mutual interests.

(d) The contributing Governments shall have the right by common consent to make from time to time such alterations in the provisions of this Regulation and of Regulation 5 of this Chapter as appear desirable.

(e) Where this Regulation provides that a measure may be taken after agreement among the contributing Governments, proposals made by any Contracting Government for effecting such a measure shall be communicated to the managing Government which shall approach the other contributing Governments with a view to ascertaining whether they accept such proposals, and the results of the enquiries thus made shall be sent to the other contributing Governments and the Contracting Government making the proposals. In particular, the arrangements relating to contributions to the cost of the services shall be reviewed by the contributing Governments at intervals not exceeding three years. The managing Government shall initiate the action necessary to this end.

Regulation 7

Speed Near Ice

When ice is reported on or near his course the master of every ship at night is bound to proceed at a moderate speed or to alter his course so as to go well clear of the danger zone.

Regulation 8

North Atlantic Routes

(a) The practice of following recognised routes across the North Atlantic in both directions and, in particular, routes in converging areas of both sides of the North Atlantic, has contributed to the avoidance of collisions between ships and with icebergs, and should be recommended to all ships concerned.

(b) The selection of the routes and the initiation of action with regard to them, and the delineation of what constitutes converging areas, is left to the responsibility of the shipping companies concerned. The Contracting Governments will assist the companies, when requested to do so, by placing at their disposal any information bearing on the routes which may be in the possession of the Governments.

(c) The Contracting Governments undertake to impose on the companies the obligations to give public notice of the regular routes which they propose their ships should follow, and of any changes made in these routes. They will also use their influence to induce the owners of all passenger ships crossing the Atlantic to follow the recognised routes, and will do everything in their power to ensure adherence to such routes in the converging areas by all ships, so far as circumstances will permit. They will also induce the owners of all ships crossing the Atlantic bound to or from ports of the United States or Canada via the vicinity of the Grand Banks of Newfoundland to avoid, as far as practicable, the fishing banks of Newfoundland north of latitude 43°N. during the fishing season, and to pass outside regions known or believed to be endangered by ice.

(d) The Government managing the ice patrol service is requested to report to the Administration concerned any passenger ship which is observed not to be on any regular, recognised or advertised route and any ship which crosses the above mentioned fishing banks during the fishing season, or which when proceeding to or from ports of the United States or Canada passes through regions known or believed to be endangered by ice.

Regulation 9

Misuse of Distress Signals

The use of an international distress signal, except for the purpose of indicating that a ship or aircraft is in distress, and the use of any signal which may be confused with an international distress signal, are prohibited on every ship or aircraft.

Regulation 10

Distress Messages—Obligations and Procedures

(a) The master of a ship at sea, on receiving a signal from any source that a ship or aircraft or survival craft thereof is in distress, is bound to proceed with all speed to the assistance of the persons in distress informing them if possible that he is doing so. If he is unable or, in the special circumstances of the case, considers it unreasonable or unnecessary to proceed to their assistance, he must enter in the logbook the reason for failing to proceed to the assistance of the persons in distress.

(b) The master of a ship in distress, after consultation, so far as may be possible, with the masters of the ships which answer his call for assistance, has the right to requisition such one or more of those ships as he considers best able to render assistance, and it shall be the duty of the master or masters of the ship or ships requisitioned to comply with the requisition by continuing to proceed with all speed to the assistance of persons in distress.

(c) The master of a ship shall be released from the obligation imposed by paragraph (a) of this Regulation when he learns that one or more ships other than his own have been requisitioned and are complying with the requisition.

(d) The master of a ship shall be released from the obligation imposed by paragraph (a) of this Regulation, and, if his ship has been requisitioned, from the obligation imposed by paragraph (b) of this Regulation, if he is informed by the persons in distress or by the master of another ship which has reached such persons that assistance is no longer necessary.

(e) The provisions of this Regulation do not prejudice the International Convention for the unification of certain rules with regard to Assistance and Salvage at Sea, signed at Brussels on the 23rd September, 1910, particularly the obligation to render assistance imposed by Article 11 of that Convention.

Regulation 11

Signalling Lamps

All ships of over 150 tons gross tonnage, when engaged on international voyages, shall have on board an efficient daylight signalling lamp which shall not be solely dependent upon the ship's main source of electrical power.

Regulation 12

Radio Direction-Finding Apparatus

(a) All ships of 1,600 tons gross tonnage and upwards, when engaged on international voyages, shall be fitted with radio direction-finding apparatus complying with the provisions of Regulation 11 of Chapter IV.

(b) The Administration may, in areas where it considers it unreasonable or unnecessary for such apparatus to be carried, exempt any ship under 5,000 tons gross tonnage from this requirement, due regard being had to the fact that radio direction-finding apparatus is of value both as a navigational instrument and as an aid to locating ships, aircraft or survival craft.

Regulation 13

Manning

The Contracting Governments undertake, each for its national ships, to maintain, or, if it is necessary, to adopt, measures for the purpose of ensuring that, from the point of view of safety of life at sea, all ships shall be sufficiently and efficiently manned.

Regulation 14

Aids to Navigation

The Contracting Governments undertake to arrange for the establishment and maintenance of such aids to navigation, including radio beacons and electronic aids as, in their opinion, the volume of traffic justifies and the degree of risk requires, and to arrange for information relating to these aids to be made available to all concerned.

Regulation 15

Search and Rescue

(a) Each Contracting Government undertakes to ensure that any necessary arrangements are made for coast watching and for the rescue of persons in distress at sea round its coasts. These arrangements should include the establishment, operation and maintenance of such maritime safety facilities as are deemed practicable and necessary having regard to the density of the seagoing traffic and the navigational dangers and should, so far as possible, afford adequate means of locating and rescuing such persons.

(b) Each Contracting Government undertakes to make available information concerning its existing rescue facilities and the plans for changes therein, if any.

Regulation 16

Life-Saving Signals

The following signals shall be used by life-saving stations and maritime rescue units when communicating with ships or persons in distress and by ships or persons in distress when communicating with life-saving stations and maritime rescue units. The signals used by aircraft engaged in search and rescue operations to direct ships are indicated in sub-paragraph (d) below. An illustrated table describing the signals listed below shall be readily available to the officer of the watch of every ship to which this Chapter applies.

(a) *Replies from life-saving stations or maritime rescue units to distress signals made by a ship or person:*

<i>Signal</i>	<i>Signification</i>
<i>By day</i> —Orange smoke signal or combined light and sound signal (thunderlight) consisting of three single signals which are fired at intervals of approximately one minute.	"You are seen—assistance will be given as soon as possible."
<i>By night</i> —White star rocket consisting of three single signals which are fired at intervals of approximately one minute.	(Repetition of such signals shall have the same meaning.)

If necessary the day signals may be given at night or the night signals by day.

(b) *Landing signals for the guidance of small boats with crews or persons in distress* :—

Signal

By day—Vertical motion of a white flag or the arms or firing of a green star-signal or signalling the code letter “K” (—·—) given by light or sound-signal apparatus.

By night—Vertical motion of a white light or flare, or firing of a green star-signal or signalling the code letter “K” (—·—) given by light or sound-signal apparatus. A range (indication of direction) may be given by placing a steady white light or flare at a lower level and in line with the observer.

Signification

“This is the best place to land.”

By day—Horizontal motion of a white flag or arms extended horizontally or firing of a red star-signal or signalling the code letter “S” (···) given by light or sound-signal apparatus.

By night—Horizontal motion of a white light or flare or firing of a red star-signal or signalling the code letter “S” (···) given by light or sound-signal apparatus.

By day—Horizontal motion of a white flag, followed by the placing of the white flag in the ground and the carrying of another white flag in the direction to be indicated or firing of a red star-signal vertically and a white star-signal in the direction towards the better landing place or signalling the code letter “S” (···) followed by the code letter “R” (·—·) if a better landing place for the craft in distress is located more to the right in the

“Landing here highly dangerous.”

“Landing here highly dangerous. A more favourable location for landing is in the direction indicated.”

Signal

direction of approach or signalling the code letter “L” (·—·) if a better landing place for the craft in distress is located more to the left in the direction of approach.

By night—Horizontal motion of a white light or flare, followed by the placing of the white light or flare on the ground and the carrying of another white light or flare in the direction to be indicated or firing of a red star-signal vertically and a white star-signal in the direction towards the better landing place or signalling the code letter “S” (···) followed by code letter “R” (·—·) if a better landing place for the craft in distress is located more to the right in the direction of approach or signalling the code letter “L” (·—·) if a better landing place for the craft in distress is located more to the left in the direction of approach.

Signification

“Landing here highly dangerous. A more favourable location for landing is in the direction indicated.”

(c) *Signals to be employed in connection with the use of shore life-saving apparatus* :—

Signal

In general—“Affirmative.”

Specifically:—

“Rocket line is held.”

“Tail block is made fast.”

“Hawser is made fast.”

“Man is in the breeches buoy.”

“Haul away.”

By day—Vertical motion of a white flag or the arms or firing of a green star-signal.

By night—Vertical motion of a white light or flare or firing of a green star-signal.

By day—Horizontal motion of a white flag or arms extended horizontally or firing of a red star-signal.

By night—Horizontal motion of a white light or flare or firing of a red star-signal.

In general—“Negative.”

Specifically:—

“Slack away.”

“Avast hauling.”

(d) *Signals used by aircraft engaged on search and rescue operations to direct ships towards an aircraft, ship or person in distress (see explanatory NOTE below):—*

(i) The following procedures performed in sequence by an aircraft mean that the aircraft is directing a surface craft towards an aircraft or a surface craft in distress:—